MONITORING REPORT: MIXED PLANTING OF NATIVE AND NON-NATIVE SPECIES IN PARAGUAY-I

ID: BCR-PY-451-14-001

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Date of issue *2024/11/14*

Monitoring Report Template (Version 1.1)	
Name of project	Mixed planting of native and non-native species in Paraguay-I
BCR Project ID	ID: BCR-PY-451-14-001
Registration date of the project activity	02/11/2022
Project holder	Desarrollos Madereros S.A. (DMSA)
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Version number of the Project Document applicable to this monitoring report	Version number 6.2
Applied methodology	BCR0001 V4.0 " Quantification of GHG Removals".
Project location (Country, Region, City)	Tapytá, Paraguay (26°12'34 "S, 55°45'57 "W) Hernadarias, Paraguay (25°21'4 "S,54°46'6 "W)

Monitoring Report Template (Version 1.1)	
Project starting date	2018/12/01
Quantification period of GHG reductions/removals	40 years: 2018/12/01 a 2058/11/30
Monitoring period number	1
Monitoring period	2018/12/1 to 2023/05/31 (4.5 years)
Amount of emission reductions or removals achieved by the project in this monitoring period	Total emission reductions: 15.917 tCO_2 1
Contribution to Sustainable Development Goals	SDG 1: End poverty SDG 2: Zero hunger SDG 3: Health and well-being SDG 4: Quality education SDG 6: Clean water and sanitation SDG 9: Industry, Innovation and Infrastructure SDG 12: Responsible Consumption and Production SDG 13: Climate Action SDG 15: Life of terrestrial ecosystems
Special category, related to co-benefits	N/A

[1] Throughout the whole document comma will be used as decimal separator and point as separator of every three digits. Additionally, the date format throughout the document is year/month/day.

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1 General Description of Project

The project activity aims to generate net anthropogenic GHG removals through the establishment of forest plantations on low quality soils that were degraded by extensive cattle ranching, and the Monitoring Plan to ensure that this objective is met is based on the requirements established in both the BCR0001 methodology version 4.0 and the complementary tools, more specifically the BCR Tool: Monitoring, Reporting and Verification V1.0 (February, 2023).

In addition, Desarrollos Madereros S.A. has FSC certification for its forest management, which implies that the design, planting and maintenance of the forest are carried out through a sustainable forest management program that avoids negative impacts on biodiversity, local communities, the water balance of the watersheds and the scenic beauty of the landscape. The project aims to establish mixed forest plantations with non-native eucalyptus and native species in an area of 172,76 hectares, spread over two farms in Paraguay, in the municipalities of Hernandarias (Department of Alto Paraná) and in the municipality of San Juan Nepomuceno (Department of Caazapá) owned by DMSA. The land has historically been used for cattle grazing.

The activities that will result in GHG reductions correspond to the establishment of 172,76 ha, initially with *Eucalyptus grandis, Eucalyptus grandis x urophylla* and *Eucalyptus grandis x camaldulensis,* all of which will be thinned to 50% after 6 years of planting and harvested after 10 years of life for the first two cycles. The third and last cycle will be thinned after 6 years, but it will not be harvested. On the other hand, the native species will be planted after the first thinning of the Eucalypt. The project strata are described below.

Table 1. Composition of the Project Strata.

Stratum	Year of planting	Species	Area (ha)
1	2018	*Eucalyptus* + Native (year 2024 onwards)	13,43
2	2019	*Eucalyptus* + Native (year 2025 onwards)	32,14
3	2019	*Eucalyptus* + Native (year 2025 onwards)	17,62
4	2019	*Eucalyptus* + Native (year 2025 onwards)	52,71
5	2020	*Eucalyptus* + Native (year 2026 onwards)	3,02

Stratum	Year of planting	Species	Area (ha)
6	2022	*Eucalyptus* + Native (year 2028 onwards)	17,53
Subtotal planted in first monitoring			**136,45**
7*	2023	*Eucalyptus* + Native (year 2029 onwards)	11,83
8*	2023	*Eucalyptus* + Native (year 2029 onwards)	24,48
Project Total			**172,76**

Source: DMSA, 2023.
*Note: as of the closing date of this monitoring - May 31, 2023 - strata 7 and 8 have not yet been planted. However, they are included in this table for completeness of the project description.

Regarding the schedule, the eucalypt was planted before the native plants, because the shading effect of this fast-growing species is intended to allow the native species to thrive.

Table 2 of the PD lists the various eucalypt species proposed for each stratum. The eucalypt trees will be thinned after 6 years of planting, reducing their planting density by half, and harvested completely after 10 years of life for the first two cycles The third cycle will be thinned after 6 years, but it will not be harvested.

The planting of the Eucalypt trees started in December 2018 where a total of 13,43 hectares were planted. In 2019 were planted 102,47 hectares, in 2020 were planted 3,02 hectares, in 2022 were planted 17,53 hectares and finally in 2023 the remaining 36,31 hectares will be planted to reach a total of 172,76 hectares.

Native species will be planted immediately after thinning, the complete list of species can be seen in Table 1 of the PD. Therefore, the planting of native species will be carried out progressively from 2024 to reach in 2029 the total of the project plots with a coverage of 42% of native species over what was planted in 2018, 2019, 2020 and 2022 (strata 1 to 6), and in the remaining 36,31 hectares to be planted in 2023 (strata 7 and 8) native species will have a coverage of 27% of each hectare.

The planting of *Eucalyptus spp.* and the 11 native species follows two designs, according to the established strata:

a) **Design 1.** In strata 1 to 6, the eucalypt has 7 meters between rows. The native species will have 14 meters between rows (native to native), these rows of native species will be located between the eucalypt, once these are thinned to 50% leaving one of every two individuals of the same line. The 11 species will be planted with a separation of 2 meters between plants (357 plants per hectare) with a systematic distribution in the order mentioned above. In these strata the eucalypt will have 501 trees per hectare at the time of planting and with the thinning there will be 251 trees per hectare.

b) **Design 2.** In strata 7 and 8 (not considered in the present monitoring period) the eucalypt will have a spacing of 4 meters between rows, which will be thinned to 50% of the rows after 6 years. The native rows will be planted in the row where the eucalypt was thinned and will have a spacing of 16 meters between rows and 2 meters between plants (313 plants per hectare). In these strata the Eucalypt will have 833 trees per hectare at the time of planting and the thinning will leave 400 per hectare. These will be planted in the spring of 2023 and therefore will not be considered for the CO_2 capture calculations of the first stage of quantification.

Table 2. Project Timeline by Strata.

Stratum	*Eucalyptus spp.* Planting (year-ha)	Initial Density *Eucalyptus spp.* (pl/ha)	Year Of Thinning on *Eucalyptus spp.*	Post-Thinning Density *Eucalyptus spp.* (pl/ha)	Harvest Year of *Eucalyptus spp.*	Planting of Native Species (year-ha)	Density of Native Species (pl/ha)	First VVO Monitoring Date
1	2018 – 13,4 ha	501	2024	251	2028	2024 - 13,43 ha	357	2023
2, 3, 4	2019 – 102,5 ha	501	2025	251	2029	2025- 102,47 ha	357	2023
5	2020 - 3,0 ha	501	2026	251	2030	2026 - 3,02 ha	357	2023
6	2022 – 17,5 ha	501	2028	251	2032	2028 - 17,53 ha	357	2023
7, 8	2023 – 36,4 ha	833	2028	400	2033	2029 – 36,31 ha	313	NO*

Source: DMSA, 2023.

** Since strata 7 and 8 have not been planted, they will not be included in the project's GHG removal calculations.*

As of the date of this monitoring report - May 31, 2023 - 136,45 ha of eucalypt (strata 1 to 6) had been planted. The remaining 36,31 ha of eucalypt (strata 7 and 8) will be planted in the last quarter of 2023. Native species will be planted after the first thinning of the Eucalypt trees, which will take place from 2024 onwards.

The project is based on the application of sustainable production practices and advanced plantation technology. The plantations have been managed using sustainable management practices under FSC (Forestry Stewardship Council) certification, a quality management system certification that is being implemented. Fire and infrastructure protection policies and setting aside preservation areas within the Estancia enhance biodiversity in the project area. The main technology applied to the forestry project consists of direct planting with low-impact and environmentally friendly techniques.

The development of the project will contribute to the achievement of nine (9) sustainable development objectives:

- SDG 1 No poverty
- SDG 2 Zero hunger
- SDG 3 Good health and well-being
- SDG 4 Quality education
- SDG 6 Clean water and sanitation
- SDG 9 Industry, innovation and infrastructure
- SDG 12 Responsible consumption and production
- SDG 13 Climate action
- SDG 15 Life on land

The project "Mixed planting of native and non-native species in Paraguay-I" will capture a total amount of 153.133 tCO_2 over a period of 40 years, which is equivalent to an average capture of 3.828 tCO_2 per year, through the carbon pools of aboveground and belowground biomass of the trees established by the project.

1.1 Sectoral Scope and Project Type

The current project is an afforestation project, ARR, and therefore falls under the category "AFOLU GHG Removal Activities".

1.2 Project Start Date

The start date of the project is 2018/12/01.

1.3 Project Quantification Period

The project is to have a total quantification period of 40 years, spanning from its start date of 12/1/2018 to its completion date of 11/30/2058.

This first monitoring period runs from the start of the project until May 31, 2023:

- YEAR 0 (partial): December 1, 2018 to December 31, 2018
- YEAR 1 (complete): January 1, 2019 to December 31, 2019
- YEAR 2 (full): January 1, 2020 to December 31, 2020
- YEAR 3 (full): January 1, 2021 to December 31, 2021
- YEAR 4 (full): January 1, 2022 to December 31, 2022
- YEAR 5 (partial): January 1, 2023 to May 31, 2023

1.4 Project Location and Project Boundaries

The project is being developed in Paraguay, in two Farms or forest management units (hereinafter FMUs). The first is in the municipality of Hernandarias, Department of Alto Paraná and is called UMF Yvypytá, hereafter referred to as Hernandarias. The second is called UMF Tapytá.

The coordinates of their centroids are listed in Table 3.

Table 3. Geographical Coordinates and Area of the Project Farms.

Stay	Reference Location	Project Area
Hernandarias	-25,361682 -54,773279	138,74ha (102,43ha planted as of the current monitoring date)
Tapytá	-26,207745 -55,771425	34,02ha (all of them planted at the date of the current monitoring)

Source: DMSA, 2023.

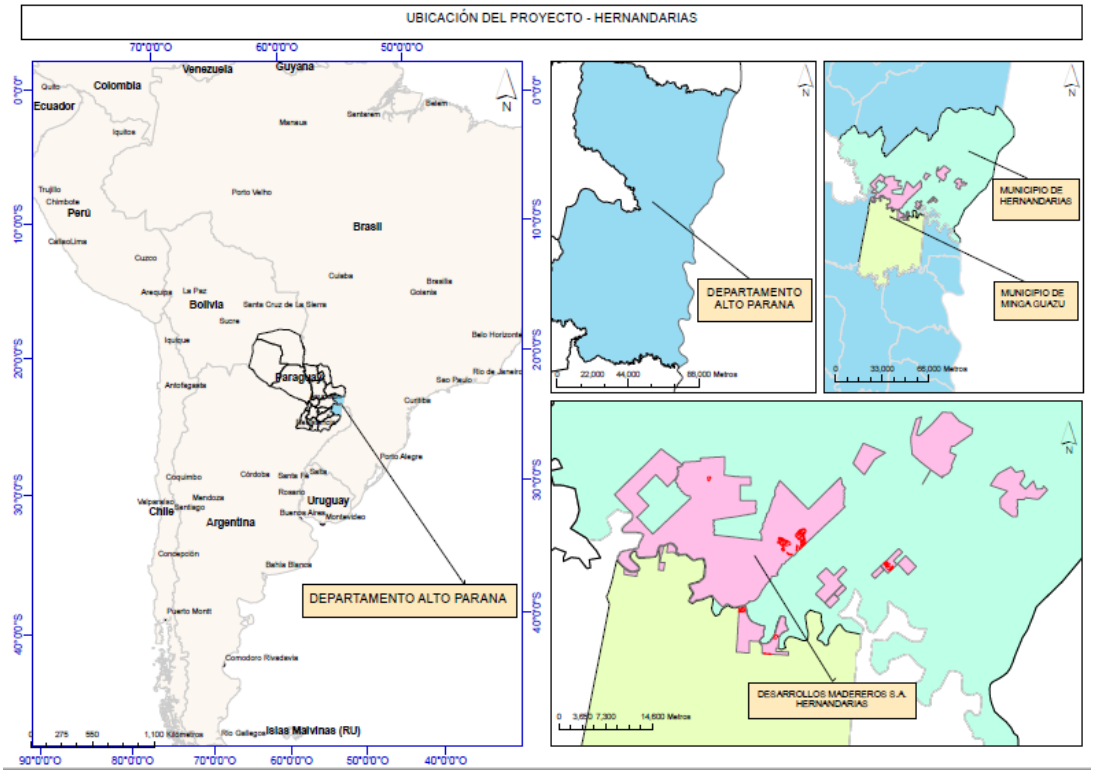
On the other hand, in the present monitoring the boundaries of the plots planted in the period 2018-2023 are checked. The KML file with the location of all project plots of both farms is shared in the supplementary documentation folder and subfolder delimitation plots of the project. The spatial boundaries of the monitored plots are shown in the table below.

Table 4. Spatial Boundaries of the Plots of the Current Monitoring Period.

Plot	Stratum	Area (ha)	Xmax	Ymax	Xmin	Ymin
2900-A	1	2,44	-54,6992	-25,3667	-54,7024	-25,3695
2901-A	1	10,99	-54,6967	-25,3678	-54,7044	-25,3736
2629-A	2	11,10	-54,7652	-25,3448	-54,7732	-25,351
2627-A	2	2,60	-54,7655	-25,345	-54,7704	-25,3504
2622-A	2	16,22	-54,781	-25,353	-54,7838	-25,361
2624-A	2	2,22	-54,777	-25,3512	-54,7865	-25,3572
1403-A	3	13,20	-55,7768	-26,2049	-55,782	-26,2156
2620-A	3	4,42	-54,7852	-25,3514	-54,7867	-25,355
2626-A	4	3,29	-54,7693	-25,3465	-54,7729	-25,3527
2621-A	4	2,65	-54,7822	-25,3514	-54,7855	-25,3567
2623-A	4	3,32	-54,7829	-25,3548	-54,7873	-25,3576
2617-B	4	12,58	-54,7788	-25,3534	-54,781	-25,3556
2615-C	4	1,25	-54,7712	-25,3564	-54,7726	-25,3606
2630-A	4	13,66	-54,7678	-25,3568	-54,7704	-25,3598
2628-A	4	11,85	-54,7664	-25,3497	-54,7694	-25,3551
1402-B	4	4,11	-55,7618	-26,2022	-55,7654	-26,2111
2619-B	5	3,02	-54,7754	-25,3617	-54,7799	-25,3636
1402-E	6	17,53	-55,763	-26,2019	-55,7714	-26,211

Source: DMSA, 2023.

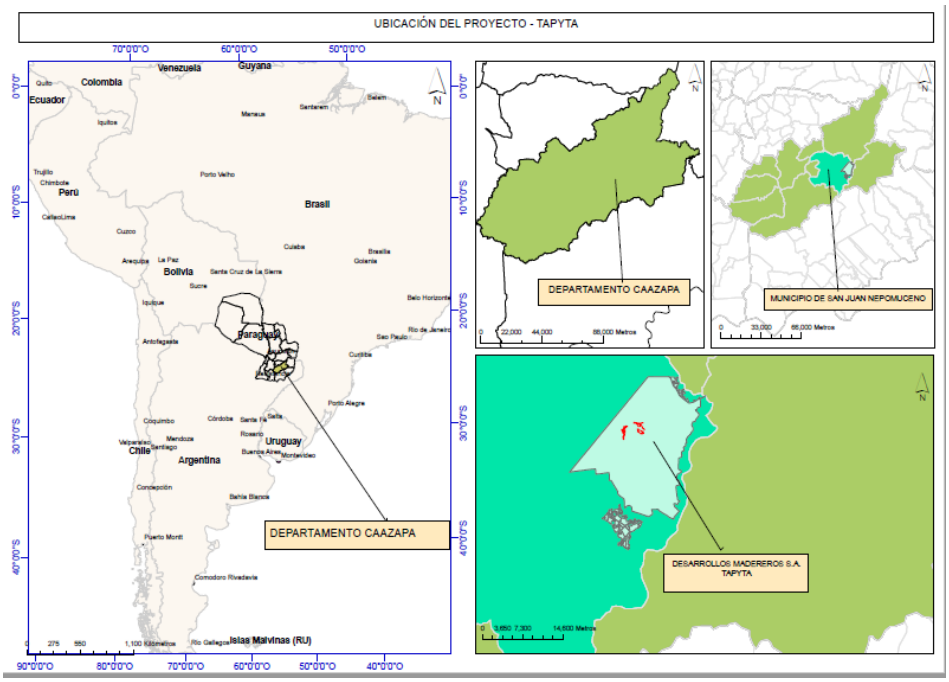
Figure 1. Hernandarias, in red the lots that are part of this project are highlighted.



Source: DMSA, 2023.

Hernandarias is the Forest Management Unit (FMU) of Hernandarias and Minga Guazú located in the Eastern Region, Department of Alto Paraná, in the municipalities of Hernandarias and Minga Guazú. The closest cities are Hernandarias, Minga Guazú and Ciudad del Este.

Figure 2. Tapytá, highlighting in red the lots that are part of this project.



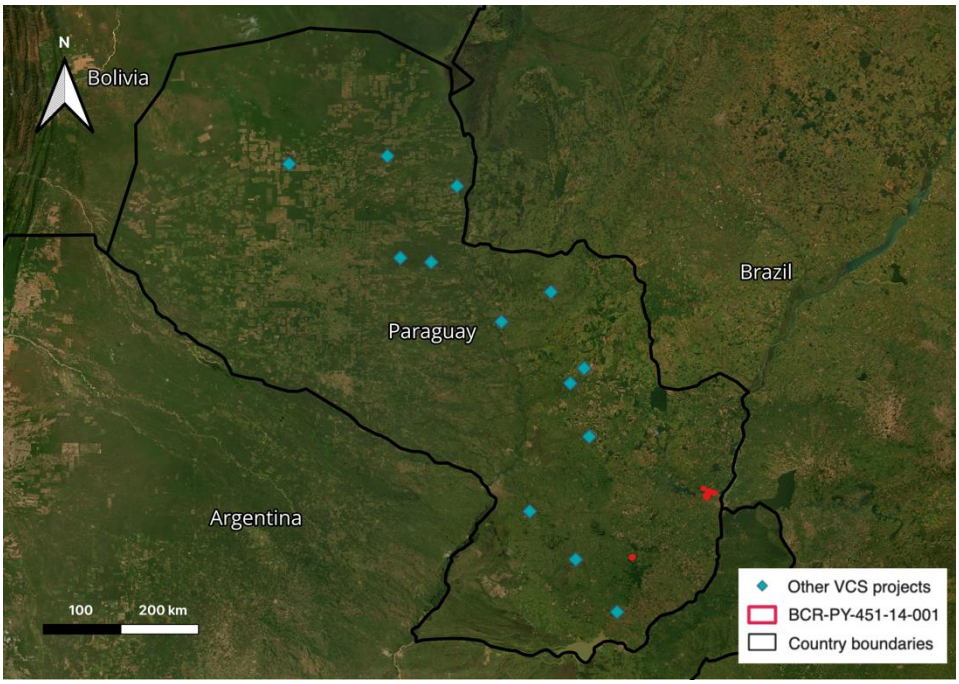
Source: DMSA, 2023.

Both Tapytá and Hernandarias estancias are owned by the project developer and as shown in Figure 3, there is no overlap with other CO_2 absorption projects$_2$ through nature-based solutions.

The government of Paraguay has urged the creation of an official registry of this type of project, which does not yet exist. Therefore, in order to determine this point, a survey of the existence of other ARR and REDD+ type GHG removal projects throughout Paraguay's territory was carried out on the main platforms, and the only standard with projects in Paraguay is Verra: there are 14 registered projects in Paraguay under Verra VCS [2]

Figure 3. Other GHG projects in Paraguay, together with the current project BCR-PY-451-14-001 promoted by DMSA. Datum WGS84.

[2] https://registry.verra.org/app/search/VCS/All%20Projects



Source: Own elaboration based on information collected at https://registry.verra.org/. ArcGIS World Imagery base cartography[3] . Datum WGS84.

1.5 Summary Description of the Implementation Status of the Project

As of the date of this monitoring report, 136,45 hectares (strata 1 to 6) of the 172,76 hectares that make up the entire project have been planted. **The remaining 36,31 hectares will be planted in the last quarter of 2023 (strata 7 and 8).**

- Delimitation of lots and strata, and supervision of project boundaries.

Prior to the soil preparation work, the field layout of the lots and strata designed in GIS was reconsidered in the field.

After the planting work was completed, the limits of each lot and stratum were verified by GPS verification of the perimeters of the plantations, and it was not detected that the planting work had exceeded those limits.

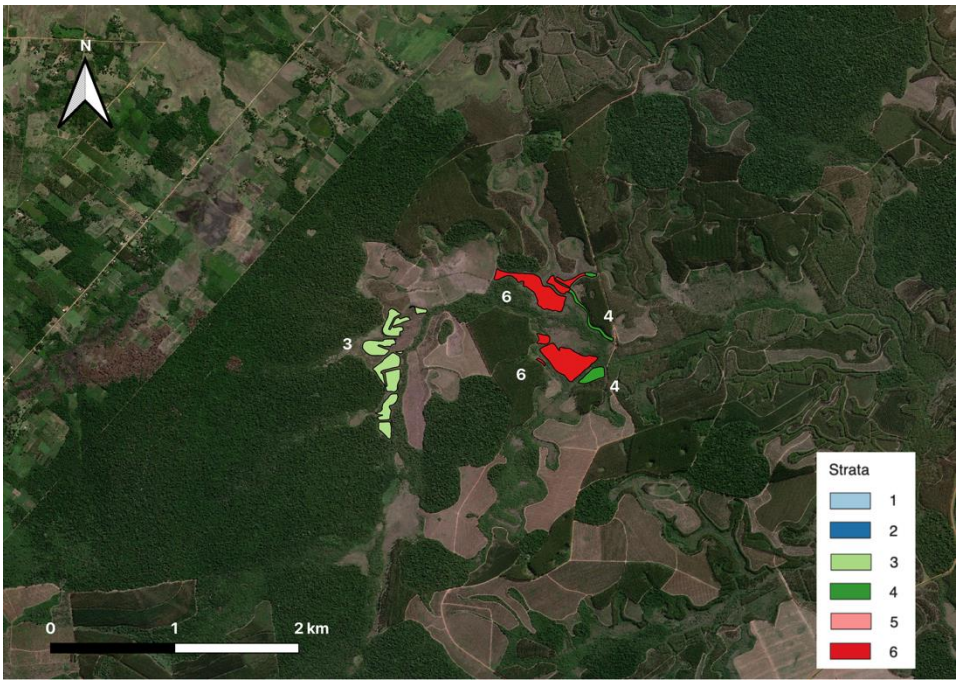
[3] Sources: Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

This supervision was carried out again on a global basis towards the end of the monitoring period (May 2023), with no incidences detected.

Figure 4. Detail of strata planted in the monitoring period (strata 1-6) in the Hernandarias environment.

Source: DMSA, 2023. ArcGIS World Imagery base mapping. Datum WGS84.

Figure 5. Detail of strata planted in the monitoring period (strata 1-6) in the Tapytá environment.



Source: DMSA, 2023. ArcGIS World Imagery base mapping. Datum WGS84.

As planned in the PD, the native species will be planted after the first thinning to be carried out in 2024; therefore, as of the date of preparation of this document - May 2023- they have not been planted and therefore cannot be included in the project's GHG removal calculations.

The amount of GHG removals from the project during this first quantification period is 16.711 tCO_2. This figure has been calculated by rounding down to unity the removals of each stratum.

Considering the provisions of BCR Standard V3.4 in section 14.1.1 "Reversal Risk", once the GHG removals of an AFOLU project are registered, a reserve of 20% of the total GHG emission reductions quantified for each verified period will be automatically deducted and maintained. Therefore, the amount of VCC Carbon Certificates for the project - after deducting the 20% for the purpose of covering the potential materialization of the identified risks (10% in the general BCR reserve account and 10% in the project reserve account) - will be 13.369 tCO_2.

The project activities carried out during this first quantification period are as follows:

- Nursery

DMSA's own nursery located in Hernandarias produced all the seedlings used in the project area. The methodology used was reproduction by cuttings of *Eucalyptus spp.* and its hybrids. A greenhouse, fertigation, substrates and biodegradable papers were used to reproduce the seedlings. This process lasted between 3 and 4 months. The production of seedlings per year during the monitoring period is presented in Table 4.

- Soil preparation

The minimum tillage technique was used for soil preparation. This implies that soil preparation is done in strips: only a strip 1 to 2 m wide is prepared along the tree planting lines. This system is one of those that generates the least soil disturbance because it greatly reduces the portion of soil that is tilled[4] . At the same time, the days on which the minimum tillage task is carried out are carefully selected, selecting the appropriate humidity conditions, because if it is not the correct one, soil erosion can be generated[5] .

The soil was prepared in strips 1,5 meters wide, using dragging machinery such as harrower and ridger. The soil is conditioned to favor root development of the trees to be planted. The progress of this activity during the monitoring period is shown in Table 5.

- Plantation of *Eucalyptus spp.*

Planting was done manually using tools such as shovels to dig the holes and a light vehicle (less than 2.000 kg) was used to transport the plants to the limits of the stratum. Within the stratum, the plants were transported by hand using containers. The operator made a hole with a shovel only in the place where the

[4] http://revistas.uach.cl/pdf/bosque/v16n2/art01.pdf

[5] https://www.jircas.go.jp/sites/default/files/publication/manual_guideline/manual_guideline-_-_44.pdf

tree was planted. The planting was also done manually by inserting the plant and then covering it with soil from the same hole.

During the current quantification period, the *Eucalyptus spp.* was planted at a density of 501 trees per hectare, respecting the planned density per hectare established in the Project description document the distance between rows is 7 meters and between plants 2,85 meters.

Table 5 presents an overview of the progress of planting activities and their percentage of compliance during the monitoring period. Table 6 shows the species that make up the planting plots and the corresponding stratum.

- Fertilization

Once the trees were planted, fertilization with nitrogen, phosphorus and potassium (NPK+) and micronutrients was directed to the plant at a dose of 120 grams per plant, at 15 cm from the seedling and incorporated into the soil. The progress of this activity and its percentage of compliance during the monitoring period is shown in Table 5.

- Weed control

Weed control was carried out before and after planting, with a time interval of 2 to 3 months, up to 24 months after planting. Each intervention was verified in the field by supervisors from the operations area 8 to 10 days after the activity was carried out. The progress of this activity and the number of hectares subjected to weed control is shown in Table 5.

- Pest Control

During the present quantification period, the pest that was controlled before and after planting was the leafcutter ant (no other pests were found). Controls were carried out every 4 to 6 months throughout the project area. Verification of the effectiveness of the controls was carried out 10 to 15 days after the activity was carried out by the operational supervisor. The controls were carried out using FSC-permitted phytosanitary products. The handling, storage, application, and final

disposal of phytosanitary products were carried out in accordance with the "Programa de Manejo Responsable de Agroquímicos" (Responsible Agrochemical Management Program)[6] . In order to reduce the use of phytosanitary products, all controls were carried out in a targeted manner at the anthill. The cumulative progress of this activity is summarized in Table 5.

- Pruning

During the current quantification period, the following pruning levels were carried out, complying with all the levels planned and described in the PD. The first two levels of pruning are done with hand shears. Levels 3 to 5 pruning is done with saws.

Table 6 describes the levels of pruning practiced with respect to the years of tree planting and Table 7 summarizes the progress of the activity and the percentage of compliance during the monitoring period.

[6] See Supplementary Documentation Folder and Project Activities subfolder.

Table 5. Number of Seedlings Produced in Nursery During the Monitoring Period 2018-2023.

Species	Unit	2018*	2019	2020	2021	2022	2023**	Total, Monitoring Period	Target for the Period	Compliance (%)
Eucalyptus grandis x urophylla	Seedlings	7.049	27.775	1.578	0	9.206	0	45.608	45.608	100
Eucalyptus grandis x camaldulensis	Seedlings	0	9.258	0	0	0	0	9.258	9.258	100
Eucalyptus grandis	Seedlings	0	16.886	0	0	0	0	16.886	16.886	100
Total	Seedlings	7.049	53.919	1.578	0	9.206	0	71.752	71.752	100

* in 2018 only the month of December is considered.

** in 2023 will be considered only until May 31.

Source: DMSA, 2023.

Table 6. Progress of Plantation Establishment and Maintenance Activities By Number of ha, During the Monitoring Period 2018-2023.

Activity	Unit	2018*	2019	2020	2021	2022	2023**	Total, Monitoring Period	Target for the Period	Compliance (%)
Soil preparation	Ha	13,43	102,47	3,02	-	17,53		136,45	136,4	100,0%
Planting and fertilization of *Eucalyptus spp.*	Ha	13,43	102,47	3,02	-	17,53		136,45	136,4	100,0%

Activity	Unit	2018*	2019	2020	2021	2022	2023**	Total, Monitoring Period	Target for the Period	Compliance (%)
Pre-planting weed control	Ha	13,43	102,47	3,02	-	17,53		136,45	136,4	100,0%
Post-planting weed control	Ha	13,43	385,50	471,90	193,30	180,60	89,40	1.334,13	1355	98,5%
Pest control (ants)	Ha	49,90	254,10	100,90	105,10	210,70	102,50	823,20	830	99,2%

* in 2018 only the month of December is considered.
** in 2023 will be considered only until May 31.
Source: DMSA, 2023.

Although the initial target for post-planting weed control and pest control activities was 1.355 and 830 ha, respectively, it was not considered necessary to apply to the entire area given the evolution of the plantations.

Table 7. Date of Execution of Plantings in Each Plot and Planting Scheme According to Stratum.

SPECIES	Plot No.	Stay	Planting Date	Area (ha)	Stratum
Eucalyptus grandis x urophylla	2900-A	Hernandarias	01/12/2018	2,44	1
Eucalyptus grandis x urophylla	2901-A	Hernandarias	02/12/2018	10,99	1
Eucalyptus grandis x urophylla	2615-C	Hernandarias	17/10/2019	2,65	4
Eucalyptus grandis x urophylla	2617-B	Hernandarias	09/10/2019	3,32	4
Eucalyptus grandis x urophylla	2619-B	Hernandarias	03/12/2020	3,02	5
Eucalyptus grandis x camaldulensis	2620-A	Hernandarias	07/10/2019	4,42	3
Eucalyptus grandis x urophylla	2621-A	Hernandarias	07/10/2019	12,58	4
Eucalyptus grandis	2622-A	Hernandarias	09/10/2019	11,10	2
Eucalyptus grandis x urophylla	2623-A	Hernandarias	09/10/2019	1,25	4

SPECIES	Plot No.	Stay	Planting Date	Area (ha)	Stratum
Eucalyptus grandis	2624-A	Hernandarias	17/10/2019	2,60	2
Eucalyptus grandis x urophylla	2626-A	Hernandarias	07/10/2019	13,66	4
Eucalyptus grandis	2627-A	Hernandarias	09/10/2019	16,22	2
Eucalyptus grandis x urophylla	2628-A	Hernandarias	08/10/2019	11,85	4
Eucalyptus grandis	2629-A	Hernandarias	10/10/2019	2,22	2
Eucalyptus grandis x urophylla	2630-A	Hernandarias	10/12/2019	4,11	4
Eucalyptus grandis x urophylla	1402-B	Tapytá	04/10/2019	3,29	4
Eucalyptus grandis x urophylla	1402-E	Tapytá	10/10/2022	17,53	6
Eucalyptus grandis x camaldulensis	1403-A	Tapytá	04/10/2019	13,20	3
TOTAL (ha)				**136,45**	

Source: DMSA, 2023.

Table 8. Levels of Pruning Performed on the Project Lots.

Year Planted	Pruning Level
2018	1 to 5
2019	1 to 5
2020	1 to 5
2022	1 to 2
2023	(without plantations)

Source: DMSA, 2023.

Table 9. Progress of Pruning Activities According to Pruning Height Level, During the Monitoring Period 2018-2023.

Pruning According to Level	Unit	2018*	2019	2020	2021	2022	2023**	Total, Monitoring Period	Target for the Period	Compliance (%)
Level 1	Ha	0,00	13,43	102,47	0,00	3,02	17,53	136,45	136,45	100
Level 2	Ha	0,00	0,00	99,40	16,50	3,00	0,00	118,90	118,90	100
Level 3	Ha	0,00	0,00	61,00	54,90	3,00	0,00	118,90	118,90	100
Level 4	Ha	0,00	0,00	0,00	102,70	3,00	13,20	118,90	118,90	100
Level 5	Ha	0,00	0,00	0,00	50,10	49,30	19,50	118,90	118,90	100

* in 2018 only the month of December is considered. ** in 2023 will be considered only until May 31.
Source: DMSA, 2023.

2 Title, Reference and Version of the Baseline and Monitoring Methodology Applied to the Project

The methodologies, Tools, and ISOs that were applied for the preparation of the report are as follows:

- BCR0001 Quantification of GHG Removals V4.0, February 2024
- BCR Guidelines. Baseline and Additionality, September 2023
- Standard BCR V3.4 June 2024
- ISO 14064-2:2019
- ISO 14064-3:2019
- BCR Tool: Sustainable Development Goals V 1.0 July 13, 2023
- BCR Tool: Permanence and Risk Management V1.1 March 19, 2024
- BCR Tool: Monitoring, reporting and Verification V1.0 February 13, 2023
- BCR Tool: Baseline and Additionality V 1.3 March 1, 2024
- BCR Tool: Avoiding Double Counting V2.0 February 7, 2024
- Tool 14 Carbon stock estimation and carbon stock change of trees and shrubs in F/R CDM Project Activities V 04.2
- BioCarbon Registry Requirements

In compliance with ISO 14064-3:2019 section 5.1.6, the project developer must adjust the scope not only to what is required in the selected methodology but also set the scope contemplating own objectives (see objectives in section 2.2 "Objectives" of this document) and the needs and expectations of the intended user, which for this project is registered in the voluntary carbon market.

The following parameters have been defined for compliance:

a) Spatial and temporal limits: The project is being developed in Paraguay on two farms. The first is in the municipality of Hernandarias, Department of Alto Paraná, in the Hernandarias Forest Management Unit (UMF) where 102,43 ha were planted, owned by DMSA, and the second in the municipality of San Juan Nepomuceno, Department of Caazapá, in the UMF called Tapytá where 34,02 ha were planted, also owned by DMSA. The planted area as of the date of the current monitoring is therefore 136,45 ha. The estancias are 141 km apart. The standard is applicable to forest plantation projects that

are developed in areas that are not natural forest, nor are they a natural vegetation cover other than forest at the start of the project activity and 5 years prior to the start date. In the area where the tree plantation was implemented, there was no forest cover either at the beginning of the implementation or 5 years before, because the plots that are part of the spatial limits of the project were lands degraded by livestock use. The time limit of the project is 40 years to be counted from the beginning of the project on 2018/12/01 to culminate on 2058/11/30. In its 40-year crediting period this project will capture a total amount of 153.133 tCO2, equivalent to an average capture of 3.828 tCO2/year. In the current monitoring period 2018-2023 the captures have been 15.917 tCO_2. The expected users of the current project are the companies that in the voluntary market acquire the VCCs generated as a result of this project: after allocating 20% to reserve accounts, 12.734 VCCs will remain marketable in this first monitoring.

b) Physical infrastructure, activities, technologies and processes: The project involves planting *Eucalyptus grandis* -and hybrids thereof- that will be thinned after 6 years of life and harvested after 10 years, as well as a set of 11 native species that will be planted immediately after the first thinning and on which no thinning or harvesting will be carried out. Once harvested, the eucalypt trees will be replanted, covering two harvest cycles and leaving the last cycle unharvested. The native species will be conserved with the objective of leaving a semi-native forest in the project area. The proponent, DMSA, has more than 20 years of experience in the forestry sector, in which it has always operated with great social and environmental sensitivity. Therefore, all of its plantations have been certified by the FSC® (Forestry Stewardship Council) since 2006. This project will also have this certification, therefore the design, planting and maintenance of the forest are carried out through a sustainable forest management program that allows the commercialization of the wood, avoiding negative impacts on biodiversity, local communities, the water balance of the watersheds and the scenic beauty of the landscape.

c) GHG Sources, Sinks or Reservoirs: The only greenhouse gas that this forestry project will be concerned with is carbon dioxide. GHG sequestration will occur through carbon stocks that will be generated by tree planting. These include aboveground biomass, belowground biomass and soil organic carbon.

d) Types of GHG: In compliance with the Kyoto Protocol and ISO: 14064-3, N_2O, CH_4 and CO_2 should be quantified. Considering that the proposed project is only forestry and that no biomass burning will be carried out, the only GHG to be quantified will be CO_2.
e) Periods: the project has been validated and verified for the first time in 2023, 4,5 years after the start of the project, and the following verifications are planned to be carried out every five years, although it is at the proponent's discretion to carry them out more frequently.

3 Registration or Participation Under Other GHG Programs/Registries

The current project was not registered in any other GHG program neither rejected in the past in any GHG program.

4 Contribution to Sustainable Development Goals (SDGs)

This section will present the progress made in meeting the commitments and contributions made by DMSA with respect to the different SDGs within the framework of the current project.

It is important to note that DMSA has an area dedicated to corporate social action and endowed with the annual budget necessary to maintain a permanent organizational structure of collaborative activities with neighboring communities. This area was created in 2014 and worked in a reactive manner in response to specific requests that came to the company.

Since the decision was made in 2018 to carry out the current project with the objective of generating carbon credits, this area was professionalized, and long-term planning began for collaborative projects that have a direct relationship with the Sustainable Development Goals within the framework of this project.

Besides, it is important to clarified that the apply the BIOCARBON SDG Tool v1.0 has applied to assess the contribution to the Sustainable Development Goals, which is in accordance with the requirements of BCR Standard v3.4, section 17.

In this way, the following 12 programs and 24 implementation actions were developed, as detailed below.

Table 10. Programs and Actions Proposed by the Project to Contribute to the SDGs, Quantifiable in Monetary Units and Tons of CO_2.

Project Programs and their Association with the SDGs	Number of Actions in Which Each Program is Implemented	SDG 1: No Poverty	SDG 2: Zero Hunger	SDG 3: Good Health and Well-Being	SDG 4: Quality education	SDG 6 Clean Water and Sanitation	SDG 9: Industry, Innovation and Infrastructure	SDG 12: Responsible Consumption and Production	SDG 13: Climate Action	SDG 15: Life on Land
Program A) Rural and forest fire prevention	3	✅								
Program B) Repair of roads and bridges in neighboring communities	3	✅								
Program C) Impact on employment and promotion of forestry plantations among neighboring communities	2	✅								
Program D) Family and	2		✅							

Project Programs and their Association with the SDGs	Number of Actions in Which Each Program is Implemented	SDG 1: No Poverty	SDG 2: Zero Hunger	SDG 3: Good Health and Well-Being	SDG 4: Quality education	SDG 6 Clean Water and Sanitation	SDG 9: Industry, Innovation and Infrastructure	SDG 12: Responsible Consumption and Production	SDG 13: Climate Action	SDG 15: Life on Land
school gardens										
Program E) Health prevention	2			✅						
Program F) Hygiene promotion in disease prevention	2			✅						
Program G) Education as an opportunity for development	2				✅					
Program H) Water for Neighboring Communities	2					✅				
Program I) Research and Development	1						✅			

Project Programs and their Association with the SDGs	Number of Actions in Which Each Program is Implemented	SDG 1: No Poverty	SDG 2: Zero Hunger	SDG 3: Good Health and Well-Being	SDG 4: Quality education	SDG 6 Clean Water and Sanitation	SDG 9: Industry, Innovation and Infrastructure	SDG 12: Responsible Consumption and Production	SDG 13: Climate Action	SDG 15: Life on Land
Program J) Use of non-polluting inputs	**1**							✅		
Program K) Afforestation for carbon sequestration	**2**								✅	
Program L) Improvement of biodiversity on land previously degraded by livestock farming	**2**									✅
	Σ= 24									

Source: DMSA, 2023.

The activities implemented to contribute to the SDGs will be detailed, to be followed.

4.1 SDG 1: End Poverty

Program A) Rural and forest fire prevention

Target 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.

Indicator 1.5.3: Adopt and implement disaster risk reduction strategies

Objective: Prevent and fight rural and forest fires in neighboring communities in DMSA's area of influence, through early detection with equipment, tools and trained firefighters, in order to prevent fires from damaging the communities' resources, such as their homes, crops and livestock, thus deepening their poor economic situation.

During these first 5 years, the actions carried out for the fulfillment of the SDG were as follows:

Action 1: Adoption and implementation of fire risk reduction strategies through road and street maintenance.

Within the monitoring period (2018-2023) the projected roads in Tapytá and Hernandarias were built.

DMSA has a network of fire roads and streets for the prevention of forest and rural fires. The firebreaks around the perimeter of the communities are built as preventive barriers to stop the advance of fire and are a strategic place to start firefighting operations. This infrastructure is periodically maintained by harrowing and weed control to keep them clean, partially or completely free of vegetation. The width of the firebreak areas varies according to the regulations of the integrated fire management law. In DMSA, according to technical criteria, at least 5 meters of these areas must be left free of vegetation. Firebreaks generally coincide with main and secondary roads. The width of the main roads is 10 to 12 meters and

the secondary roads 6 to 8 meters. They are kept passable so that the fields can be accessed by bulldozers, front shovels, and hydraulic bulldozers.

During the current quantification period, annual monitoring has been carried out to verify the condition of the roads and firebreaks. All necessary maintenance was carried out to ensure that they remain in optimal condition.

Action 2: Availability of an early fire detection system, firefighting equipment and tools, trained brigades, and a system of property protection guards.

DMSA's history of fire outbreaks occurred in September 2020, in the vicinity of the Tapytá field, affecting the private Tapytá Nature Reserve and part of the property belonging to DMSA. This episode, despite having caused several losses in the present ecosystem, did not spread and took large magnitudes due to the joint reaction and intense combat of fellow park rangers, technicians of the Moisés Bertoni Foundation and DMSA officials. At the same time, thanks to the quick action, the fire was prevented from reaching the homes of neighbors, their plantations and / or livestock. Likewise, during the months of August to October, burning season for the preparation of soil for the farms, smoke columns are detected every year coming from the communities of Manduarã, Ciervo Cua, Toro Blanco and Guazú Cua, neighboring the Tapytá field, and from the communities of Toryvete, Independiente, and Acaraymi, neighboring the Hernandarias fields.

In 2021, neighbors of the community who own fields bordering DMSA's property in Tapytá started a fire on their properties; they notified DMSA personnel prior to the activity and they went to the site to check the situation and the status of the fire. It was observed that the fire advanced, and to prevent it from spreading to other neighbors and to DMSA's property, DMSA's hydrant truck was called to put out the fire, thus preventing the fire from spreading to properties, small animals, livestock and homes.

Figure 6. Controlled fire in communities neighboring Tapytá.

Source: DMSA, 2023.

Through the sighting of the torrista who gave notice of the column of smoke in the Hernandarias area, he gave notice by radio, where DMSA personnel went to verify the property affected by the fire started by unknown persons. The presence of the hydrant truck was necessary to suffocate the fire and prevent it from spreading to the nearest houses.

Figure 7. Controlled fire in a plot of land adjacent to the community neighboring the fields of Hernandarias

Source: DMSA, 2023.

DMSA has an early fire detection system with observation and surveillance towers to detect smoke plumes, one in Tapytá and another in Hernandarias. It has natural water reservoirs and large-capacity water tanks (6.000 liters) distributed in strategic locations on the properties, and tractors with harrows and weed cutters for opening strategic fire breaks during firefighting. It has a radio communication system using a VHF repeater, for which each unit has a radio base, in addition to the use of small Handy-type radio equipment. It has firefighting equipment in the two business units Hernandarias and Tapytá consisting of 2 fire engines, water supply tanks, 15 quick-attack hydrant units for trucks, tractors, and hand tools, as well as other equipment used for firefighting. The condition of the combat

equipment and tools is periodically checked by means of a check list and its indicator is their condition (good, fair, bad).

DMSA has established a system of property protection guards during weekends and on critical days when fires occur. The guards, made up of brigade members, travel the fields, mainly on the perimeters, to detect any fire outbreaks early on. If they are detected, the firefighting brigades are notified to summon and join the team to fight the fire. The implementation of guards is verified annually.

The brigade has a hierarchical organization chart with a chief who is responsible for firefighting planning and personnel safety, transmitting instructions to the brigade chiefs and crew chiefs, when several crews are affected, so that they are carried out. All brigade members are equipped with personal protective equipment (PPE) and receive training and instruction through an annual forest fire prevention and firefighting training plan.

Figure 8. Theoretical/Practical training with DMSA brigade members, Hernandarias Volunteer Fire Department, Santa Fe Volunteer Fire Department, and the trainer Roque Giménez.



Source: DMSA, 2023.

Action 3: Frequent communication with neighboring community representatives, training and talks to officials.

DMSA maintains frequent and cordial communication with the community neighboring the fields. On more than one occasion, the neighbors have warned DMSA personnel that they were going to carry out burns, and they went to the site to monitor that the activity did not advance to other neighbors' agricultural plots. The communities neighboring the Tapytá field are Ciervo Cua, Enramadita, Toro Blanco, Corazón de Maria, Ñumi, Tacuaró (Indigenous), Manduarã, San Carlos, Primero de Mayo, and the communities neighboring the Hernandarias field are Toryvete (Campesina), Independiente (Indigenous) and Acaraymi

(Indigenous/Campesina). Through dialogue with community leaders, it was established and agreed to communicate to DMSA's Chiefs and Supervisors about the use of fire for their cultural practices in advance. In this way, DMSA warns its brigades to be alert and collaborate with the community in case the use of fire gets out of control.

As a preventive measure, DMSA gives educational talks in the schools neighboring the Tapytá and Hernandarias fields. In 2022 a talk on fire prevention with puppets was given in Tapytá, and it is planned to repeat this action in Hernandarias in 2023.

In order to make the neighboring community aware of the responsible use of fire and to provide tools and new knowledge for firefighting, the training provided to the brigade members themselves opens their participation to the representatives of the neighboring communities. This also allows them to be better prepared and coordinated with security authorities, health centers, schools, and neighbors in general in the event of a fire that could affect everyone. This modality will be implemented as of 2023.

Monitoring results: Program 1: Prevention and combat of rural and forest fires to prevent damage to homes, crops and livestock in neighboring communities.

As described in the DD, DMSA developed the following rating scheme to measure and monitor activities and sub-activities that contribute to program compliance.

- Maintenance of roads and firebreaks,
- Maintenance of equipment, machinery,
- Training for brigadistas,
- Communication with the Community

For actions 1 and 2 it will be used to qualify and monitor compliance:

- B: Good
- MB: Very Good
- A: Regular
- M: Bad

Table 11. Monitoring of Program Actions A) Prevention of Rural and Forest Fires.

PROJECT YEAR	2018*	2019	2020	2021	2022	2023**	TOTAL
ACTION 1: Fire preventive maintenance							

PROJECT YEAR	2018*	2019	2020	2021	2022	2023**	TOTAL
Maintenance status of internal roads	MB	MB	MB	MB	MB	MB	
Firewall maintenance status	MB	MB	MB	MB	MB	MB	
ACTION 2: Equipment, machinery, firefighting brigade members							
Maintenance status of equipment and tools	B	B	B	B	B	B	
Implementation of guard system	B	B	B	B	B	B	
Training of brigadiers and officials carried out	0	0	0	0	0	0	0
ACTION 3: Neighboring community communication							
Educational talks Schools	-	-	-	-	9 Schools-200 students	-	
Neighborhood training	-	-	Training sessions before 2 institutions of the volunteer fire department of Santa Fe.	-	-	Training for the installation of a community garden in the indigenous community of Tacuaro.	

Source: DMSA, 2023.

As can be seen, during the period under analysis, 20% more resources were allocated to this program than had been projected. This was due to the poor initial conditions of the main roads and community firebreaks. Therefore, the overall rating of the program is MB.

Program B) Repair of roads and bridges in neighboring communities

Target 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.

Indicator 1.5.3: Adopt and implement disaster risk reduction strategies

Objective: Improve access and communication for families in neighboring communities through the improvement of local roads, which will facilitate their economic development.

For these reasons, DMSA considers it important and a priority to accompany the neighboring community in the improvement of neighboring roads. To implement this program, DMSA held **meetings with community leaders** to identify and prioritize road sites in need of improvement. To the extent possible, DMSA **provided resources to carry out these** road **improvements** and facilitated the **implementation of these improvements before the Directorate of Neighborhood Roads** (DNR) for rural roads before the Roads Directorate, which is part of the Paraguayan Ministry of Public Works and Communications.

During the period under analysis, the following actions were carried out:

- In 2018, 7,4 kilometers of roads and two bridges were repaired, benefiting the rural community of Toryvete and the indigenous communities of Acaraymi and Independiente in the district of Hernandarias.
- In 2019, 7,7 kilometers of roads and two bridges were repaired, benefiting the rural community of Toryvete and the indigenous communities of Acaraymi and Independiente in the district of Hernandarias.
- In 2021-2023, resources were used to undertake infrastructure improvements, specifically roads and bridges, of a 7-kilometer stretch in the Hernandarias area. These works benefited families from the Toryvete community and the Independiente and Acaraymí indigenous communities. The improvement of infrastructure in the Hernandarias area was completed. The construction of sewage systems and road improvements began.
- Between 2022 and 2023 in Tapytá, an investment was made to improve roads and build a sewer system on a 10-kilometer stretch of a country road that runs between Desarrollos Madereros S.A. and the rural colonies of the San Juan Nepomuceno district; this road will provide direct access to the new asphalt road that connects San Juan Nepomuceno with Ruta Sexta.

Figure 9. Road and bridge repair





Source: DMSA, 2023.

As described in the DD, DMSA developed the following rating scheme to measure and monitor activities and sub-activities that contribute to program compliance.

For actions 1 and 3 the indicator is the completion of meetings and the attendance sheet.

Regarding action 2 road and bridge maintenance, it will be used to qualify and monitor compliance:

- B: Good
- MB: Very Good
- A: Regular
- M: Bad

Table 12. Monitoring of actions program B) Repair of roads and bridges in neighboring communities.

PROJECT YEAR	2018*	2019	2020	2021	2022	2023**	
ACTION 1: Dialogue and coordination with the neighboring community							
Dialogue and coordination with the neighboring community regarding road infrastructure improvement needs.	MB	MB	M	M	MB	MB	

PROJECT YEAR	2018*	2019	2020	2021	2022	2023**	
ACTION 2: Repair of local roads							
Maintenance of local roads	B	B	-	B	B	MB	
Bridge maintenance	-	MB	-	MB	-	-	
ACTION 3: Negotiations with road authorities							
Negotiations with the authorities	MB	MB	MB	MB	MB	MB	

Source: DMSA, 2023.

During the monitoring period, the resources that were projected for the fulfillment of these tasks in this period of time were allocated. Therefore, the overall rating of the program is MB.

Regarding action 1, the planned meetings could not be held due to the restrictions caused by the Covid-19 pandemic. Regarding action 2, road maintenance was performed every year as planned. On the other hand, maintenance was only performed on the bridges in 2019 and 2021 because it was not necessary for the others due to their good condition. Finally, Action 3 is planned to begin in 2023.

Program C) Impact on employment and promotion of forestry plantations among neighboring communities

Target 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.

Objective: Contribute and collaborate so that the different communities can develop forestation that will allow them to generate income, better conditions for the production of food and timber inputs, which will contribute to their own food autonomy.

Eucalypt seedlings were delivered and planted. In this way, when the trees reach adequate growth, the communities can have a source of income from the extraction and sale of the wood.

The shortage of fuel for cooking food can influence the food situation. Cooking food is important for the development of a more balanced and healthy diet. In DMSA's neighboring communities, firewood is the main source of energy and the forestations can be a supplier of this input.

The total projected budget for the program was USD 3.500, so the main indicator is the amount allocated.

With respect to Action 1, the meetings planned for 2020 and 2021 could not be held due to the restrictions caused by the Covid-19 pandemic.

Figure 10. Delivery of seedlings, inputs

Source: DMSA, 2023.

DMSA developed the following rating scheme to measure and monitor the sub-activities that contribute to program compliance.

For action 1, communications and meetings held with the neighboring community, the indicator is the number of meetings held, accompanied by the attendance sheet.

With respect to Action 2, delivery of seeds and inputs, the installation of vegetable gardens will be used to qualify and monitor compliance:

- B: Good
- MB: Very Good
- A: Regular
- M: Bad

Table 13. Monitoring program C) Impact on employment and promotion of forest plantations among neighboring communities.

PROJECT YEAR	2018*	2019	2020	2021	2022	2023**	
ACTION 1: Direct relationship of the project with the neighboring community							
Total action 1 DMSA (FTE)	247	183	182	215	227	244	
Jobs created by the project and filled by local residents (FTE)	4	3	3	4	4	4	
Communications and meetings held with the neighboring community	B	B	M	M	B	MB	
ACTION 2: Soil preparation and delivery of inputs and seedlings for timber production							
Delivery of inputs and seedlings, soil preparation, etc.	MB	MB	MB	MB	MB	B	
Total seedlings delivered (und.)	750	9.000	10.000	10.000	10.000	150	

* in 2018 only the month of December is considered.
** in 2023 will be considered only until May 31.
Source: DMSA, 2023.

As can be seen, during the period under analysis, the projected amount was allocated for program compliance. Therefore, the overall rating of the program is MB.

With respect to Action 1, the impact on employment is calculated by allocating a percentage of DMSA's full-time jobs (about 216 employees on average) proportionally to the weight of the project's area with respect to the total managed by DMSA (approximately 2%). The units are FTE (full-time equivalent), however project work is carried out with many more staff simultaneously as required by each task, albeit intermittently throughout the year, resulting in the full-time positions indicated.

On the other hand, the meetings planned for 2020 and 2021 could not be held due to restrictions due to the Covid-19 pandemic. Therefore, the overall grade for Action 1 is B.

In relation to Action 2, a significant investment was made between 2018 and 2022. Thanks to this disbursement, the families of the neighboring communities benefited in Hernandarias were 113. Herbicides, hormiguicides, fertilizers, eucalypt seedlings were also delivered for forestation; always accompanied by the supervision and corresponding technical assistance of DMSA personnel.

Visits were made to the property of Mrs. Aurora Mariño de Riquelme of the Community of Toryvete, Virgen de Fátima, and it was possible to see the management of the plots with the seedlings that she had received as a donation. It was also possible to see the tables obtained as a result of the first batch of eucalypt seedlings delivered.

Figure 11. Evolution of seedlings delivered

Source: DMSA, 2023.

Year 2022: The neighboring communities benefited in Hernandarias were: *Comunidad Campesina de Toryvete, Indígena Independiente*, and Acaraymi. In Tapytá: Ciervo Cua, Enramadita, Toro Blanco, Corazón de Maria. The Basic School N° 1631 San Isidro Labrador de Enramadita Tava'i received herbicides, ant killer, fertilizers, Eucalypt seedlings and seedlings of native species, always accompanied by the corresponding supervision and technical assistance.

Figure 12. An environmental education talk was given at the San Isidro Labrador de Enramadita Tava'i Basic School No. 1631.



Source: DMSA, 2023.

4.2 SDG 2: Zero Hunger

Program D) Family and school gardens

Target 2.4: By 2030, ensure sustainability of food production systems and implement resilient agricultural practices that increase productivity and production, contribute to the maintenance of ecosystems, strengthen resilience to climate change, extreme weather events, droughts, floods and other disasters, and progressively improve land and soil quality.

Indicator 2.4.1: Proportion of the agricultural area in which organic agriculture is practiced.

Objective: Contribute and collaborate so that the different communities can develop their own crops, so that they can achieve their own food autonomy.

The following actions were carried out during the period under analysis:

In the period 2018-2023, an investment in the amount of USD 18.384 was made. Thanks to this disbursement, 113 families of the neighboring communities in Hernandarias have benefited.

In 2018, they received kits of seeds for self-consumption (peanuts, corn and beans) and vegetables, as well as herbicides, ant killer, fertilizers, animal sanitation and eucalypt seedlings. All actions were accompanied by the corresponding supervision and technical assistance.

Figure 13. seed kits delivered to neighbors in Hernandarias

Source: DMSA, 2023.

In 2019, families from neighboring communities in Hernandarias were benefited: Comunidad Campesina de Toryvete, Indígena Independiente, Acaraymi and in Tapytá: Ciervo Cua, Enramadita, Toro Blanco, Corazón de Maria, Ñumi, who received kits of seeds for self-consumption (peanuts, corn and beans) and vegetables (school vegetable garden), as well as herbicides, ant killer, fertilizers, animal sanitation and delivery of eucalypt seedlings; always accompanied by a corresponding supervision and technical assistance.

Figure 14. Vegetable harvesting in neighboring communities.

Source: DMSA, 2023.

In 2020, the families of the neighboring communities of Hernandarias benefited were: Comunidad Campesina de Toryvete, Comunidad Indígena Independiente, and Comunidad Acaraymi. In Tapytá: Ciervo Cua, Enramadita, Toro Blanco, Corazón de Maria, Ñumi. They received seed kits for self-consumption (peanuts, corn and beans) and vegetables (school vegetable garden), as well as herbicides, ant killer, fertilizers, material for animal sanitation and eucalypt seedlings, always accompanied by the corresponding supervision and technical assistance.

Figure 15. Delivery of 7,7 kg of seeds to Jaime Zorrilla of the Industry and Commerce area of the Municipality of Hernandarias and 200 eucalypt poles for the Hernandarias Municipal Family Vegetable Garden.


Source: DMSA, 2023.

In 2021, the families of the neighboring communities of Hernandarias benefited were: Comunidad Campesina de Toryvete, Comunidad Indígena Independiente, and Acaraymi. In Tapytá: Ciervo Cua, Enramadita, Toro Blanco, Corazón de Maria, Ñumi. They received seed kits for self-consumption (peanuts, corn and beans) and vegetables (school vegetable garden), as well as herbicides, ant killer, fertilizers, material for animal sanitation and eucalypt seedlings, always accompanied by the corresponding supervision and technical assistance.

In 2022, the families of the neighboring communities benefited in Hernandarias were: Comunidad Campesina de Toryvete, Comunidad Indígena Independiente and Acaraymi. In Tapytá: Ciervo Cua, Enramadita, Toro Blanco, Corazón de Maria, Ñumi, who received kits of seeds for self-consumption (peanuts, corn and beans), vegetables (school vegetable garden), and seeds of branches (cassava); as well as herbicides, ant killer, fertilizers, material for animal sanitation and eucalypt seedlings; always accompanied by the corresponding supervision and technical assistance.

Figure 16. Delivery of 5Kg of seeds to Jaime Zorrilla of the Industry and Commerce area of the Municipality of Hernandarias for the Municipal Family Vegetable Garden.

Source: DMSA, 2023.

Figure 17. Cassava seeds delivery to neighboring communities.

Source: DMSA, 2023.

As described in the DD, DMSA developed the following rating scheme to measure and monitor activities and sub-activities that contribute to program compliance.

For action 1, communications and meetings held with the neighboring community, the indicator is the number of meetings held, accompanied by the attendance sheet.

With respect to Action 2, delivery of seeds and inputs, the installation of vegetable gardens will be used to qualify and monitor compliance:

- B: Good
- MB: Very Good
- A: Regular
- M: Bad

Table 14. Monitoring of program D) Family and school gardens

PROJECT YEAR	2018*	2019	2020	2021	2022	2023**	TOTAL
ACTION 1: Dialogue and coordination with the neighboring community							
Communications and meetings held with the neighboring community	B	B	M	M	B	MB	
ACTION 2: Promoting food self-sufficiency							
Delivery of seeds and inputs, installation of orchards	MB	MB	-	MB	MB	MB	
Total seeds delivered (kg)	130	1.550	1.550	1.550	1.550	645	6.975

*in 2018 only the month of December is considered
** in 2023 only up to May 31 is considered
Source: DMSA, 2023.

As can be seen, during the period, the amount that had been projected was allocated for program compliance, therefore, the overall rating of the program is MB.

With respect to Action 1, it was not possible to hold the meetings planned in 2020 and 2021 due to restrictions due to the COVID-19 pandemic.

4.3 SDG 3: Health and Well-Being

Program E) Health Prevention

Target 3.8: Achieve universal health coverage, access to quality essential health services, and access to safe, effective, affordable and quality medicines and vaccines for all.

Indicator 3.8.1: Percentage of population with a perceived good or very good health status

Objective: To have constant health personnel in the community of Toryvete.

The Toryvete Community has a Health Unit located approximately 45 km from the city of Hernandarias. DMSA decided to collaborate with the professional fees of a local nurse to be present every day of the week attending the USF who continuously assists the community with basic health care needs, especially in

emergency cases. DMSA makes cash contributions (70 USD/month) to contribute to the nurse's professional fees, and also made a one-time delivery of medicines in 2022 in the amount of 280 USD to the Toryvete Family Health Unit.

It is planned to maintain the program throughout the 40 years of the project. A new survey will be conducted every 5 years to identify new needs that may arise.

With the permanent presence of the nurse at the Family Health Unit of the community of Toryvete, cases requiring immediate assistance were dealt with, as well as emergency cases, which could be attended with first aid until they reached the health care center in the city of Hernandarias.

Figure 18. Delivery of medicines; and the Nurse Fabiana Riquelme Gayoso.

Source: DMSA, 2023.

Between 2020 and 2022, deliveries were made between the contribution to the nurse and the donation of medicines that the Family Health Unit (USF) of the Toryvete Community does not have.

Table 15. Monitoring Program E) Health Prevention.

PROJECT YEAR	2018*	2019	2020	2021	2022	2023**	
ACTION 1: Communications and meetings held with the neighboring community	Planning		Pandemic	Pandemic			
ACTION 2: Monetary contribution to the USF Toryvete infirmary	-	-	**X**	**X**	**X**	**X**	

*in 2018 only the month of December is considered

** in 2023 only up to May 31 is considered

Source: DMSA, 2023.

Program F) Hygiene Promotion for Disease Prevention

Target 3.8. Achieve universal health coverage, access to quality essential health services and access to safe, effective, affordable and quality medicines and vaccines for all.

Indicator 3.8.1: Percentage of population with a perceived good or very good health status

Objective: Contribute with the neighboring population to the prevention of mosquito-borne diseases and diseases transmitted by lack of hand washing.

According to the publications of the Ministry of Health of Paraguay since 2015 cases of chikungunya have been reported in the country with outbreaks in 2018 and 2022, and it is currently present in all departments of the country. The *Aedes aegypti* and *Aedes albopictus* mosquitos transmit not only this disease but also dengue, zika and yellow fever. These diseases also circulate and are present in the country.

DMSA has a social commitment with the neighboring community to help prevent chikungunya, dengue, zika and yellow fever diseases, as well as those transmitted by the lack of hand washing. In order to carry this out, it has a partnership with the Mundo Sano Foundation (FMS), an organization whose mission is to transform the reality of people affected by neglected diseases, with serious consequences for their health, mainly in the most vulnerable populations. FMS works with affected communities in various parts of Latin America (Paraguay and Argentina), Europe and Africa, within the framework of current regional and global strategies established by the World Health Organization (WHO), the Pan American Health Organization (PAHO).

In the rural and indigenous communities of Tapytá and Hernandarias, the "Prevention in Action Program" was carried out, an educational project with pedagogical and recreational resources to raise awareness and sensitize about mosquito-borne diseases, and recommendations on personal and home care to reduce the risk of transmission of these diseases. The implementation of this program is face-to-face, however, to facilitate participation opportunities, the

program has a remote proposal where pedagogical tools are provided to deepen knowledge, awaken curiosity and turn children into agents of change in their communities.

Together with the FMS we implemented the "Handwashing" program, which joins the "Global Handwashing Day", promoted by the Global Handwashing Partnership coalition, organizing face-to-face and virtual events in schools in the neighboring communities of Tapytá and Hernandarias. This program was very important during the pandemic, not only because the material was available virtually, but also because the subject matter was fundamental during the pandemic to reduce the risk of transmission and circulation of COVI-19. Although hand hygiene is a simple practice, in many cases it is not performed correctly or with adequate frequency. This program raises awareness of the importance of hand washing with soap and water as an effective, inexpensive and affordable means of preventing infectious diseases.

Through the Prevention in Action and Hand Washing programs, we contributed to the neighboring communities who valued the activity by replicating the information provided to the students and teachers of the educational institutions that participated in the activities both in Hernandarias and Tapytá.

The programs were implemented since the beginning of the project in 2018, where 476 people per year were benefited by the actions of prevention of mosquito-borne diseases and infectious diseases transmitted by insufficient hand washing. Details of the actions carried out and integrating the programs are available in the FMS Social Management Plan.

Regarding the actions, the meetings planned for 2020 and 2021 could not be held due to restrictions due to the Covid 19 pandemic, but virtual activities were carried out with the students through the teachers.

Figure 19. Results of activities performed DMSA and FMS.

Source: DMSA, 2023.

Table 16. Monitoring of Program F) Hygiene Promotion in Disease Prevention.

PROJECT YEAR	2018*	2019	2020	2021	2022	2023**	TOTAL
ACTION 1: Implementation of the Prevention in Action Program in the Schools and neighboring communities.	Planning	6 volunteer participation, 34 children and youth, 4 teachers	pandemic/ virtual: 167 children and youth, 8 teachers	pandemic	29 participation of volunteers, 217 children and youth, 11 teachers	2 volunteer participation, 16 children and youths, 1 teacher	37 volunteers, 434 children and youths, 24 teachers, 37 volunteers, 434 children and youths, 24 teachers, 37 volunteers, 434 children and youths, 24 teachers
ACTION 2: Implementation of Handwashing Program in Schools and Neighboring Communities	Planning	14 volunteer participation, 57 children and youths, 4 teachers	pandemic		23 volunteer participation, 197 children and youths, 9 teachers	-	37 participation of volunteers, 254 children and youth, 13 teachers

*in 2018 only the month of December is considered

** in 2023 only up to May 31 is considered

Source: DMSA, 2023.

4.4 SDG 4: Quality Education

Program G) Education as an Opportunity for Development

Target 4.3. By 2030, ensure equal access for all men and women to quality technical, vocational and higher education, including university education.

4.b.1 Gross official development assistance for fellowships

Objective: To encourage education, promoting scholarships to guarantee a better future for the children of the neighboring community.

DMSA is strongly committed to encourage and develop education plans for the local communities, considering and contributing to close the historical gender gap. For this reason, since 2020, an annual scholarship program of 5 scholarships for women wishing to pursue university studies will be financed. This scholarship program will continue throughout the accreditation period of the current forestry project.

Women are prioritized as beneficiaries to ensure inclusive, equitable quality education and promote lifelong learning opportunities for all; however, scholarships are open; regardless of gender, without discrimination.

In 2020 and 2021, due to the Covid-19 pandemic, the students continued with their classes virtually, and in 2022 they were able to complete their studies and reach their goal as graduates of the technical baccalaureate in environmental sciences with emphasis on tourism, from the Mbaracayu Educational Center.

In the year 2022, the first group of students who received a scholarship from DMSA concluded their studies. They obtained a technical bachelor's degree in environmental sciences. Two of them are currently continuing their training at the University of Asunción. This achievement reaffirms and motivates DMSA's

commitment to continue with the program during the entire accreditation period of the project.

Figure 20. DMSA scholarship students

Source: DMSA, 2023.

DMSA developed the following rating scheme to measure and monitor the sub-activities that contribute to program compliance.

For action 1, communications and meetings held with the neighboring community, the indicator is the number of meetings held, accompanied by the attendance sheet.

Action 2 will be used to qualify and monitor compliance:

- B: Good
- MB: Very Good
- A: Regular
- M: Bad

Table 17. Monitoring Program G) Education as an Opportunity for Development.

PROJECT YEAR	2018*	2019	2020	2021	2022	2023**
ACTION 1: Dialogue and coordination with representatives of Educational Institutions	MB	MB	M	M	MB	MB
ACTION 2: Implementation of the Scholarship Program	-	-	**X**	**X**	**X**	**X**

*in 2018 only December is considered ** in 2023 only up to May 31 is considered

Source: DMSA, 2023.

Action 1: During the first 5 years, meetings were held in 2018, 2019 and 2022. It was not possible to hold meetings in 2020 and 2021 due to restrictions due to the Covid-19 pandemic. Therefore, the rating for this indicator is Good.

Action 2: Once the needs were identified, the scholarship program could be implemented starting in 2020. During this period, it was possible to comply with the program's projections. Five women received scholarships for their studies in 2020, 2021 and 2022. In turn, in the year 2022 the first scholarship recipients completed their studies. Therefore, the rating for this indicator is Very Good and for the program in general is Very Good.

4.5 SDG 6: Clean Water and Sanitation

Program H) Water for Neighboring Communities

Target 6.1. By 2030, achieve universal and equitable access to safe drinking water at an affordable price for all .

6.1.1 Percentage of population supplied by the National Drinking Water System Coverage

Objective: Improve access to water for human consumption and hygiene services to the neighboring communities of San Marcos, Ciervo Cua in Tapytá and Genarito H49, Hernandarias.

Program description:

Water free of impurities and accessible to all is an essential part of the world we want to live in. There is enough freshwater on the planet to achieve this dream. However, water allocation is currently inadequate and by 2050, at least 25% of the world's population is expected to live in a country affected by chronic and recurrent freshwater shortages. Drought is affecting some of the world's poorest countries, exacerbating hunger and malnutrition.

This scarcity of water resources, along with poor water quality and inadequate sanitation, impacts food security, livelihoods and educational opportunity for poor families around the world. Fortunately, some progress has been made in the last

decade and more than 90% of the world's population has access to improved drinking water sources.

To improve access to safe water and sanitation and sound management of freshwater ecosystems among local communities in several developing countries*.

This program seeks to facilitate access to water for people in the communities neighboring DMSA.

Description of actions taken

San Marcos and Ciervo Cuá

San Marcos: Donation of a) 130 meters of 1,5" diameter PVC pipe for the artesian well; b) A PVC tank for water reservoir, capacity 10.000 liters,

Ciervo Cuá: Donation of: a) A PVC tank for water reservoir, capacity 10.000 liters; b) a 4,8 hp water pump; c) 150 meters of 1,5" diameter PVC pipe for the artesian well; d) 150 meters of rope for pump extraction; e) 150 meters of cable for pump operation; f) Electric panel for pump control; g) 600 meters of pipe for the water network; h) 3.000 meters of cable and 15 insulators to bring the electric network to the pump.

Figure 21. PVC tank installation

Source: DMSA, 2023.

Contribution made infrastructure / land for local people to have access to drinking water.

In 2021, 2.000 meters of 2" diameter PVC pipes with a capacity of 10 kg/inch of pressure were donated to the neighborhood commission of Calle 20 Acaray de Minga Guazú neighboring DMSA's Genarito field; this pipe was used to build part of the water distribution network from the neighborhood artesian well up to 2.000 meters away, benefiting the families neighboring the road.

Figure 22. delivery of 2.000 meters of PVC pipes to the community representative, Mr. Alcides Noguera.

Source: DMSA, 2023.

Table 18. Monitoring of Program H) Water for Neighboring Communities.

PROJECT YEAR	2018*	2019	2020	2021	2022	2023**
ACTION 1: Implementation of the Program in the Neighboring Community	Conversation with the community					

PROJECT YEAR	2018*	2019	2020	2021	2022	2023**
ACTION 2: Contribution for water supply infrastructure in the neighboring community	-	-	-	**X**	**X**	**0**

*in 2018 only the month of December is considered
** in 2023 only up to May 31 is considered
Source: DMSA, 2023.

Through infrastructure improvements, the neighboring communities of San Marcos, Ciervo Ciua and Genarito received water supply in the communities and eventually in their homes, benefiting more than 120 families in the communities neighboring the DMSA company.

4.6 SDG 9: Industry, Innovation and Infrastructure

Program I) Research and Development

Target 9.5: Enhance scientific research and improve technological capabilities of industrial sectors in all countries, in particular developing countries, including, by 2030, encouraging innovation and substantially increasing the number of research and development workers per 1 million people and public and private research and development spending.

9.5.1 R&D expenditure and 9.5.2 Number of researchers.

Objective: To achieve forestations that optimize production, growth rate under different site conditions, carbon sequestration, and are more resilient to the effects of climate change.

For more than 20 years, DMSA has been investing in research to improve forestry production. The R&D team works on the identification and selection of individuals with high potential for growth, development and wood quality, with measurements of their behavior and performance in the field. Since 1998, various materials have been incorporated. It has about 2.000 families of *E. grandis* and 450 families of *E. urophylla. Other Eucalyptus* species have also been incorporated. Planted in trials with statistical designs that allow the evaluation of the

performance of the genotypes and their use in genetic improvement. Currently we have the third generation of families for genetic improvement.

For the development of the Research and Development program, the number of people involved in breeding activities has been increasing since the project's inception year. The overall figures for DMSA are shown below and a share is assigned to this project according to the proration rule indicated.

Table 19. Monitoring Program I) Research and Development.

ACTION/YEAR	2018*	2019	2020	2021	2022	2023**	TOTAL
ACTION 1: Number of people involved in genetic improvement activities	5	5	6	7	7	7	

*in 2018 only the month of December is considered
** in 2023 only up to May 31 is considered
Source: DMSA, 2023.

Thanks to these scientific advances, it is possible to plant five different genetic materials in the carbon project, whose improvements have made it possible to optimize growth and consequently the speed of CO_2 capture, both in high, medium and low productivity sites. Likewise, materials that tolerate certain diseases and pests have been selected over time, as well as combinations of materials that withstand certain temperature, relative humidity and soil conditions. This allows us to have a greater diversity of species within the *Eucalyptus* genus to capture CO_2 under different conditions, as well as to have greater plasticity in the face of extreme meteorological factors or possible variations in temperature and humidity conditions that could occur as a consequence of climate change.

4.7 SDG 12: Responsible Production and Consumption

Program J) Use of non-polluting inputs

Target 12.5: By 2030, substantially reduce waste generation through prevention, reduction, recycling, and reuse activities.

12.5.1: Percentage of waste recycled as a percentage of total waste generated

Objective: Reduce waste generation in the production of forest seedlings in the nursery and in the field by replacing plastic containers with biodegradable ones.

DMSA has a strong commitment with the environment. For this reason, for the current project, seedlings with biodegradable containers were used, as opposed to the plastic containers that are commonly used in the region. Biodegradable containers reduce the volume of plastic waste production, reduce the consumption of fossil fuels for the transport of empty plastic containers from the field to the nursery, and the management of plastic containers once their useful life is over or they are discarded due to deterioration. The biodegradable container reduces the time the container remains in the environment.

Table 20. Program Monitoring J) Use of Non-Polluting Inputs.

PROJECT YEAR	2018*	2019	2020	2021	2022	2023**	TOTAL
ACTION 1: Biodegradable packaging used in the project for seedling production (kg)	1,340	10,270	0,300	0	1,750	0	13,660

*in 2018 only the month of December is considered

** in 2023 only up to May 31 is considered

Source: DMSA, 2023.

By way of summary, in the period 2018-2023 at the DMSA-wide level, biodegradable tubes were used, representing 13,660 kg of biodegradable paper. This avoided the use of an equivalent of 83,170 kg of plastic. The allocation to this project is prorated based on the above rule.

Figure 23. Plastic and biodegradable tubing

Source: DMSA, 2023.

4.8 SDG 13: Climate Action

Program K) Afforestation for carbon sequestration

Target 13.2: Integrate climate change measures into policies, strategies, plans and planning.

Indicator 13.1.2: Contribution to disaster risk reduction strategies

Indicator 13.2.2: Total Greenhouse Gas Captures

Objective: Contribute to mitigate the effects of climate change by capturing CO_2 with eucalypt and native species forestation and contribute to reducing disaster risk.

The actions planned to be carried out were:

- Land preparation and planting of eucalypt (see tables 2, 3 and 4).
- Fire and property protection (see program 1)

Planting was carried out as planned. See section 1.5 of the Monitoring Report for details of all the activities carried out with respect to the plantations. In the year 2023, planting has not yet taken place due to the fact that they will be carried out in September of that year.

Regarding the implementation of guards and fire protection measures, the entire schedule planned for the period under analysis was met (see details in SDG 1). Therefore, the result of the program is Very Good.

Table 21. Monitoring program K) Afforestation for carbon sequestration.

PROJECT YEAR	2018*	2019	2020	2021	2022	2023**		
ACTION 1: Land preparation and planting of Eucalypt (ha)	13,4	102,5	3,0	0	17,5	0		
ACTION 2: Planted area of native species (ha)	-	-	-	-	-	-		
SDG 13 main KPI: removals (tCO_2/year)	0	0	602	5.018	4.037	7.054	**16.711**	***

** in 2018 only the month of December is considered.*

*** in 2023 will be considered only until May 31.*

**** without deducting 20% for reserve account*

4.9 SDG 15: Life on Land

Program L) Improvement of Biodiversity on Soil Previously Degraded by Livestock Farming

Target 15.1: By 2030, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, consistent with obligations under international agreements.

Indicator 15.1.1: Forest area as a percentage of the total area of a jurisdiction.

Indicator 15.1.2: Proportion of sites important for terrestrial and freshwater biodiversity included in protected areas in forests

Objective: To reforest 172,76 hectares of land degraded by cattle ranching.

After thinning the eucalypt trees, in the sixth year, a group of 11 native species will be planted, which will not be thinned or harvested. Planting will be done progressively until 100% of this area is covered. The end result will be that a native forest will be preserved in the project area.

The planting and conservation of native species will contribute positively to biodiversity. As a greater number of different species coexist in an ecosystem, the capacity of the system to maintain itself in equilibrium is much greater. For example, the consequences of low rainfall are mitigated in a mature forest, and crop pests quickly find biological controllers that keep them away.

The actions planned for this program are as follows:

- Action 1: Contribution to the biodiversity of the area's flora (activity not included in this monitoring period, as it will begin in 2024, with the planting of a mix of 11 native species).
- Action 2: Contribution to the biodiversity of fauna in the area (activity not included in this monitoring period, as it will begin in 2024, with the installation of camera traps).

Table 22. Monitoring Program L) Improvement of Biodiversity on Soil Previously Degraded by Livestock.

PROJECT YEAR	2018*	2019	2020	2021	2022	2023**
ACTION 1: Increasing plant biodiversity	*(activity not included in this monitoring period, as it will start from 2024 onwards)*					
ACTION 2: Increasing wildlife biodiversity	*(activity not included in this monitoring period, as it will start from 2024 onwards)*					

Source: DMSA, 2023.

With respect to Action 1, although during the analysis period all of the eucalypt plantations planned to date were carried out (representing 79% of the project area), it will actually begin to be counted when planting of native species begins in 2024.

Likewise, the monitoring of faunal biodiversity will begin in 2024, which is why it was not included in this monitoring report.

5 Compliance with Applicable Legislation

The identification and compilation of the Applicable Legal Norms and the commitments assumed consists of a systematic process of formal review in official information media, external and internal to Desarrollos Madereros S.A. (DMSA), in which all the legal norms of National, Departmental and Municipal scope are published. Additional sources of identification may include municipal legal instruments, meetings and communiqués from public agencies, the results of litigation in which the company is a party, reports from technical commissions and any other background information that is formally provided to DMSA.

On the other hand, whenever corporate rules are issued or commitments are assumed with third parties, they are reported to the Legal and Regulatory Affairs Management of the Corporate so that they can be evaluated and eventually, if they have obligations, incorporated into the DMSA Legal Registry.

5.1 Review and Update of Legal Requirements and Other Commitments

The review and update of legal requirements and other commitments is performed by DMSA Legal and Regulatory Affairs. The Legal and Regulatory Affairs

Department at DMSA, has within its tasks agreed with the company the obligation in each quarter of the current year, to survey the main legislations that affect the activities, products or services developed by the organization.

If applicable, a report is prepared for communication to DMSA. If there are changes in the legislation, a system of importance evaluation (green, yellow and red) is elaborated.

Green implies that the changes have no effect on the activity. Yellow represents a change that slightly affects the operating activity. Red represents a significant change.

In case of a change that applies to the yellow and red categories, a legal mitigation plan is executed where DMSA Legal and Regulatory Affairs, conforms a specialized team, in order to provide the application guidelines. These changes are included in the Paraguay DMSA Legal Register document, keeping it always up to date.

Table 23. History of Modifications to the DMSA Legal Record.

Version	Date	Description and/or Modified Items
1	03-2005	Original Emission. Requirement Principle 1 of the FSC Standard for Forest Management and Chain of Custody.
3	05-2008	General Revision. The National Forest Service becomes the National Forest Institute (INFONA). Requirement Principle 1 of the FSC Standard for Forest Management and Chain of Custody.
4	03-2011	General Overhaul. No new updates. Requirement Principle 1 of the FSC Standard for Forest Management and Chain of Custody.
5	03-2015	General Overhaul. No new updates. Requirement Principle 1 of the FSC Standard for Forest Management and Chain of Custody.
6	03-2017	General Review. Requirement Principle 1 of the FSC Standard for Forest Management and Chain of Custody. No new updates. Prior verification is performed, and in accordance with the Carbon Credits Project.
7	03-2018	General Review. Requirement Principle 1 of the FSC Standard for Forest Management and Chain of Custody. No new updates. Prior verification is carried out, and in accordance with the Carbon Credits Project. The Ministry of Environment and Sustainable Development (MADES) has its origin in what was the Secretariat of Environment created in 2000 by law 1561/00, in 2018 it reached the rank of ministry.

Version	Date	Description and/or Modified Items
8	03-2019	General Review. Requirement Principle 1 of the FSC Standard for Forest Management and Chain of Custody. No new updates. Prior verification is performed, and in accordance with the Carbon Credits Project.
9	03-2020	General Review. Requirement Principle 1 of the FSC Standard for Forest Management and Chain of Custody. No new updates. Prior verification is performed, and in accordance with the Carbon Credits Project.
10	03-2021	General Review. Requirement Principle 1 of the FSC Standard for Forest Management and Chain of Custody. No new updates. Prior verification is performed, and in accordance with the Carbon Credits Project.
11	03-2022	General Review. Requirement Principle 1 of the FSC Standard for Forest Management and Chain of Custody. No new updates. Prior verification is performed, and in accordance with the Carbon Credits Project.
12	03-2023	General Review. Requirement Principle 1 of the FSC Standard for Forest Management and Chain of Custody. No new updates. Prior verification is performed, and in accordance with the Carbon Credits Project.
13	10-2023	General Review. Requirement Principle 1 of the FSC Standard for Forest Management and Chain of Custody. Law No. 7190 on Carbon Credits in Paraguay is incorporated.

Source: DMSA, 2023.

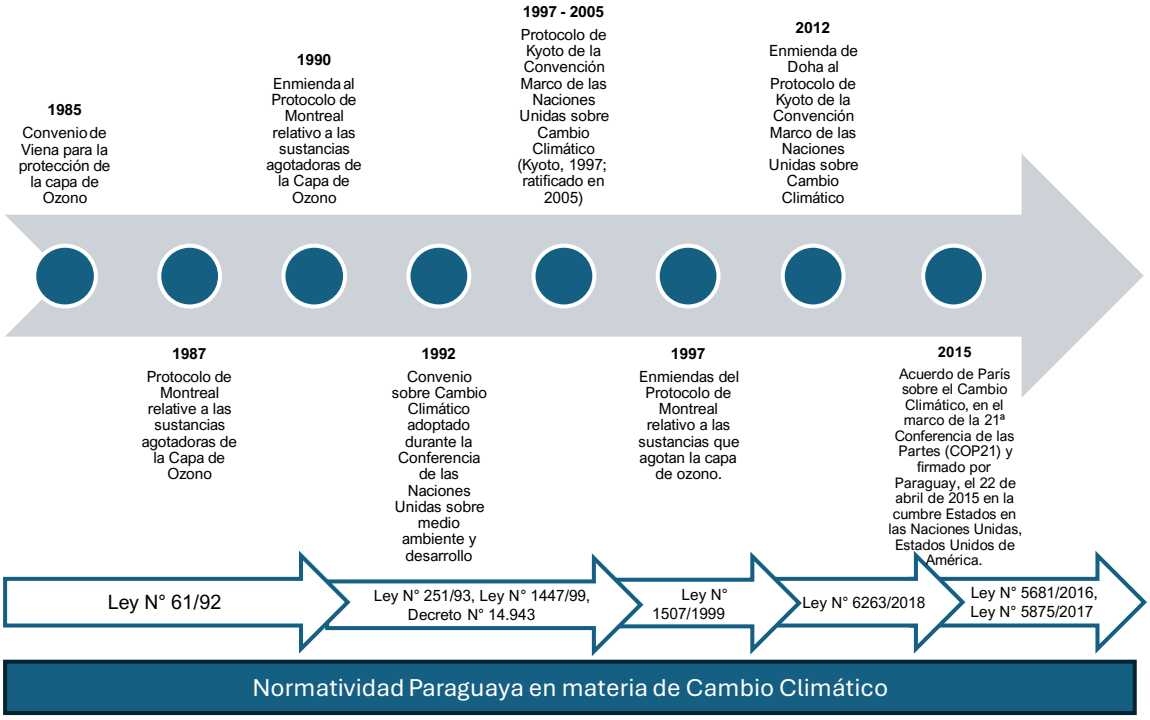
The issuance of Paraguay's Legal Registration document DMSA, gives prior origin to the Forest Management Certification FM/COC of FSC Standard 01. It is mandatory compliance with Principle 1 of the standard.
During FSC Certification, Monitoring and Recertification Audits, compliance with legal requirements is audited by Desarrollos Madereros S.A.; and as the company owning the forest plantations it has been reviewed and documented by SGS Societe Generale de Surveillance S.A., since in order to register the plantations and obtain FSC certification, the plantations must demonstrate good practices.

In 2018 DMSA decided to address a Carbon Credits project. Therefore, it was incorporated the review of the Legal Registry of Paraguay DMSA all laws, regulations referred to the implementation of the Carbon Credits Project in Paraguay.
Annually, after the FM/COC Forest Management audit of FSC Standard 01, a General Review of the document is carried out. The same review shall be carried out at each Verification.

5.2 Compliance With the Entire Legal Framework of Paraguay

The following figure summarizes the historical milestones and international treaties to which the Republic of Paraguay has committed itself in recent decades, through the creation of laws in the fight against climate change and in accordance with these commitments.

Figure 24. Regulations of the Republic of Paraguay in accordance with international commitments to combat climate change.



Source: DMSA, 2023.

Legal Framework for Environmental and Forestry Regulations in Paraguay

There is a set of decrees and laws that regulate forestry activities. Each environmental determinant was verified by reviewing official information and it was established that: the DMSA Carbon Project is not included in any environmental compensation plan or its areas of influence, nor does it have any environmental restrictions, as shown in detail in the project's legal content tables.

The project proponents and beneficiaries undertake to fully comply with the established and applicable legal regulations.

The following is a list of the main related regulations, together with details of their implementation in the present project.

Table 24. Compliance With the Environmental and Forestry Legal Framework of the Project in Paraguay.

Law	Description	Compliance Within the Framework of the Project
Forestry Law No. 422/73[7]	**Regulated by** Decree No. 11.681/75[8] which approves the Regulations of Law No. 422, Forestry Law, provides that the Ministry of Agriculture and Livestock is responsible for the State's forestry administration through the National Forest Service. The work programs of the National Forest Service will be carried out throughout the country by the Head of the Forestry Districts and Forestry Centers, whose heads or directors are directly responsible to the Director of the National Forest Service, or by the auxiliary unit that will operate at the Directorate level of the National Forest Service. The Service is the successor to all government agencies and agencies responsible for the administration of forests, forest lands and wildlife resources. Consequently, all the powers conferred to such agencies in laws, regulations, decrees, and resolutions concerning the forestry and wildlife sector are considered transferred to the Service. The Service will be in charge of the Public Forest Registry.	DMSA manages before INFONA (National Forestry Institute), the Forestry Plan to obtain the Forestry Registry. Annually DMSA, presents its Real Forestry Plan, with the Projection and Execution for the following six months. INFONA issues a Certificate with the explanatory note to DMSA.
Law No. 294/93 - Environmental Impact Assessment (EIA) [9].	The Ministry of Environment and Sustainable Development (MADES) designs, establishes, supervises, monitors and evaluates the National Environmental Policy, promoting research, recovery, conservation, preservation, protection, planning, management and use of natural resources, in coordination with public, private and civil society organizations, in order to ensure sustainable development and guarantee the	DMSA has an EIA approved by MADES, which issues the environmental license. The Environmental Management Program (EMP) audit, which certifies compliance with the EIA, is submitted to MADES every 2 years.

[7] https://www.ecolex.org/es/details/legislation/ley-no-42273-ley-forestal-lex-faoc023975/

[8] Decree No. 11.681/75 - Regulates Law No. 422, Forestry Law. https://www.ecolex.org/es/details/legislation/decreto-no-1168175-reglamenta-la-ley-no-422-ley-forestal-lex-faoc022920/

[9] https://www.ecolex.org/es/details/legislation/ley-no-29493-evaluacion-de-impacto-ambiental-lex-faoc022956/?q=Ley+294%2F93&xdate_min=&xdate_max=

Law	Description	Compliance Within the Framework of the Project
	right of all citizens, present and future generations to live in a healthy environment and enjoy the goods and services provided by ecosystems. The present Law, which consists of 15 articles, declares mandatory the Environmental Impact Assessment (EIA) and defines it as the scientific study that allows to identify, foresee and estimate environmental impacts (any modification of the environment caused by works or human activities), in any work or activity projected or in execution. Any assessment shall be submitted by the responsible parties to the administrative authority together with the project or activity; and the modifications introduced by: **Law No. 345/94[10]** This Law amends Article 5 of Law No. 294, stipulating that all Environmental Impact Assessments and their reports shall be submitted by the person or persons responsible to the administrative authority together with the work project. **And its Regulatory Decree No. 453/13 [11]** By virtue of this Decree, the scope of Article 2° of Decree No. 453 of 2013, which lists the works and activities that require obtaining an environmental impact statement, is expanded.	Certificates of approval for these audits are provided in Annexes 3 and 4.

[10] https://www.ecolex.org/es/details/legislation/ley-no-34594-modifica-la-ley-no-29493-sobre-evaluacion-de-impacto-ambiental-lex-faoc023953/

[11] https://www.ecolex.org/es/details/legislation/decreto-no-954-por-el-cual-se-modifican-y-amplian-los-articulos-20-30-50-60-inciso-e-90-10-14-y-el-anexo-del-decreto-no-453-de-2013-por-el-cual-se-reglamenta-la-ley-no-2941993-de-evaluacion-de-impacto-ambiental-lex-faoc135604/

Law	Description	Compliance Within the Framework of the Project
Law No. 7190/23 on Carbon Credits[12]	The purpose of this Law is to establish the ownership regime of the credits derived from the benefits of reduced, avoided and/or captured carbon and to determine the ownership of the Carbon Credits generated by projects developed in the Republic of Paraguay, in order to encourage and facilitate the participation of all sectors in the mitigation of Greenhouse Gas emissions and in the Carbon Markets, safeguarding the compliance of the contributions determined at a national level. Likewise, to identify the parties involved. The Law also creates the Carbon Registry as a formal mechanism for the accounting of Carbon Credits that are the object of mitigation projects and for the recording of the transactions that are formalized with said credits. **Law 1447/99**[13] . The Kyoto Protocol implements the United Nations Framework Convention on Climate Change by committing industrialized countries to limit and reduce greenhouse gas (GHG) emissions in accordance with agreed individual targets. **Law No. 1507/99**[14] The Montreal Protocol allowed the elimination and reduction of the use of substances that damage the ozone layer, helping not only to protect it for the current and future generations, but also to improve the results of initiatives aimed at addressing climate change.	To date, the corresponding regulation of the Law is pending, therefore, the creation of the Registry of Carbon Credits, as a registry under the Ministry of Environment and Sustainable Development, with the purpose of registering the data related to any type of mitigation project aimed at obtaining Carbon Credits within the voluntary market. Likewise, DMSA would comply with the additional requirements for transactions in addition to the registration and payment of fees, as well as the percentage to be retained by the MADES of the carbon credits that would be destined to the Nationally Determined Contributions (between 3% - 10%). Once the Law is regulated, it will enter into full force and DMSA will comply with the registration obligation of this project and with the other duties contemplated in the aforementioned legislative initiative.

[12] https://www.bacn.gov.py/leyes-paraguayas/11986/ley-n-7190-de-los-creditos-de-carbono

[13] http://dncc.mades.gov.py/quienes-somos/marco-legal#:~:text=La%20Ley%20N%C2%B0%201447,a%C3%B10%2020201%20por%20el%20cual

[14] https://www.bacn.gov.py/leyes-paraguayas/10360/ley-n-1507-aprueba-las-enmiendas-del-protocolo-de-montreal-relativo-a-las-sustancias-que-agotan-la-capa-de-ozono#:~:text=Law%20N%C2%BA%201507%20%2F%20APPROVES%20LAS,AGOTAN%20LA%20CAPA%20DE%20OOZONO

Law	Description	Compliance Within the Framework of the Project
	Law No. 5681/16[15] , the Paris Agreement, establishes the efforts to reduce emissions in order to stabilize GHGs in the atmosphere to keep the increase of the global average temperature below 2°C. Paraguay has submitted its Nationally Determined Contributions to the Convention, through which it assumes the international commitment to reduce 20% of greenhouse gas emissions projected to the year 2030.	
Determinations of the Institut of Social Prevision (IPS) [16]	Regulates labor regulations in Paraguay	DMSA complies with national taxes and contributions on forestry workers. They are paid through the IPS, a government entity, which includes: ○ Medical care for work-related accidents. ○ Medical care due to illness. ○ Pension contributions. ○ Family allowances are paid directly by the employer.

Source: DMSA, 2023.

Finally, the following table refers to the laws that regulate economic incentives for reforestation in Paraguay, to which the project is NOT applying.

[15] https://portal.ips.gov.py/sistemas/ipsportal/contenido.php?c=242
[16] https://portal.ips.gov.py/sistemas/ipsportal/contenido.php?c=242

Table 25. Laws that Affect Forestry Activities in Paraguay but **NOT** the Current Project.

Law	Description	Project Impact
Law for the promotion of afforestation and reforestation N° 536/95[17] .	The Law consists of 5 chapters and 30 articles. INDEX: General provisions (I); Incentives to forestry activities (II); Tax regime (III); Penalties (IV); Special and final provisions.	The current project does not benefit from these incentives because the land on which it is being developed is of low quality.
Developed by Decree Nº 9.425/95[18] - Regulates Law Nº 536/95, for the promotion of forestation and reforestation.	The Decree, which consists of 25 articles, regulates Law No. 536/95 on the promotion of forestation and reforestation, and establishes the criteria for the classification of forest priority soils and management plans, as well as incentives for forestry activities. This Law provides that the State shall promote the action of afforestation and reforestation in forest priority soils, based on a Forest Management Plan and with the established incentives. The National Forestry Service will periodically supervise the faithful compliance of the afforestation or reforestation program.	

Source: DMSA, 2023.

6 Climate Change Adaptation

This forestry project contributes directly to mitigating the causes of climate change by capturing atmospheric CO_2, while increasing the resilience of previously degraded areas to the consequences of global warming.

The presence of forest cover in the project area also contributes to responsible soil management, reducing additional erosion and regulating the hydrological cycle.

[17] https://www.ecolex.org/es/details/legislation/ley-no-53695-ley-de-fomento-a-la-forestacion-y-reforestacion-lex-faoc017512/

[18] https://www.ecolex.org/es/details/legislation/decreto-no-942595-reglamenta-la-ley-no-53695-de-fomento-a-la-forestacion-y-reforestacion-lex-faoc017513/

In turn, the project has contributed and will continue to contribute to the sustainable development of the region and the country in the following ways:

- Conservation of Biological Diversity. Work with Moisés Bertoni Foundation[19]
- Development of forestry capabilities on eroded, shallow, clay loam soils[20]
- Maintenance of the productive capacity, health and vitality of forest ecosystems.
- Conservation and maintenance of soil and water resources. Monitoring
- Maintaining the contribution of forests to the global carbon cycle.
- Drainage system against flooding. Drainage maintenance is defined in DMSA's periodic budget.
- Choice of adapted species: Desarrollos Madereros SA has a Research and Development (R&D) area, which is a fundamental tool for the generation of technology that will be used for silvicultural management and the establishment of forest plantations.

One of the main actions to adapt to climate change resulting from the current project is the development and planting of hybrid species that have demonstrated better adaptability to the climate change being experienced in the region. The R&D program seeks to improve tree growth through genetic testing of the trees so that the species can better adapt to inclement weather. This is an ongoing process as new tests are constantly being carried out.

The advances achieved in R&D are incorporated into the forestry management plan established by the company in order to maximize the growth and production of the plantations, achieving high quality timber.

[19] https://mbertoni.org.py/

[20] https://imagoteca.com.py/republica-del-paraguay-mapa-de-reconocimiento-de-suelos-de-la-region-oriental/

To this end, the materials are subjected to strict physical-mechanical studies of the wood, which guide the selection of the best material for each situation, without neglecting the evaluation of volume growth, cold tolerance, disease resistance, industrial performance, etc.

As for the Base Populations, we have the Third Generation for both *E. grandis* and *E. urophylla*. The families that are part of the genetic base are necessary to obtain new materials on a permanent basis.
The plantations of the present project come from this genetic improvement R&D program.

7 Carbon Ownership and Rights

DMSA, as the project proponent, landowner and forestry developer, is the sole owner of the carbon rights. A contract has been signed between DMSA and Cambium Earth SL for the trading of the Carbon Credits from this project by Cambium Earth SL, in exchange for a commission. The contract is available upon request.

DMSA is the owner of the plots of land where the project activity will be developed. The following table specifies since when the company has been the owner of the plots.

Table 26. Acquisition Date of the 16 Plots selected for the Current Project.

Zone	Deed Date	Property	Registry	District
Tapytá	1996/07/23	7271	7533	San Juan Nepomuceno
H-2	1999/02/04	13138	18046	Hernandarias
H-3	1998/10/21	1338	2243	Hernandarias
H-29	1998/11/9	13864	3331	Hernandarias
H - 45	2000/05/26	749	1382	Hernandarias
H - 45	2000/05/26	749	1380	Hernandarias

Zone	Deed Date	Property	Registry	District
H - 45	2000/05/26	9355	15261	Hernandarias
H - 45	2000/05/26	1951	2786	Hernandarias
H - 45	2000/05/26	1950	2785	Hernandarias
H - 45	2000/05/26	2723	4437	Hernandarias
H - 45	2000/05/26	29703	30632	Hernandarias
H - 45	2000/05/26	29704	30633	Hernandarias
H - 45	2000/05/26	29702	30631	Hernandarias
H - 45,1	2000/05/26	2614	4338	Hernandarias
H - 45,1	2000/05/26	2626	4357	Hernandarias
H-49	2000/03/21	K13/3624	2996	Minga Guazú

Source: DMSA, 2023.

Proof of land ownership in Paraguay is provided by means of a Condition of Ownership Report, which is filed with the General Directorate of Public Registries and shared in the supplementary documentation folder[21] .

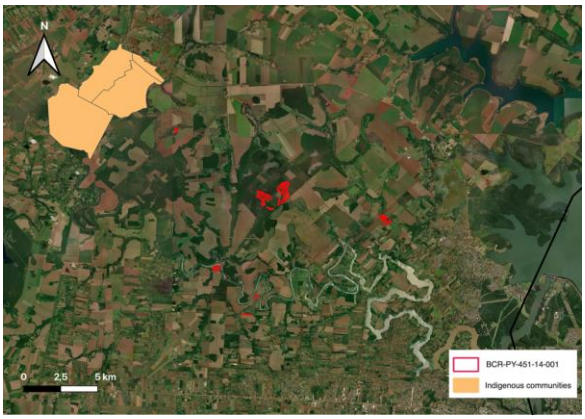
In order to ensure transparency, prior to this verification, the report of ownership conditions of all the lots that make up the project area has been requested before a Notary Public. An interpretation guide is thus presented in Annex 1 and the set of domain conditions within the complementary documentation of the audit, in

[21] See Condition of Ownership Documents in the Supplementary Documentation Folder Subfolder Deed of Ownership and Condition of Ownership reports.

order to demonstrate with this that no property transfers have occurred throughout the 2018-2023 monitoring period.

Finally, there are no indigenous communities in the project plots according to the data on indigenous communities from the Geoportal of the National Institute of Statistics of Paraguay[22].

Figure 25. Presence of indigenous communities in the area of influence of the project, Hernandarias.



Source: National Institute of Statistics of Paraguay, 2023. ArcGIS World Imagery base cartography. Datum WGS84.

Figure 26. Presence of indigenous communities in the area of influence of the project, Tapytá.

[22] Indigenous Communities Layer in the Geographic/Society Layers section https://portalgeoestad.ine.gov.py/

Source: National Institute of Statistics of Paraguay, 2023. ArcGIS World Imagery base cartography. Datum WGS84.

8 Environmental Aspects

The BCR tool Sustainable Development Safeguards version 1.1 was used to assess risks and potential negative impacts related to land use, water, biodiversity and ecosystems, and human rights, among others, which is in accordance with the requirements of the BCR Standard v3.4, section 15. As defined in the Project Description Document, some potential risks were identified, mainly regarding water and soil pollution. The mitigation and prevention measures that were taken during the reporting period are described below (Table 30).

Table 27. Project Impacts on Environmental Aspects During the Monitoring Period 2018-2023.

Environmental Aspect	Detail	Project Activity	Response	Control Measures	Mitigation Measures
Water	Water pollution, including contamination of rivers, lakes, oceans, or aquifers as a result of project-related activities such as emissions, spills, or waste disposal	Use of agrochemicals	Potentially	Water analysis at the inlet and outlet of the Aña Cuá creek	Strict compliance with the Responsible Agrochemical Management Plan, Agrochemical

Environmental Aspect	Detail	Project Activity	Response	Control Measures	Mitigation Measures
					Application Operating Program, PGA and FSC guidelines.
Land use	Land degradation or soil erosion, leading to the loss of productive land	Land preparation	Potentially		Use of minimum tillage techniques and selection of a favorable period of action according to weather conditions. Strict follow-up and compliance with the Responsible Agrochemical Management Plan, Agrochemical Application Operating Program, PGA and FSC guidelines.
	Contaminating soils and aquifers with pollutants, chemicals, or hazardous materials		Potentially	Soil analysis on control points	Use of minimum tillage techniques and selection of a favorable period of action according

Environmental Aspect	Detail	Project Activity	Response	Control Measures	Mitigation Measures
					to weather conditions.
		Use of agrochemicals	Potentially	Soil analysis on control points. Water analysis at the inlet and outlet of the Aña Cuá creek	Strict follow-up and compliance with the Responsible Agrochemical Management Plan, Agrochemical Application Operating Program, PGA and FSC guidelines.
		Plantation	Potentially	Soil analysis on control points	Use of light vehicles for transportation and manual planting and auger planting.

Source: DMSA, 2023.

The project activity converts an area of low production, where extensive cattle ranching was carried out, into a forestation that will contribute positively to mitigating the advance of climate change by capturing carbon dioxide from the atmosphere. The project is based on direct planting with low-impact, environmentally friendly techniques and the use of sustainable management practices under FSC certification, which means that the design, planting and maintenance of the forest are carried out through a sustainable forest management program that avoids negative impacts on biodiversity, local communities, the water balance of the watersheds and the scenic beauty of the landscape.
This afforestation project will be carried out considering DMSA's Forest Management Plan under the FSC certified Forest Management standard. And in compliance with Law N° 422/73[23] . And Law N° 536/95[24] .

The afforestation project activity in soils degraded by cattle ranching with suboptimal quality for afforestation is included in the environmental studies developed for both estancias: Hernandarias and Tapytá. Only part of the environmental impacts mentioned in the environmental assessment correspond to the environmental impacts of the project activity. The analysis of environmental impacts comes from the Environmental Impact Study[25] developed by DMSA and approved by the Secretariat of the Environment (currently the Ministry of the Environment and Sustainable Development).

The impact on the different environmental aspects during the current monitoring period, as well as the corresponding control and mitigation plans, are described below.

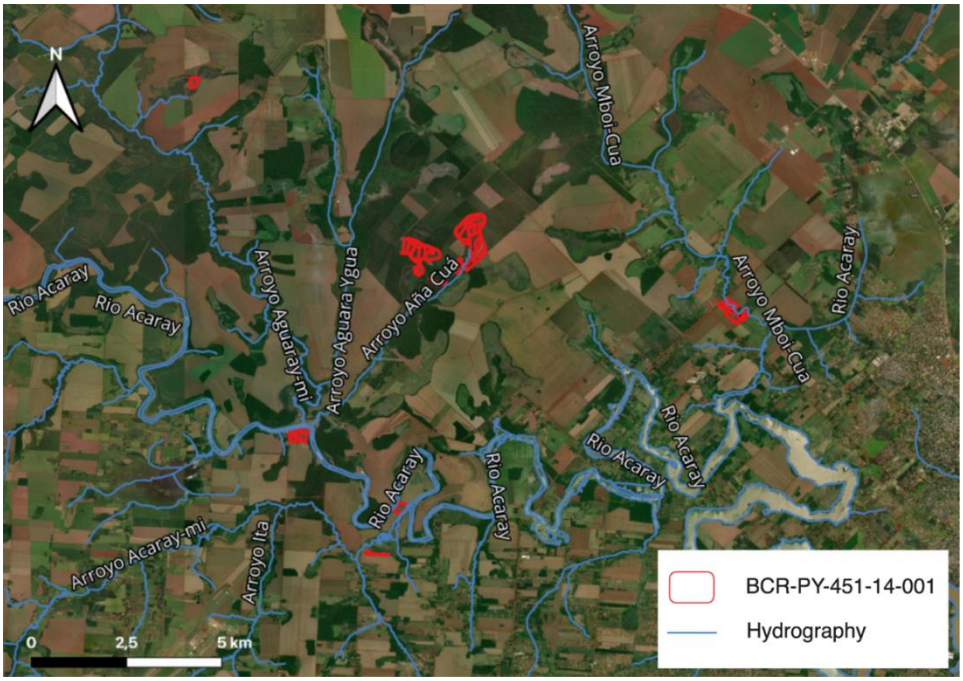
Impact on Water Resources
The Aña Cuá stream is located in the vicinity of the project plots in the Hernandarias area.

[23] https://www.ecolex.org/es/details/legislation/ley-no-42273-ley-forestal-lex-faoc023975/.

[24] https://www.ecolex.org/es/details/legislation/ley-no-53695-ley-de-fomento-a-la-forestacion-y-reforestacion-lex-faoc017512/

[25] Environmental Impact Assessment Study. Main Report/October.2000 / submitted and approved by SEAM/ environmental impact statement N° 32/01 dated 2001/03/23.

Figure 27. Hydrographic network in the area of influence of the project's Hernandarias farm.



Source: MADES from public consultation (number 78248); DMSA, 2023. ArcGIS World Imagery base mapping. Datum WGS84.

As a control measure to analyze the possible impact on this watercourse, two analyses were carried out where pH and dissolved oxygen were measured, both at the inlet and outlet of the stream. The result was that the water shows no signs of having been negatively impacted.

This analysis will also be repeated in future monitoring periods to ensure that there are no negative impacts on surface waters. The results of the water analyses performed as well as the location of the sampling points in geospatial format compatible with GIS software are provided as Supplementary Documentation[26].

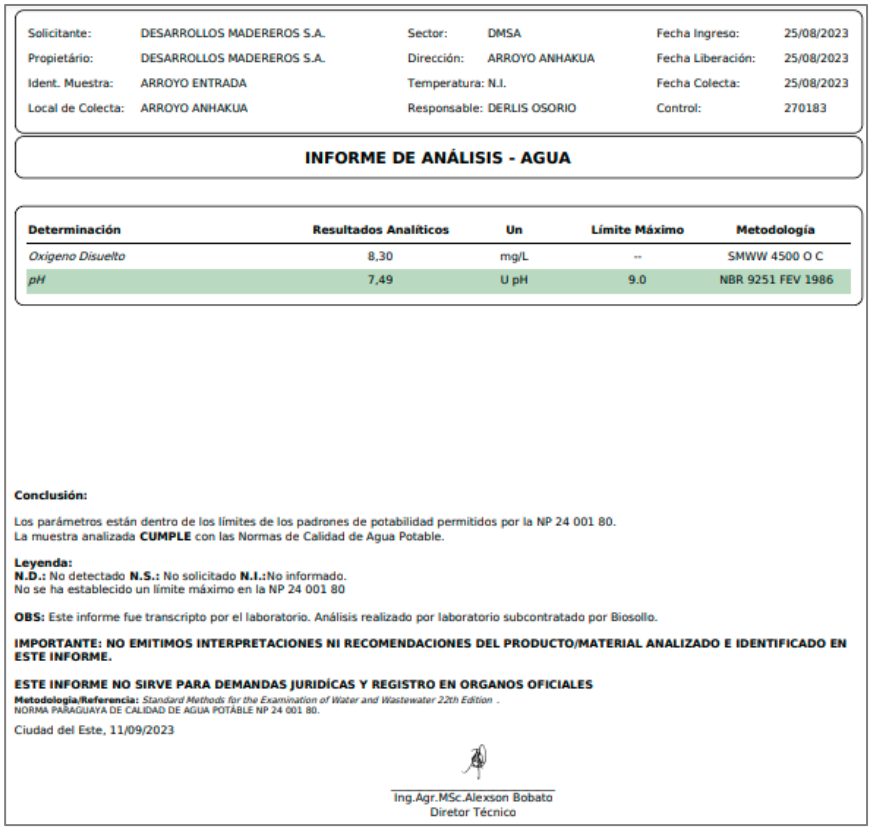
Table 28. Water Analysis Sampling Points in the Aña Cuá Stream.

[26] See folder 09.- SOIL AND WATER ANALYSIS in the Complementary Documentation folder.

Name	Longitude	Latitude
MA-H2-1	-54,77	-25,3566
MA-H2-2	-54,7764	-25,3646

Source: DMSA, 2023.

Figure 28. Hernandarias water analysis



Solicitante:	DESARROLLOS MADEREROS S.A.	Sector:	DMSA	Fecha Ingreso:	25/08/2023
Propietário:	DESARROLLOS MADEREROS S.A.	Dirección:	ARROYO ANHAKUA	Fecha Liberación:	25/08/2023
Ident. Muestra:	ARROYO ENTRADA	Temperatura:	N.I.	Fecha Colecta:	25/08/2023
Local de Colecta:	ARROYO ANHAKUA	Responsable:	DERLIS OSORIO	Control:	270183

INFORME DE ANÁLISIS - AGUA

Determinación	Resultados Analíticos	Un	Límite Máximo	Metodología
Oxigeno Disuelto	8,30	mg/L	--	SMWW 4500 O C
pH	7,49	U pH	9.0	NBR 9251 FEV 1986

Conclusión:

Los parámetros están dentro de los límites de los padrones de potabilidad permitidos por la NP 24 001 80.
La muestra analizada **CUMPLE** con las Normas de Calidad de Agua Potable.

Leyenda:
N.D.: No detectado **N.S.:** No solicitado **N.I.:**No informado.
No se ha establecido un límite máximo en la NP 24 001 80

OBS: Este informe fue transcripto por el laboratorio. Análisis realizado por laboratorio subcontratado por Biosollo.

IMPORTANTE: NO EMITIMOS INTERPRETACIONES NI RECOMENDACIONES DEL PRODUCTO/MATERIAL ANALIZADO E IDENTIFICADO EN ESTE INFORME.

ESTE INFORME NO SIRVE PARA DEMANDAS JURIDICAS Y REGISTRO EN ORGANOS OFICIALES

Metodologia/Referencia: *Standard Methods for the Examination of Water and Wastewater 22th Edition .*
NORMA PARAGUAYA DE CALIDAD DE AGUA POTABLE NP 24 001 80.

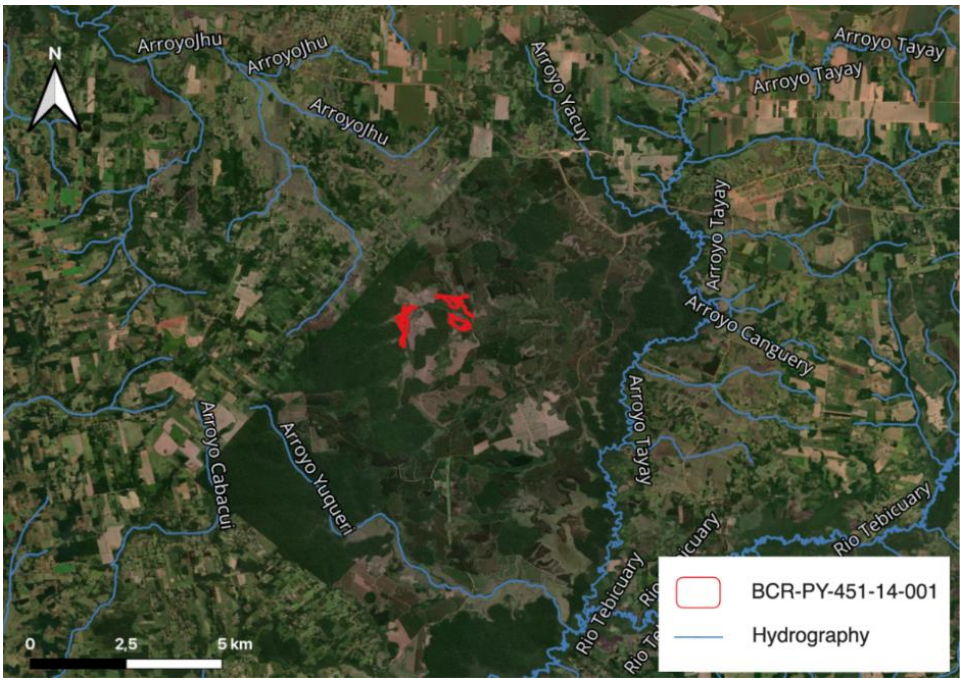
Ciudad del Este, 11/09/2023

Ing.Agr.MSc.Alexson Bobato
Diretor Técnico

Source: DMSA, 2023.

On the other hand, there are no surface watercourses in the immediate surroundings of Tapytá, so the impact of the project on them cannot be analyzed.

Figure 29. Hydrographic network in the area of influence of the project's Tapytá farm.



Source: MADES from public consultation (number 78248); DMSA, 2023. ArcGIS World Imagery base mapping. Datum WGS84.

Finally, the effect on groundwater was positive and indirect, thanks to the improved infiltration capacity of the soil as a result of the soil preparation using minimum tillage techniques, which favored the improvement in the physical structure of the soil. As a control measure, as detailed in the section on soil impact, a physicochemical analysis was carried out at different control points, which will also be repeated in future monitoring periods to ensure that there are no negative impacts on the soil or indirect impacts on groundwater.

Impact to soil

During the current monitoring period, the activities carried out that could have had an impact on the soil are: soil preparation, planting, fertilization and weed control, as shown in Table 6. This same table shows the progress by number of ha and year during the current monitoring period. In addition, Section 1.5 of this document details the execution of these activities.

The most significant negative impact that may have occurred during the current monitoring period corresponds to the use of agrochemicals during fertilization and weed control activities. In any case, as a mitigation measure, the Responsible

Agrochemical Management Plan has been strictly followed, as well as the Agrochemical Application Operating Procedure[27] , and the guidelines established by FSC in order to minimize the impact of such applications.

To obtain FSC certification it is necessary to pass annual audits where the work orders and the list of agrochemicals that were used in the proportion that their respective safety data sheets were applied and the agrochemical purchase invoices that show the quantity and types of these chemicals purchased during the analysis period are reviewed. Once the audits have been approved, a certificate is issued for a period of four years. DMSA has been FSC certified continuously since 2006. DMSA passed all annual audits during the current monitoring period, obtaining the most recent certificate in 2022, demonstrating the correct use of agrochemicals.

In turn, the MADES[28] requires the presentation and approval of an Environmental Impact Study, which must be updated every 2 years, in order to start forestry activities. The requirements include compliance with the Environmental Management Plan[29] , which regulates the requirements for the appropriate use of agrochemicals.

DMSA has the approval of the Environmental Impact Study in 1998, and made all the corresponding updates, which were approved, prior to the current quantification period. In 2014 the Environmental Management Plan was updated, which stipulates periodic audits to be reported to MADES, the most recent of which was carried out in 2022. Annexes 3 and 4 provide the certificates of approval of these audits.
The soil preparation activity was carried out between 2019 and 2022. This activity generated a slight soil disturbance due to the use of machinery such as tractor and

[27] See documents DMSA Responsible Agrochemical Management Program 2023 and PO 05-DMSA Agrochemical Application - Ant Control, attached in Supplementary Documentation, folders 07.- PROJECT ACTIVITIES and 04.- RISK MANAGEMENT respectively.
[28] https://www.mades.gov.py/
[29] https://www.mades.gov.py/wp-content/uploads/2019/06/RESOLUCION-177-de-fecha-29-de-marzo-de-2019.pdf

harrow[30] . As a mitigation measure to reduce the impact, the minimum tillage technique was used. This implies that the soil was prepared in strips: only a strip 1 to 2 m wide was prepared along the tree planting lines. This system is one of those that generates the least soil disturbance due to the fact that it greatly reduces the portion of soil that is tilled[31] . At the same time, the days where the minimum tillage task was carried out were carefully selected, selecting the appropriate humidity conditions to avoid further soil compaction[32].

Tree planting was also carried out in 2019 and 2022. As a mitigation measure, it was done manually, so the soil disturbance of this activity was low[33] . Shovels were used to dig the holes. A light vehicle (less than 2.000 kg) was used to transport the plants to the limits of the stratum and within the stratum the transport was done manually with containers. The operator made a hole with the shovel only in the place where the tree was planted, inserted the plant and then covered it with soil from the same hole.

Since no forest harvesting activities have been carried out yet, there have been no negative impacts to the soil related to the dragging of logs or harvesting machinery during this monitoring period.

As a soil quality control measure, at the end of the monitoring period in 2023, a soil study was conducted to check the physicochemical status, evaluating parameters such as pH, nutrient availability and organic matter content. For this purpose, samples were taken at randomly determined points, fixed points identified with GPS and wooden stakes fixed to the ground where the samples were extracted, with the objective of repeating this same analysis every five years at the same point.

[30] https://www.scielo.sa.cr/pdf/tem/v31n1/0379-3982-tem-31-01-167.pdf
[31] http://revistas.uach.cl/pdf/bosque/v16n2/art01.pdf
[32] https://www.jircas.go.jp/sites/default/files/publication/manual_guideline/manual_guideline-_-_44.pdf
[33] https://journals.lib.unb.ca/index.php/IJFE/article/view/30002/1882525236

Soil analyses were carried out in a specialized laboratory and revealed that the nutrient and organic matter content was high compared to the type of soil in which they were performed. Thus, the analysis showed that the soil situation in both estancias at the end of this monitoring period is adequate from an environmental and forestry point of view. The results of all the soil analyses carried out as well as the location of the sampling points in geospatial format compatible with GIS software are provided as Supplementary Documentation[34] .

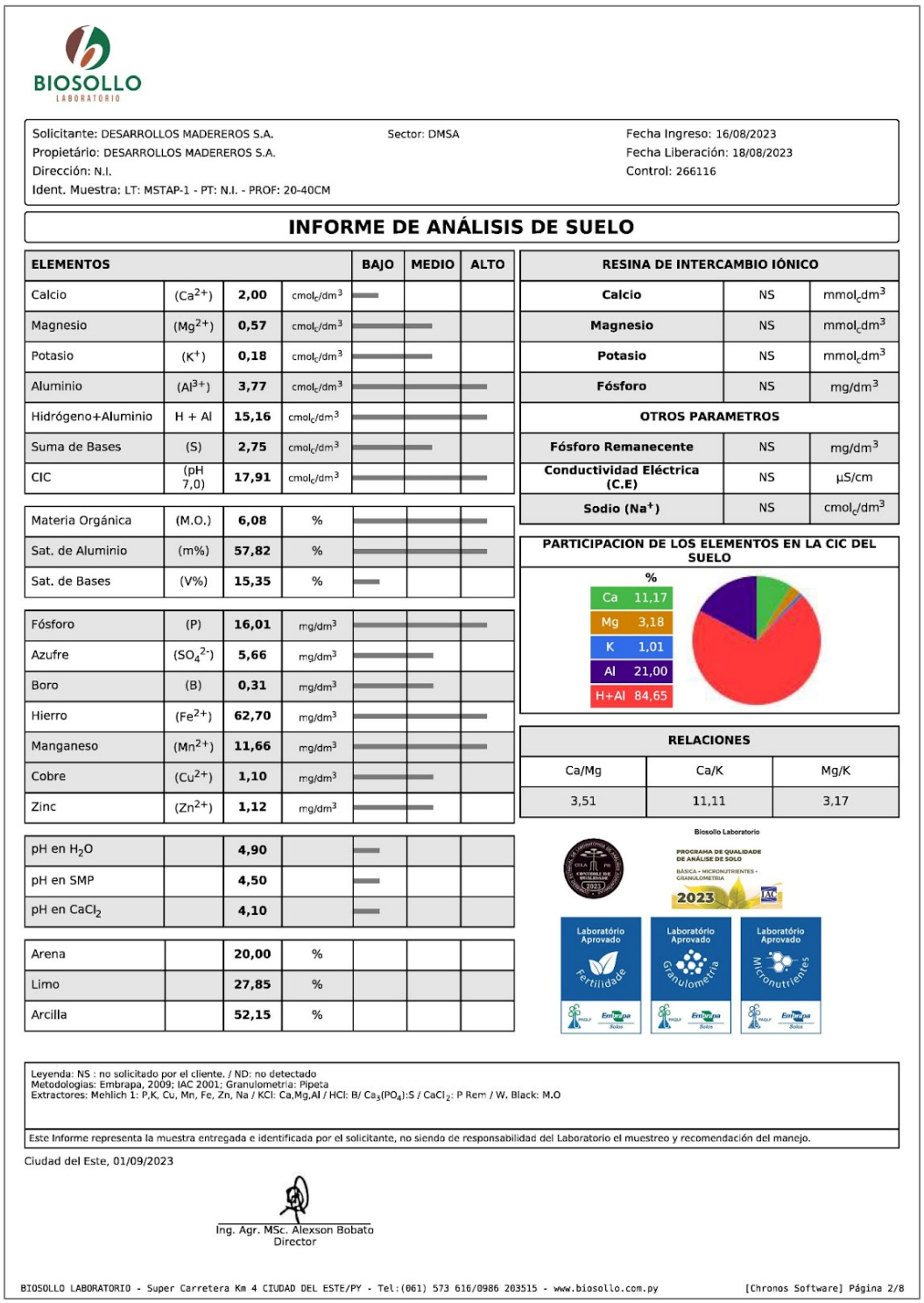
Table 29. Soil Analysis Sampling Points in the Project Environment.

Name	Longitude	Latitude
MS-Tap_1	-55,7653	-26,2099
MSH29_1	-54,8412	-25,3103
MSH2_1	-54,7683	-25,3514
MSH45_1	-54,6987	-25,3715
MSH49_1	-54,7869	-25,4222
MSH49_2	-54,8128	-25,4024

Source: DMSA, 2023.

[34] See folder 09.- SOIL AND WATER ANALYSIS in the Complementary Documentation folder.

Figure 30. Results of soil analysis in Hernandarias



BIOSOLLO LABORATORIO

Solicitante: DESARROLLOS MADEREROS S.A. Sector: DMSA Fecha Ingreso: 16/08/2023
Propietário: DESARROLLOS MADEREROS S.A. Fecha Liberación: 18/08/2023
Dirección: N.I. Control: 266116
Ident. Muestra: LT: MSTAP-1 - PT: N.I. - PROF: 20-40CM

INFORME DE ANÁLISIS DE SUELO

ELEMENTOS				BAJO	MEDIO	ALTO
Calcio	(Ca^{2+})	**2,00**	$cmol_c/dm^3$			
Magnesio	(Mg^{2+})	**0,57**	$cmol_c/dm^3$			
Potasio	(K^+)	**0,18**	$cmol_c/dm^3$			
Aluminio	(Al^{3+})	**3,77**	$cmol_c/dm^3$			
Hidrógeno+Aluminio	H + Al	**15,16**	$cmol_c/dm^3$			
Suma de Bases	(S)	**2,75**	$cmol_c/dm^3$			
CIC	(pH 7,0)	**17,91**	$cmol_c/dm^3$			
Materia Orgánica	(M.O.)	**6,08**	%			
Sat. de Aluminio	(m%)	**57,82**	%			
Sat. de Bases	(V%)	**15,35**	%			
Fósforo	(P)	**16,01**	mg/dm^3			
Azufre	(SO_4^{2-})	**5,66**	mg/dm^3			
Boro	(B)	**0,31**	mg/dm^3			
Hierro	(Fe^{2+})	**62,70**	mg/dm^3			
Manganeso	(Mn^{2+})	**11,66**	mg/dm^3			
Cobre	(Cu^{2+})	**1,10**	mg/dm^3			
Zinc	(Zn^{2+})	**1,12**	mg/dm^3			
pH en H_2O		**4,90**				
pH en SMP		**4,50**				
pH en $CaCl_2$		**4,10**				
Arena		**20,00**	%			
Limo		**27,85**	%			
Arcilla		**52,15**	%			

RESINA DE INTERCAMBIO IÓNICO		
Calcio	NS	$mmol_c dm^3$
Magnesio	NS	$mmol_c dm^3$
Potasio	NS	$mmol_c dm^3$
Fósforo	NS	mg/dm^3
OTROS PARAMETROS		
Fósforo Remanecente	NS	mg/dm^3
Conductividad Eléctrica (C.E)	NS	µS/cm
Sodio (Na^+)	NS	$cmol_c/dm^3$

PARTICIPACION DE LOS ELEMENTOS EN LA CIC DEL SUELO

RELACIONES		
Ca/Mg	Ca/K	Mg/K
3,51	11,11	3,17

Biosollo Laboratorio
PROGRAMA DE QUALIDADE DE ANÁLISE DE SOLO
BÁSICA - MICRONUTRIENTES - GRANULOMETRIA
2023
Laboratório Aprovado Fertilidade
Laboratório Aprovado Granulometria
Laboratório Aprovado Micronutrientes

Leyenda: NS : no solicitado por el cliente. / ND: no detectado
Metodologias: Embrapa, 2009; IAC 2001; Granulometria: Pipeta
Extractores: Mehlich 1: P,K, Cu, Mn, Fe, Zn, Na / KCl: Ca,Mg,Al / HCl: B/ $Ca_3(PO_4)$:S / $CaCl_2$: P Rem / W. Black: M.O

Este Informe representa la muestra entregada e identificada por el solicitante, no siendo de responsabilidad del Laboratorio el muestreo y recomendación del manejo.

Ciudad del Este, 01/09/2023

Ing. Agr. MSc. Alexson Bobato
Director

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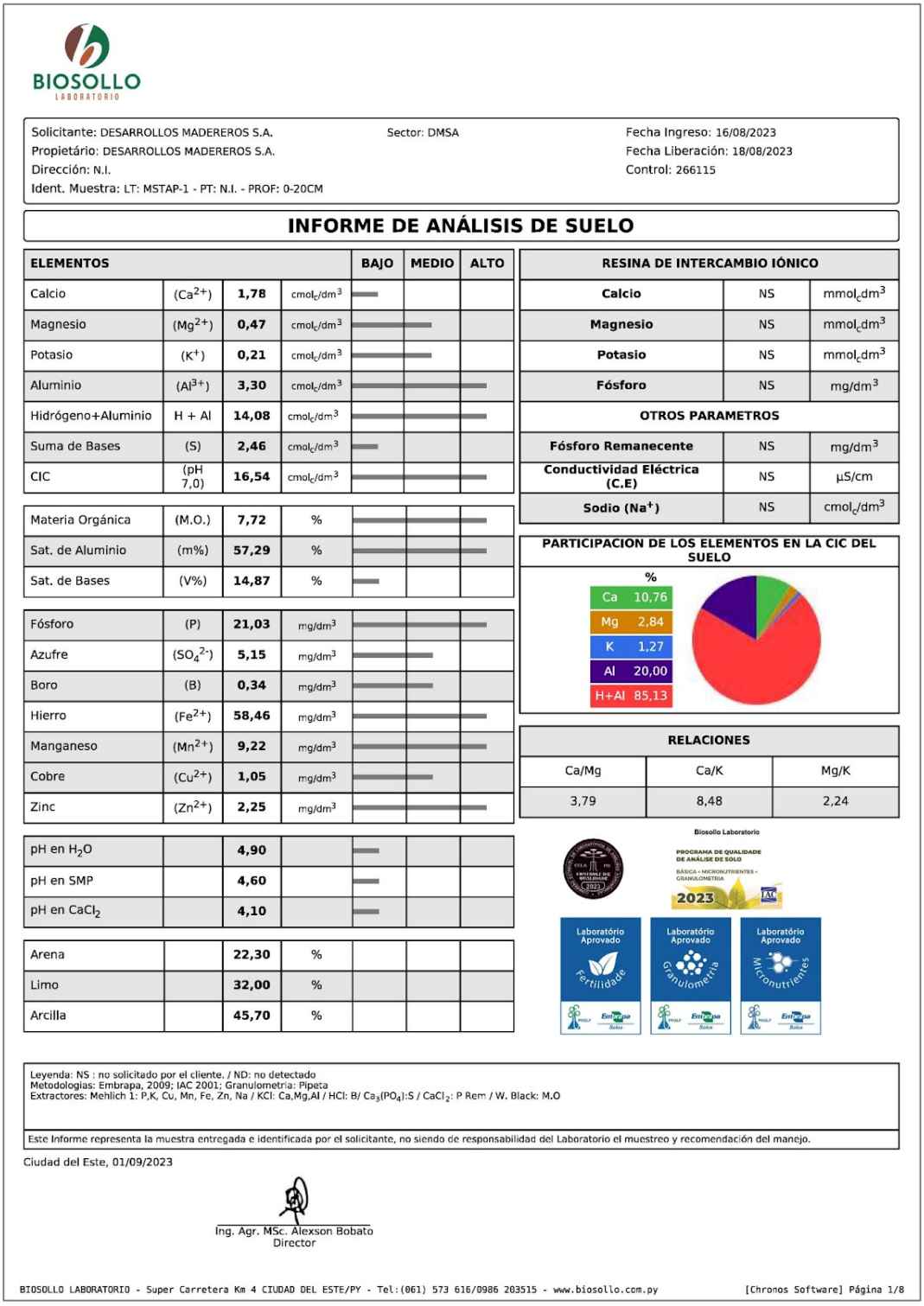
Source: Biosollo, 2023.

Figure 31. Tapytá soil analysis results



BIOSOLLO
LABORATORIO

Solicitante: DESARROLLOS MADEREROS S.A.
Propietário: DESARROLLOS MADEREROS S.A.
Dirección: N.I.
Ident. Muestra: LT: MSTAP-1 - PT: N.I. - PROF: 0-20CM

Sector: DMSA

Fecha Ingreso: 16/08/2023
Fecha Liberación: 18/08/2023
Control: 266115

INFORME DE ANÁLISIS DE SUELO

ELEMENTOS				BAJO	MEDIO	ALTO
Calcio	(Ca^{2+})	1,78	$cmol_c/dm^3$			
Magnesio	(Mg^{2+})	0,47	$cmol_c/dm^3$			
Potasio	(K^+)	0,21	$cmol_c/dm^3$			
Aluminio	(Al^{3+})	3,30	$cmol_c/dm^3$			
Hidrógeno+Aluminio	H + Al	14,08	$cmol_c/dm^3$			
Suma de Bases	(S)	2,46	$cmol_c/dm^3$			
CIC	(pH 7,0)	16,54	$cmol_c/dm^3$			
Materia Orgánica	(M.O.)	7,72	%			
Sat. de Aluminio	(m%)	57,29	%			
Sat. de Bases	(V%)	14,87	%			
Fósforo	(P)	21,03	mg/dm^3			
Azufre	(SO_4^{2-})	5,15	mg/dm^3			
Boro	(B)	0,34	mg/dm^3			
Hierro	(Fe^{2+})	58,46	mg/dm^3			
Manganeso	(Mn^{2+})	9,22	mg/dm^3			
Cobre	(Cu^{2+})	1,05	mg/dm^3			
Zinc	(Zn^{2+})	2,25	mg/dm^3			
pH en H_2O		4,90				
pH en SMP		4,60				
pH en $CaCl_2$		4,10				
Arena		22,30	%			
Limo		32,00	%			
Arcilla		45,70	%			

RESINA DE INTERCAMBIO IÓNICO		
Calcio	NS	$mmol_c dm^3$
Magnesio	NS	$mmol_c dm^3$
Potasio	NS	$mmol_c dm^3$
Fósforo	NS	mg/dm^3
OTROS PARAMETROS		
Fósforo Remanecente	NS	mg/dm^3
Conductividad Eléctrica (C.E)	NS	µS/cm
Sodio (Na^+)	NS	$cmol_c/dm^3$

PARTICIPACION DE LOS ELEMENTOS EN LA CIC DEL SUELO

%
Ca 10,76
Mg 2,84
K 1,27
Al 20,00
H+Al 85,13

RELACIONES		
Ca/Mg	Ca/K	Mg/K
3,79	8,48	2,24

Biosollo Laboratorio
PROGRAMA DE QUALIDADE DE ANÁLISE DE SOLO
BÁSICA · MICRONUTRIENTES · GRANULOMETRIA
2023
Laboratório Aprovado Fertilidade
Laboratório Aprovado Granulometria
Laboratório Aprovado Micronutrientes

Leyenda: NS : no solicitado por el cliente, / ND: no detectado
Metodologías: Embrapa, 2009; IAC 2001; Granulometria: Pipeta
Extractores: Mehlich 1: P,K, Cu, Mn, Fe, Zn, Na / KCl: Ca,Mg,Al / HCl: B/ $Ca_3(PO_4)$:S / $CaCl_2$: P Rem / W. Black: M.O

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Ciudad del Este, 01/09/2023

Ing. Agr. MSc. Alexson Bobato
Director

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Source: Biosollo, 2023.

Impact on Flora, Fauna and Landscape

The project converts an area where cattle ranching was being developed into an afforestation project. As of the date of this report, only the eucalypt trees have been planted; in any case, the flora, fauna and landscape have been positively affected compared to the existing cattle ranch prior to the project[35] .

Although it has not been quantified during the current monitoring period, the planting of trees allows the nesting of birds and also enhances the presence of mammals, having a positive impact on the fauna. In the next stage of the project, in 2024, it is estimated that the positive effect will be even greater as the native species that will not be harvested will begin to be planted, at which time, according to the Monitoring Plan contained in the PD, in alignment with *SDG 15 Life of terrestrial ecosystems,* flora and fauna sampling will be carried out to corroborate the positive impact for birds, insects, reptiles and mammals, as well as for the landscape context and surrounding environments.

9 Socioeconomic Aspects

The BCR tool Sustainable Development Safeguards version 1.1 was used to assess risks and potential negative impacts related to social aspects which is in accordance with the requirements of the BCR Standard v3.4, section 15. As defined in the Project Description Document, some potential risks were identified, mainly regarding gender equality and community health and safety. The mitigation and prevention measures that were taken during the reporting period are described below (Table 31).

- Gender equality: after the stakeholder consultation public presentations that were carried out before the validation of the project began, no other

[35] https://www.researchgate.net/profile/Ronnie-De-Camino/publication/262728776_Impactos_ambientales_de_las_plantaciones_forestales_y_medidas_correctivas_de_caracter_silvicultural/links/00463538a7617054cb000000/Impactos-ambientales-de-las-plantaciones-forestales-y-medidas-correctivas-de-caracter-silvicultural.pdf

presentations have been made to the neighboring communities. Hence, there is nothing to report in this aspect. Future consultations will be carried out with a gender perspective to ensure a higher female participation. In particular, the women in DMSA's payroll will be invited to attend, and we will emphasize to the interested parties that they should not only attend with male stakeholders. Community health and safety: DMSA followed its Operational Procedure 14 for accidents and incidents (supplementary documentation folder 4) throughout the entire monitoring period. No accidents or incidents were reported to have happened inside the project area regarding exposure to hazardous materials or traffic accidents. Additionally, to ensure no water pollution would impact the health of the communities, water sample analyses were carried out as described in the previous section.

Table 30. Project Impacts on Social Aspects During the Monitoring Period 2018-2023.

Social Aspect	Detail	Project Activity	Response	Control Measures	Mitigation Measures
Gender equality	Limited participation and representation of women in project activities, consultations, or community engagements, potentially marginalizing their voices and perspectives	Stakeholder consultation	Potentially		
Community Health and Safety	Exposure to hazardous materials, chemicals, or pollutants, potentially leading to adverse health effects or life-threatening risks	Land preparation	Potentially	Soil analysis on control points. Water analysis at the inlet and outlet of the Aña Cuá creek	Strict follow-up and compliance with the Responsible Agrochemical Management Plan, Agrochemical Application Operating Program, PGA and FSC guidelines.
	Water contamination, including pollution of water sources or reduced access to clean water, affecting community health and well-being		Potentially	Soil analysis on control points	Use of minimum tillage techniques and selection of a favorable period of action according to weather conditions.
		Use of agrochemicals	Potentially	Soil analysis on control points. Water analysis at the inlet and outlet of the Aña Cuá creek	Strict follow-up and compliance with the Responsible Agrochemical Management Plan, Agrochemical Application Operating Program, PGA and FSC guidelines.
		Plantation	Potentially	Soil analysis on control points	Strict follow-up and compliance with the Responsible Agrochemical Management Plan,

Social Aspect	Detail	Project Activity	Response	Control Measures	Mitigation Measures
					Agrochemical Application Operating Program, PGA and FSC guidelines.
	Traffic accidents or road safety hazards associated with increased traffic flow or transportation activities related to the project	Clear-cutting	Potentially		Strict follow-up and compliance with the Operational Procedure 3 regarding transportation of forestry products.

Source: DMSA, 2023

On another note, there is a significant positive impact on the generation of local labor and, consequently, on improving the family economy of neighboring communities. It produces improvements in relation to the training of qualified personnel and best practices in safety and hygiene through training programs. The project contributes to transmit to the operators, as well as to the local population, the importance of the following values: professionalism in services, labor quality standards between operators and suppliers, the importance of environmental conservation and health and safety practices. Promotes the growth and development of the local and regional market by increasing the demand for inputs and services, while providing raw material for the development of the regional wood industry.

The positive impacts identified are detailed below:

Job Creation and Changes in Traditional Technological Practices

The selection of personnel working within the project area is mostly from the area.

In addition, during the current quantification period, several training courses were held on both operational issues (handling of machinery, correct use of herbicides, firefighting, among others) and cross-cutting issues (biodiversity, first aid, among others); the following table shows the courses and the operators who attended them during the current quantification period:

All DMSA employees are duly registered with the Social Security Institute (IPS in Spanish). DMSA has an updated list of all workers who participated during the year 2018-2022. It has all the personal data, trainings carried out, area of work. Due to the fact that this spreadsheet has personal information of the employees, it will not be made public. However, if necessary, it will be available upon request.

Social Responsibility

The company's policy considers neighboring communities as an integral part of the forestry business, so it contributes to the improvement of socioeconomic needs, offering opportunities for labor insertion and favoring those that are close to the forestry management units (FMU) based on a Social Management Plan, and also considering requests for donations received outside of it. The details of

DMSA's contributions to the community are detailed in section 4 of the contributions to the SDGs; however, the following complements the information provided in that section.

The main objective of the Social Management Plan of Desarrollos Madereros S.A. (DMSA) is to build and maintain permanent relationships of trust with those stakeholders that coexist daily with the forestry activity, seeking to preserve and create social value.

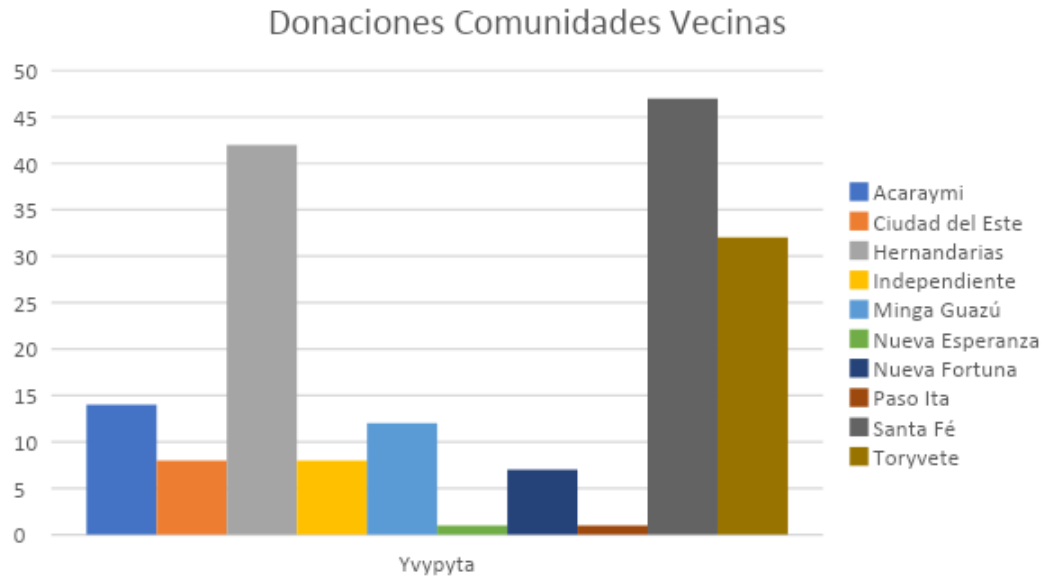
The main stakeholders with whom DMSA and its forestry area interact are: workers, contractors and their employees, communities in the area of influence of the operations, indigenous communities, suppliers and customers, municipalities, authorities, non-governmental organizations, universities and scientific institutions, the media and civil society in general.
With all stakeholders, DMSA seeks to maintain a relationship based on respect, transparent and honest communication, promoting spaces for dialogue and understanding.

As part of the approved donations program, fuel is supplied monthly to police stations in the areas of Yvypyta (Hernandarias) and San Juan Nepomuceno (Tapytá) and a monthly contribution to the volunteer firefighters of Yvypyta (Hernandarias).

During the current quantification period, a total of 207 requests were received from different communities, of which 100% were fulfilled.

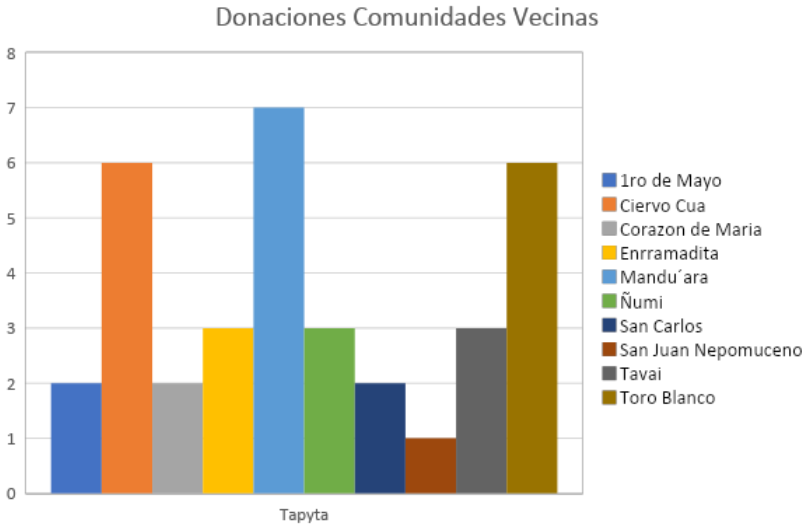
In Yvypyta (Hernandarias) and Tapytá, 10 communities have benefited. The beneficiary entities are distributed within Educational Centers, Health Centers, Neighborhood Organizations, Indigenous Communities, Volunteer Fire Departments and Police Stations.

Figure 32. Communities benefited in Yvypypyta (Hernandarias) (y-axis = number of donations by community)



Source: DMSA, 2023.

Figure 33. Communities benefited in Tapytá
(y-axis = number of donations by community)



Source: DMSA, 2023.

10 Stakeholder Consultation

10.1 Methods for Local Stakeholder Consultation

During the month of May 2023, a public presentation was made to the stakeholders of the community neighboring the Hernandarias and Tapytá fields, within the framework of the carbon sequestration project through afforestation with species of the *Eucalyptus* genus and a group of 11 native species.

In order to provide as much clarity as possible and in compliance with the principles of DMSA, the meetings were held in person in order to be as close as possible. Considering that the proposed project is divided into two locations, public consultations were held on different days.

Different types of stakeholders were identified according to whether they were directly or indirectly affected by the project, including governmental or nongovernmental organizations, individuals or legal entities. Governmental organizations included ministries, municipalities, national agencies, universities, health centers, primary and secondary schools, and security forces. Civil associations included those representing the forestry sector and volunteer firefighters. Individuals were considered to be private neighbors of the forestry fields, independent professionals and contractors. Thus, the following types of stakeholders were considered:

Table 31. Stakeholders Identified.

Type of Stakeholder
Civil Association - Paraguayan Federation of Timber Companies
Health Center - Family Health Unit
Educational centers in the vicinity of the project
University Center surrounding the project
Security forces surrounding the project
Forest service providers
Independent Professionals (forestry, environmental, legal advisors, etc.)
Municipalities - Hernandarias, and of San Juan Nepomuceno
National Bodies (INFONA, MADES)
NGOs - Moises Bertoni Foundation
Neighbors - project surroundings

International Certifications - FSC

Source: DMSA, 2023.

Invitations were sent by e-mail and by telephone via WhatsApp to representatives of governmental organizations, civil associations, educational centers, security forces, health field, and private neighbors. The invitation included information on the day, time and form of the meeting. To ensure participation, calls were made the day before as a reminder of the invitation.

Figure 34. Hernandarias public consultation (left). Consultation Municipality of San Juan Nepomuceno (right)

Source: DMSA, 2023.

The objective of the public consultation was to raise awareness of the DMSA Carbon Project among its main stakeholders, sensitize and inform them about the context of climate change, mitigation strategies, compensation, and commitments at the global, national and local levels and, particularly, the contribution of the project to mitigate the effects of climate change. The objectives, location, surface areas, species, and the way in which the whole process is being carried out for its implementation in the field, registration and documentary compliance were informed.

A Power Point presentation was shared with those present and Lilian Giménez, head of FSC / Environment and Occupational Safety DMSA, was responsible for the presentation. At the end of the presentation, there were questions and queries related to the presentation and the expected impact on the community. The feedback and questions were very positive, accepting the project and acknowledging the company for its initiative. There were no objections or comments about possible detrimental effects on the community.

At the end of the consultation process, a report was prepared with the results obtained. All evidence of the call, consultation, responses, and follow-up will be kept as supporting material.

Details of the participants can be found in the minutes of the meetings, which are provided in folder 12 of the confidential supplementary information, although they are listed below in an anonymized form to preserve their privacy.

Table 32. The List of Participants in the Public Consultations is as Follows.

Representative Sector
Hernandarias District Hospital
Neighbor of the Community of Toryvete
Neighbor of the Community of Toryvete
Principal of School No. 3240 Sta. Rosa
Health and Hygiene of the Municipality of Hernandarias
Environment of the Municipality of Hernandarias
Finance Manager DMSA
DMSA Forestry Supervisor
Contractor INAFO/BGB
Head of Caazapá Regional Office
Caazapá Regional Office
Contractor Grupo Geral Servicios
Independent Professional
Hernandarias 5th Police Station
Hernandarias 5th Police Station
Hernandarias 5th Police Station
Hernandarias 5th Police Station
Hernandarias 5th Police Station
Hernandarias 5th Police Station
Hernandarias 5th Police Station
Hernandarias 5th Police Station
Moisés Bertoni Foundation
Enramadita Health Sub-Council
Directorate of Agricultural Extension (MAG)
H.D.S.J.N. Mesa Vamos
Cooperativa Capiibary Ltda.

Representative Sector
Municipal Board of S.J.N.
University Student
Municipality of San Juan Nepomuceno
Municipality of San Juan Nepomuceno
Municipality of San Juan Nepomuceno
Radio Kapiibary FM 104,5
Judge of Misdemeanors of the Municipality of San Juan Nepomuceno
Municipality of San Juan Nepomuceno
Mayor of the Municipality of San Juan Nepomuceno
Representative of the U.P.G. Agronomy Career
Desarrollos Madereros S.A.
Desarrollos Madereros S.A.
Desarrollos Madereros S.A.
Desarrollos Madereros S.A.
Desarrollos Madereros S.A.

Note: Attendance lists with attendees' names are shared in the supporting documentation folder[36] .

Source: DMSA, 2023.

10.2 Outcomes of the Stakeholder Comments

Table 33. Summary of Comments Received During Stakeholder Consultation.

Sector of Representation of the Actor	Comment/Question	Response from DMSA
Neighbor Toryvete	The Desarrollos Madereros project is very important because reforestation will produce oxygen, which is the basis of life on earth. Hopefully it will quickly make a difference in mitigating climate change and erosion.	NA

[36] See "Minutes of the Public Presentation of the DMSA Carbon Project _with Telephone Contact" in the Public Presentation subfolder of the project in the supporting documentation folder.

Sector of Representation of the Actor	Comment/Question	Response from DMSA
	It seems to me that other companies with large areas of land should try to do like Desarrollos Madereros. Thanks to Desarrollos Madereros, if it fulfills its reforestation project to capture carbon, the communities neighboring its property will benefit from breathing clean air.	
Hernandarias District Hospital	How would the surrounding community benefit from this project?	Trees are the main carbon reservoirs and reduce atmospheric carbon dioxide through the process of photosynthesis. We believe as a forestry company we can contribute to mitigate the effects of climate change by capturing CO_2 through the planting of *Eucalyptus*.
Moisés Bertoni Foundation	I would like to give my opinion on the Carbon Project that was presented to the general public in the Municipality of San Juan Nepomuceno where I participated in the presentation on behalf of the Moisés Bertoni Foundation. This project is very good and interesting. Reforestation or reforestation is urgent for the whole world and in fact Paraguay is booming with the planting especially of *Eucalyptus*, but for commercial purposes that is also serving and my suggestion is to do this reforestation for the carbon project with native plants of Paraguay and also takes advantage for wildlife refuges that like more native forest. I hope that my suggestion will be useful for a better use of this project and to go ahead and that it will be a starting point that will serve as an example to more companies or private owners that can do this project.	Thank you for your suggestion and comment; we are in an initial stage of the Project, in which we mentioned that the current plantations are destined to the production of wood and DMSA's renewable energy from the company's own *Eucalyptus* plantations. It should be noted that we are currently in the initial stage of submitting the project to the corresponding platform for evaluation and eventual approval. This indicates that native Paraguayan plant species will be included in the project design.
Desarrollos Madereros S.A.	Thank you very much for the presentation of the carbon credit project made this morning, I have the following questions about it.	Carbon dioxide is a compound of carbon and oxygen that exists as a colorless gas at standard temperature and pressure conditions. It is closely related to the greenhouse effect.

Sector of Representation of the Actor	Comment/Question	Response from DMSA
	- When we talk about carbon dioxide and carbon dioxide are we talking about the same gases with the same effects?	Prior to the 2005 IUPAC standards, it was also known as carbon dioxide, so we are talking about the same gas, and yes, it will have the same effects.
Desarrollos Madereros S.A.	The temperature increases to be maintained at 1.5 degrees Celsius over what period of time would it be?	In the Paris Agreement (2015) it mentions in Article 4: In order to meet the long-term temperature goal set out in Article 2, the Parties aim to achieve the peaking of global greenhouse gas emissions as soon as possible, bearing in mind that developing country Parties will take longer to achieve this, and thereafter to rapidly reduce greenhouse gas emissions, in accordance with the best available scientific information, to achieve a balance between anthropogenic emissions by sources and removals by sinks in the second half of the century, on the basis of equity and in the context of sustainable development and efforts to eradicate poverty.

Source: DMSA, 2023.

DMSA has a long history of working in harmony with stakeholders in the regions where this project will be carried out. During the more than 20 years of working in these locations, public consultations with stakeholders have been held every time a new project was planned, so this public consultation falls within the parameters of DMSA's normal operations.

The feedback and questions were very positive, accepting the project and acknowledging the company for its initiative. There were no objections or comments about possible detrimental effects on the community.

10.3 The Mechanism for On-Going Communication with Local Stakeholders

In addition to the comments detailed in Table 29 during the stakeholder consultation, to date no further comments have been received through the

continuous communication mechanism with stakeholders, provided on the website[37] of the company POMERA (trade name of DMSA, the project proponent).

11 REDD+ Safeguards

N/A

12 Special Categories, Related to Co-Benefits

N/A

13 Grouped Projects

N/A

14 Implementation of the Project

14.1 Implementation Status of the Project

The start date of the activities was 2018/12/01. All project activities, nursery seedling production, soil preparation, *Eucalyptus spp.* planting, fertilization, weed control, pest control, pruning and the entire monitoring process (see detail in section 1.5 of this report) were carried out progressively according to the planting year (see project compliance progress tables 3 to 7, section 1 of this report).

Since DMSA's operational actions, there have been no activities or events that have had a negative impact on the plantations and therefore on the amount of GHG removals from the project. On the other hand, in 2020 there was a fire that affected 10% of the project area, which was controlled and liquidated. The affected area was replanted in 2022.

[37] Communication channel website: https://pomeramaderas.com/contacto/

The plantations are located in two Forest Management Units (FMUs) owned by DMSA:

- In Hernandarias: 138,74 hectares (of which 102,43 hectares have been planted as of the date of the current monitoring).
- In Tapytá: 34,02 hectares (all planted as of the current monitoring date)

The two locations, totaling 172,76 hectares, are approximately 141 km apart.

In Hernandarias it started on 2018/12/01, while the activities in Tapytá began on 2019/10/04.

As of the date of project preparation, the planting scheme projected in the PD, which can be seen in the tables in section 1 of this report (project schedule), has been completed.

Further details on project implementation are mentioned in the Monitoring of project implementation activities section below.

Machinery, Equipment and Tools

All the measuring equipment used for tree growth monitoring was newly acquired and tested in the field. This equipment was Vertex IV, GPS, Diametric tape, tape measures.

All equipment and machinery used for the development of this monitoring report were maintained in very good condition and could be used without problems during the current quantification period. The equipment and tools used were:

- Soil preparation: tractor with harrow - ridge
- Planting: Tractor with trailers and manual planting shovel
- Fertilization: Buckets and doser
- Weed control: 20-liter backpack
- Pruning: shears and saws

For this project, validation and verification were carried out simultaneously; therefore, there was no situation that could have affected the applicability of the methodology. Both the PD and this monitoring report followed and complied with the most updated versions of the Standard, methodology and Tools (all methodologies, tools and other criteria can be found in section 2 of this report).

The project activities did not generate any type of leakage during its development. Regarding the non-permanence risks, the following is a detailed analysis of the reversion risks during the current quantification period:

Reversion Risks

1) **Natural Hazards**

   a. **Fires**

To prevent and mitigate the effects of a fire during the period analyzed, DMSA has a Fire Protection Plan[38] , which is in charge of the operations manager. This person is responsible for implementing, updating and carrying out all necessary corrective measures. The plan acts on two different sources:

1. Reduction in the number of fires, mainly through awareness-raising measures.
2. Reduction of fire spread through preventive techniques.

Forest fire prevention refers to the "Set of measures and actions to prevent the fire from spreading, once it has started". On the margins of streams, places should be prepared for tanker trucks or coupled tanks, so that they can arrive close to the supply.

Fire Reduction Through Awareness-Raising Measures

[38] See supplementary documentation folder, Risk Management sub folder.

DMSA has a training and awareness program for the local population in which the company's personnel also participate, which was carried out twice a year in person during the 5 years of the current quantification period.

Reduction of Fire Spread Through Preventive Techniques.

Tower Employees (People Who Carry Out the Fire Watch from the Towers)

To date, DMSA has an early fire detection system using observation and surveillance towers to detect smoke plumes, one in Tapytá and the other in Hernandarias. The tower employees are watching the plantations at all times.

It has natural water reservoirs and large-capacity mobile water tanks (6.000 liters) distributed in strategic locations on the properties, and tractors with harrows and weed cutters for opening strategic firebreaks during combat. It has a radio communication system using a VHF repeater, for which each unit has a radio base, in addition to the use of small Handy-type radio equipment. It has firefighting equipment in the two business units Hernandarias and Tapytá, consisting of 2 fire engines, water supply tanks, 15 quick-attack hydrant units for trucks, tractors, and hand tools, as well as other equipment used for firefighting.

Property Protection Guard

DMSA has established a system of property protection guards during weekends and on critical fire days. The guards, made up of brigade members, travel the fields, mainly on the perimeters, in order to detect any fire outbreaks early on. If they are detected, the firefighting brigades give notice to summon and join the team to fight the fire.

The brigade has a hierarchical organization chart with a chief who is responsible for firefighting planning and personnel safety, transmitting instructions to the brigade chiefs and crew chiefs, when several crews are affected, so that they are carried out. All brigade members are equipped with personal protective equipment (PPE) and receive training and instruction through an annual training plan for forest fire prevention and firefighting.

Firebreaks

In turn, well-maintained firebreaks are created. The construction, maintenance and periodic cleaning of firebreaks is perhaps the most widespread preventive technique in forestry. In addition to hindering the passage of fires, firebreaks are strategic places to initiate firefighting operations against fires that are burning inside plantations. Most of the existing firebreaks in the forests of this region are covered by herbaceous or shrub vegetation. After a frost or rainy season, this vegetation dries out and burns with great intensity and speed. Thus, instead of hindering the passage of fire, firebreaks will spread the fire faster than the forest itself. In some firebreaks the grass is kept well cut, but they are not very efficient, if the grass is dry it will pass very easily. Therefore, in spite of the erosion risks that can be avoided through special techniques, it is recommended to leave a strip of at least five meters completely free of vegetation (harrowing).

Detection

Watchtowers are one of the most efficient and economical means to detect and locate fires. The tower cabins have conditions for shelter from inclement weather, a chair, sliding windows, cartography (reference map), long view, portable radio, cell phone, among other elements.

The topography of the eastern region of Paraguay is quite flat, making it easy to cover a visual area of 70.000 ha with a radial distance of 15 km.

There are a total of 2 (two) Observation Towers equipped to detect smoke plumes that may correspond to possible fire outbreaks, one in Hernandarias and the other in Tapytá.

Mobile ground detection is based on ground patrols, which can be done by means of vehicles equipped with radio transmitters, using motorcycles or simply on foot.

This detection system can make use of roving guards who circulate on motorcycles and can watch over a given forest area. These guards must travel the entire area assigned to them on a daily basis or be located at strategic points within the area where it is possible to observe the entire area or most of the area. The Operations Center determines the schedule for each field.

Another way of detecting a probable fire outbreak is through information provided by the company's own personnel, contractors, passers-by or neighbors in the area.

Following I.P.I. indications, the person in charge of Prevention, equipment and logistic support will organize the watch, and will arrange permanent observation tasks from the towers from 08:00 hs. to 16:30 hs.; this last schedule is variable according to I.P.I. and may be 24 hs. when reaching VERY HIGH. The observation tasks from the towers will be suspended only in the presence of rain.

During non-working days (Saturdays, Sundays and holidays), the Fire Chief will implement a system of active guards, which will have a minimum of 4 people (1 driver and 3 brigade members). In the event of fire detection, the chief on duty will notify the Chief Forester.

Meteorological Equipment

DMSA has two strategically located weather stations (one in Hernandarias and the other in Tapytá) that provide local and updated information on weather conditions and forecasts. These monitoring stations analyze the information in real time, indicating the degree of alert according to the IPI reading.

Pre-Fire Suppression

Pre-suppression refers to those activities carried out prior to combat that allow it to be carried out efficiently and effectively.

It includes hazard assessment, detection, communications, personnel, supply and dispatch of equipment and materials, transportation and maintenance of a state of alertness.

Evaluation of the Degree of Danger

The data is taken from the meteorological boxes located in each forest unit, analyzed according to the Fire Danger Index, communicated to the Fire Chief who will decide on actions and the data enter informs the organization of the degree of danger.

- The low seasons are July - August.
- High season is October - March.

Continuous Measurement of the Forest Fire Danger Index.

The calculations used to determine the fire danger index are based on the Monte Alegre or Soarez formula, adjusted to the needs of DMSA. It is the product of a series of meteorological considerations such as temperature, humidity, wind speed. Number of days elapsed since the last rainfall, effective precipitation, data published and updated on the Pomera Maderas website, thus allowing an analysis of the degree of danger of fire occurrence and measures to be taken.

The adjusted formula is a cumulative coefficient, which categorizes the danger of vegetation fires. When precipitation occurs during the observation period, it is corrected according to the precipitation fallen.

For decision making in the field, the monthly index history and fuel type of the different areas, accumulated rainfall and temperature rise in a short period of time must be taken into account.

Alert Degrees According to Fire Danger Index (F.D.I.) Reading.

According to the IPI readings during the day and according to its evolution, the Operations Center shall issue different alert levels.

Concept of level of alert: the level of alert is understood as that signal emanating from the Operations Center that indicates to the rest of the organization the degree of the current and/or potential problem being faced at a given moment, the nature and magnitude of which should trigger some level of concrete actions.

Alert dissemination channel: alert levels will be disseminated directly to system users by e-mail and the radio communications system from the Operations Center. Once informed, it will be assumed that the alert level is known by all personnel involved in the emergency.

No alert (Low-Medium I.P.I.): normal operating condition. Assumes a balance between the level of problems and the organization's response capacity.

Orange Alert (I.P.I. High): this level of alert is triggered as a result of a technical evaluation carried out by the Operations Center, based mainly on the evaluation of the variables and factors that condition the occurrence and potential behavior of the fire.

The orange alert clearly indicates that the severity of the day's conditions may reach extreme situations in which the Operations Center may be overwhelmed, requesting a meeting of the company's Management.

The purpose of this alert level is to raise awareness and inform the rest of the organization so that it has sufficient time to adequately prepare for the emergency.

All gates of the different sectors must remain open during fires. In case of animals, they must be closed but not padlocked. If the GS leaves his post to locate the source of the fire (night fires), the gate must remain unlocked.

Red Alert (I.P.I. Very high): this level of alert implies the immediate involvement of the rest of the organization.

The red alert indicates that the severity conditions of the day correspond objectively to extreme situations, where it is not necessarily in the presence of a major fire affecting the company's assets, but there is a high probability that, if a fire starts outside or within the boundaries of the field, its spread will acquire extreme behavioral characteristics, putting up great resistance to its control. All the gates of the different sectors must remain open during fires.

Fire Fighting

After detection, communication and location of the fire, it is necessary that the team responsible for firefighting is quickly mobilized to go to the place of the fire.

This requires a person responsible for the initial combat action.

The training of the firefighting teams, mainly the first attack team, is fundamental to always achieve a rapid mobilization of personnel. In this training, the person responsible for the initial firefighting action must clearly define the responsibilities of all personnel involved in firefighting.

The travel or mobilization time of the firefighting team is perhaps the most critical phase preceding the actual firefighting. If the fire is very far away or the access roads are very precarious, the time spent in moving the equipment will allow a great increase of the fire perimeter, making the fight more difficult.

For this reason, it is very important to maintain the main roads and fire roads of the forestations.

The dispatch of personnel in a rapid attack will be done in vans, in a medium fire in the fire truck and vans and the contractors' operators will be mobilized in the vehicle destined for personnel transport.

Regarding the events that occurred during the current monitoring period, 17,5 ha were affected by a fire in 2020. These were completely replanted in 2022. Adding up all the measures that make up the Fire Protection Plan implemented by DMSA during the 2018-2023 monitoring period, the events that impacted the project and the mitigation measures implemented are listed (Table 30):

Table 34. Summary of Impacts and Fire Risk Management in the Monitoring Period.

				Meteorology throughout the fire season						
Season	No. of smoke plumes observed	No. Fires (in rooms)	Main causes of fire	Max. temp. °C	Minimum relative humidity	Max. wind speed km/hr	Burned area in plantations (ha)	Resources in extinction (USD)	Damage Value (USD)	Lessons learned
2018*	0	0	0	0	0	0	0	0	0	0
2019	3	0	Uncontrolled Burning Neighbor Tapytá	0	0	0	0	0	0	Strengthen Neighborhood Communication Prior to the Start of Burns.
2020	1	1	Uncontrolled Burning Neighbor Tapytá	39,7	37,7	18,2	17,5	1.992,87	13.277,00	Strengthen Neighborhood Communication Prior to the Start of Burns.
2021	2	0	Uncontrolled Burning Neighbor Tapytá	0	0	0	0	0	0	Strengthen Neighborhood Communication Prior to the Start of Burns.
2022	1	0	Burns Hunters in Yvypyta.	0	0	0	0	0	0	Strengthen Perimeter Control.
2023**	0	0	0	0	0	0	0	0	0	0
TOTAL, MONITORING PERIOD	7	1	0	39,7	37,7	18,2	17,5	1.992,87	13277	0

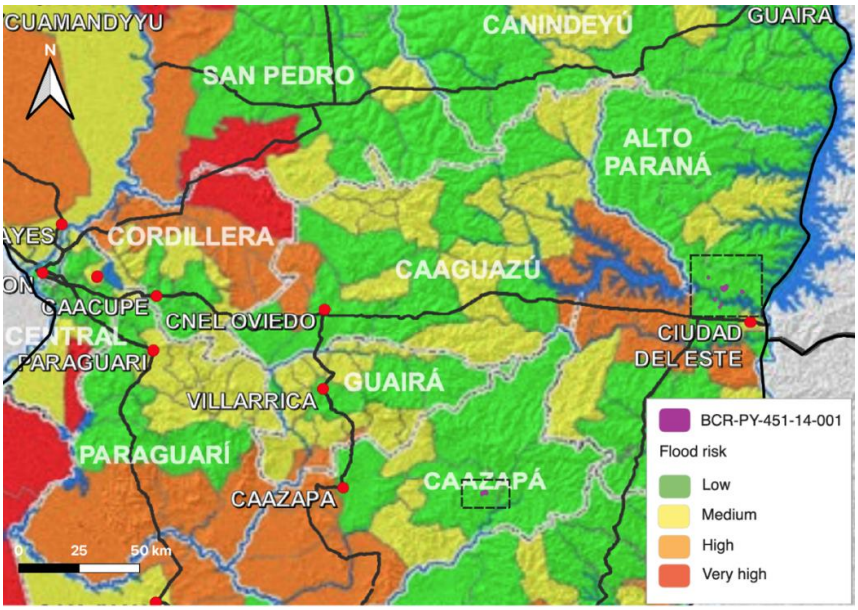
* in 2018 only the month of December is considered. ** in 2023 will be considered only until May 31.
Source: DMSA, 2023.

b. Floods

No flooding was recorded in the current monitoring period. The risk of flooding in the project area is low according to the barrier analysis conducted (see *Flood Related Barriers* section in Step 3 of Section 3.3 of the PD for more details).

In said analysis, it is shown that according to the Disaster Risk Atlas of Paraguay, document approved by SEN Resolution No. 565/2018[39] the risk of flooding does not exist within the project area.

Figure 35. Approximate location of the BCR-PY-451-14-001 project lots with respect to the combined flood hazard risk map (excess rainfall and overflow of the Paraguay and Paraná rivers) according to districts[40].



Source: Atlas de Riesgos de Desastres de Paraguay, 2018. Datum WGS84.

[39] https://www.mades.gov.py/wp-content/uploads/2019/04/RESO-AA-N%C2%B0-565_2018.pdf

[40] Figure 126 from the Atlas de Riesgos de Desastres de Paraguay. https://www.sen.gov.py/application/files/9015/9862/5498/Atlas_de_Riesgos_de_Desastres_de_la_Republica_del_Paraguay_2018.pdf.

In addition, mapping indicates that the soils are moderate to well-drained with a slope of 3 to 15%. In turn, DMSA protects and maintains the natural drainage of the area. Finally, only two plots belonging to stratum 8 (see Hernandarias 2 image in section 3.1.1 of this report) are located near a river. The risk of flooding is very low because this river is part of the reservoir of a hydroelectric dam that controls the water level.

The rest of the parcels in the project area are not close to rivers, lakes or seas (see mapping in this document in section 3.1.1) whose fluctuations could generate flooding.

c. Pests and Diseases

During the current quantification period, through pest monitoring, the only pest that represented a real threat to the plantations were cutter ants of the species *Atta sp.* and *Acromirmex sp*. No diseases associated with the trees in the project's plantations were recorded.

For their combat were executed, with work orders issued by the operational manager, prior to planting and post planting every 4 to 6 months depending on the degree of infestation throughout the forest crop cycle; verification and effectiveness of the controls is performed 10 to 15 days after the execution of the activity by the operational supervisor, see Table 4, section 1.5 for details of the progress in ha of ant control during the monitoring period 2018-2023.

The controls are carried out using granulated baits that are distributed manually in the vicinity of the anthills. The bait is composed of an inert part and another part containing the phytosanitary approved by SENAVE[41] and also permitted by FSC (DMSA has been FSC certified since 2006).

[41] https://www.senave.gov.py/

The risk of affecting non-target animals was reduced by means of a targeted control procedure, in which the nests were first identified and then the product was applied to the mouths of the ant nests. All personnel involved in the control and combat of the leafcutter ant are duly instructed and trained in the handling and application of agrochemicals.

Leaf Cutter Ant Control

A localized method was used to control leaf-cutting ants. Ant baits with the active ingredient fipronil were used at a concentration of 0,01%. The baits were applied next to the cutting lanes or paths when there is heavy ant traffic. No bait was applied on the roads or mounds.

Applications were carried out in different stages and according to the age of the plantation. The following table describes the control methods used in the Forest Management Units. The method used tries to reduce the number of active anthills.

Table 35. Cutter Ant Control Methods.

Method	Stage	Situation
2. Localized with granulated bait	Training	Pre-Plantation
3. Localized with granulated bait	Training	Plantations up to 3 years old
4. Localized with granulated bait	Management	Plantations older than 3 years

Source: DMSA, 2023.

- Formation: It covers the period from soil preparation to 3 years of planting. In this first stage of control, the level of infestation was defined according to the number of active anthills present in the plot.
- The nests found were treated with granulated bait, marked with a point on the GPS and the following was recorded on a spreadsheet: nest number, size of the nest and amount of bait applied. Depending on the genus of ant identified (Atta or Acromyrmex), it was marked with a different point on the GPS.

The stages of ant control during the first quantification period were:

- Pre-planting control: In the lots selected for execution of the task, the first was started with the first one before soil preparation and the second one, days before planting.
    - First control: Prior to soil tillage
    - Second control: days before planting
- Post-planting control: A third control was carried out during planting. For this, the operator entered by line, which took into account the area covered to his left and right in order to detect nests, rails or damaged plants that indicated activity of leaf cutter ants.

  Fourth control: It was carried out after planting. Following the same methodology as the third control.

- Maintenance control: The first maintenance control was carried out 30 and 40 days after the last control. For the application, each operator took into account the area covered to his left and right in order to detect nests, rails or damaged plants that indicated leafcutter ant activity.

- Management: Covers plantations older than three years up to clear-cutting. In this case, periodic controls were carried out, depending on the area and the level of infestation, with two to three passes per year. In the case of large YSA'U (Atta) nests, this treatment was carried out in active anthills where first the main mouth of the anthill was identified and then the bait was placed using dosifiers at a rate of 10 to 12 gr/m2 of anthill.

- Time of application - weather conditions
    - Temperature: The ants are active outside the nest when the temperature is between 0°C and 35°C, with higher intensity between 15°C and 22°C. When the temperature is above 20°C they prefer to work at night. In winter they prefer the daytime period between 9:00 am and 4:00 pm.
    - Humidity: baits were placed with relative humidity below 70%.
    - The baits were placed directly, in bulk, on the sides of the foraging paths of the anthills, in conditions of low relative humidity to prevent the product from gassing and annulling its action. The

application of bulk baits has the disadvantage that since the product remains exposed to the environment, it is susceptible to decomposition by rainfall.

- Quality inspection
    - After a prudent period of time (8 to 10 days), the person in charge of the Contractor's Operational Unit reviewed the places where the combat group passed, in order to detect possible faults in the application, and corrections were made in sectors where a control failure was detected.
    - The person in charge of Desarrollos Madereros S.A. finally verified the results obtained in the field within 10 to 15 days after the execution and proceeded to receive the task.

- Control and verification mechanism
    - In order to verify compliance with the Operating Procedure, the supervisor conducted a tour of the plots where the application of agrochemicals (ant bait) was being carried out, prior to the end of the activities.
    - If non-compliance was detected, it was documented in a "Corrective Action Request" booklet. These were filed with the Forestry offices once the requirements had been met.
    - Corrective actions aimed at mitigating or attenuating the impacts or risks produced by non-compliance with the stipulations of the operating procedures, the preparation and verification of compliance was the responsibility of the Area Manager. In this quantification period there was no request for corrective action for this task.
    - The original Work Order was kept on file for at least five (5) years at the Forestry office. A copy of this document was given to the Operational Unit Managers (Contractor), who had it available at the place where the operations were executed until the total completion of the works foreseen in this document.

d. Risks Associated With Winds

During the current quantification period, no wind damage to the plantations was recorded. The mitigation measure adopted to reduce the degree of impact of this risk is that the plantations that make up the current project were carried out in the vicinity of natural barriers.

2) **Financial Risks**

a. **Risks associated with the resources insured for the establishment of the project**

During the current quantification period, no financial event occurred that would have jeopardized the resources for the establishment of the project, which has been demonstrated in the project execution schedule tables 2 to 5.

b. **Risks associated with insured resources for the maintenance of the project**

During the current quantification period no financial event occurred that would have put at risk the resources for the maintenance of the project, which has been demonstrated in the project execution schedule Tables 4 and 7.

c. **Risks associated with the financial capacity of the project holder.**

During the current quantification period there were no financial events that would have put the current project at risk. DMSA has more than 20 years of forestry activity in the regions where the current project is being developed, as the proponent and sole financier of the project, has a forestry patrimony of more than 8.500 hectares which are standardized. All investments in plantations are historically made with its own funds that come not only from forestry activities, but also from other production activities. DMSA has also developed a forestry management plan, in compliance with FSC requirements, which includes a 10-year projection of all the activities to be carried out.

In the last decade, DMSA's fiscal year has been positive, which has allowed it to have sufficient funds to face the planting of the current project area, maintenance and to face any type of contingencies and ensure solvency for the next quantification periods.

3) Social Risks

a. Land Disputes

During the current quantification period, there were no social problems that could have had a negative impact on this project. DMSA owns all of the land, which is 100% titled and duly registered with the General Directorate of Public Registries. DMSA's land tenure dates back more than 20 years. Table 42 presented in Section 7 specifies how long the company has held title to these lands, which affirms that the project plots are not under dispute by ethnic groups and/or local traditional communities. The original documents are attached in the supporting documentation folder[42] .

In order to prove the ownership of the land (real estate), a request must be made to the General Directorate of Public Registries for a certificate called "report of ownership conditions". The competent professional to make the request is a Notary Public who must have the title deed and complete the certificate following the guidelines therein. It informs about the ownership of the real estate and everything that affects it, and it has no expiration date.

b. Political Risks

There were no events associated with political risks during the monitoring period.

[42] Supplementary documentation folder and subfolder 02 Titles and Condition of Ownership.

c. Opportunity Cost

There were no events associated with opportunity cost risks. DMSA has been involved in forestry activities for more than 20 years and decided to include carbon credit projects as part of its business unit. During the monitoring period DMSA did not consider developing any activities other than reforestation.

Monitoring of Project Implementation Activities

1) Project Boundary Monitoring

The monitoring of the project boundaries was carried out in May 2023, using GPS and GIS software as a tool and field work, the project boundaries were verified and no variations from those originally established in the PD were found. Carried out by the R&D manager.

2) Monitoring the Execution of Project Activities

The follow-up and control of the activities carried out during the quantification period are detailed below.

The responsibility for silvicultural activities was the responsibility of the Chief of Operations, who carried out the execution, control, approval or rejection of the work performed by service providers and the company's own personnel, in compliance with the Operating Procedure Manual prepared by Desarrollos Madereros S.A. The record was kept in digital format and the physical copy was kept at the company.

- Nursery: The activities were carried out during the entire period, the annual planting goals were met, work orders were issued monthly with details of the different tasks, the tasks were closed monthly and compliance with them was supervised daily by the Nursery Manager, together with the R&D

Manager. All the seedlings required for the establishment of the plantations in the area of this project were delivered.

- Soil preparation: Soil preparation was carried out prior to planting. A work order was prepared for the contractor company that performed the task in the fields detailed in the following table. On the same day that the batch activity was completed, the operating supervisor verified and approved the task, complying with the specifications described in the operating procedure. In this way, the plan for this project was fulfilled (see table 4, section 1). The progress of this activity by farm is presented below.

Table 36. Soil Preparation Date.

Execution Year	Tapytá Farm Area (ha)	Hernandarias Farm Area (ha)
2018	0,0	13,43
2019	16,49	85,98
2020	0,0	3,02
2021	0,0	0,0
2022	17,53	0,0

Source: DMSA, 2023.

- Planting and Fertilization: these activities were executed by means of a work order to the contractor, who followed the technical instructions expressed in the operating procedure manual. Verification and approval of the tasks is carried out through the accompaniment of operational supervisors during the execution of the work on site. The PD plan was complied with, as shown in tables 4 and 5, section 1.5. The progress of this activity for each stay is presented below.

Table 37. Planting Date and Fertilization.

Field	Year Planted	Planted Species	Area Planted and Fertilized
Hernandarias	2018	*Eucalyptus grandis x urophylla*	13,43
	2019	*Eucalyptus grandis*	32,14

Field	Year Planted	Planted Species	Area Planted and Fertilized
		Eucalyptus grandis x camaldulensis	4,42
		Eucalyptus grandis x urophylla	49,42
	2020	*Eucalyptus grandis x urophylla*	3,02
Total, Hernandarias			**102,43**
Tapytá	2019	*Eucalyptus grandis x camaldulensis*	13,20
		Eucalyptus grandis x urophylla	3,29
	2022	*Eucalyptus grandis x urophylla*	17,53
Total, Tapytá			**34,02**
Total, General			**136,45**

Source: DMSA, 2023.

- Weed Control: The annual plan for each of the years of the project was fulfilled (13,43 ha in 2018; 102,47 ha in 2019; 3,02 ha in 2020; 17,53 ha in 2022; thus reaching 136,45 hectares planted). This was carried out with work orders executed by contractors. Pre-planting and seven post-planting checks were carried out in the 24 months after planting. Each intervention was verified in the field by supervisors from the operations area 8 to 10 days after the activity was carried out (see Table 4, Section 1.5).

- Pest control: was executed with work orders issued by DMSA's operational manager for the contractor. Once prior to planting and every 4 months after planting, applying the control technique described in the PD, reducing the degree of infestation throughout the forest crop cycle. The verification and effectiveness of the controls was carried out 10 days after the execution of the activity by DMSA's operational supervisor (see the number of ha with ant control in Table 4, Section 1.5 during the monitoring period).

- Pruning: Pruning was performed as follows: 5 levels of pruning to trees planted in the years 2018 to 2020 and 2 level to those planted in the year 2022, starting 9 months after planting, with an interval between pruning level of 3 months. They were carried out by means of work orders. The supervision and control for the acceptance of work was in charge of the person responsible for the DMSA operational area.

- Relationship with the community: Section 11 of this document provides details of DMSA's relationship with the communities. The person responsible for this task is the head of FSC, who followed up on each of the actions in accordance with the social management plan.

3) **Crop management and biomass growth monitoring.**

Crop management monitoring during the present quantification period was carried out every 15 days with the work teams in charge of the operations area. Biomass growth was monitored and recorded. In this way, the requirements that the plantation needed were identified, such as: weed control, pruning, pests and firebreak conditions. The biomass evolution was monitored through two permanent plots of 1.000 m2 each installed in the first year after planting. The following dasometric parameters were measured annually in June/July: diameter at breast height, total height, stem straightness and health. These data were analyzed with the objective of verifying if the growth complied with the projections. In the current quantification period, the difference between projected and actual growth was less than 5%.

- **Stratification:** The strata were duly defined in the PD and were not modified as of the date of preparation of this monitoring report. The variables considered to determine the number of strata were: species types and combinations, planting density and spacing, and year of planting, while topography and soil type are considered indirectly with the species planted given their linkage. The amount and composition of the strata can be found in section 3.7.2 of the PD. The strata and field sampling design were subject to pre-verification checks, with trained personnel in charge of R&D, using

calibrated measurement equipment. The head of R&D was responsible for monitoring this task and ensuring that it was carried out correctly.

- **Size of the plots or sampling units:** The size of the temporary sampling plots was 400 square meters in a circular shape, complying with section 16.3.1.3 of the BCR0001 methodology version 4.0. Details of the composition of the sampling plots can be found in section 15.1 of this document. Before each verification, this task will be followed up. The follow-up in this activity and its correct fulfillment was in charge of the R&D manager. The strata and field sampling design were controlled prior to verification, with trained personnel in charge of R&D, using calibrated measuring equipment. For the sampling design, ArcMap software was used to create random points within the polygons of each stratum. The verification of this activity in the field was carried out at the beginning and end of the activity by the R&D Manager.

- **Sample size:** The size of the temporary sampling plots was 400 square meters circular in shape (11,28 m radius) in compliance with section 16.3.1.3 of BCR0001 methodology version 4.0. The verification of the plot sizes in the field was carried out by the R&D Manager at the beginning and during the measurements performed for this quantification period.

- **Calculation of the number of plots:** Temporary plots were selected to comply with the good practices recommended in the selected methodology BCR0001 version 4.0. The allocation of plots is recorded in a GIS and can always be located. Equation 23 of section 16.3.1.4 of BCR0001 methodology version 4.0 was used to calculate the number of temporary sampling plots (see details in section 15.1 of this document). The person in charge of following up on this activity and ensuring proper compliance was the R&D manager. The strata and field sampling design were subject to pre-verification controls by trained personnel in charge of R&D, using calibrated measurement equipment.

- **Location of the plots in the field:** The location of the center of the sampling plots was geo-referenced with GPS and assigned a number. This activity was carried out by DMSA R&D work teams.

Table 38. Location of Project Plots.

TSP Number	Latitude	Length
2168	-25,3679	-54,7013
2169	-25,3715	-54,6987
2170	-25,3525	-54,7672
2173	-25,3482	-54,7711
2175	-25,3577	-54,7689
2176	-25,3578	-54,7718
2180	-25,3570	-54,7833
2181	-25,3539	-54,7862
2182	-25,3540	-54,7847
2183	-25,3542	-54,7815
2184	-25,3546	-54,7792
2165	-25,3630	-54,7782
2185	-25,3569	-54,7801
2164	-25,3468	-54,7664
20105	-26,2047	-55,7664
20104	-26,2100	-55,7653
20077	-26,2084	-55,7806
20098	-26,2095	-55,7799
2143	-25,3514	-54,7683
2177	-25,3596	-54,7824

Source: DMSA, 2023.

- **Measurement and estimation of changes in carbon content:** The current project carried out the validation and verification simultaneously. A scientific software called PlaForNEA was used to prepare the PD for the ex-ante projection of plantation growth and volume. For verification, an allometric equation (see section 15.1 of this document) and field measurements were used to calculate CO removals$_2$. For all the following verifications the monitoring will be performed using the mentioned allometric equation and field data for the estimation. Field measurements were performed by DMSA R&D teams.

- **Monitoring of quantification of removals:** Monitoring of the quantification of removals was conducted in July 2023 prior to verification. The person in charge of monitoring this activity and ensuring proper compliance was the head of R&D at DMSA. The strata and field sampling design was carried out prior to the measurements and verification, with trained personnel in charge of R&D, using calibrated measurement equipment. A total of 20 circular plots of 400 square meters in 6 strata were measured.

- **Verification of field data:** Advanced measuring equipment was used (e.g., graduated metal tape for measuring DBH, Vertex IV for measuring height and distances, and GPS, among others). Prior to field measurements, the condition and calibration of the measuring equipment was checked and monitored by the R&D manager. The data were compiled in templates that were then digitally transcribed. In the event of a data inconsistency between the 2 formats, the physical template will prevail. This was done prior to verification.

- **Review of data processing:** A follow-up and review of all the data recording sheets was carried out in the field. This was done by the head of R&D, who went to the field where the measurements were taken and randomly took his own measurements (following the same protocol and with the same equipment) covering between 10% - 20% of the sampling to corroborate the data. There was no deviation greater than 5%. If there had

been an error exceeding 5%, the entire measurement would have been redone from scratch in compliance with the protocol. This process was carried out within 5 days of delivery of the form.

- **Quality control and quality assurance data recording and archiving system:** Following DMSA's Backup Procedures Plan, DMSA's Administration area was responsible for the safekeeping and security of the data files. This data will be kept in safekeeping for at least 2 years after the last accreditation period of the project in compliance with section 17.5.3 of the BCR0001 V4.0 methodology. The review of the correct registration and data archiving system shall be performed by the administration area once a year.

4) Monitoring How Double Counting Is Avoided

One more of the project activities is the periodic control of not incurring in double counting of carbon sequestration, according to the BCR Tool Avoiding Double Counting V2.0. The causes of potential double counting of a project's CO removals$_2$ may be those indicated in section 7 of the tool, and it is verified that none of them have been incurred:

a. A ton of CO_2 is counted more than once to demonstrate compliance with the same GHG mitigation target.

As specified in section 1.4 Project location and project boundaries, there is no geographic overlap of this project with other carbon projects. Something that, on the other hand, would be improper because the exclusive ownership of the land of this project is that of the proponent, DMSA.

For the current monitoring period (December 2018-May 2023) was verifying that there are no geographic overlaps with the projects listed on the main platforms, that cover more than 90% of credits issuance worldwide[43]:

[43] https://vcmprimer.org/wp-content/uploads/2023/10/figure7.2-1.png?w=1024

- BioCarbon Registry: the only project is this one, BCR-PY-451-14-001
- VERRA: there are 14 registered projects in Paraguay [44]
- Gold Standard: no projects registered in Paraguay[45]
- Cer Carbono: no projects registered in Paraguay[46]
- Puro Earth: no projects registered in Paraguay[47]
- Global Carbon Council: no projects registered in Paraguay[48]
- Clean Development Mechanism: no projects registered in Paraguay[49]
- Plan Vivo: no projects registered in Paraguay[50]
- Climate action reserve: this standard has not developed a protocol for Paraguay[51]

On the other hand, given that in the period covered by this monitoring this project had not yet generated VCCs, and these credits have not been transacted, and this risk of double counting by end users of the credits has not materialized, since there are still no end users who can argue that they have used and withdrawn catches generated by this project to meet their mitigation objectives.

b. One ton of CO_2 is counted to demonstrate compliance with more than one GHG mitigation target.

As with the previous double-counting risk, this being the first monitoring, no VCCs backed by the catches of this project have yet been placed on the market, and therefore this double-counting risk has not materialized.

c. One ton of CO_2 is used more than once for remuneration, benefits or incentives.

[44] https://registry.verra.org/app/search/VCS/All%20Projects
[45] https://registry.goldstandard.org/projects?q=&page=1&countries=PY&project_types=22
[46] https://www.ecoregistry.io/projects
[47] https://registry.puro.earth/carbon-sequestration/projects
[48] https://projects.globalcarboncouncil.com/pages/approved_projects
[49] https://offset.climateneutralnow.org/reforestation-and-afforestation
[50] https://www.planvivo.org/pages/category/projects?Take=4
[51] https://www.arcgis.com/apps/dashboards/e2f5c6180f504obfbdd418a0a04824c8

The same response applies as for the two previous double-counting risks, this being the first monitoring, no VCCs have been placed on the market backed by the catches of this project, and therefore this double-counting risk has not materialized.

d. A ton of CO_2 is verified, certified or credited by assigning more than one series to a single mitigation result.

Again, as no VCCs backed by the catches from this project have been placed on the market, this risk of double counting has not materialized.

Uncertainty Management

At all times the data to be used for the measurement of GHG emission reductions in the project scenario will follow the "conservative approach" principle. In turn, for the verification of the corporate GHG inventory, a level of accuracy and materiality of 95% will be guaranteed.

To meet the objective of maintaining the 95% level of accuracy and materiality, DMSA adopts the following procedures:

- Planning tasks prior to the field inventory: Training of the team to carry out the corresponding measurements, preparation of the necessary inputs, field data recording form, maps, preparation of strata, generation of randomized sampling points in ArcMap, review of the condition and calibration of the necessary measuring instruments and tools. Determination of sampling intensity, which was 0,59% on average, totaling 20 circular plots of 400 m^2 (11,28 m radius) in 136,4 ha.

- Execution of the measurements: Field measurements were carried out where the main activities were: revision of size of the strata that did not undergo modifications. Establishment of the sampling plots. A GPS was used to load the planned points for the center of the sampling. Upon reaching the point indicated by the GPS, the plot was defined, starting with the installation of a wooden stake marked with the numbering of the sampling point. Then the north orientation was defined and the trees within a radius of 11,28 meters from the fixed center were numbered. The

distance between each tree and the center of the plot was measured, numbers were also generated for each tree and all were recorded in a spreadsheet, DBH was measured in centimeters at 1,3 meters from the ground leaving marks with paint in the section where the measurements were taken, the same were made with Lufkin diametric tape, the precision of the measurement indicated by the manufacturer is +/- 0,5%.

- Total height and pruning height in meters were measured using a Vertex IV digital hypsometer with an accuracy range of +/- 4cm at 90 meters. All data were recorded in a field sheet.

- Quality control of the data obtained was carried out by checking all the parameters measured at 20% of the samples where the variations were low and did not exceed 0,5% deviation.

- Digitization: It was loaded in digital format in excel for filtering, 100% of the data was reviewed and compared to those captured in the field, 3 parameters were detected with wrong typing and were corrected for subsequent dasometric and volumetric calculations.

- Data analysis: Data analysis was performed in the office using allometric equations defined in the PD providing results of basal areas, volumes, number of trees extrapolated to hectares, also average diameter at breast height, height and others.

The head of R&D was responsible for the follow-up. This data processing was carried out in June and July 2023.

14.2 Revision of Monitoring Plan

This monitoring report was duly reviewed by the entire DMSA technical and professional team, which approved it on 2023/11/17.

14.3 Request for Deviation Applied to this Monitoring Period

There were no deviations in the execution of the project with respect to what was planned in the Projevt design document.

14.4 Notification or Request of Approval of Changes

No notifications of changes have been requested or received from the GHG Program.

15 Monitoring System

15.1 Description of the Monitoring Plan

The following is a description of the monitoring plan applied during this quantification period

a. Data and information to estimate GHG reductions or removals during the quantification period.

The monitoring system for the measurement of biomass and removals during the quantification period of the project consisted of a stratified random sampling with temporary plots. Its main elements were:

Stratified Random Sampling - Time Plots

Temporary plots were selected to comply with the good practices recommended in the selected methodology BCR0001 version 4.0. Plot allocation is recorded in a GIS and can always be located. Equation 23 of section 17.3.1.4 of BCR0001 methodology version 4.0 was used to calculate the number of temporary sampling plots.

- Sampling intensity: A value of 0,5% was used, complying with the provisions of section 17.3.1.4 of BCR0001 methodology version 4.0.

- Size of the temporary sampling plots: The sampling plots used were 400 m^2 complying with the provisions of section 17.3.1.3 of the BCR0001 methodology version 4.0.

- Stratification: The strata used were those determined in the PD having complied with the totality of what had been guideline to be done in time and form. In total for the current quantification period there are 6 strata

whose dimensions can be seen in Table 1 of Section 1 of this document. Strata 7 and 8 were not planted at the date of preparation of this monitoring report, therefore, they were not considered for the CO_2 capture calculations of this first quantification period.

- The variables considered for the determination and number of strata were the types and combinations of species, density, planting distances and year of planting. On the other hand, topography and soil type were indirectly considered with the species planted given their linkage. For the genus *Eucalyptus, the* three species *E. grandis*, hybrid (*E. grandis* x *E. urophylla*) and hybrid *(E.grandis x E.camaldulensis)* were considered.

  As planned in the PD, there were five planting years in total. Thus, plantings were carried out in the following years: 2018, 2019, 2020, 2022. In the spring of 2023, it is planned to plant strata 7 and 8 and at the time of submitting this monitoring report they had not been planted and therefore have not been considered for the CO2 capture of the current quantification period.

  The planting density for this first quantification period was 501 trees per hectare. Taking into account the aforementioned criteria, 6 strata were defined (considered for the calculation of CO2 capture for the current quantification period). Each of these strata was duly measured with GPS and processed in GIS to determine its area. Therefore, the stratification of the project will be as follows:

Table 39. Stratum Composition.

Stratum	Year Planted	Species	Area (Ha)	Location	Execution Result
1	2018	*Eucalyptus grandis x urophylla*	13,43	Hernandarias	100% executed
2	2019	*Eucalyptus grandis*	32,14	Hernandarias	100% executed
3	2019	*Eucalyptus grandis x camaldulensis*	17,62	Hernandarias and Tapytá	100% executed

Stratum	Year Planted	Species	Area (Ha)	Location	Execution Result
4	2019	*Eucalyptus grandis x urophylla*	52,71	Hernandarias and Tapytá	100% executed
5	2020	*Eucalyptus grandis x urophylla*	3,02	Hernandarias	100% executed
6	2022	*Eucalyptus grandis x urophylla*	17,53	Hernandarias	100% executed
Total			**136,45**		

* Strata 7 and 8 were not included as they were not planted as of the closing date of this monitoring, 2023/05/15, and therefore are not part of the current quantification period.
Source: DMSA, 2023.

- Installation of temporary plots and measurement of trees: The ArcMap program was used to determine the center of the sample plot. The center of each sample plot was randomly generated. This coordinate was loaded into the GPS for the location in the field. Once the center of the plot was located, a wooden stake was nailed to this point.

  By means of another stake placed in a position visible from the center of the plot (between 10 and 15 m), the north course was defined. From this direction, the trees were numbered clockwise, taking as a second criterion from the outside to the inside. This correlative numbering was done with easy-to-see paints with prolonged permanence for each tree.

  The general information of the plot, squares, date of measurement, etc. was recorded in a spreadsheet. And for each tree, the distance in meters and azimuth, having as zero origin the center of the plot. All trees that reached the size for DBH measurement were painted with paint in the form of a ring or point at a height of 1,30 m from the immediate floor (ground). The tape for the successive DBH measurements (diameter at breast height) was positioned on this ring.

  In this way, using equation 23 of section 17.3.1.4 of the BCR0001 Version 4.0 methodology and the aforementioned parameters, the temporary sample plots were constituted (The development for each stratum using

this equation can be seen in the attached spreadsheet). For conservative reasons, when the first decimal place of the equation result is greater than 2, it is rounded up and one more sample plot is added. The number of plots collected per stratum is presented in Table 27, as well as the equation used below.

$$Amount\ of\ sampling\ plots = \frac{Size\ of\ each\ stratum * 10000\ m^2 * Sampling\ intensity}{400\ m^2}$$

Table 40. Number of Sampling Plots Per Stratum.

Stratum	Year of Planting	Species	Area (ha)	Number of Sample Plots
1	2018	*Eucalyptus spp.* + Native (year 2024 onwards)	13,43	2
2	2019	*Eucalyptus spp.* + Native (year 2025 onwards)	32,14	4
3	2019	*Eucalyptus spp.* + Native (year 2025 onwards)	17,62	3
4	2019	*Eucalyptus spp.* + Native (year 2025 onwards)	52,71	8
5	2020	*Eucalyptus spp.* + Native (year 2026 onwards)	3,02	1
6	2022	*Eucalyptus spp.* + Native (year 2028 onwards)	17,53	2
Total			**136,45**	**20**

Source: DMSA, 2023.

Tree Density Per Hectare

The determination of tree density per hectare was developed using temporary sampling plots. The number of trees within the sampling plot was manually enumerated and using the following equation the number of trees per hectare was determined:

$$Trees\ per\ hectare = \frac{Amount\ of\ trees\ counted\ in\ the\ plot}{400\ m^2} * 10000\ m^2$$

1 hectare is equal to 10000 m².

The sampling plots are 400 m² which is equal to 0,04 hectares.

Using a simple rule of three:
1 tree ---------- 400 m²
X trees --------- 1000 m²

This value of 25 should be multiplied by the number of numbered trees within the sample plot and the density of trees per hectare is determined. Thus, the density of trees per hectare per stratum is:

$$x\ trees = \frac{1\ tree * 10000\ m^2}{400\ m^2}$$

Table 41. Density of Trees Per Hectare.

Stratum	Year of Planting	Area (ha)	Year of Monitoring	Tree Density Per ha
1	2018	13,43	2023	488
2	2019	32,14	2023	425
3	2019	13,62	2023	383
4	2019	52,71	2023	394
5	2020	3,02	2023	500
6	2022	17,53	2023	500

Source: DMSA, 2023.

Average Tree Volume Per Stratum

In order to obtain the most accurate value possible, a specific allometric equation was used in this monitoring report to determine the volume of a tree over the analysis period.

The allometric equation[52] used is:

[52] https://crea.org.py/wp-content/uploads/2020/12/CF-Manual-para-la-medicion-de-pla-ntaciones-forestales-version-2.pdf

$$V = DBH^2 * \frac{\pi}{4} * HT * FF$$

Where,

V = Volume in m^3
DBH = Diameter at breast height in meters
π = 3,1416 (π/4 = 0,7854)
HT = Total height in meters
FF = Form factor = 0,4

Using this equation for the area of the project, the following values of volume per tree are obtained for each of the strata that make up the project. The details of the calculations made for each stratum and each plot using this equation can be found in the attached Excel file:

Table 42. Average Individual Tree Volume Per Stratum.

Stratum	Year of Planting	Year of Monitoring	Average Volume per Individual m^3
1	2018	2023	0,261
2	2019	2023	0,179
3	2019	2023	0,156
4	2019	2023	0,238
5	2020	2023	0,080
6	2022	2023	0,005

Source: DMSA, 2023.

Wood Density

For the density value of *Eucalyptus spp.* (0,51 g/cm^3) we used the value from the Greenhouse Gas Inventory Guideline Table 4.13 corresponding to *Eucalyptus*

robusta (America), from the IPCC 2006 guidelines[53]. Guide used by the government of Paraguay for the preparation of its greenhouse gas inventory.

Biomass Expansion Factor

Regarding the biomass expansion factor for the conversion of biomass from tree stem to aboveground whole-tree biomass, the data for the species used are those provided in Table 3A.1.10 by the default tables in Annex 3A.1 Biomass of section 3.2 Forest Land of the IPCC Guidelines (2005)[54] for National Greenhouse Gas Inventories, which is the one used by the government of Paraguay for the development of its greenhouse gas inventory. For conservative purposes, the lowest value for tropical forests is used:

Eucalyptus spp.: 2

Carbon Fraction Biomass

The carbon fraction for all tree species, the default value of 0,47 is used according to the IPCC 2006 Greenhouse Gas Inventory Guideline Table 4.3.

Root/shoot Ratio of Tree Species (Root/shoot)

The data used are those provided in Table 3A.1.8 by the IPPC Annex 3A.1 Biomass default tables for IPPC Annex 3A.1 for Section 3.2 Forest Land of the 2005 IPCC Guidelines for National Greenhouse Gas Inventories. The IPCC Guidelines suggest a mean root/shoot ratio in intervals that depend on aboveground biomass. For this purpose, Table 3.A.1.8 of the IPCC Guidelines (2005)[55] was used. For *Eucalyptu spp.* the values of the table corresponding to "*Eucalyptus* plantations" were used. This is the one used by the government of Paraguay for the elaboration of its greenhouse gas inventory.

Therefore, the values to be used in the current project in this quantification stage will be:

[53] https://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/4_Volume4/V4_04_Ch4_Forest_Land.pdf
[54] https://www.ipcc-nggip.iges.or.jp/public/gpglulucf/gpglulucf_files/Chp3/Anx_3A_1_Data_Tables.pdf
[55] https://www.ipcc-nggip.iges.or.jp/public/gpglulucf/gpglulucf_files/Chp3/Anx_3A_1_Data_Tables.pdf

Table 43. Root/shoot Ratio for *Eucalyptus spp.* From the Project.

Root/shoot ratio (R;%)		
Source / Link	IPCC 2005- Table 3.A.1.8	
Source data	Eucalypt plantation/forest	
Value /unit	0,29	b<50 t.d.m/ha
Value /unit	0,15	50-150 t.d.m /ha
Value /unit	0,1	b>150 t.d.m /ha

Source: IPCC, 2005.

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

In order to consider GHG removals, in the baseline scenario, the cover in the project area must be considered. According to the methodological tool, TOOL 14 "Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R Project Activities" version 04.2 carbon removals in the baseline scenario can be counted as zero, if the following conditions are met:

1. Trees existing prior to the establishment of the project are not harvested, felled or removed during the crediting period of the project activity;
2. Trees existing prior to project establishment do not suffer mortality due to competition from trees planted in the project, or damage due to the implementation of the project activity, at any time during the crediting period of the project activity;
3. Trees present before the start of the project activity are not included with the project trees in the monitoring (and quantification) of carbon stocks.

As demonstrated in the previous sections, the baseline is the continuation of extensive cattle ranching, which is the historical land use. In the absence of the proposed project activity, this area would remain low-quality land with some scattered grasses and shrubs. As for existing trees in the project area, they are very few and far between. These few trees present in the project area will not be felled, cleared, or removed. They will not suffer mortality due to competition with trees planted in the project, nor damage due to the implementation of the project activity and will not be inventoried along with the project trees in the monitoring

of carbon stocks, but will be monitored for their continued existence, consistent with the baseline scenario, all throughout the crediting period of the project activity. In conclusion, carbon stocks and carbon stock changes in the baseline scenario can be considered zero.

In addition, the carbon stock of dead wood and litter will not increase in the baseline scenario. Finally, the carbon stock change in soil organic carbon can be conservatively considered to be zero, as it is unlikely to increase in the extensive baseline.

In summary and based on the IPCC Good Practice Guidance for Land Use, Land Use Change and Forestry (2003), considering that the identified baseline scenario activity has been the same for at least 15 years, net GHG removals by sinks in the baseline are assumed to be Zero.

$$CBSL, t = \mathbf{0}$$

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

   Section 16.3 of this document demonstrates how there was no leakage at the beginning of the project because the existing livestock in the project area were all destined for the slaughterhouse. Sales invoices are included in Annex 2.

   It is also important to note that, due to the nature of this project (forestation project), the project activities do not generate emissions outside the project boundaries.

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

   The project converted an area of low production, where extensive cattle ranching was carried out, into a forestation that contributes positively to mitigating the advance of climate change by capturing carbon dioxide from the atmosphere. In this project, plantations of the *Eucalyptus* genus were carried out with low environmental impact techniques, using sustainable management

practices considering the DMSA Forest Management Plan under FSC certification, and complying with Law No. 422/73[56] and Law No. 536/95[57] . It also implies that the design, planting and maintenance of the forest were carried out through a sustainable forest management program avoiding negative impacts on biodiversity, local communities and the water balance of the watersheds.

The reforestation project activity developed in soils degraded by cattle ranching with suboptimal quality for forestation has environmental studies developed for both estancias: Hernandarias and Tapytá. The studies come from the Environmental Impact Study[58] developed by DMSA and approved by the Secretariat of the Environment (currently the Ministry of the Environment and Sustainable Development).

Hernandarias and Tapytá Farms

Impact on Geomorphology

The degree to which the project affected geomorphology for this report was low. Potential impacts were related to morphological and topographical modifications, such as erosion and/or sediment accumulation in land preparation, road and firebreak maintenance. The first stage of the new planting is the period of least soil cover. During this time, no sediments were washed away by rain and there was no significant erosion.

Impact on Water Resources

The degree of impact of the project on water resources was low. From the start of the project to date, there have been no alterations or modifications to surface water quality. To this end, the operations and procedures for handling phytosanitary products and hydrocarbons throughout the production process

[56] https://www.ecolex.org/es/details/legislation/ley-no-42273-ley-forestal-lex-faoc023975/.

[57] https://www.ecolex.org/es/details/legislation/ley-no-53695-ley-de-fomento-a-la-forestacion-y-reforestacion-lex-faoc017512/

[58] Environmental Impact Assessment Study. Main Report/October.2000 / submitted and approved by SEAM/ environmental impact statement N° 32/01 dated 2001/03/23.

as of the date of this report, as well as the management of waste from forestry operations, were carried out within the standards.

Soil Impact

The degree to which the project affected the soil was low in terms of the use of this resource and the potential disturbance that could occur. During weed control, potential disturbance could occur due to spills resulting from improper use of agrochemicals. During the reporting period, there were no spills due to the responsible and appropriate use of these inputs. On the other hand, the soils did not suffer hydrocarbon spills from machinery during operations, nor did they suffer erosion on roads and firebreaks. This was due to the application of the preventive measures described in the operating procedures.

Impact to Flora, Fauna and Landscape

The impacts on these factors varied in intensity over time:

Flora and Landscape

The strata planted in the first 2 years had a medium impact, due to the soil preparation and subsequent planting where weed controls were carried out in a directed or partial manner. After 2 years, no more weed controls were carried out, which allowed the appearance of shrub species typical of the area.

Fauna

Wildlife constitutes the factor of greatest environmental mobility and least predictability due to its variable requirements throughout its life cycle, growth phases, and difficulty of observation. Undoubtedly, their abundance and biodiversity are directly linked to the physical spaces of the habitat. Impacts to fauna were minimized through the efficient use of machinery in the project area, by using minimum tillage in strips of 1 to 2 m, reducing the number of hours of preparation and intensity versus soil preparation in an area of 100%, in order to reduce impacts on fauna due to noise and thus scaring them away. At the same time, FSC principles are followed to reduce impacts on fauna, for example, hunting and commercialization of fauna is prohibited on both farms.

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

General Instructions on Data Collection

A follow-up and review of all the data recording sheets was carried out in the field. This was done by the head of R&D, who went to the field where the measurements were taken and randomly made his own measurements (following the same protocol and with the same equipment). He covered 20% of the sampling. There was no deviation greater than 0,5%. There was no need to repeat all the measurements because the data were consistent. This process was carried out within 3 days after the delivery of the field record sheet.

Data Recording and Archiving System

The company has a backup procedure to ensure the availability and proper protection of information. These standards and procedures were applied to all the information stored in the company's servers.

The DMSA Backup Procedures Plan was followed and the DMSA Administration area was responsible for the safekeeping and security of the data files. These data files will be kept in safekeeping for at least 2 years after the last accreditation period of the project in compliance with section 17.5.3 of the BCR0001 V4.0 methodology. The review of the correct registration and data archiving system was performed by the administration area once a year.

A quality control system was implemented where the consistency, correctness and completeness of the data were checked every two weeks to identify and correct errors and omissions, and then the data and documentation related to the monitoring activities were properly documented and archived. These measures ensured the quality of the data, records and the safekeeping of the documentation related to this project.

Standard Operating Procedure

The Operational Procedure (OP) developed by DMSA was used for the establishment of temporary sampling plots. The location of the plots applied to the polygons that formed the strata was generated with the ArcMap program

through the tool *Sampling: Create random points;* and the data were transferred to the GPS to find the location in the field. This avoided the subjective choice of the same (plot centers, plot reference points, movement of plot centers to more "convenient" positions).
Sampling work was carried out in compliance with the procedures established in Section 17 of the PD.

Quality Assurance and Control
Advanced measuring equipment was used (such as Vertex IV for measuring height and distances, graduated metal tape for measuring DBH, and GPS, among others). Before carrying out any measurement task, the equipment was checked to ensure that it was in good condition and calibrated. The head of R&D was in charge of the follow-up. The data were compiled in physical spreadsheets that were later digitized. In the event of inconsistency between the two formats, the physical form prevailed. This was done in June and July 2023.

Quality assurance and quality control procedures were implemented to ensure that net GHG removals by sinks were measured and monitored in an accurate, credible, verifiable and transparent manner.

The project followed the IPCC Good Practice Guidance for Land Use, Land-Use Change and Forestry (GPG). This methodology uses two types of procedures to ensure that inventory estimates and data inputs are of high quality[59][60][61]: Quality Assurance (QA) and Quality Control (QC). Since a QA/QC plan is critical to building credibility, procedures were developed that describe the QA/QC activities with a scheduled time frame from preparation to final report. The plan describes specific QA/QC procedures in addition to special QA/QC review

[59] IPCC GPG for LULUCF; Chapter 5.5 Quality assurance and quality control
[60] IPCC GPG and Uncertainty management in National GHG Inventories; Ch. 8 QA and QC
[61] IPCC GPG for LULUCF; Chapter 3.2 Forest land

procedures. The QA/QC plan is an internal document for organizing, planning and implementing QA/QC activities.

- Operating Procedures (OP) which established specific procedures for each activity, such as: GIS analysis; field measurements; data entry; data documentation and data storage.
- Training courses were organized for all relevant personnel on all data collection and analysis procedures.
- Steps were taken to control errors in sampling and data analysis in order to develop a plan to measure and monitor carbon stock change in the context of the project.

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

The current project is an afforestation project and therefore belongs to the "AFOLU GHG removal activities" category. Due to the activities inherent to this type of project, periodic calculations of the project's GHG removals are not performed. This is done before each verification. Regarding leaks, section 16.3 shows that there were no leaks at the beginning of the project. At the same time, the project's operational activities do not generate any leaks.

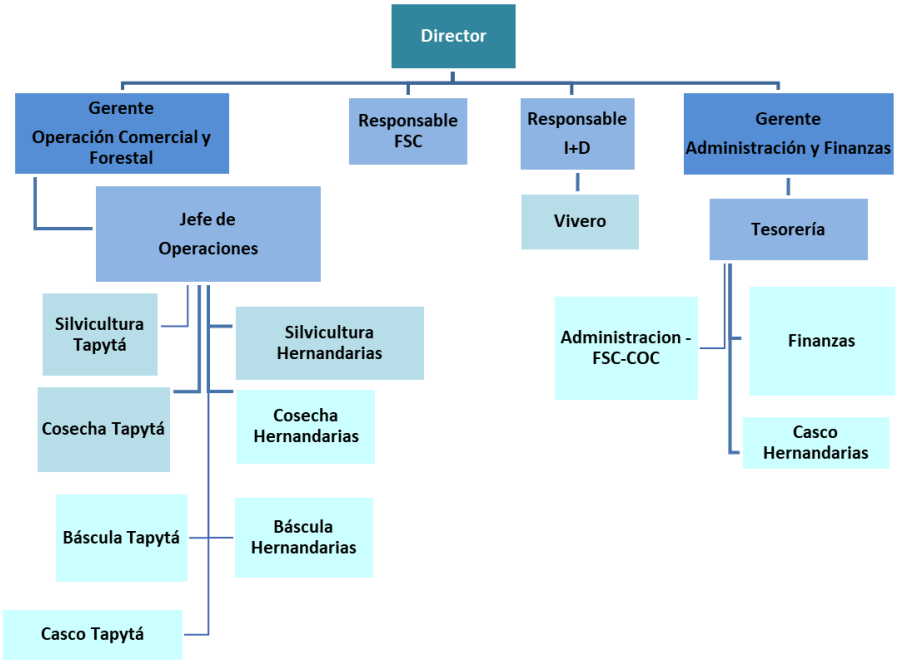
g. The assignment of roles and responsibilities for monitoring and reporting the variables relevant to the calculation of reductions or removals.

DMSA's constitution is as follows:

- **Director:** Responsible for approving the Project Document (PD) for mixed planting of native and alien species in Paraguay. Provide resources to implement and control. Ensure the permanence of the forestry activity for the duration of the project.
- **Commercial and Forestry Operations Manager:** Responsible for the commercialization of assets, and the formation and administration of plantations, from the establishment and management of plantations and the maintenance and protection of all forestry resources.

- **Research and Development (R&D)**: Responsible for the planning of management plans, cutting plans, plantation inventory, and mapping services to the operational areas. As well as activities related to pest and disease control, genetic improvement, general testing and evaluation of new projects.
- **FSC Responsible**: Responsible for ensuring the care of the environment, safety and occupational health of forestry workers in forestry operations carried out by the different operational areas and community management and sustainable management in terms of relations and communications with the community in general.
- **Management:** Responsible for achieving the maximum possible benefit for an entity. It achieves this through the organization, planning, direction and control of the resources at its disposal. These include human, economic and technological resources.
- **Contractors**: Comply with procedures, standards and instructions in force for their operations and activities. Maintain training in SGI matters, to its personnel, through authorized rapporteurs.

Figure 36. DMSA organization chart



Source: DMSA, 2023.

Assignment of Monitoring Roles and Responsibilities

The head of the Research and Development Area (R&D) was responsible for carrying out the field monitoring of tree growth. His team, composed of the head of the Area and five members of the company's technical staff, who have technical training to carry out this type of task, were responsible for carrying out the following tasks: Establishment of the temporary sampling plots, enumeration of the trees within the plots, measurement of diameter breast height, measurement of tree height, georeferencing of the sampling points and corroboration of the size of the strata. On the other hand, the GHG quantification and removal calculations were the responsibility of an external consultant.

The head of the R&D area is in charge of the measurements and information storage. Measurements will be stored digitally and physically. All data collected will be stored for at least two years after the last crediting period of the project activity, as required by the BCR0001 methodology "Quantification of GHG Removals" version 4.0.

The collection forms of the sampling plots, with the data of the collected variables of height and diameter; as well as the procedure of the calculations are available in the supplementary documentation folder[62] .

15.2 Data and Parameters to Quantify the Reduction of Emissions

15.2.1 Data and Parameters Determined at Registration and Not Monitored During the Monitoring Period, Including Default Values and Factors.

Data / Parameter	Dj
Data unit	$t.d.m^3$
Description	Basic wood density of tree species j

[62] 2024/02/15 DMSA Emission reduction ex post- monitoring report 23.08.2023.xls

Data / Parameter	Dj
Source of data used	2006 IPCC Greenhouse Gas Inventory Guidance Table 4.13 for *Eucalyptus robusta* (Americas)
Value (s)	*Eucalyptus spp.:* 0,51
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Project emission calculations ex-ante and ex-post
Justification of choice of data or description of measurement methods and procedures applied	The 2006 IPCC guidelines include a guide for greenhouse gas inventories that provides default wood density data that should be used if data from local sources are not available, as in the present case. From Table 4.13 the value corresponding to *Eucalyptus robusta* America was selected.
Additional comments	None

Data / Parameter	BEF 2,J
Data unit	No dimensions
Description	Biomass expansion factor for the conversion of trunk biomass to aboveground biomass for tree species or groups of species j
Source of data used	Table 3A.1.10 of IPCC GPG LULUCF 2005
Value (s)	*Eucalyptus spp.*: 2
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Project emission calculations ex-ante and ex-post
Justification of choice of data or description of measurement methods and procedures applied	The expansion factor value *Eucalyptus*: 2 was selected, this being the lowest value that can be selected, for conservative reasons.
Additional comments	None

<table>
<tr><td>Data / Parameter</td><td>Rj</td></tr>
<tr><td>Data unit</td><td>No dimensions</td></tr>
<tr><td>Description</td><td>Root/shoot ratio for species j Eucalyptus spp.</td></tr>
<tr><td>Source of data used</td><td>Table 3A.1.8 of the IPCC GPG LULUCF 2005.</td></tr>
<tr><td>Value (s)</td><td>
<table>
<tr><td colspan="3">Root/shoot ratio (R;%)</td></tr>
<tr><td>Source / Link</td><td colspan="2">IPCC (2006) - Table 3.A.1.8</td></tr>
<tr><td>Source data</td><td colspan="2">Eucalyptus plantation/forest</td></tr>
<tr><td>Value /unit</td><td>0,29</td><td>b<50 t.d.m/ha</td></tr>
<tr><td>Value /unit</td><td>0,15</td><td>50-150 t.d.m /ha</td></tr>
<tr><td>Value /unit</td><td>0,1</td><td>b>150 t.d.m /ha</td></tr>
</table>
</td></tr>
<tr><td>Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)</td><td>Project emission calculations ex-ante and ex-post</td></tr>
<tr><td>Justification of choice of data or description of measurement methods and procedures applied</td><td>The IPCC Guidance suggests an average root/shoot ratio in intervals that depend on aboveground biomass. This causes unrealistic jumps in what is usually a smooth tree growth model. For this reason, we have chosen to smooth the values by respecting the conservative intervals provided by the Guide. For our species of interest, three intervals are usually considered, depending on whether the biomass (t/ha) falls below, between or above certain limits. For this reason, we chose a 2-degree polynomial for the interpolation, ensuring that the resulting smoothed values still respect the conservative limits proposed in the Guide.</td></tr>
<tr><td>Additional comments</td><td>None</td></tr>
</table>

Data / Parameter	CF
Data unit	t C (t d.m.)-1
Description	Carbon fraction of tree biomass
Source of data used	2006 IPCC Greenhouse Gas Inventory Inventory Guidance Table 4.3
Value (s)	0,47
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Project emission calculations ex-ante and ex-post
Justification of choice of data or description of measurement methods and procedures applied	Default value recommended in Tool 14 "Estimation of Carbon Stocks and Carbon Stock Change of Trees and Shrubs in F/R CDM Project Activities" v.04.2
Additional comments	None

15.2.2 Data and parameters monitored

Data / Parameter	Ai
Data unit	has
Description	Area of stratum i
Measured /Calculated /Default:	Measured
Source of data	Field measurement
Value(s) of monitored parameter	see attached spreadsheet "DMS Monitoring Emission reductions
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Project emissions calculations
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	GPS (Global Positioning System) and GIS (Geographic Information System). All equipment will be calibrated before each measurement and equipment older than 5 years will not be used.

Data / Parameter	Ai
Measuring/ Reading/ Recording frequency	Before verification
Calculation method (if applicable)	SOPs from published manuals or from the IPCC GPG LULUCF 2003 have been applied.
QA/QC procedures applied	The quality control/quality assurance procedures of the IPCC GPG LULUCF 2003, point 5.5 have been applied.

Data / Parameter	$Vtree_{j,p,i}$
Data unit	m^3
Description	Stem volume with bark of species j in plot p stratum i
Measured /Calculated /Default:	Calculated
Source of data	*Field measurement*
Value(s) of monitored parameter	View Emission reduction DMSA spreadsheet values
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Calculation of project emissions
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	Measuring tape. Equipment older than 5 years will not be used.
Measuring/ Reading/ Recording frequency	Before each verification
Calculation method (if applicable)	The values of DBH, Eucalypt shape coefficient, total tree height are used (see section 16.2).
QA/QC procedures applied	The quality control/quality assurance procedures of the IPCC GPG LULUCF 2003, point 5.5 have been applied.

Data / Parameter	$A_{plot,i}$
Data unit	Ha
Description	Total area of sample plots in stratum i
Measured /Calculated /Default:	Calculated
Source of data	Field measurements
Value(s) of monitored parameter	View Emission reduction DMSA spreadsheet values
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Calculation of project emissions
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	GPS. Tape measure. Compass. Stake. All equipment will be calibrated before each measurement and equipment older than 5 years will not be used.
Measuring/ Reading/ Recording frequency	Before each verification
Calculation method (if applicable)	Standard Operating Procedures (SOPs) prescribed in the national forest inventory are applied. In the absence of these, Standard Operating Procedures (SOPs) from published manuals or from the IPCC GPG LULUCF 2003 are applied. The area of the plot was established by calculating the area of a circumference with a radius prefixed in the monitoring design. The method consists of locating the center of the plot, marking it with a stake. From the plot center, the radius is measured in horizontal projection with a tape measure, starting from a reference orientation.
QA/QC procedures applied	The quality control/quality assurance procedures of the IPCC GPG LULUCF 2003, point 5.5 have been applied.

Data / Parameter	DBH
Data unit	cm
Description	Diameter at breast height (DBH)
Measured /Calculated /Default:	calculated
Source of data	Field measurement on trees in sample plots
Value(s) of monitored parameter	See values in spreadsheet l "DMSA emission reduction".
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Calculation of project emissions
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	The diameter at breast height is measured with a diametric tape. Equipment older than 5 years shall not be used.
Measuring/ Reading/ Recording frequency	Before each verification
Calculation method (if applicable)	Standard Operating Procedures (SOPs) prescribed in the national forest inventory are applied. In the absence of these, Standard Operating Procedures (SOPs) from published manuals or the IPCC GPG LULUCF 2003 are applied.
QA/QC procedures applied	The quality control/quality assurance procedures of the IPCC GPG LULUCF 2003, point 5.5 have been applied.

Data / Parameter	H
Data unit	Meters
Description	Tree height
Measured /Calculated /Default:	Calculated
Source of data	Field measurement on trees in the sample plots

Data / Parameter	H
Value(s) of monitored parameter	See values in spreadsheet l "DMSA emission reduction".
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Calculation of project emissions
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	Depending on the particular case, one of the following three measuring devices will be used: Hypsometer or Clinometer, Vertex Dendrometer. All equipment will be calibrated before each measurement and equipment older than 5 years will not be used.
Measuring/ Reading/ Recording frequency	Before each verification
Calculation method (if applicable)	Standard Operating Procedures (SOPs) prescribed in the national forest inventory are applied. In the absence of these, Standard Operating Procedures (SOPs) from published manuals or the IPCC GPG LULUCF 2003 are applied.
QA/QC procedures applied	The quality control/quality assurance procedures of the IPCC GPG LULUCF 2003, point 5.5 have been applied.

Data / Parameter	T
Data unit	Year
Description	Time period elapsed between two successive carbon stock estimates
Measured /Calculated /Default:	Calculated
Source of data	Field measurement on trees in the sample plots
Value(s) of monitored parameter	Year

Data / Parameter	T
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Calculation of project emissions
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	NA
Measuring/ Reading/ Recording frequency	Before each verification
Calculation method (if applicable)	NA
QA/QC procedures applied	NA
Comments	If the two successive estimates of tree carbon stocks are made at different times of the year t2 and t1 (e.g., in June of year t1 and November of year t2), then a fractional value is obtained. assigned to T

Data / Parameter	Survival i,j,k
Data unit	Tree/ha
Description	Survival rate per hectare established for stratum I, species j and forest system k.
Measured /Calculated /Default:	calculated
Source of data	Calculated from field measurements
Value(s) of monitored parameter	See values in spreadsheet l "DMSA emission reduction".
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Calculation of project emissions
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	The quality control/quality assurance procedures of the IPCC GPG LULUCF 2003, point 5.5 have been applied.

Data / Parameter	Survival i,j,k
Measuring/ Reading/ Recording frequency	It is carried out 3 months after planting and then once a year.
Calculation method (if applicable)	The area of the plot was established by calculating the area of a circumference corresponding to 400 m^2 per plot. The method consists of locating the center of the plot, marking it with a stake. From the center of the plot, the radius is measured in horizontal projection with a tape measure, starting from a reference orientation.
QA/QC procedures applied	The quality control/quality assurance procedures of the IPCC GPG LULUCF 2003, point 5.5 have been applied.

Data / Parameter	NA
Data unit	Tree has^{-1}
Description	Identification of the tree species planted for each stratum.
Measured /Calculated /Default:	Default
Source of data	Calculated from field measurements
Value(s) of monitored parameter	see Worksheet "Emission reductions DMSA".
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Calculation of project emissions
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	Measuring tape, VertexIV, Diametric tape, Recording sheets. All equipment will be calibrated before each measurement and equipment older than 5 years will not be used.

Data / Parameter	NA
Measuring/ Reading/ Recording frequency	Once a year
Calculation method (if applicable)	It will be carried out through direct observation using comparative bibliographic reference, at the temporary sampling points each year.
QA/QC procedures applied	The quality control/quality assurance procedures of the IPCC GPG LULUCF 2003, point 5.5 have been applied.

Data / Parameter	pH
Data unit	The index will be analyzed from 0 to 14
Description	Conducting a chemical study of soil quality to identify the availability of nutrients.
Measured /Calculated /Default:	Calculated
Source of data	Calculated from field measurements
Value(s) of monitored parameter	For Tapytá: pH in H_2O= 4,0 (see soil test results in section 8 of this document). For Hernandarias: Hernandarias 1: 4,6 Hernandarias 2: 4,8
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Soil quality control
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	The monitoring team will be in charge of the laboratory that takes the samples.
Measuring/ Reading/ Recording frequency	Before each verification
Calculation method (if applicable)	Soil sampling: soil samples will be taken at three random points, two in the

	Hernandarias field and one in Tapytá, a fixed point identified with GPS and wooden stakes fixed to the ground where the sample will be extracted every five years. The soil analysis will be carried out in specialized laboratories that will deliver the report with the results of chemical analysis of the soil. It was analyzed at a depth of 0 cm to 20 cm.
QA/QC procedures applied	The quality control/quality assurance procedures of the IPCC GPG LULUCF 2003, point 5.5 have been applied.

Data / Parameter	Dissolved Oxygen, pH
Data unit	mg/L, U pH
Description	Dissolved oxygen in streams is essential for the survival of most aquatic species, including fish, invertebrate organisms and plants. If values below minimum required levels are detected, corrective action will be taken. The pH is the potential of hydrogen or potential of hydrogenions and serves to determine the degree of alkalinity or acidity of a solution, based on the concentration of positive hydrogen ions of the compound. This process will be carried out following the parameters of the Water Quality Standard in the National Territory of Paraguay. Resolution 222/02). This process will not be carried out in Tapytá because there is no watercourse near the project area.
Measured /Calculated /Default:	Calculated
Source of data	Calculated from field measurements
Value(s) of monitored parameter	Hernandarias shows input (See water analysis results in section 8): Dissolved oxygen 4,6

Data / Parameter	Dissolved Oxygen, pH
	pH: 7,49 Hernandarias shows output Dissolved oxygen 4,6 pH: 7,34
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Water quality control
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	SMWW 4500 OC, NBR 9251 FEV 1986
Measuring/ Reading/ Recording frequency	Every 5 years
Calculation method (if applicable)	Water samples will be collected from the stream (named Aña Cuá), which is located in the vicinity of the Project. Physicochemical analyses will be performed in a specialized laboratory. The results will provide information on the quality of the water and whether it meets acceptable standards.
QA/QC procedures applied	The quality control/quality assurance procedures of the IPCC GPG LULUCF 2003, point 5.5 have been applied.

Data / Parameter	Pests affecting plantations
Data unit	Presence of the pest in the sticky traps
Description	Survey of presence or absence of pests on plantations
Measured /Calculated /Default:	Calculated
Source of data	Calculated from field measurements
Value(s) of monitored parameter	No pests of *Eucalyptus spp.* were recorded during this period of analysis.

Data / Parameter	Pests affecting plantations
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Plantation control
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	To trap the insects, yellow chromatic adhesive traps (10 cm x 12 cm) are used, installed in the project area at a height of 3 meters from the ground, one in Tapytá and 2 in Hernandarias.
Measuring/ Reading/ Recording frequency	Every 30 days
Calculation method (if applicable)	To trap the insects, yellow chromatic adhesive traps (10 cm x 12 cm) were installed in the project area at a height of 3 meters from the ground, one in Tapytá and one in Hernandarias. Each trap is identified with the number of the box where it was installed. Every 30 days the group of traps is changed. Each trap is packed with transparent plastic film so as not to damage the captured insects and to facilitate identification under the stereoscopic magnifying glass. The next step is to record the data in the Counting Form. The insect count is recorded in digital format and saved in the Project Monitoring folder in the company's Central Server. Mitigation plan: if pests appear and possible severe damage occurs, the Operations Manager is informed so that the necessary control actions can be taken. This type of monitoring began in October 2021.
QA/QC procedures applied	The quality control/quality assurance procedures of the IPCC GPG LULUCF 2003, point 5.5 have been applied.

16 Quantification of GHG Emission Reduction / Removals

16.1 Baseline Emissions

As demonstrated in the PD, the baseline of the current project is the continuation of extensive cattle ranching, which is the historical land use.

During the current quantification period, the very few trees and shrubs within the project area were not damaged, felled, removed or suffered mortality due to competition with the trees planted in the project or damage due to the execution of project activities. These trees were not inventoried for the project removal calculation.

Therefore, and based on the IPCC Good Practice Guidance for Land Use, Land Use Change and Forestry (2003), considering that the identified baseline scenario activity has been the same for at least 15 years, and that no trees or shrubs were damaged or removed, it is assumed that the net GHG removals by sinks in the baseline were Zero.

$$CBSL, t = \mathbf{0}$$

16.2 Project Emissions/Removals

According to Tool 14 "Estimation of carbon stocks and carbon stock change of trees and shrubs in a F/R CDM project activity", v. 04.2, section 7, the change in tree carbon stocks in one year (annual change) between two successive verifications is estimated assuming a linear change. The change in tree carbon stocks in one year is estimated as follows:

$$\Delta C_{TREE,t} = \Delta C_t \frac{C_{TREE,t_2} - C_{TREE,t_1}}{T} * 1\ year$$

Where,

$\Delta C_{TREE,t}$ = change in carbon stock of trees within the project boundary in year t; t CO2-e

C_{TREE,t_1}= carbon stock change of trees within the project boundary in year t1; t CO2-e

C_{TREE,t_2}= carbon stock change of trees within the project boundary in year t2; t CO2-e

T= time elapsed between two successive estimates (T= t_2 - t_1), year.

According to the tool, carbon stocks in trees at a given time can be estimated using one or a combination of four methods:

a) Estimation by measurement of sample plots;
b) Estimation through modeling of tree growth and stand development;
c) Estimation by canopy cover ratio;
d) Updating of previous stocks through independent measurements of change.

For the present project monitoring report, the calculations were performed following the method of estimation by measurement of sampling plots (alternative a): **stratified random sampling according to this method**. Mean tree carbon stocks within the tree biomass estimation strata and associated uncertainty were estimated as follows:

$$C_{TREE} = \frac{44}{12} * CF_{TREE} * B_{TREE}$$

$$B_{TREE} = A * b_{TREE}$$

$$b_{TREE} = \sum_{i=1}^{m} w_i \, b_{TREE,i}$$

$$u_c = \frac{t_{val} X \sqrt{\sum_{i=1}^{m} w_i x \frac{s_j^2}{n_i}}}{b_{TREE}}$$

Where,

C_{TREE} = carbon stocks in trees in the tree biomass estimation strata; t CO2-e

CF_{TREE} = the carbon fraction of tree biomass; t C (td.m.)-1 default value 0,47

B_{TREE} = tree biomass in the tree biomass estimation strata; t d.m.

A = sum of the areas of the tree biomass estimation strata; ha

b_{TREE}= average tree biomass per hectare in the tree biomass estimation strata

w_i= Ratio of the area of stratum i to the sum of the areas of the tree biomass estimation strata (i.e., wi = Ai/A); dimensionless

$b_{TREE,i}$= average tree biomass per hectare in stratum i; t.d.m. ha-1

u_c= uncertainty in C_{TREE} (in compliance with BCR0001 V4.0 methodology, section 15, a 20% uncertainty discount factor should be applied to the current project).

t_{val}= two-sided student's t-value for a 90% confidence level and degrees of freedom equal to n -M, where n is the total number of sample plots within the tree biomass estimation strata and M is the total number of three biomass estimation strata.

s_j^2= variance of tree biomass per hectare in all sample plots in stratum i; (t d.m. ha)$^{-12}$

n_i= number of sample plots in stratum i

The mean tree biomass per hectare in a stratum and the associated variance are estimated as follows:

$$b_{TREE,i} = \frac{\sum_{p=1}^{n_i} b_{TREE,p,i}}{n_i}$$

$$s_j^2 = \frac{(n_i X \sum_{p=1}^{n_i} b^2{}_{TREE,i} - n_i X \sum_{p=1}^{n_i} b_{TREE,p,i})^2}{n_i X (n_i - 1)}$$

Where

$b_{TREE,i}$= average tree biomass per hectare in stratum i; t.d.m. ha^{-1}

$b_{TREE,p,i}$= tree biomass per hectare in plot p of stratum i; t.d.m. ha^{-1}

s_j^2= variance of tree biomass per hectare in all sample plots of stratum i; (t d. m. ha)$^{-12}$

n_i= number of sample plots in stratum i

Finally, according to Appendix 1 (Plot biomass measurement methods) of the tool, the plot biomass value is determined as follows:

$$b_{TREE,p,i} = \frac{B_{TREE,p,i}}{A_{plot\ i}}$$

$$B_{TREE,p,i} = \sum_{j} B_{TREE,j,p,i}$$

$$B_{TREE,j,p,i} = \sum_{l} B_{TREE,l,j,p,i}$$

Where,

$b_{TREE,p,i}$= tree biomass per hectare in plot p of stratum i; t.d.m. ha^{-1}
$B_{TREE,p,i}$= tree biomass in the sample plot or of stratum i; t m.d.
$A_{plot\ i}$ = size of the sample plot of stratum i; ha
$B_{TREE,j,p,i}$= biomass of trees of species j in the sample plot or stratum i; t d.m.
$B_{TREE,l,j,p,i}$= biomass of trees of species j in sample plot or stratum j; t d.m.

With,
$B_{TREE,l,j,p,i} = f_j(x_{1,l}, x_{1,l}, x_{1,l} \dots) * (1 + R_j)$
$B_{TREE,l,j,p,i} = V_{TREE,j}(x_{1,l}, x_{1,l}, x_{1,l} \dots) * D_j * BEF_{2,j} * (1 + R_j)$

Where,

$B_{TREE,l,j,p,i}$= Biomass of tree l of species j in sample plot p of stratum i; t d.m
$f_j(x_{1,l}, x_{1,l}, x_{1,l} \dots)$= Aerial biomass of the tree obtained by the allometric equation for species j that relates the measurements of tree l to the aerial biomass of the tree; t d.m
R_j= root/shoot ratio for tree species j; dimensionless
$V_{TREE,j}(x_{1,l}, x_{1,l}, x_{1,l} \dots)$= volume of the trunk of tree l of species j in sample plot p of stratum i, estimated from the size of the tree as input to a volume table or volume equation; m^3

D_j= density (overbark) of tree species j; t d.m-3 Values are taken from table 3A.1.9 of the IPCC GPG-LULUCF 2003.
$BEF_{2,j}$= biomass expansion factor for the conversion of tree trunk biomass to aboveground tree biomass for tree species j; dimensionless.

In this monitoring report, 6 strata were identified that coincide with those defined in the PD due to the fact that validation and verification were carried out simultaneously. In turn, using equation 23 of section 17.3.1.4 of the BCR0001 Version 4.0 methodology (see the detail of the development of the calculation of the sampling plots in section 15.1 of this document), 20 temporary sampling plots were established for strata 1 to 6.

Table 44. Strata and Sampling Plots Composition.

Stratum	**Year of Planting**	**Species**	**Area (ha)**	**Number of Sample Plots**
1	2018	*Eucalyptus*	13,43	2
2	2019	*Eucalyptus*	32,14	4
3	2019	*Eucalyptus*	17,62	3
4	2019	*Eucalyptus*	52,71	8
5	2020	*Eucalyptus*	3,02	1
6	2022	*Eucalyptus*	17,53	2
Total			**136,45**	**20**

Source: DMSA, 2023.

In each temporary sampling plot, the number of trees per hectare was measured and through the measurement of the Diameter Breast Height of each tree and the use of the following allometric equation, the volume per stratum was calculated (see detail in the attached spreadsheet).

For each stratum, the number of trees within each temporary sampling plot and the DBH of each tree is detailed below:

Table 45. Stratum 1 Number of Trees and DBH for Each Temporary Sample Plot.

Stratum	**1**	
Sampling area	400 m²	
Temporary Sampling Plot	2168	2169
Number of trees	20	19
Tree	DBH (cm)	DBH (cm)
1	21,8	19,3
2	18,0	18,4
3	19,8	18,7
4	20,8	20,1
5	20,7	20,3
6	20,5	17,8
7	21,4	16,8
8	22,1	12,3
9	20,0	19,8
10	20,3	20,0
11	16,3	21,9
12	17,6	15,2
13	16,2	13,4
14	15,1	20,3
15	17,8	20,0
16	16,6	12,7
17	16,0	18,0
18	19,2	15,2

Stratum	**1**	
19	15,8	21,2
20	19,1	

Source: DMSA, 2023.

Table 46. Stratum 2 Number of Trees and DBH for Each Temporary Sample Plot.

Stratum	**2**			
Sampling area	400 m²			
Temporary Sampling Plot	2164	2177	2183	2185
Number of trees	15	16	24	13
Tree	DBH (cm)	DBH (cm)	DBH (cm)	DBH (cm)
1	21,3	10,1	9,7	21,9
2	12,2	14,1	10,0	20,6
3	18,5	11,3	14,1	20,4
4	20,6	13,7	12,7	19,1
5	22,6	11,3	15,8	21,7
6	18,6	13,4	12,6	19,3
7	18,6	15,3	15,8	22,3
8	19,6	13,5	10,0	21,5
9	22,3	13,3	14,4	22,3
10	23,7	11,5	15,6	16,7
11	14,3	15,1	17,1	21,4
12	14,5	15,5	18,0	22,5
13	22,5	11,9	19,2	15,3
14	11,5	15,1	17,2	
15	13,2	13,1	17,9	
16		13,2	12,3	
17			13,4	
18			14,2	

19			13,5	
20			17,9	
21			16,2	
22			12,5	
23			14,2	
24			13,0	

Source: DMSA, 2023.

Table 47. Stratum 3 Number of Trees and DBH for Each Temporary Sample Plot.

Stratum	**3**		
Sampling area	400 m²		
Temporary Sampling Plot	20077	20098	2181
Number of trees	17	14	15
Tree	DBH (cm)	DBH (cm)	DBH (cm)
1	15,0	18,8	16,3
2	15,5	14,0	17,2
3	12,0	16,5	16,7
4	14,7	16,3	14,7
5	15,0	18,0	15,7
6	16,3	16,7	17,9
7	13,6	19,4	17,7
8	14,9	16,6	15,6
9	16,4	16,6	13,7
10	13,4	22,9	14,7
11	12,6	16,3	15,5
12	13,5	16,7	14,6
13	14,0	18,0	16,0
14	16,0	16,4	14,7
15	15,4		16,9
16	16,3		
17	14,6		

Source: DMSA, 2023.

Table 48. Stratum 4 Number of Trees and DBH for Each Temporary Sample Plot.

Stratum	4
Sampling area	400 m²

Temporary Sampling Plot	2170	2173	2175	2176	2180	2182	2184	2143
Number of trees	15	15	16	16	13	18	17	16
Tree	DBH (cm)	DBH (cm)	DBH (cm)	DBH (cm)	DBH (cm)	DBH (cm)	DBH (cm)	DBH (cm)
1	18,5	20,8	17,9	19,7	20,0	19,0	20,5	17,2
2	15,8	21,7	18,7	17,0	19,6	16,3	18,5	18,0
3	19,7	19,3	18,2	19,4	18,2	19,2	20,2	15,2
4	19,4	19,0	20,2	20,0	18,5	21,0	14,7	15,4
5	19,7	20,9	18,6	20,0	18,2	18,9	19,6	16,4
6	16,3	18,6	19,4	17,3	19,6	19,3	16,6	17,0
7	18,5	10,9	19,1	17,8	19,1	20,3	18,6	11,9
8	21,0	21,0	18,5	18,5	19,7	17,9	20,5	17,3
9	17,6	20,4	19,2	19,9	19,1	19,2	18,4	16,8
10	15,0	20,0	19,1	17,8	21,6	21,4	17,9	17,5
11	19,9	20,3	18,3	20,0	19,6	21,0	20,5	17,1
12	18,6	21,4	18,7	18,3	10,5	20,1	15,2	15,8
13	18,9	20,7	19,9	21,8	20,0	20,8	20,2	17,5
14	19,3	21,2	20,3	19,6		20,3	8,4	18,4
15	17,5	21,0	19,9	19,7		19,0	16,5	16,2
16			18,9	18,0		20,0	18,1	13,5
17						19,5	19,8	
18						19,9		

Source: DMSA, 2023.

Table 49. Stratum 5 Number of Trees and DBH for Each Temporary Sample Plot.

Stratum	**5**
Sampling area	400 m²
Temporary Sampling Plot	2165
Number of trees	20
Tree	DBH (cm)
1	13,8
2	12,9
3	13,2
4	9,8
5	13,3
6	11,8
7	15,2
8	13,1
9	11,8
10	13,0

Stratum	**5**
11	13,5
12	11,4
13	13,0
14	12,3
15	12,7
16	12,7
17	12,2
18	13,9
19	14,1
20	14,5

Source: DMSA, 2023

Table 50. Stratum 6 Number of Trees and DBH for Each Temporary Sample Plot.

Stratum	**6**	
Sampling area	400 m²	
Temporary Sampling Plot	20104	20105
Number of trees	20	20
Tree	DBH (cm)	DBH (cm)
1	5,0	6,6
2	4,4	4,4
3	5,5	5,6
4	4,6	5,8
5	4,1	5,8
6	4,5	6,0
7	5,0	5,5
8	5,9	5,5
9	5,6	5,8
10	5,2	6,3
11	5,2	5,3
12	5,0	3,7
13	4,7	6,0
14	5,4	6,3
15	4,5	6,2
16	4,1	6,3
17	5,4	5,7
18	4,8	5,4
19	4,8	5,3
20	5,2	6,3

Source: DMSA, 2023.

Use of the main formula (to calculate the volume of standing trees)[63]

$$V = DBH^2 * \frac{\pi}{4} * HT * FF$$

Where,

V = Volume in m3
DBH = Diameter at breast height in meters
π = 3,1416 (π/4 = 0,7854)
HT = Total height in meters
FF = Form factor = 0,4

Calculation of the Density of Trees Per Hectare

The determination of tree density per hectare was developed using temporary sampling plots. The number of trees within the sampling plot was manually enumerated and using the following equation the number of trees per hectare was determined:

$$Trees\ per\ ha = \frac{Number\ of\ trees\ counted\ in\ each\ plot}{400\ m^2} * 10000\ m^2$$

1 hectare is equal to 10000 m².

The sampling plots are 400 m² which is equal to 0,04 hectares.

Using a simple rule of three:
1 tree ---------- 400 m²
X trees ---------1 m²

[63] https://crea.org.py/wp-content/uploads/2020/12/CF-Manual-para-la-medicion-de-pla-ntaciones-forestales-version-2.pdf

This value of 25 should be multiplied by the number of numbered trees within the sample plot and the density of trees per hectare is determined. Thus the density of trees per hectare per stratum is:

$$x\ trees = \frac{1\ tree * 10000\ m^2}{400\ m^2}$$

Using this equation for the area of the project, the following values of volume per tree are obtained for each of the strata that make up the project.

Table 51. Volume of Trees Per Hectare Per Year of Planting and Density of Trees Per Hectare.

Stratum	Year of planting	Area (ha)	Year of monitoring	True tree volume/ha	Density of trees per ha
1	2018	13,43	2023	0,261	488
2	2019	32,14	2023	0,179	425
3	2019	17,62	2023	0,156	383
4	2019	52,71	2023	0,238	394
5	2020	3,02	2023	0,080	500
6	2022	17,53	2023	0,005	500

Source: DMSA, 2023.

The volume value of each individual tree is multiplied by the number of trees planted per hectare to obtain the volume per hectare. The number of trees per hectare obtained from on-site monitoring in the project area defined in Section 15.1 of this report is used.

Next, to obtain the total biomass and then CO_2 removed, the fixed parameters and those to be monitored in **section 15.2** will be used. First, the volume of the stem with bark is multiplied by the basic wood density for *Eucalyptus robusta* of America from table 3A.1.9-2 of the IPCC GHG guideline. For conservative reasons the lowest value of the range offered (0,51) is used. Once this value is obtained, it is multiplied by the biomass expansion factor (BEF_2) from table 3A.1.10 of the IPCC GHG guideline. For conservative reasons, the lowest value for a tropical forest is used.

To obtain the amount of aboveground biomass carbon, the total biomass volume is multiplied by the default carbon factor 0,47 in compliance with Tool 14 Estimation of carbon stocks and change in carbon stocks of trees and shrubs in F/R Project Activities V 04.2[64] .

Subsequently, the amount of carbon below the soil is calculated. To obtain it, the value of carbon dioxide in the above-ground biomass is multiplied by the Root to Shoot index of the IPCC GHG guide Table 3.A.1.8.

The amount of carbon sequestered above and below ground is then summed to obtain the amount of carbon dioxide removed per hectare.

Finally, the total carbon per hectare is multiplied by the carbon to CO2 ratio index (44/12)[65] and the amount of carbon dioxide removed per hectare is obtained. These quantities are rounded down to unity, since the VCCs must be whole numbers.

Thus, the total removals by the project's plantations in this **first monitoring period is 20.891,69 CO_2** equivalent between 2018 and 2023.

Table 52. CO2 Removals First Quantification Period.

Stratum	**Calculated Removals Period 2018-2023* (tCO_2)**	**Model Discounting and GHG Estimation Factors (-20% according to Table 3 BCR0001)**	**Calculated Final Removals After Discounting Period 2018-2023*. (tCO_2)**
Stratum 1	3.455,00	-691,00	2.764,00
Stratum 2	4.947,00	-989,40	3.957,00
Stratum 3	2.133,00	-426,60	1.706,00
Strata 4	9.983,00	-1.996,60	7.986,00

[64] https://cdm.unfccc.int/methodologies/ARmethodologies/tools/ar-am-tool-14-v4.2.pdf
[65] https://www.ipcc-nggip.iges.or.jp/public/2006gl/spanish/pdf/4_Volume4/V4_12_Ch12_HWP.pdf

Stratum	Calculated Removals Period 2018-2023* (tCO_2)	Model Discounting and GHG Estimation Factors (-20% according to Table 3 BCR0001)	Calculated Final Removals After Discounting Period 2018-2023*. (tCO_2)
Stratum 5	275,00	-55,00	220,00
Stratum 6	98,00	-19,60	78,00
Total	**20.891,00**	**-4.178,20**	**16.711,00**

* In 2018 only the month of December is considered and in 2023 it is considered only until May 31.
Source: DMSA, 2023.

It is important to clarify that in the case of the genus *Eucalyptus*, a generic volumetric equation used in the National Inventory of Paraguay is implemented (see footnote 63), which has as variables the DBH and the shape factor according to the species, and given that it is not an equation from another country, but an equation based on the diameter and shape of the tree trunk, and that the parameters such as wood density and root to shoot are IPCC data, the use of the discount factor of 20% is justified (*BCR0001 v4.0, table 3: the item "IPCC density values and factor (R:S) for below-ground biomass" has a discount factor of 20%*).

Since the VCCs must be whole numbers, the catches are conservatively rounded down and the generation of 16.711VCCs is determined. Of this amount, 20% will be allocated to the reserve accounts (10% to BCR's general account and 10% to the project's reserve account). Finally, the number of transactional credits will be 13.369VCC.

16.3 Leakages

According to methodology BCR0001 version 4.0 the measurement of project leakage is performed following the A/R Methodological Tool 15 Version 02.0 "Estimation of the increase in GHG emissions attributable to displacement of pre-project agricultural activities".

According to Methodology AR-ACM0003 and Tool 15 "Estimation of the increase in GHG emissions attributable to displacement of pre-project agricultural activities in the F/R CDM project activity" v02.0, leakage emissions due to displacement of agricultural activities should only be considered if this leads to an increase in GHG emissions relative to the GHG emissions attributable to the activity as it exists within the project boundary.

In the proposed project, the extensive cattle ranching developed in the selected parcels was not owned by Desarrollos Madereros S.A. but belonged to a neighbor in the area who had been authorized access to these lands.

Prior to the commencement of project activities, the existing contract between DMSA and a third-party owner of the cattle located on the plots was terminated. Once the contract was terminated, the cattle were sold in their entirety for slaughter.

According to AR-TOOL15 "Estimation of the increase in GHG emissions attributable to displacement of pre-project agricultural activities in a CDM F/R project activity" v.02.0, the leakage emission attributable to displacement of agricultural activities due to the implementation of a CDM F/R project activity is estimated as the decrease in carbon stocks in the affected carbon pools of the land receiving the displaced activity. The leakage emission attributable to displacement of grazing activities under the following conditions is considered negligible and is therefore counted as zero:

$$LK_t = \mathbf{0}$$

a) Animals are moved to existing grazing fields and the total number of animals in the receiving grazing fields (moved and existing) does not exceed their carrying capacity.
b) The animals are moved to existing grazing fields and the total number of animals moved does not exceed the carrying capacity of the receiving grazing field;
c) The animals move to farmland that has been abandoned in the last five years.

d) The animals move to forested land and there is no logging or reduction in tree and shrub canopy cover due to the movement of the animals.
e) The animals are moved to the zero grazing system.

As mentioned above, the livestock existing in the project area prior to the start of the current project activities were all destined for slaughter. Therefore, option e) is considered valid. The receipts for the sale of the cattle are included in ANNEX 2. Therefore, leakage is considered to be zero.

Leakage =0

16.4 Net GHG Emission Reductions / Removals

According to the methodology BCR0001 version 4.0 section 16.4 net GHG removals by sinks are calculated as follows

$$\Delta C_{PROJ,t} = \Delta C_{ACTUAL,t} - \Delta C_{BSL,t} - LK_{,t}$$

Where,

$\Delta C_{PROJ,t}$ = Net GHG removals by sinks, year t, t CO_2-e
$\Delta C_{ACTUAL,t}$= GHG removals by sinks, in year t; t CO_2-e
$\Delta C_{BSL,t}$ = GHG removals at baseline, in year t; t CO_2-e
$LK_{,t}$ = GHG removals due to leakage, in year t; t CO_2-e

As demonstrated above, both baseline GHG emissions and GHG emissions due to leakage are considered zero for the current project. Therefore, the project removals in this first quantification period were:

Table 53. Total Project Net Emissions Reductions/Removals in the 2018-2023 Monitoring Period.

Year	*Baseline Emissions / Removals (tCO_2e)*	*Project Emissions / Removals (tCO_2e)*	*Leakage Emissions (tCO_2e)*	*Net GHG Emission Reductions / Removals (tCO_2e)*
2018/12/01 - 2023/05/31	0	16.711	0	16.711
Total	**0**	**16.711**	**0**	**16.711**

Source: DMSA, 2023.

As noted in the previous steps, since VCCs are to be whole numbers, the total reductions/removals in the monitoring period have been rounded down to 16.711 tCO_2. This amount includes 20% to be allocated to reserve accounts.

For the calculation of average annual removals, this amount is divided by 4,5 years, as the monitoring period was 54 months (from December 1, 2018 to May 31, 2023), average annual catches of 3.713 tCO_2 /year are estimated (although these are not linear).

16.5 Comparison of actual emission reductions with estimates in the Project Document

- Ex-ante catch estimates for the preparation of the PD were 15.917 t CO_2.
- The calculated ex-post capture values (for this monitoring report) were 16.711 tCO_2.

The difference between the two is 5%. Such a small difference is logical when projecting the growth of a plantation over 5 years, considering the number of contingencies that can occur. However, it is important to mention that for conservative reasons a mortality rate was included and conservative values, such as the tree mortality rate, were used when preparing the PD.

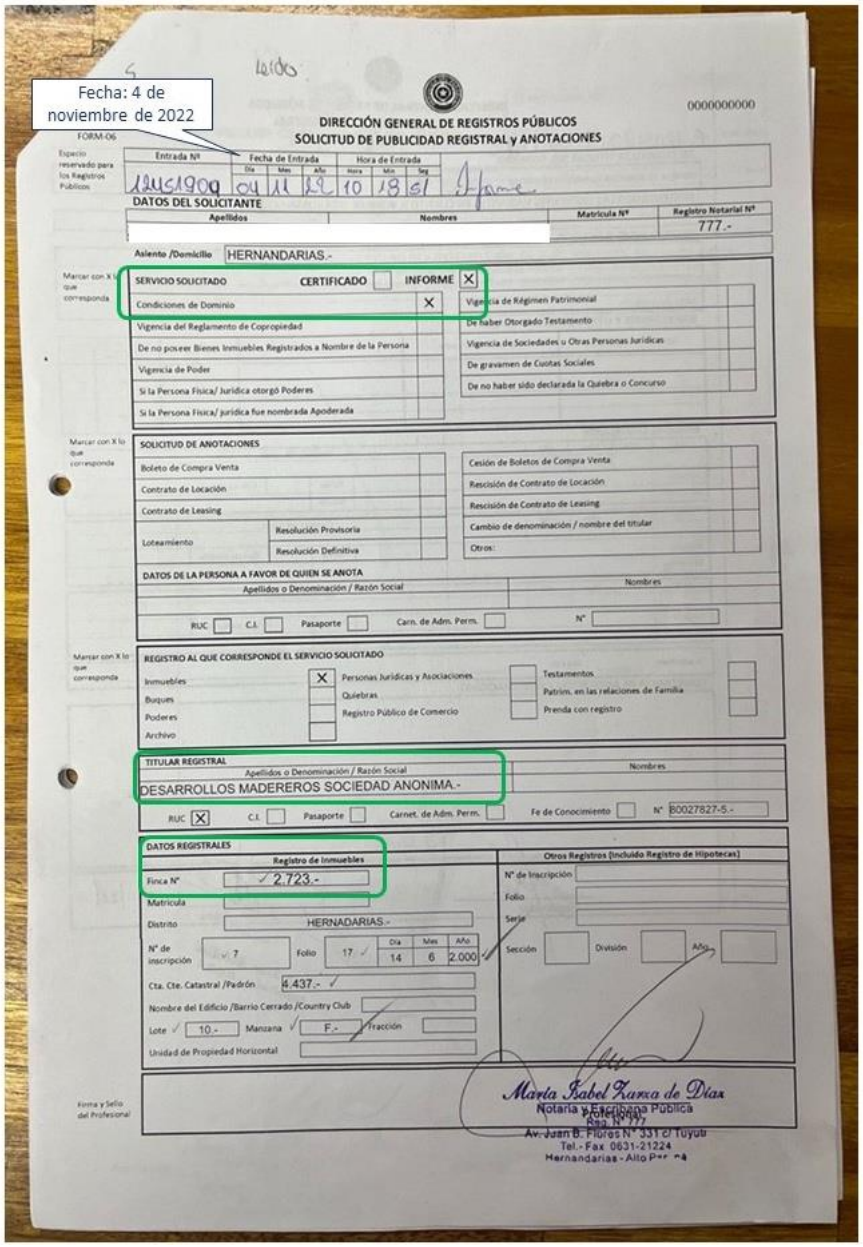
16.6 Remarks on Difference From Estimated Value in the Registered Project Document

As mentioned in section 16.5, the 5% difference between the ex-ante projection and the monitoring for the preparation of the current monitoring report is an expected value for this type of plantations.

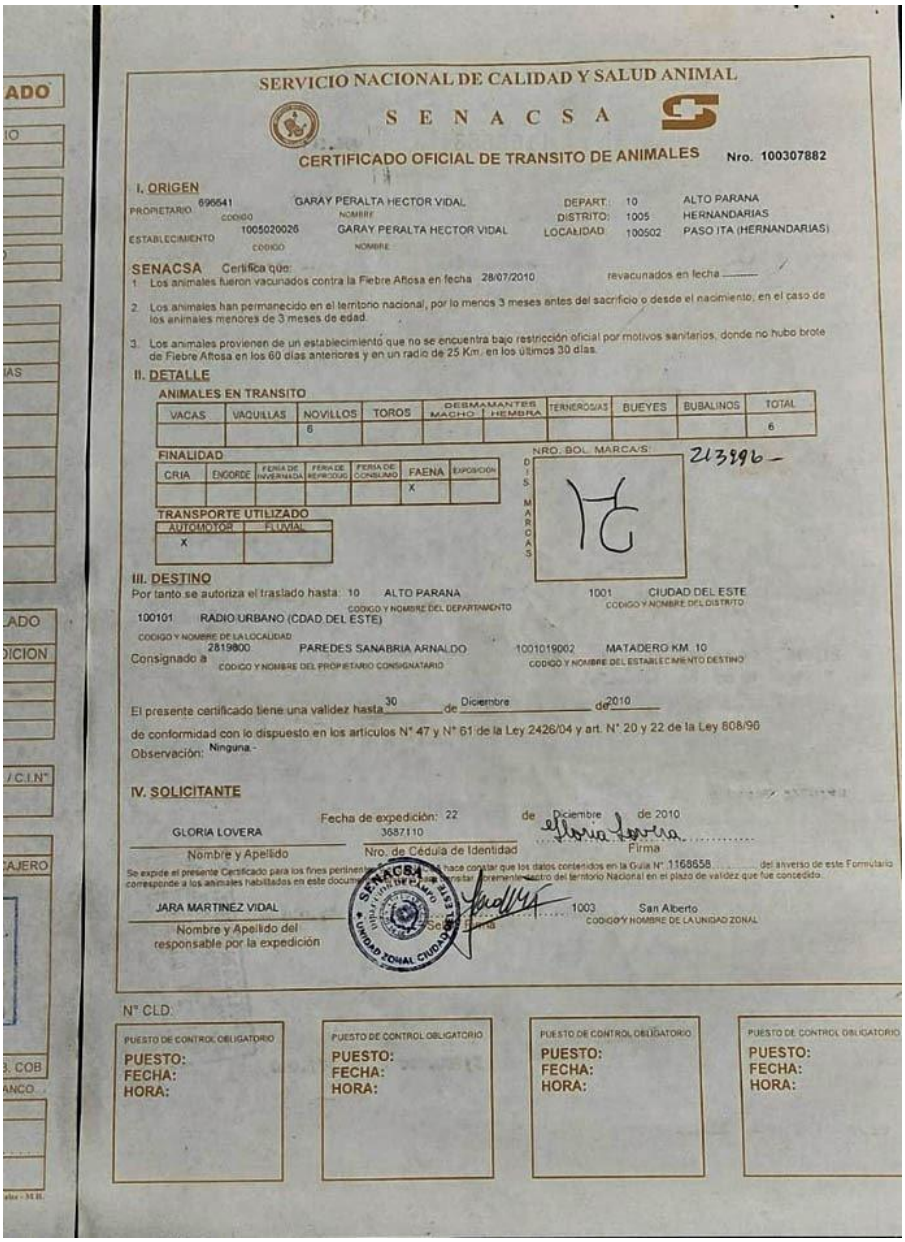
ANNEXES

ANNEX 1: Ownership of Plots

The following is an example of a condition of ownership, the one referring to parcel 2723 of the Hernandarias Farm. The complete documentation can be found in the confidential Supplementary Documentation set, folder 02.



ANNEX 2. Cattle Sale Ticket



SERVICIO NACIONAL DE CALIDAD Y SALUD ANIMAL

S E N A C S A

CERTIFICADO OFICIAL DE TRANSITO DE ANIMALES Nro. 100307882

I. ORIGEN

PROPIETARIO 696641 GARAY PERALTA HECTOR VIDAL — DEPART. 10 ALTO PARANA; DISTRITO 1005 HERNANDARIAS; LOCALIDAD 100502 PASO ITA (HERNANDARIAS)

ESTABLECIMIENTO 1005020026 GARAY PERALTA HECTOR VIDAL

SENACSA Certifica que:

1. Los animales fueron vacunados contra la Fiebre Aftosa en fecha 28/07/2010 revacunados en fecha ____
2. Los animales han permanecido en el territorio nacional, por lo menos 3 meses antes del sacrificio o desde el nacimiento; en el caso de los animales menores de 3 meses de edad.
3. Los animales provienen de un establecimiento que no se encuentra bajo restricción oficial por motivos sanitarios, donde no hubo brote de Fiebre Aftosa en los 60 días anteriores y en un radio de 25 Km. en los últimos 30 días.

II. DETALLE

ANIMALES EN TRANSITO

VACAS	VAQUILLAS	NOVILLOS	TOROS	DESMAMANTES MACHO	DESMAMANTES HEMBRA	TERNEROS/AS	BUEYES	BUBALINOS	TOTAL
		6							6

FINALIDAD

CRIA	ENGORDE	FERIA DE INVERNADA	FERIA DE REPRODUC.	FERIA DE CONSUMO	FAENA	EXPOSICION
					X	

TRANSPORTE UTILIZADO

AUTOMOTOR	FLUVIAL
X	

NRO. BOL. MARCA/S: 213896 — DISEÑO MARCAS

III. DESTINO

Por tanto se autoriza el traslado hasta: 10 ALTO PARANA (CODIGO Y NOMBRE DEL DEPARTAMENTO) 1001 CIUDAD DEL ESTE (CODIGO Y NOMBRE DEL DISTRITO)

100101 RADIO URBANO (CDAD DEL ESTE) (CODIGO Y NOMBRE DE LA LOCALIDAD)

Consignado a 2819800 PAREDES SANABRIA ARNALDO (CODIGO Y NOMBRE DEL PROPIETARIO CONSIGNATARIO) 1001019002 MATADERO KM. 10 (CODIGO Y NOMBRE DEL ESTABLECIMIENTO DESTINO)

El presente certificado tiene una validez hasta 30 de Diciembre de 2010

de conformidad con lo dispuesto en los artículos N° 47 y N° 61 de la Ley 2426/04 y art. N° 20 y 22 de la Ley 808/96

Observación: Ninguna.-

IV. SOLICITANTE

Fecha de expedición: 22 de Diciembre de 2010

GLORIA LOVERA — 3587110 — Gloria Lovera

Nombre y Apellido — Nro. de Cédula de Identidad — Firma

Se expide el presente Certificado para los fines pertinentes, se hace constar que los datos contenidos en la Guía N° 1168658 del anverso de este Formulario corresponde a los animales habilitados en este documento, debiendo circular exclusivamente dentro del territorio Nacional en el plazo de validez que fue concedido.

JARA MARTINEZ VIDAL — 1003 San Alberto (CODIGO Y NOMBRE DE LA UNIDAD ZONAL)

Nombre y Apellido del responsable por la expedición — Sello y Firma

N° CLD

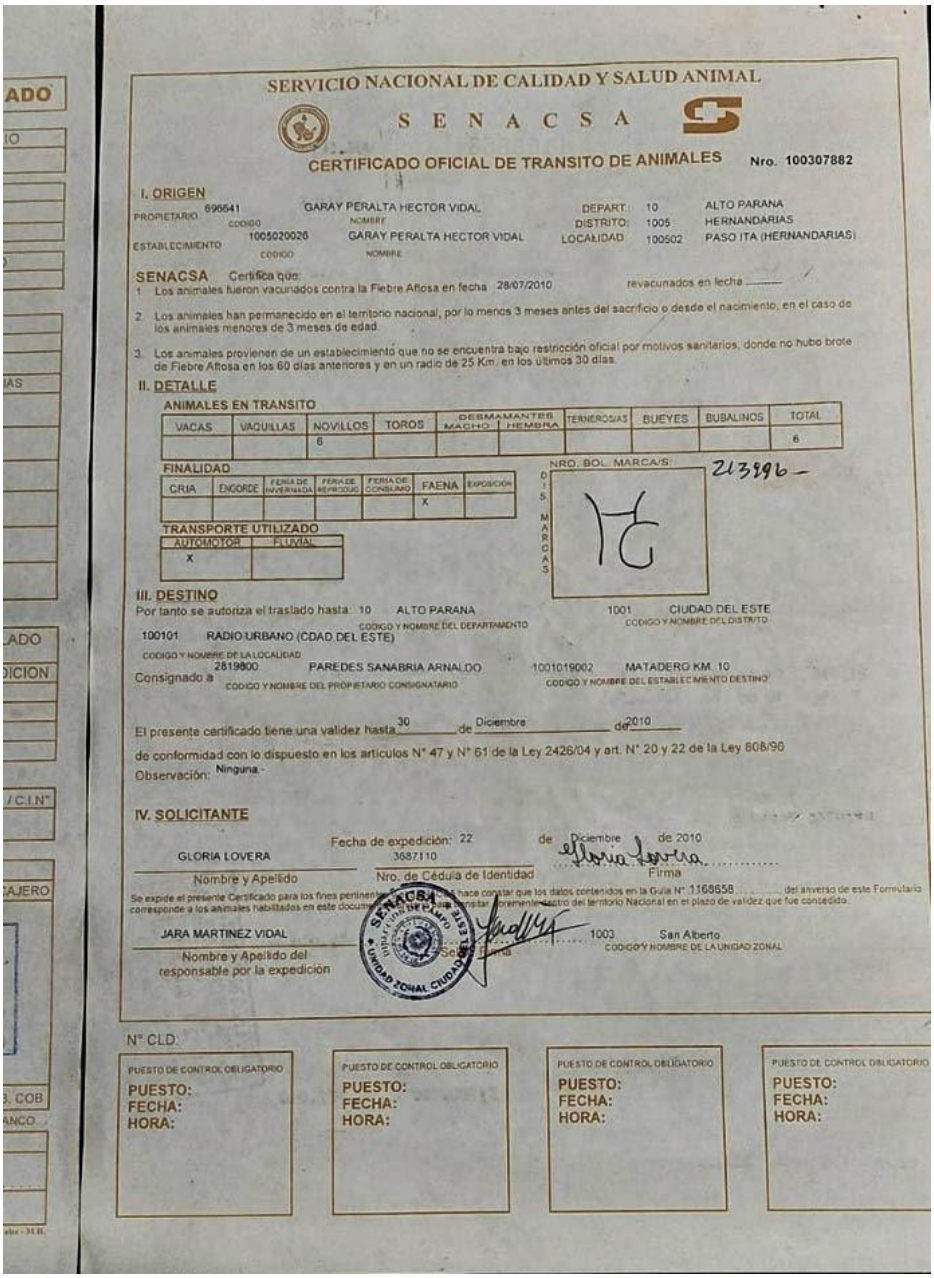
PUESTO DE CONTROL OBLIGATORIO — PUESTO: FECHA: HORA:

PUESTO DE CONTROL OBLIGATORIO — PUESTO: FECHA: HORA:

PUESTO DE CONTROL OBLIGATORIO — PUESTO: FECHA: HORA:

PUESTO DE CONTROL OBLIGATORIO — PUESTO: FECHA: HORA:

Source: DMSA, 2023.



SERVICIO NACIONAL DE CALIDAD Y SALUD ANIMAL

S E N A C S A

CERTIFICADO OFICIAL DE TRANSITO DE ANIMALES Nro. 100307882

I. ORIGEN

PROPIETARIO: 696541 GARAY PERALTA HECTOR VIDAL — DEPART: 10 ALTO PARANA; DISTRITO: 1005 HERNANDARIAS; LOCALIDAD: 100502 PASO ITA (HERNANDARIAS)

ESTABLECIMIENTO: 1005020026 GARAY PERALTA HECTOR VIDAL

SENACSA Certifica que:

1. Los animales fueron vacunados contra la Fiebre Aftosa en fecha 28/07/2010 revacunados en fecha ——
2. Los animales han permanecido en el territorio nacional, por lo menos 3 meses antes del sacrificio o desde el nacimiento, en el caso de los animales menores de 3 meses de edad.
3. Los animales provienen de un establecimiento que no se encuentra bajo restricción oficial por motivos sanitarios, donde no hubo brote de Fiebre Aftosa en los 60 días anteriores y en un radio de 25 Km. en los últimos 30 días.

II. DETALLE

ANIMALES EN TRANSITO

VACAS	VAQUILLAS	NOVILLOS	TOROS	DESMAMANTES MACHO	DESMAMANTES HEMBRA	TERNEROS/AS	BUEYES	BUBALINOS	TOTAL
		6							6

FINALIDAD

CRIA	ENGORDE	FERIA DE INVERNADA	FERIA DE REPRODUC.	FERIA DE CONSUMO	FAENA	EXPOSICION
					X	

NRO. BOL. MARCA/S: 213896 — DISEÑO MARCAS: 76

TRANSPORTE UTILIZADO

AUTOMOTOR	FLUVIAL
X	

III. DESTINO

Por tanto se autoriza el traslado hasta: 10 ALTO PARANA (CODIGO Y NOMBRE DEL DEPARTAMENTO) 1001 CIUDAD DEL ESTE (CODIGO Y NOMBRE DEL DISTRITO)

100101 RADIO URBANO (CDAD DEL ESTE) (CODIGO Y NOMBRE DE LA LOCALIDAD)

Consignado a 2819800 PAREDES SANABRIA ARNALDO (CODIGO Y NOMBRE DEL PROPIETARIO CONSIGNATARIO) 1001019002 MATADERO KM 10 (CODIGO Y NOMBRE DEL ESTABLECIMIENTO DESTINO)

El presente certificado tiene una validez hasta 30 de Diciembre de 2010

de conformidad con lo dispuesto en los artículos N° 47 y N° 61 de la Ley 2426/04 y art. N° 20 y 22 de la Ley 808/96

Observación: Ninguna.-

IV. SOLICITANTE

Fecha de expedición: 22 de Diciembre de 2010

GLORIA LOVERA — Nombre y Apellido
3687110 — Nro. de Cédula de Identidad
Gloria Lovera — Firma

Se expide el presente Certificado para los fines pertinentes, haciendo constar que los datos contenidos en la Guía N° 1168558 del anverso de este Formulario corresponde a los animales habilitados en este documento, los cuales deberán ser transportados directamente dentro del territorio Nacional en el plazo de validez que fue concedido.

JARA MARTINEZ VIDAL — Nombre y Apellido del responsable por la expedición — Sello y Firma

1003 San Alberto (CODIGO Y NOMBRE DE LA UNIDAD ZONAL)

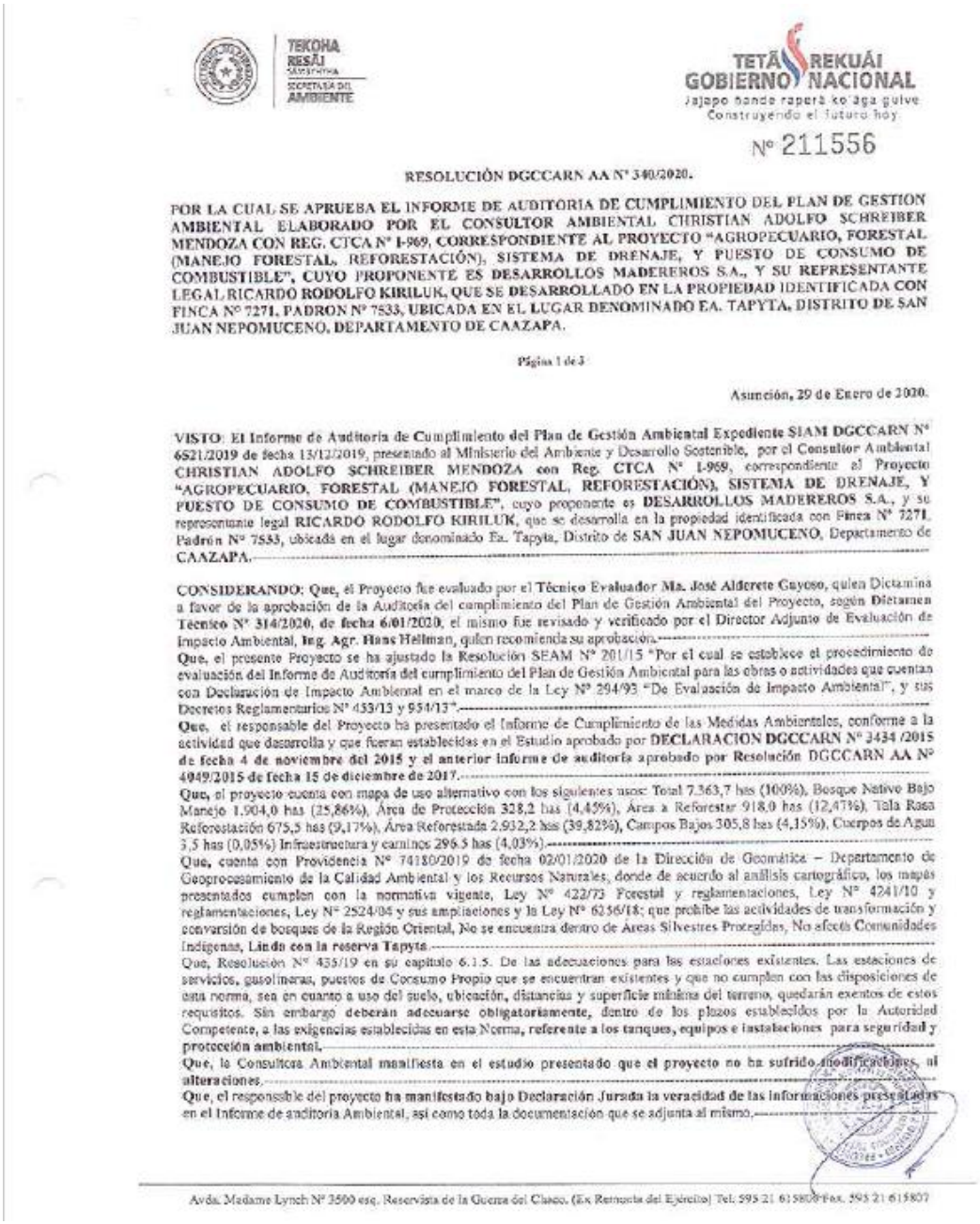
SENACSA UNIDAD ZONAL CIUDAD DEL ESTE

N° CLD

PUESTO DE CONTROL OBLIGATORIO	PUESTO DE CONTROL OBLIGATORIO	PUESTO DE CONTROL OBLIGATORIO	PUESTO DE CONTROL OBLIGATORIO
PUESTO: FECHA: HORA:	PUESTO: FECHA: HORA:	PUESTO: FECHA: HORA:	PUESTO: FECHA: HORA:

Source: DMSA, 2023.

ANNEX 3. Certificate of Approval of the Last Compliance Audit of the Environmental Impact Study Management Plan - Tapytá.



TEKOHA RESÃI
SECRETARÍA DEL AMBIENTE

TETÃ REKUÁI
GOBIERNO NACIONAL
Jajapo ñande raperã ko ãga guive
Construyendo el futuro hoy

Nº 211556

RESOLUCIÓN DGCCARN AA Nº 340/2020.

POR LA CUAL SE APRUEBA EL INFORME DE AUDITORIA DE CUMPLIMIENTO DEL PLAN DE GESTION AMBIENTAL ELABORADO POR EL CONSULTOR AMBIENTAL CHRISTIAN ADOLFO SCHREIBER MENDOZA CON REG. CTCA Nº I-969, CORRESPONDIENTE AL PROYECTO "AGROPECUARIO, FORESTAL (MANEJO FORESTAL, REFORESTACIÓN), SISTEMA DE DRENAJE, Y PUESTO DE CONSUMO DE COMBUSTIBLE", CUYO PROPONENTE ES DESARROLLOS MADEREROS S.A., Y SU REPRESENTANTE LEGAL RICARDO RODOLFO KIRILUK, QUE SE DESARROLLADO EN LA PROPIEDAD IDENTIFICADA CON FINCA Nº 7271, PADRON Nº 7533, UBICADA EN EL LUGAR DENOMINADO EA. TAPYTA, DISTRITO DE SAN JUAN NEPOMUCENO, DEPARTAMENTO DE CAAZAPA.

Página 1 de 3

Asunción, 29 de Enero de 2020.

VISTO: El Informe de Auditoria de Cumplimiento del Plan de Gestión Ambiental Expediente SIAM DGCCARN Nº 6521/2019 de fecha 13/12/2019, presentado al Ministerio del Ambiente y Desarrollo Sostenible, por el Consultor Ambiental **CHRISTIAN ADOLFO SCHREIBER MENDOZA con Reg. CTCA Nº I-969**, correspondiente al **Proyecto "AGROPECUARIO, FORESTAL (MANEJO FORESTAL, REFORESTACIÓN), SISTEMA DE DRENAJE, Y PUESTO DE CONSUMO DE COMBUSTIBLE"**, cuyo proponente es **DESARROLLOS MADEREROS S.A.**, y su representante legal **RICARDO RODOLFO KIRILUK**, que se desarrolla en la propiedad identificada con **Finca Nº 7271**, Padrón Nº 7533, ubicada en el lugar denominado Ea. Tapyta, Distrito de **SAN JUAN NEPOMUCENO**, Departamento de **CAAZAPA.**

CONSIDERANDO: Que, el Proyecto fue evaluado por el **Técnico Evaluador Ma. José Alderete Cuyeso**, quien Dictamina a favor de la aprobación de la Auditoría del cumplimiento del Plan de Gestión Ambiental del Proyecto, según **Dictamen Técnico Nº 314/2020, de fecha 6/01/2020**, el mismo fue revisado y verificado por el Director Adjunto de Evaluación de Impacto Ambiental, **Ing. Agr. Hans Hellman**, quien recomienda su aprobación.

Que, el presente Proyecto se ha ajustado la Resolución SEAM Nº 201/15 "Por el cual se establece el procedimiento de evaluación del Informe de Auditoría del cumplimiento del Plan de Gestión Ambiental para las obras o actividades que cuentan con Declaración de Impacto Ambiental en el marco de la Ley Nº 294/93 "De Evaluación de Impacto Ambiental", y sus Decretos Reglamentarios Nº 453/13 y 954/13".

Que, el responsable del Proyecto ha presentado el Informe de Cumplimiento de las Medidas Ambientales, conforme a la actividad que desarrolla y que fueran establecidas en el Estudio aprobado por **DECLARACION DGCCARN Nº 3434 /2015 de fecha 4 de noviembre del 2015 y el anterior informe de auditoría aprobado por Resolución DGCCARN AA Nº 4949/2015 de fecha 15 de diciembre de 2017.**

Que, el proyecto cuenta con mapa de uso alternativo con los siguientes usos: Total 7.363,7 has (100%), Bosque Nativo Bajo Manejo 1.904,0 has (25,86%), Área de Protección 328,2 has (4,45%), Área a Reforestar 918,0 has (12,47%), Tala Rasa Reforestación 675,5 has (9,17%), Área Reforestada 2.932,2 has (39,82%), Campos Bajos 305,8 has (4,15%), Cuerpos de Agua 3,5 has (0,05%) Infraestructura y caminos 296.5 has (4,03%).

Que, cuenta con Providencia Nº 74180/2019 de fecha 02/01/2020 de la Dirección de Geomática – Departamento de Geoprocesamiento de la Calidad Ambiental y los Recursos Naturales, donde de acuerdo al análisis cartográfico, los mapas presentados cumplen con la normativa vigente, Ley Nº 422/73 Forestal y reglamentaciones, Ley Nº 4241/10 y reglamentaciones, Ley Nº 2524/04 y sus ampliaciones y la Ley Nº 6256/18; que prohíbe las actividades de transformación y conversión de bosques de la Región Oriental, No se encuentra dentro de Áreas Silvestres Protegidas, No afecta Comunidades Indígenas, **Linda con la reserva Tapyta.**

Que, Resolución Nº 435/19 en su capítulo 6.1.5. De las adecuaciones para las estaciones existentes. Las estaciones de servicios, gasolineras, puestos de Consumo Propio que se encuentran existentes y que no cumplen con las disposiciones de esta norma, sea en cuanto a uso del suelo, ubicación, distancias y superficie mínima del terreno, quedarán exentos de estos requisitos. Sin embargo **deberán adecuarse obligatoriamente,** dentro de los plazos establecidos por la Autoridad Competente, a las exigencias establecidas en esta Norma, **referente a los tanques, equipos e instalaciones para seguridad y protección ambiental.**

Que, la Consultora Ambiental manifiesta en el estudio presentado que **el proyecto no ha sufrido modificaciones, ni alteraciones.**

Que, el responsable del proyecto **ha manifestado bajo Declaración Jurada la veracidad de las informaciones presentadas** en el Informe de auditoria Ambiental, así como toda la documentación que se adjunta al mismo.

Avda. Madame Lynch Nº 3500 esq. Reservista de la Guerra del Chaco. (Ex Retiro del Ejército) Tel: 595 21 615808 Fax: 595 21 615807

Source: DMSA, 2023.

ANNEX 4. Certificate of Approval of the Last Compliance Audit of the Environmental Impact Study Management Plan - Hernandarias.

AUDITORIA AMBIENTAL
CUMPLIMIENTO DEL PLAN DE GESTION AMBIENTAL

PROYECTO AGROPECUARIO, FORESTAL (MANEJO FORESTAL, REFORESTACIÓN), SISTEMA DE DRENAJE, Y PUESTO DE CONSUMO DE COMBUSTIBLE

Proponente: **DESARROLLOS MADEREROS S.A.**

LUGAR: Tacuru pucú (km 32 Super Carretera)

DISTRITO: Hernandarias y Minga Guazú

DEPARTAMENTO: Alto Paraná

FINCA N°: 1.338 y otros

PADRON N°: 2.243 y otros

SUP. TOTAL: 13.688,6 ha.

AUDITOR:
ING. CHRISTIAN SCHREIBER
Registro SEAM N° I - 969

TELEFAX: 677-432

Asunción - Paraguay

Año 2022

Source: DMSA, 2023.