



VERIFICATION REPORT OF “AFFORESTATION IN COOPERATION WITH LOCAL LANDOWNERS FOR FORESTAL SAN PEDRO S.A”



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Summary:

- A brief description of the verification and the project**

The projects activity consists of afforestation of agricultural land, mostly pastureland to establish quality timber plantations. This is achieved by operating under the Law 4890/13, which allows to legally decouple forest ownership from land ownership. Forestal San Pedro S.A. seeks to cooperate with local medium and large landowners to conduct tree planting on their properties. Plantations are established in silvopastoral systems on traditional cattle farms. Landowners lease their land to the company and get a share of the expected benefits while continuing using the land for cattle grazing in a manner compatible with forestry. The project aims to establish and manage an area of 7,000 ha. The project is a grouped project and covered 9 Forest Management Units (FMUs) consisting of 4,018.5 ha at the time of joint validation and verification. In the current monitoring period, a new FMU i.e. “FMU 10” has been added with an area of 306.5 ha.

- The purpose and scope of verification**

The objective of the verification is to have an independent review ex post determination by a VVB (Validation and Verification Body) of the monitored GHG removals by sink that have occurred because of the implementation of the project activity during a defined monitoring period.

- The monitoring period**

This is the 2nd monitoring period started from 01-January-2021 to 30-September-2022. In the last verification period from 05-April-2015 to 31-December-2020 certified by TUV NORD, out of 9 FMUs, only 3 FMUs i.e. FMU 5 (Los Juanes), 6 (Isla Yobay) and 8 (Ocampo Cue) were considered for the verification since “notarized forest surface rights” (DRSF=Derecho Real de Superficie Forestal) were only completed for these three FMUs because of delay due to COVID-19.

In the current i.e., 2nd monitoring period, since the notarized transfer of forest surface rights was completed for FMU 1 (Rancho ZS), 2 (Rancho 068), 3 (Don Honorio), 4 (Loma Vistosa), 7 (Cerrito) and 9 (Cerro Verde), GHG ER removals for these FMUs was accounted for the previous vintage of 05- April-2015 to 31-December-2020 and current vintage 01-January-2021 to 30- September-2022, where as for FMU 5 (Los Juanes), 6 (Isla Yobay) and 8 (Ocampo Cue), GHG ER removals were accounted for

current monitoring period from 01-January-2021 to 30- September-2022. FMU 10 has not been considered for GHG ER removals for the current monitoring period as the it has been planted only in August 2022.

- **The method and criteria used for verification**

Verification is conducted using TÜV SUD South Asia Private Limited (TÜV SUD) procedures in line with the requirements specified in the latest version of the VCS Validation and Verification Manual and applying auditing techniques. The verification team assessed the project activity's compliance against the VCS Standard Version 4.4, the selected methodology and the project monitoring report. The project is eligible under Sectoral Scope 14 "Agriculture, Forestry and other Land Use (AFOLU)". The verification criteria followed the guidance documents provided by VCS included the following:

VCS Standard Version 4.4, VCS Program Guide Version 4.3, AFOLU Non- Permanence Risk Tool (NPRT) version 4.1, and the applied CDM methodology AR-ACM0003 – "Afforestation and reforestation of lands except wetlands" (version 2.0.0).

- **The number of findings raised during verification**

In the course of the verification, 4 (CAR), 8 Clarification Requests (CLs), 2 FARs (Forward Action Request) were raised. The assessment is included in the report.

- **Any uncertainties associated with the verification**

There are no restrictions of uncertainty.

- **Summary of the verification opinion**

In the 2nd verification, a new FMU 10 planted in August 2022 consisting of 306.5 ha has been added as a new instance. After considering net loss due to storm, remapping and stagnation in development of trees due to bad site conditions, project consists of 4,259.0 hectares of pasture-/agricultural land afforested through planting of Eucalyptus in a mostly silvopastoral system. However, FMU 10 is not considered for calculation of GHG ER removals as the trees in this FMU have not reached maturity for ER accounting. Thus, total certifiable area for the 2nd verification period is 3,952.5 ha. As described in the section above, all the 9 FMUs have been considered for quantification of GHG ER removals in 2 vintages from 05-April-2015 to 30-September-2022 (including both days).

As a result of this verification, the verifier confirms that:

- all operations of the project are implemented and installed as planned and described in the registered PDMR version 1.5 of 09-March-2022;
- the monitoring plan is in accordance with the applied approved CDM methodology, i.e., AR-ACM0003– version 2.0.0 and registered PDMR version 1.5 of 09-March-2022;
- the installed equipment essential for measuring parameters required for calculating emission reductions are properly maintained;
- the monitoring system is in place and functional. The project has generated GHG emission reductions.
- In addition, the verifier confirms that the GHG emission reductions are calculated without material misstatements in a conservative and appropriate manner. TÜV SUD herewith confirms that the project has achieved emission reductions in the above-mentioned reporting period as follows:

	Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)	Buffer pool allocation (15%)	VCUs eligible for issuance
	2021 ¹	825	285,937	-	258,112	38,717	219,396
	2022	0	176,067	-	176,067	26,410	149,657
	Total	825	435,004	-	434,179	65,127	369,052

¹ Baseline emissions for 2021 are cumulative of baseline emissions for previous vintage from 05-April-2015 to 31-December-2020 for FMU 1, 2, 3, 4, 7 and 9 and current monitoring period from 01-January-2021 to 30-September-2022 for FMU 1 to 9.

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1 INTRODUCTION

1.1 Objective

Forestal San Pedro S.A., Ltd has commissioned the TÜV SUD South Asia Private Limited (TÜV SUD) to carry out the Verified Carbon Standard (VCS) 2nd periodic verification of the project for the monitoring period from 01-January-2021 to 30-September-2022. The objective of verification is to have an independent review ex-post determination by a VVB of the monitored GHG removals by sink that have occurred because of the project activity implemented during a defined monitoring period. The evaluation is done against the requirements of the VCS Standard Version 4.4^{/VCS_STD/}, based on the monitoring report^{/MR/}, AR-ACM0003 Version 2.0.0^{/METH/}, NPRT Version 4.1^{/NPRT/} and other applicable requirements as explained in further sections. To confirm that the GHG removals by sink sound reasonable and meet the identified criteria, the verification involves the assessment of monitoring plan conformance to VCS rules and applied methodology. Verification is requirement and is seen as necessary to provide assurance on the generation of Verified Carbon Units (VCUs).

1.2 Scope and Criteria

The scope of the verification is to verify that: (a) the actual monitoring system and procedures are in compliance with the monitoring systems and procedures described in the monitoring plan; (b) the GHG removals by sink data and express a conclusion with a reasonable level of assurance about whether he reported GHG removals by sink data are free from material misstatement; (c) the reported GHG emissions data is sufficiently supported by evidence. Verification shall ensure that the reported GHG removals by sink are complete and accurate in accordance with the applicable VCS criteria to be certified.

Verification is conducted using TÜV SUD procedures in line with the requirements specified in the VCS Standard 4.4^{/VCS_STD/} and ISO14064-3:2019^{/ISO/} requirements and applying auditing techniques. Verification team assessed and determines that the implementation and operation of the project activity, and steps to report GHG removals by sink comply with the VCS rules. The verification involved a document review of relevant documentation and interview with the project participants. Verification is not meant to provide any consultancy towards the project participants; however, stated request for clarifications and/or corrective actions may have provided input for improvement of the monitoring.

1.3 Level of Assurance

All GHG sinks, sources and GHG emissions equal to or greater than 5% of the total GHG assertions are considered. As per registered PDMR^{/PDMR/}, the project size is categorized as Project, regarding its scale, subject to a 5% materiality threshold in line with the section 4.1.8 of the VCS Standard, v4.4^{/VCS_STD/}.

The assessment was conducted to provide a reasonable level of assurance of compliance against the defined audit criteria and materiality threshold within the audit scope. Based on the audit findings, the verification statement reasonably assures that the GHG assertion is materially correct and is a fair representation of the GHG data and information.

1.4 Summary Description of the Project

The project's activity is a grouped project which consists of afforestation of pastureland to establish quality timber plantations. This is achieved by operating under the Law 4890/13, which allows to legally decouple forest ownership from land ownership. Forestal San Pedro S.A. who is the project proponent (PP) seeks to cooperate with local medium and large landowners to conduct tree planting on their properties. Plantations are established in silvopastoral systems on traditional cattle farms. Landowners lease their land to the company and get a share of the expected benefits while continuing using the land for cattle grazing in a manner compatible with forestry. The Project aims to establish and manage an area of 7,000 ha. Different species from the genera of eucalypts are selected, among them: *Eucalyptus grandis*, *E. urophylla*, *E. saligna*, *Corymbia citriodora* and *Corymbia maculata*, as well as the hybrids *E. urograndis* (*urophylla* x *grandis*) and *E. grancam* (*grandis* x *camaldulensis*).

At the time of joint validation and verification^{/FVR/}, the project consisted of 4,018.5 ha of pastureland afforested through planting of *Eucalyptus* in a silvopastoral system over total 9 number of Forest Management Units (FMUs) namely: FMU 1 (Rancho ZS), 2 (Rancho 068), 3 (Don Honorio), 4 (Loma Vistosa), 5 (Los Juanes), 6 (Isla Yobay), 7 (Cerrito), 8 (Ocampo cue) and 9 (Cerro Verde). In the current monitoring period, PP has included 306.5 ha of area planted with *Eucalyptus* in Aug 2022 in a new FMU i.e. FMU 10 as 2nd instance. Assessment of eligibility of FMU 10 as a new project activity instance is discussed in the report further. Therefore, the total project area consists of 4,259.0 ha in the current period.

Through GIS mapping^{/GIS/}, PP has adjusted the total area of 4,259.0 ha as mentioned below:

1. FMU 1 had loss of 44.5 ha due to storm in Aug 2022
2. FMU 6 and FMU 7 had loss of 0.5 and 1 ha due to remapping respectively
3. Area of FMU 5 was increased by 1 ha due to remapping
4. FMU 8 had loss of 14 due to stagnation in growth because of bad site conditions
5. FMU 9 had loss of 7 ha due to stagnation in growth because of bad site conditions

None of the above-mentioned areas adjustments had any impact in the claimed carbon in previous verifications. Therefore none of these corresponds to a loss event.

The project is certified against the Forest Stewardship Council (FSC) sustainable forest management standard^{/FSC/}.

The current monitoring period is from 01-January-2021 to 30-September-2022². After deducting buffer of 15%, the total net carbon emission reduction of 420,244 tCO_{2e} has been determined.

2 VERIFICATION PROCESS

2.1 Method and Criteria

The objective of verification is the ex-post assessment of the monitored GHG data and information. During the verification, the verification team has evaluated monitoring report and assessed the following:

- The extent to which methods and procedures, including monitoring procedures, have been implemented in accordance with the validated project description. This included ensuring compliance with monitoring plan.

- The extent to which GHG emission removals reported in the monitoring report version 2.0 dated 11/06/2024 are materially accurate.

In determining the scope of verification, TÜV SUD has taken into account the physical boundaries, project sites and temporal boundaries i.e. the length of monitoring period. This verification includes assessment of GHG data and information reported in the monitoring report version 1 for the monitoring period 01-January-2021 to 30-September-2022 of the project activity “Afforestation in cooperation with local landowners for Forestal San Pedro S.A” (VCS 2361) located in 10 FMUs as described in section 1.4 in the Department of San Pedro and Canindeyu.

A project specific Verification and Sampling plan was developed to guide the verification auditing process to ensure efficiency and effectiveness. The purpose of the verification and sampling plan is to present a risk assessment for determining the nature and extent of verification procedures necessary to ensure the risk with respect to material errors, omissions, and misrepresentations is reduced to a reasonable level. According to the ISO14064-3:2020, the criteria are the policy, procedure or requirement used as reference against which evidence is compared. Therefore, verification of the monitoring plan and the reported project results were measured for compliance against the key requirements in the following documents:

- VCS Standard, v4.4^{/VCS_STD/}
- VCS Program Guide, v4.3^{/VCS_STD/}
- VCS Program Definitions, v4.3^{/VCS_STD/}
- AFOLU Non-Permanence Risk Tool, v4.1^{/NRPT/}
- ISO 14064-2:2019^{/ISO/}
- Applied Methodology AR-ACM0003 “Afforestation and reforestation of lands except wetlands” Version 2.0^{/METH/} and Applied Tools referred in the registered VCS PDMR Version 1.5 dated 09/03/2022^{/PDMR/}

As per 4.1.2 of VCS Standard, v4.4, the verification team gathered evidence to verify statement of historical data and information of emission removals of the monitoring period 01-January-2021 to 30-September-2022 to a reasonable level of assurance that the project meets more than 5% of materiality requirement in line with 4.1.8 of VCS Standard, v4.4.

The verification process derived from all items in the verification criteria stated above. Field sampling and techniques based on the project parameters, scope, and best professional judgement of the verification team to meet a reasonable level of assurance. The verification consisted of the following three phases:

- Document review
- On-site assessment and interviews of project personnel
- The resolution of outstanding issues and the issuance of the final verification report and statement

For the monitoring of the volume standing Permanent Sample Plots (PSPs) were established. The PSPs consist of 20 planted trees (regardless of whether they survived or not) and are established randomly. In older areas, where second thinning was already conducted, the number of remaining trees in each plot was too small to conduct statistical analysis. Therefore, in 2022, whenever the trees in the plot were less than 8, the size of the plot was duplicated, meaning 40 equivalent trees were measured. This has been reported as a PDD deviation. According to internal procedures, the minimum density is 1 PSP every 10 ha, corresponding to a minimum sampling size of 0.2 % in terms of area^{/SOP/}. However, in actual, the average is 1 PSP every 6 ha, corresponding to 0.3% of the planted area as checked during on-site visit and inventory data^{/INV/}.

Depending on the spacing of the forest stand two types of PSPs were designed with different sizes of 200 m² and 280 m² in the PDD for plantation with 1,000 and 714 trees/ha respectively. The size for the plots in each strata is defined by the measurement of 20 trees. Therefore, the new strata 2019 and 2020 with 476 and 417 trees/ha require a plot size of 420 and 480 m² respectively. Each

² Refer “Summary” section above regarding explanation on verification period

tree is numbered and thus re-measurable. During the site visit, out of total 1097 plots, in line with FSC Standard, FSC-STD-20-007, a sample of 20 plots was randomly selected which is $x=0.6 \cdot \sqrt{y}$, where x is the sampling size determined by verification team and y is the sample plots number determined by PP for the monitoring), and it has ensured a representative cross-section of all the FMUs & plantation plots in all the these FMUs.

During site visit, by sample plots observation and inspection, the verification team measured the sample plot area, counted the number of the trees inside plot, measured the DBH and height of the trees inside plot, and confirmed that the value of all trees from PP sampling data are correct and reasonable, hence it is verified that the calculation method used in the monitoring report is correct and actual.

The verification team member and technical reviewer composition are listed in the below table:

Table 2.1.1 Verification team member

N o.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of VVB or outsourced entity)	Involvement in			
						Desk/document review	On-site inspection	Interviews	Verification findings
1.	Team Leader, Verifier	IR	Kudtarkar	Shruti	TÜV SUD South Asia Pvt. Ltd.	☑	☑	☑	☑
2.	Technical Expert, Country Expert	EI	Pizzurno	Cecilia	TÜV SUD South Asia Pvt. Ltd.	☑	☑	☑	☑

Table 2.1.2 Technical reviewer and approver of the verification report

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)
1.	Technical reviewer	EI	K.	Sudheendra	TÜV SUD South Asia Pvt. Ltd.
2.	Technical expert for review	IR	Rawat	Dr. Ashish	TÜV SUD South Asia Pvt. Ltd.

2.2 Document Review

The VCS MR version 1 dated 31/05/2023, version 1.1 dated 14/09/2023^{/MR/}, version 2.0 dated 08/03/2024, version 2.1 dated 11/06/2024, ER Calculations version 1 dated 31/05/2023, version 1.1 of 14/09/2023^{/ER/}version 2.0 of 08/03/2024, version 2.1 dated 11/06/2024 and supporting documents related to the project implementation and monitoring were reviewed. Document review was conducted to ensure consistency with and identify any deviation from VCS program requirements. Desk review included an examination of the project details, data and parameters, and quantification of GHG removals.

Furthermore, the verification team used additional documentation by third parties like host party legislation, technical reports referring to the monitoring or to the basic conditions and technical data. The references used during this verification are summarized in Appendix 2.

The verification was performed based on the documents check, site inspection covering actual measurements in the sample plots by the verification team and interviews with relevant personnel. Please refer to section 4 of this report for the verification process detail and corresponding documents review.

2.3 Interviews

The objective of the interview process was to seek important information from personnel related to project and relevant to the verification process. On-site interviews and information discussions were conducted with project proponent^{/Interview Records/}, landowners, local communities^{/Interview Records/} and field team^{/Interview Records/}. The interviews were performed by the verification team on-site. Interview covered discussion on the topics such as technical details of the project, monitoring and measurement equipment and system, crediting period, new instance addition, ownership, inventory management, analysis of local stakeholder consultation, ongoing stakeholder feedback and grievance mechanism, non-performance risk analysis, net harm, safeguards, training of field staff, VCS MR and ER calculation.

It should be noted that large part of the field workers (often staff of service providers) interviewed come from local communities. The list of persons interviewed is given in the table below:

Table 2.3.1 List of persons interviewed

Name of the interviewee
Ismael Rojas, Production manager
Giannina Alvarez, Forestry planning & monitoring manager
Luis Zarate, Forestry technician and community member of San José
Adriana Arza, Social specialist and resident of the local town San Pedro
Julio Duarte, Field staff and community member of San José (Ocampo cue)
Cristian Pavon, Field staff and community member of San José (Ocampo cue)
Jose Benitez, Inventory manager and community member of Inmaculada Moreira (Cerrito, Isla Yobai, Los Juanes)
Rufino Benitez, Field staff and community member of Aguaray Seco Santa Catalina (Cerrito, Isla Yobai, Los Juanes)
Alejandro Cardozo, Field staff and community member of Ybycui (Cerrito, Isla Yobai, Los Juanes)
Eladio Ramirez, Inventory staff and community member of Kororoi (Rancho zs)
Hector Ramirez, Inventory staff and community member of Kororoi (Rancho zs)
Marlene Gonzalez, Inventory staff and community member of Kororoi (Rancho zs)
Diana Quiroz, Production manager
Arnaldo Cabrera, Technician
Bernabe Villalba, Estancia Don Honorio officer and community member of Calle 1ro de Mayo
Lucio Valenzuela Gaona, Estancia training, equipment, stakeholder consultation manager

2.4 Site Visits

The verification site visit was conducted on 13-June-2023 to 23-June-2023. An on-site inspection of the eucalyptus plantation area was conducted and during site visit, members of the verification team visited 20 representative sample plots within the project area as described in 2.1 above by checking the map of the project location and PP's sampling plots inventory^{/SPI/}. During the site inspection, the verification team was accompanied by the project proponent and field team.

Refer to the section 4.4.1 of this report for the details of the sampling approach conducted by the verification team during site inspection and refer to table 4-7 of this report for the details of the sampling results concluded by the verification team.

2.5 Resolution of Findings

Material discrepancies identified during verification are addressed either as CARs, CLs or FARs.

A **Corrective Action Request (CAR)** is established where:

1. The project participants have made mistakes that will influence the ability of the project activity to achieve real, measurable additional emission reductions,
2. VCS Standard Version 4.4 requirements have not been met,
3. There is a risk that the emission reductions cannot be monitored or calculated.

A **Clarification Request (CL)** will be issued where information is insufficient, unclear or not transparent enough to establish whether a requirement is met.

A **Forward Action Request (FAR)** will be issued when certain issues related to project implementation should be reviewed during the next verification.

A detailed list of the CARs CLs and FAR raised and discussed in the course of this validation is included in Appendix 3 of this report.

During the verification, 4 CARs, 8 CLs and 2 FARs were raised. The assessment is included in the report.

2.5.1 Forward Action Requests

This is the 2nd verification, and there were 2 FARs raised in the 1st verification report^{/FVR/}. FAR 1 is closed. FAR 2 remains open and to be verified by the VVB certifying 3rd verification period. 2 FARs have been opened during this verification.

2.6 Eligibility for Validation Activities

TÜV SUD South Asia Private Limited holds accreditation for both validation and verification of sectoral scope 14.

As per VCS Standard 4.1.23 (1), “Validation (including project crediting period renewal validation) and the first verification of a project (in a given project crediting period) may be undertaken by the same validation/verification body. However, the subsequent verification shall be undertaken by a different validation/verification body”, this is the 2nd periodical verification. The joint validation and 1st periodical verification was conducted by TUV NORD^{/VER1/}. Thus, this requirement of VCS Standard is fulfilled.

The 2nd verification period is from 01-January-2021 to 30-September-2022³. Thus, the condition of VCS standard 4.1.23 (2) is met.

3 VALIDATION FINDINGS

3.1 Participation under Other GHG Programs

The GHG emission removals generated by the project have not counted or used under other GHG Programs i.e. UNFCCC-CDM, The Gold Standard, Plan Vivo Standard and/or other forms of environmental credit. The net GHG emission reductions from the project will not be used for compliance with emission trading programs or to meet binding limits on GHG emissions. The host country Paraguay does not have a national emissions trading scheme. Thus, it has been concluded that the project is not part of any emission trading program or it has not participated under any GHG programs and the same has been confirmed via checking the UNFCCC-CDM^{/unfccc/}, The Gold Standard^{/gs/}, Plan Vivo^{/planvivo/} and other GHG schemes' website.

Furthermore, the project is validated & registered through VCS as confirmed by checking joint validation and 1st verification which was conducted by TUV NORD for the monitoring period from 05-April-2015 to 31-December-2020^{/FVR/}. The issuance of VCUs have ensured the avoidance of double counting as the credits generated from the project were sold as offsets on VCS registry publicly, the series number of the issued credits can be tracked to avoid any potential double counting.

3.2 Methodology Deviations

During the monitoring period, there are no methodology deviations.

3.3 Project Description Deviations

There are two deviations regarding the monitoring system for the yearly inventories of the company:
.. *Deviation 1: Currently, the company only measures the heights of odd-numbered trees and calculates the heights of the other trees using mathematical regressions. A regression was calculated for each FMU, and with this equation, the remaining heights are estimated for the final volume calculation. The company compared the inferred heights of the regressions with the measured values and the result were very accurate. This system has yielded results similar to measuring all heights and reduced field time during inventories, allowing for more plots to be measured, with a positive effect on inventory accuracy.*

Deviation 2: There is a second deviation in the PD regarding the inventory. Sections 5.2 and 5.3 of the PD indicate areas of 200 and 280 m² for each inventory plot, which translates into measurement of 20 originally planted trees for the plantation densities in the first instance, 714 and 1,000 trees per ha. For the new instances, the method for selecting the inventory plot remains the same by marking 5 trees in a line and 4 parallel lines for each plot, marking 20 originally planted trees. For the two new planting densities included in the second instance of 476 trees/ha established in 2019 and 417 trees/ha established in 2020, new plot sizes are established to cover the measurement of 20 trees. Establishing the 20-tree plots in these areas requires plot sizes of 420 and 480 m², respectively. Therefore, there are currently 4 plot sizes: 200, 280, 420, and 480 m².

The VVB has found the deviations to be compliant with the methodology requirement and therefore accepted.

3.4 Grouped Project

Project is a grouped project activity. PP has included a new FMU i.e. FMU 10 consisting of 306.5 ha leading to current project area as 4,259.0 ha. In accordance with 3.6.16 and 3.6.17 of VCS standard 4.4 and eligibility criteria prescribed in the registered PDMR, assessment of eligibility of FMU 10 as a new project activity instance has been carried out as described in the table below. In conclusion, FMU 10 has been found meeting the eligibility requirements for new instance.

Table 3.4.1 Assessment of eligibility of new project activity instance

Eligibility condition as per registered PDMR	Assessment opinion
Occur within one of the designated geographic areas specified in the project description	FMU 10 is in department of San Pedro ^{/Insp/} in eastern Paraguay which is the same location of FMU 1 to 8. San Pedro has been identified as one of the designated geographic areas in PDMR. Thus, this eligibility condition is met.
Conform with at least one complete set of eligibility criteria for the inclusion of new project activity instances. Partial conformance with multiple sets of eligibility criteria is insufficient.	The following eligibility criteria have been assessed as per PDMR: <i>10 years no deforestation of native ecosystems</i> Eligible AR areas must have been cleared of native ecosystems at least 10 years prior project establishment. Furthermore, according to chapter 3.2.4 activities that convert native ecosystems to generate GHG credits are not eligible under the VCS Program.

The FMU 10 project area consisted of agricultural fields, namely mechanized soy, before tree planting took place as confirmed from the satellite imagery^{/shp/}. The project instance has been introduced into the scope of the FSC certification in 2022 (FSC®-C169494)^{/FSC/} and follows FSC Principles and Criteria that establish a non-deforestation cut-off date of 1994.

2. No drainage

The VCS Standard Art 3.2.5 states: “Activities that drain native ecosystems or degrade hydrological functions to generate GHG credits are not eligible under the VCS Program.”

For FMU 10, it has been observed during the site visit that drainage exists only on the periphery of the plantation to reduce surface water accumulated in some parts. It existed prior to project due to agricultural activities in the area and the canals are appx. 80 cm deep. It was ensured that this practice only drains excess water and does not drain native ecosystem. Hence, this condition is met.

3. The land subject to the project activity does not fall in wetland category

It was confirmed during the site visit that FMU 10 land is not a wetland and rather consists of agriculture and pastureland. Moreover, wetlands are not suitable for Eucalyptus plantations. Further, results of soil analysis based on HSWD (<https://iiasa.ac.at/models-tools-data/hwsd>) data of FMU 10 belong to IPCC class sandy soil with more than 70% sand and less than 8% clay. Thus, this condition is met.

4. Soil disturbance attributable to the project activity does not cover more than 10 per cent of area in each of the following types of land, when

	<i>these lands are included within the project boundary.</i> It has been confirmed from interviews that FMU 10 follows same technical and silvicultural management as other FMUs which consists of plantations of 6 X 2 m spacing resulting in 20 lines/ha up to 50cm width resulting in less than 10% of soli disturbance. Thus, this condition is met. 5. <i>Are subject to the baseline scenario determined in the project description for the specified project activity and geographic area</i> Prior to project plantation, FMU 10 was used for mechanized agriculture and for pasture and has been planted with same Eucalyptus species by PP as on other FMUs. Because of the same technical measures, FMU 10 additionality assessment remains in line with the additionality of the project activity. Thus, this condition is met. 6. <i>Be included in an updated project description, with updated project location information(as set out in Section 3.11), which shall be validated at the time of verification against the applicable set of eligibility criteria</i> The eligibility criteria is being assessed for FMU 10 and found to be in order. 7. <i>Have evidence of project ownership, in respect of each project activity instance, held by the project proponent from the respective start date of each project activity instance (i.e., the date upon which the project activity instance began reducing or removing GHG emissions).</i> PP has acquired forestry surface rights /DRSF/ through notarized transfer of FMU 10. Thus, this condition is met.
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	8. <i>Have a start date that is the same as or later than the grouped project start date.</i> FMU 10 plantation started in 01-August 2022 as confirmed from project register^{/actividades/}. Thus, this condition is met. 9. <i>Be eligible for crediting from the start date of the project activity instance through to the end of the project crediting period (only). And</i> 10. <i>Only eligible for crediting from the start of the verification period in which they were added to the grouped project.</i> FMU 10 will be considered for verification from 01-August-2022 till the end of crediting period. Thus, the above 2 conditions are met. 11. <i>Not be or have been enrolled in another VCS project.</i> It has been verified from the VERRA registry that FMU 10 is not part of another ARR project. 12. <i>Adhere to the clustering and capacity limit requirements for multiple project activity instances set out in 3.6.8 - 3.6.9. Activity-shifting, market leakage and ecological leakage assessments, where required.</i> FMU 10 is more than 10km radius from the nearby FMUs^{/Insp/}. Further, new instance does not cause activity shifting, market leakage and ecological leakage assessments. Thus, this condition is met. 13. <i>Leakage AR-Tool 15: This tool is not applicable if the displacement of agricultural activities is expected to cause, directly or indirectly, any drainage of wetlands or peat lands.</i>
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	<i>Furthermore, according to Paragraph 9, Note 1: Displacement of an agricultural activity by itself does not result in leakage emission. Leakage emission occurs when the displacement leads to an increase in GHG emissions relative to the GHG emissions attributable to the activity as it exists within the project boundary.</i> The PP has provided evidence corresponding to no leakage according to AR Tool 15. This is found to be in order.
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4 VERIFICATION FINDINGS

4.1 Project Implementation Status

The project activity is mainly implemented and in operation in accordance with the description contained in the registered PDMR Version 1.5 dated 09/03/2022 ^{/PDMR/}. As confirmed during the on-site inspection, interviews, the project implementer has implemented the activities as described in the registered PDMR in compliance with the VCS Standard Version 4.4 applicable requirements. The actual planted area accounts to 4,260.5 ha for the current monitoring period.

The implementation status of the project activity is identified, and the assessment steps are taken as the following.

Table 4.1. Assessment of implementation status of the project activity

Item	Assessment
The existence of any material discrepancies between project implementation and the project description.	No material discrepancies have been noted since last verification; absence of such material discrepancies was confirmed through onsite inspection and interviews with the project personnel. CL 4 was raised for this point and closed.
The implementation status of the monitoring plan and the completeness of monitoring, including the suitability of the implemented monitoring system (i.e., process and schedule for obtaining, recording, compiling and analyzing the monitored data and parameters).	The monitoring has been carried out mainly in accordance with the monitoring plan contained in the validated monitoring plan. The project stratifications for carbon calculations is ex-ante determined as plantation year and plantation density/ha of area. And the total sample plots are calculated by PP as 1,097 as per various

	spacing sizes distinctly. CL 4 was raised for this point and closed.
The existence of any material discrepancies between the actual monitoring system, and the monitoring plan set out in the project description and the applied methodology.	As assessed above, there is no change of the sampling plots in the actual monitoring system comparing with the monitoring plan. Through detailed review and data testing on implementation of all relevant aspects of actual monitoring system, it is confirmed there is no material discrepancy between methodology and actual monitoring system. The actual monitoring system is implemented in line with the applied methodology.
Whether the GHG emission reductions or removals generated by the project have become included in an emissions trading program or any other mechanism that includes GHG allowance trading.	It is confirmed, applying professional judgment, that there is very low risk of GHG removals having included in any other trading program or any other mechanism that includes GHG allowance trading which has been assessed and verified in the validation process.
Whether the project has participated or been rejected under any other GHG programs since validation or previous verification.	As described in section 3.1 above, the verification team has ascertained that there is no evidence of project's rejection from any other GHG programs as the UNFCCC-CDM ^{/unfccc/} , The Gold Standard ^{/gs/} , Plan Vivo ^{/planvivo/} since last verification.
Whether the project has received or sought any other form of environmental credit, or has become eligible to do so since validation or previous verification.	The verification team is unaware of any other environmental crediting program that project would be eligible to participate in since validation.

Sustainable development contributions.	As per registered PDMR/^{PDMR}, the project contributes to the national forest sector by providing proof of concept and implementation of models aligned to political goals, such as the national plan of reforestation (Decree N° 10,147 of 2012), governmental efforts to formalize the biomass sector (Decree N° 4056/2015), and the contribution to the National Determined Contributions of the country, where afforestation is highlighted as a prominent measure. In the MR, PP has self reported SDG contribution as below. CL 1 was raised for this point and closed.
The implementation status of project activities that lead to the intended GHG benefits that commenced prior to monitoring period.	As confirmed during on-site inspection & interviews with stakeholders, the project activity has not lead to intended GHG benefits that commenced prior to the monitoring period under assessment.
List any previously validated methodology deviations, project description deviations, and minor changes to the project description (each verification report must contain an exhaustive list of all deviations or changes applied to the project).	This is the 2 nd periodic verification, via checking the registered PDMR and via site inspection, it is confirmed that there is no previously validated methodology deviations, project description deviations, and minor changes to the project description.
When the project is in a supply chain, whether public statements have been made by the producer(s), retailer(s) or project proponent (as applicable) saying that VCUs may be issued for the GHG emission reductions and removals associated with the impacted goods and services	Project is part of supply chain. PP has published public statement on its website that VCUs may be issued for the GHG emission reductions and removals associated with the impacted goods and services. CL 2 was raised in this regard which is closed.
When the project is in a supply chain, whether the producer(s) or retailer(s) of the impacted good(s) and service(s) have been notified of the potential risk of Scope 3 emissions double claiming via email (where applicable).	Project is part of supply chain. PP has intimated its customers of timber via email on potential risk of scope 3 emissions double claiming. CL 2 was raised in this regard which is closed.

Based on above assessment, it is concluded that the project has been implemented as described in the project description.

4.2 Safeguards

4.2.1 No Net Harm

The project is an afforestation project of agricultural land, mostly pastureland. Plantations are established in silvopastoral systems on traditional cattle farms. Landowners lease their land to the company and get a share of the expected benefits while continuing using the land for cattle grazing in a manner compatible with forestry. Landowners are required to have legal land titles^{/DDI/}. The plantation activity is subject to an annual inspection by an independent third party^{/FSC, SAI/}

Thus, there are no negative environmental or socio-economic impacts due to the project activity. On the contrary, in terms of ecological aspects, the most important benefits are:

- Reduction of Erosion due to tree rows
- Contribution to improved water household
- Carbon sequestration
- Valid environmental licenses
- Improvement of fire prevention

In terms of socio-economic aspects, the most important benefits are:

- Continuation of cattle grazing due to the implementation of silvopastoral systems
- Increase of job opportunities compared to industrialized agriculture for which local entrepreneurs are hired.
- Strict adherence to international accepted health and safety requirements
- Elaboration and implementation of an out growers scheme

Assessment team confirms that the project activity does not lead to any net harm in regard to environmental and socio-economic impacts. The above mentioned was further confirmed by inter-viewing the field staff, technical staff, plantation managers, landowners, community leaders.

CL 4 was raised in this regard which is closed.

4.2.2 Local Stakeholder Consultation

The registered PDMR discusses the way stakeholders were involved in the project design initially, furthermore, the MR discusses the meeting and consultation regarding design, implementation, monitoring and benefits are shared with stakeholders and communities.

At the time of joint validation/verification, the PP had conducted local stakeholder consultation with communities directly neighboring the plantation sites, and those that share the use of resources (water courses) and infrastructure (access roads), as “direct local stakeholders” in November 2014^{/PDMR, FVR/}.

As part of ongoing communication with local stakeholders and for the new FMU 10 being added, the PP has carried out consultation for the current monitoring period. The stakeholders identified include neighbouring communities Santa Isabel for FMU 10. Consultations with this community have taken place during the expansion of project area in August 2022. After due diligence and consultation with communities, it was identified by the PP that there exists no conflict between plantation sites in and local communities.

The PP has also conducted Rapid Rural Appraisal with Santa Isabel to facilitate further communication with these communities. Community Liaison Officer (CLO) has been appointed by the PP for continuous dialogue with the communities and management of grievances. Community engagement, grievance addressal has been verified by checking records maintained by CLO ^{/LSC/} and interaction with few of these stakeholders during on-site inspection. There were 8 grievances recorded and PP has followed up on the grievances to close them by taking appropriate corrective actions such as monthly assessment of conditions related to labour employment (employment as per national labour code, health & safety measures adopted at site) and annual or bi-annual assessment of job satisfaction of sub-contracted labour^{/LSC/}. Throughout the year 2022, eight grievances were collected, six from operational staff regarding labor relations and work-related issues, and two related to community impacts. Of the former, three were collected during the annual job satisfaction survey. All were addressed. Regarding community impact, in Q1 there were repeated grievances by community members of San José about the state of their community road, negatively impacted by heavily loaded trucks.

Also, the PP has provided evidence of communication events conducted, such as meetings, trainings, and public consultations, and the communication is considered appropriate. Also, the PP has signed benefit sharing agreements with the landowners, with complete and transparent information.

As part of its social responsibility approach towards community, PP has supported 23 beneficiaries’ eucalypt plantations and conducted communication campaigns in schools for fire prevention, support in road maintenance and soil preparation for crops^{/LSC/}.

It was noted by the audit team that the project has obtained FSC certification and undertakes FSC audit annually. In the last FSC audit conducted in January 2023^{/FSC/}, the auditor has interacted with communities, workers, contractors and there were no negative comments as checked from the FSC report. PP has made available public summary of the management plan and monitoring results for 2020-21 at the weblink ^{/LSC/}.

4.3 AFOLU-Specific Safeguards

The PP has a stakeholder identification and consultation processes are in place^{/LSC/}. Stakeholder engagement includes environmental and forest authorities, Non-governmental organizations (NGOs) and experts, local community members and associations, contractors, and workers. The management team keeps a complete list of stakeholders per FMU which are also contacted during the FSC Audits^{/FSC/}.

The main impact to local stakeholders is positive as the project is providing more job opportunities than the pre-project land use: (pasture-/agricultural land).

Besides this positive effect some potentially negative impacts are to be found in:

- Risks of accidents / Health and safety
- Non-observation of minimum labor benefits
- Dust and noise / accidents on the road

The consideration of socio-economic impacts for local stakeholders and contractors and their adequate processing is also controlled during the annual FSC Audits^{/FSC/}.

Further it must be mentioned that an ongoing grievance policy is established and publicly available as part of the Management Plan^{/policy/}. Grievances received are processed and documented^{/LSC/}. During the field visit “buzones des sugerencia y quejas” (Grievance letterboxes) could be observed at all FMUs.

Further, the verification team has confirmed that the PP takes adequately due account of all, and any potential negative socio-economic impact. The above mentioned was further confirmed by interviewing the field staff, landowners and community representatives.

4.4 Accuracy of GHG Emission Reduction and Removal Calculations

Monitoring approach

The monitoring has been carried out in accordance with the monitoring plan contained in the registered PDMR /PDMR/.

The following table describe for each parameter which data are fixed ex-ante. Data and parameters fixed ex-ante as listed in the monitoring report have been cross-checked and reviewed as applicable against the validated PDMR and applied methodology.

The following list shows the default values used in this verification for GHG removals calculation:

Table 4.4.1 Assessment of ex-ante determined parameters

Parameter	Description	Value applied	Assessment
MAI	Mean Annual Increment	35m ³ /ha/yr	Value sourced from growth estimation based on inventory data and eucalyptus growth simulator of EMBRAPA which is in line with registered PDMR.
Conversion factor from C to CO ₂	Carbon coefficient times the fraction oxidized times the ratio of the molecular weight of carbon dioxide to carbon	44/12 tCO ₂ /C	Value sourced from IPCC as per methodology guidance which is in line with registered PDMR and found to be appropriate.
R _{TREE_PROJEC T}	Root-shoot ratio published for Eucalyptus globulus and E. camaldulensis	Approximately 0.25	Value sourced from the equation included in the methodological tool "Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities" Version 4.1
R _{TREE_BSL}	Root-Shoot ratio of trees	0.25	Value sourced from methodological tool "Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities" Version 4.1 which is found to be appropriate.

Parameter	Description	Value applied	Assessment
Wood density	Weight to volume relation of Eucalyptus grandis and E. urophylla	0.54 t/m ³	The value was calculated for Eucalyptus grandis and E. urophylla according to Zanne, A.E., Lopez-Gonzalez, G.*, Coomes, D.A., Illic, J., Jansen, S., Lewis, S.L., Miller, R.B., Swenson, N.G., Wiemann, M.C., and Chave, J. 2009. Global wood density database. Dryad. Identifier: http://hdl.handle.net/10255/dryad.235 which is in line with registered PDMR and found to be appropriate.
B _{FOREST}	Total Aboveground biomass of trees in the country, where the AR CDM project activity is located	80 t d.m. ha ⁻¹	Value sourced from De Sy, V., Herold, M., Achard, F., Beuchle, R., Clevers, J. G. P. W., Lindquist, E., & Verchot, L. (2015). Land use patterns and related carbon losses following deforestation in South America. Environmental Research Letters, 10(12), 124004 for tropical forest in Paraguay, de Sy et.al <i>which is in line with registered PDMR</i> and found to be appropriate.
CF _{TREE}	Carbon fraction of tree biomass	0.47 t C (t.d.m.) ⁻¹	Value sourced from methodological tool "Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities" Version 4.1 which is found to be appropriate.
DeltaC _{DW_BSL}	Conservative default factor expressing carbon stock in dead wood as a percentage of carbon stock in tree biomass	1%	Value sourced from IPCC for mean annual precipitation of 1300mm/yr.
DeltaC _{LI_BSL}	Conservative default factor expressing carbon stock in litter biomass as a percentage of carbon stock in litter biomass	1%	Value sourced from IPCC for mean annual precipitation of 1300mm/yr.

Parameter	Description	Value applied	Assessment
BEF	Biomass expansion factor for conversion of stem biomass to above-ground tree biomass for rubber	1.15	Value sourced from Table 3A.1.10 of IPCC GPG-LULUCF 2003 as per methodology guidance for broad leaf temperate forest since unavailability of data for sub tropical forest and found to be appropriate.
SOC _{REF,i}	Reference SOC stock corresponding to the reference condition in native lands	47 tC/ha	Value sourced from “Tool for estimation of change in soil organic carbon stocks due to the implementation of A/R CDM project activities” for tropical moist climate regions and found to be appropriate.
f _{LU,i}	Relative stock change factor for baseline land-use in stratum I of the areas of land	Agriculture 0.48 Pasture 1	Value sourced from IPCC which is in line with registered PDMR.
f _{MG,i}	Relative stock change factor for baseline management regime in stratum I of the areas of land	Full tillage/Agriculture 1 Moderately degraded/pasture 0.97	Value sourced from IPCC which is in line with registered PDMR.
f _{IN,i}	Relative stock change factor for baseline input regime (e.g. crop residue returns, manure) in stratum I of the areas of land	Medium/cropland 1 Medium/grassland 1	Value sourced from IPCC which is in line with registered PDMR.

It is confirmed that the parameters listed above are fixed ex-ante and used for baseline and project emissions calculation in accordance with the applied methodology and methodological tools.

The following table describe for each parameter which is to be measured according to the monitoring plan and how the verification team has verified that the actual monitoring complies

with the monitoring plant and that data have been assessed to correctly support the GHG removals being claimed.

Table 4.4.2 Assessment of ex-post determined parameters

Parameter	Description	Value applied	Assessment																		
FF	Form Factor for volume	0.4	PP has carried out measurement of 41 trees in different stem lengths in 2019 to determine the tree volume according to sectional diameter method 10.b of the methodology AR Tool 18. Also, the R2 factor is 0.98, above the minimum established of 0.85 and found to be appropriate. This analysis has been repeated in 2024, measuring 35 trees every meter according to the methodology defined in the tool. The p value obtained is less than 0.2 as required. Therefore, the value has been found to be appropriate																		
Ai	Area of tree biomass stratum i	Refer project Inventory^{/INV/}<table><tr><th>Stratum (Year_tree density)</th><th>Area (ha)</th></tr><tr><td>2015_714</td><td>866.5</td></tr><tr><td>2015_1000</td><td>438.5</td></tr><tr><td>2016_714</td><td>199.5</td></tr><tr><td>2016_1000</td><td>185.5</td></tr><tr><td>2017_714</td><td>1747.5</td></tr><tr><td>2018_714</td><td>378</td></tr><tr><td>2019_476</td><td>22</td></tr><tr><td>2020_416</td><td>115</td></tr></table>	Stratum (Year_tree density)	Area (ha)	2015_714	866.5	2015_1000	438.5	2016_714	199.5	2016_1000	185.5	2017_714	1747.5	2018_714	378	2019_476	22	2020_416	115	The areas of stratum are measured through GPS (Garmin), QGIS software. Strata is plantation year and plant density/ha. Measurements are taken at the start of project and adjusted every year with satellite imagery ^{/shp/} and found to be appropriate. CAR 2 was raised in this regard which is closed.
Stratum (Year_tree density)	Area (ha)																				
2015_714	866.5																				
2015_1000	438.5																				
2016_714	199.5																				
2016_1000	185.5																				
2017_714	1747.5																				
2018_714	378																				
2019_476	22																				
2020_416	115																				

W _i	Relative weight of the area of stratum I, the area of the stratum i divided by the project area	Calculated based on W_i and total area <table><tr><td>Stratum (Year_tree density)</td><td>W_i</td></tr><tr><td>2015_714</td><td>0.22</td></tr><tr><td>2015_1000</td><td>0.11</td></tr><tr><td>2016_714</td><td>0.05</td></tr><tr><td>2016_1000</td><td>0.05</td></tr><tr><td>2017_714</td><td>0.44</td></tr><tr><td>2018_714</td><td>0.10</td></tr><tr><td>2019_476</td><td>0.01</td></tr><tr><td>2020_416</td><td>0.03</td></tr></table>	Stratum (Year_tree density)	W _i	2015_714	0.22	2015_1000	0.11	2016_714	0.05	2016_1000	0.05	2017_714	0.44	2018_714	0.10	2019_476	0.01	2020_416	0.03	Calculated based on A _i and total area and found to be appropriate.
Stratum (Year_tree density)	W _i																				
2015_714	0.22																				
2015_1000	0.11																				
2016_714	0.05																				
2016_1000	0.05																				
2017_714	0.44																				
2018_714	0.10																				
2019_476	0.01																				
2020_416	0.03																				
S _i	Estimated standard deviation of biomass stock in stratum i	T.d.m, calculated value <table><tr><td>Stratum (Year_tree density)</td><td>S_i</td></tr><tr><td>2015_714</td><td>22.8</td></tr><tr><td>2015_1000</td><td>40.2</td></tr><tr><td>2016_714</td><td>15.0</td></tr><tr><td>2016_1000</td><td>40.9</td></tr><tr><td>2017_714</td><td>21.2</td></tr><tr><td>2018_714</td><td>11.6</td></tr><tr><td>2019_476</td><td>9.0</td></tr><tr><td>2020_416</td><td>7.0</td></tr></table>	Stratum (Year_tree density)	S _i	2015_714	22.8	2015_1000	40.2	2016_714	15.0	2016_1000	40.9	2017_714	21.2	2018_714	11.6	2019_476	9.0	2020_416	7.0	Calculated in accordance with AR tool and found to be in order.
Stratum (Year_tree density)	S _i																				
2015_714	22.8																				
2015_1000	40.2																				
2016_714	15.0																				
2016_1000	40.9																				
2017_714	21.2																				
2018_714	11.6																				
2019_476	9.0																				
2020_416	7.0																				

n _i	Number of sample plots in stratum i	Calculated		For the monitoring of the volume standing Permanent Sample Plots (PSPs) were established. The PSPs consist of 20 planted trees (regardless of whether they survived or not) and are established randomly. According to internal procedures, the minimum density is 1 PSP every 10 ha, corresponding to a minimum sampling size of 0.2 % in terms of area/SOP/. Depending on the spacing of the forest stand two types of PSPs were designed with different sizes of 200m², 280m², 420m², 480m², 400m² and 560m². Each tree is numbered and thus re-measurable. During the field out of the in total 840 PSPs 20 plots were remeasured based on formula provided by the FSC Standard FSC-STD-20-007 ($X=0.6*\sqrt{y}$). For the calculation of the ex-post GHG emission reductions achieved the original approach was abandoned because the trees have adjusted their growth performance with age, i.e. the stands show a high homogeneity, so that for the inventory of the present verification, the forest stand were stratified according to their planting year. The homogeneity is confirmed
		Stratum (Year_tree density)	n _i	
		2015_714	229	
		2015_1000	104	
		2016_714	26	
		2016_1000	50	
		2017_714	357	
		2018_714	48	
		2019_476	6	
		2020_416	20	

			via the result of the estimation of the precision level reached. The overall uncertainty of the inventory/average carbon stock per PSP for the present verification is 2.24% at a 90 per cent confidence level.
$A_{p,i}$	Size of a sample plot in stratum i	Field measurement	According to internal procedures, the minimum density is 1 PSP every 10 ha, corresponding to a minimum sampling size of 0.2 % in terms of area ^{SOP/} . Depending on the spacing of the forest stand two types of PSPs were designed with different sizes of 200m ² , 280m ² , 420m ² , 480m ² , 400m ² and 560m ² . Each tree is numbered and thus re-measurable. CAR 3 was raised in this regard which was closed.

DBH	Diameter breast height of tree	Refer inventory ^{/INV/}	PP has determined to measure DBH at the start of each verification period using Vertex IV Good Practice Guidance for Land Use, Land-Use Change and Forestry (GPG-LULUCF) and the inventory of same is maintained in the form of data sheets. DBH was cross-checked by the verification performing actual measurements of the sample plots selected as per the sampling plan explained in 2.1 above. The DBH is measured at 1.3 m length from the tree base. The measurement procedures followed at the site were confirmed during on-site visit and found to be in line with the registered PDMR^{/PD/}. The PP has included the raw data in the Ex-Post Spreadsheet, which have been evaluated for plausibility by the VVB.
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H	Height of tree planted	Refer inventory ^{/INV/}	Tree height is measured with a Vertex. Before every use, vertex is calibrated using internal procedure^{/SOP/} as observed during site audit. 20 PSPs were measured. Exactly the same measuring method was used for this. The audit team observed the measurements and found them to be in accordance with the monitoring plan. The PP has included the raw data in the Ex-Post Spreadsheet, which have been evaluated for plausibility by the VVB.
T	Time period elapsed between two successive estimations of carbon stock in a carbon pool	Year	Recorded in inventory^{/INV/}. Difference in two successive estimations of carbon stock in carbon pool using fractional value of T1 and T2.

GHG Emission Reduction and Removal Calculations

The GHG removals are calculated according the applied methodology AR-ACM0003 version 02 and validated PDMR^{/PDMR/} as below steps,

1. Baseline net GHG removals by sinks

The actual net GHG removals by sinks were estimated as the change in the carbon stocks in project occurring in the selected carbon pool, minus the increase in non-CO₂ GHG emissions within the project boundary as a result of the implementation of the A/R CDM project activity (Equation (2) in the applied methodology) and validated PD, which is shown as follows:

$$\Delta C_{BSL,t} = \Delta C_{TREE_BSL,t} + \Delta C_{SHRUB_BSL,t} + \Delta C_{DW_BSL,t} + \Delta C_{LI_BSL,t}$$

Where-

$\Delta C_{BSL,t}$ = Baseline net GHG removals by sinks in year t; t CO₂-e

$\Delta C_{TREE_BSL,t}$ = Change in carbon stock in baseline tree biomass within the project boundary in year t, as estimated in the tool “Estimation of carbon stocks and change in carbon stocks of trees and shrubs in project activities”; t CO₂-e.

$\Delta C_{DW_BSL,t}$ = Change in carbon stock in baseline dead wood biomass within the project boundary, in year t, not included in the carbon pool under the conservative approach under applicability condition.

$\Delta C_{L_BSL,t}$ = Change in carbon stock in baseline dead wood biomass within the project boundary, in year t, Not included in the carbon pool under the conservative approach under applicability condition

$\Delta C_{L_BSL,t}$ = Change in carbon stock in baseline litter biomass within the project boundary, in year t, Not included in the carbon pool under the conservative approach under applicability condition.

The table below shows the distribution of the areas to be part of the verification distributed between the verification.

Table 4.4.3 Distribution of areas in the project

Stratum (Year_Density)	Total project area (ha)	Areas part of 1 st verification vintage	New areas of 2 nd verification vintage
2015_714	866.5	866.5	0
2015_1000	438.5		438.5
2016_714	199.5		199.5
2016_1000	185.5	172.5	13.54
2017_714	1,747.5	457.0	1,290.5
2018_714	378.0		378.0
2019_476/417	22.0	22.0	-
2020_476/417	115.0		115.0
Total	3,952.5	1,517.5	2,435.5

⁴ There is 0.5 ha lost from first verification (the verified area now would be 172.0 ha, which with the addition of 13.5 ha results in the total project area for the strata 2016_1000 of 185.5 ha).

The table below displays the baseline carbon stocks for the pre-existing trees for the planting years 2015-2020 which are subject to this monitoring period.

Table 4.4.4 Baseline biomass for this monitoring period

Stratum (Year_Density)	Project year	Annual planted area (ha)	$C_{TREE_{BSL}}$ and $C_{SHRUBS_{BSL}}$ and (t CO ₂ e)	$C_{DW,i,t}$ and $C_{LI,i,t}$ trees (t CO ₂ e)	Total Baseline emission (t CO ₂ e)
2015_714	1	866.5	0	0	0
2015_1000	1	438.5	227	3	230
2016_714	2	199.5	-	0	0
2016_1000	2	185.5	6	0	6
2017_714	3	1,747.5	380	5	385
2018_714	4	378.0	149	2	150
2019_476/417	5	22.0	-	0	0
2020_476/417	6	115.0	50	1	50
Total	-	3,952.5	811	10	822

2. Project emissions

According to the selected methodology AR-ACM0003 (Version 02.0), actual net GHG removals by sinks were calculated as follows:

$$\Delta C_{ACTUAL,t} = \Delta C_{P,t} - GHG_{E,t}$$

Where-

$\Delta C_{ACTUAL,t}$ = Actual net GHG removals by sinks, in year t; t CO₂-e

$\Delta C_{P,t}$ = Change in the carbon stocks in project, occurring in the selected carbon pools, in year t; t CO₂-e

$GHG_{E,t}$ = Increase in non-CO2 GHG emissions within the project boundary as a result of the implementation of the project activity, in year t , as estimated in the tool “Estimation of non- CO2 GHG emissions resulting from burning of biomass attributable to a project activity”; t CO2-e

The verifiable changes in the carbon stock in above-ground and below-ground biomass within the project boundary were estimated using the following equations.

$$\Delta C_{P,t} = \Delta C_{TREE_PROJ,t} + \Delta C_{SHRUB_PROJ,t} + \Delta C_{DW_PROJ,t} + \Delta C_{LI_PROJ,t} + \Delta SOC_{AL,t}$$

Where:

$\Delta C_{P,t}$ = Change in the carbon stocks in project, occurring in the selected carbon pools, in year t ; t CO2-e

$\Delta C_{TREE_PROJ,t}$ = Change in carbon stock in tree biomass in project in year t , as estimated in the tool “Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities”; t CO2-e

$\Delta C_{SHRUB_PROJ,t}$ = Change in carbon stock in shrub biomass in project in year t , as estimated in the tool “Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities”; t CO2-e

$\Delta C_{DW_PROJ,t}$ = Change in carbon stock in dead wood in project in year t , not included in the carbon pool under the conservative approach under applicability condition

$\Delta C_{LI_PROJ,t}$ = Change in carbon stock in litter in project in year t , not included in the carbon pool under the conservative approach under applicability condition

$\Delta SOC_{AL,t}$ = Change in carbon stock in SOC in project, in year t , in areas of land meeting the applicability conditions of the tool “Tool for estimation of change in soil organic carbon stocks due to the implementation of A/R CDM project activities”, as estimated in the same tool; t CO2-e

$$B_{TREE,j,p,i,t} = V_{TREE,j,p,i,t} \times D_j \times BEF_{2,j} \times (1 + R_j)$$

Where:

$B_{TREE,j,p,i,t}$ = Biomass of trees of species j in sample plot p of stratum i at a point of time in year t ; t drymatter (d.m.)

$V_{TREE,j,p,i,t}$ = Volume of trees of species j in sample plot p of stratum i at a point of time in year t , estimated by using the steps explained below; m^3

D_j = Density (overbark) of tree species j ; t d.m. m^{-3}

$BEF_{2,j}$ = Biomass expansion factor for conversion of stem biomass to above-ground tree biomass, for tree species j ; dimensionless

R_j = Root-shoot ratio for tree species j ; dimensionless

$j = 1, 2, 3, \dots$ tree species in plot p

$p = 1, 2, 3, \dots$ sample plots in stratum i

LTA Update

The PP developed an LTA calculation for the Ex-Ante estimation. The LTA was calculated for each density, based on the theoretical growth of three different growth tables. The ex-post LTA was calculated by the PP and compared to current emission reductions as well as to Ex-ante LTA. The adjustment of the Root-shoot ratio is the main reason for the decrease of all strata. Also, the lower performance, specially the plantation established in 2015 with 714 trees/ha had an impact of approximately 5%. The results are considered appropriate and conservative.

Stratum	Area planted (ha)	Ex-Ante LTA (tCO ₂ e/ha)	Ex-Post LTA (tCO ₂ e/ha)
2015_714	866.5	190.2	150,4
2015_1000	438.5	213.0	180,0
2016_714	199.5	190.2	171,8
2016_1000	185.5	213.0	194,6
2017_714	1,747.5	190.2	172,1
2018_714	378.0	190.2	171,2
2019_476/417	22.0	191.4	172,2
2020_476/417	115.0	191.4	173,5
TOTAL	3,952.5	193.8	169.2

Table 4.4.5 Summary calculation B_{TREE} and C_{TREE}

Stratum	Area (ha)	wi	b _{TREE,t} t d.m. ha-1	B _{TREE,t} t d.m.	C _{TREE,t} t CO ₂ -e
2015_714	866.5	0.22	84.2	72,996	125,796
2015_1000	438.5	0.11	104.4	45,796	78,921
2016_714	199.5	0.05	99.7	19,884	34,266
2016_1000	185.5	0.05	112.9	20,952	36,107
2017_714	1,747.5	0.44	86.5	151,164	260,505
2018_714	378.0	0.10	53.8	20,320	35,018
2019_476/417	22.0	0.01	31.9	702	1,210
2020_476/417	115.0	0.03	12.4	1,422	2,450

TOTAL	3,952.5	1.00	84.3	333,234	574,273
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¹ Please note that the bTREE total (93.2 t d.m. ha⁻¹) is a weighted average as required by the methodology.

Table 4.4.6. Calculation of uncertainty

Stratum	si t.d.m. ha-1	ni	uc %	uc mean (t CO2-e)	uc Discount (t CO2-e)
2015_714	22.8	229	1.6%	9,185.0	0
2015_1000	40.2	104			
2016_714	15.0	26			
2016_1000	40.9	50			
2017_714	21.2	357			
2018_714	11.6	48			
2019_476/417	9.0	6			
2020_476/417	7.0	20			
Total	35.9	840			

Change in soil organic carbon (SOC)

For ex-post estimation of the SOC changes under the project scenario for this monitoring period, the default method of the A/R Methodological tool 'Tool for estimation of change in soil organic carbon stocks due to the implementation of A/R CDM project activities' (Version 01.1.0) is applied. The application and justification of the tool is outlined in section 4.2.

The rate of change in SOC stock in the project scenario until the steady state in SOC content is reached (assumed in 20 years from the time of the initial site preparation) is calculated as 0.61 tC/ ha/ yr which represents the weighted average value over all baseline strata.

For this monitoring period, for each new planting area included in a certain year, only nine months are assumed for that planting year with the dSOC value. It is calculated to be 41,934.6 tCO2-e.

Change in carbon stocks of trees

According to the tool AR-TOOL14 A/R Methodological tool 'Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities' (Version 04.1) at the first verification C_{TREE, t2} is set equal to the carbon stock in the first verification. Based on

this, the following table shows the change in carbon stock during the period between two points of time t1 (pre-existing baseline tree biomass for 6 FMUs and end of 2020 for the already monitored FMU 5, 6 and 8) and t2. The Excel sheet '2022 San Pedro Carbon Inventory M2' details the full calculation of emission reductions for this monitoring period and is available upon request. The following table show the change in carbon stocks of trees separated by the point of time t1. Column C_{tree} (M1 31-12-2020) shows the calculations for FMU 5,6, and 8, and t1 is therefore 31-12-2020, and the rest of the FMUs are abrupted in Cree (plantation date).

Stratum (year_density)	Area strata included in year t (ha)	$CTREE_{t1} =$ $CTREE_{BSL}$ $,t1$ (M1 31- 12-2020)	$CTREE_{t1} =$ $CTREE_{BSL}$ $,t1$ (plantation date)	$CTREE_{PROJ}$ $_{DISCOUNT};$ $t2$	$CDW_{PROJ};$ $t2$	$\Delta CTREE +$ DW_{PROJ} $; (t2-t1)$
2015_714	866.5	102,956	0	125,897	-	22,941
2015_100 0	438.5	0	230	63,711	-	63,481
2016_714	199.5	0	0	28,986	-	28,986
2016_100 0	185.5	20,568	6	26,952	-	6,379
2017_714	1,747.5	54,242	383	253,901	-	199,276
2018_714	378.0	0	150	54,921	-	54,771
2019_476 /417	22.0	2,614	0	3,196	-	582
2020_476 /417	115.0	0	55	16,709	-	16,654
TOTAL	3,952.5	180,379	825	574,273	-	393,069

Actual net greenhouse gas removals by sinks

The table below shows the distribution of the carbon based on the monitoring period (01-January-2021 to 30-September-2022).

Year	Baseline emissions or	Project emissions or	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or	Buffer pool allocation (15%)	VCUs eligible for issuance
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	removals (tCO _{2e})	removals (tCO _{2e})		removals (tCO _{2e})		
2021 ⁵	825	258,937	-	258,112	38,717	219,396
2022	0	176,067	-	176,067	26,410	149,657
Total	825	435,004	-	434,179	65,127	369,052

4.5 Quality of Evidence to Determine GHG Emission Reductions and Removals

During the verification assessment, the evidence provided by the PPs was sufficient in both quantity and quality to support the determination of GHG removals reported by the project. The threshold for materiality to the total GHG removals reported was met for this project; materiality is a concept that the errors, omissions and misrepresentations could affect the GHG removals assertion and influence the intended users.

The source and nature of the evidence (external or internal, oral or documented) for the determination of GHG emission reductions or removals has been assessed and verified in above section 4.4.1 together with each calculation step, thus the reliability of the evidence is confirmed. The evidence provided to determine GHG removals reported in the Monitoring Report included values, notations, units and sources; the evidences has been cross-checked with supplied GHG removals calculation spreadsheet^{/ER/}.

The procedure for data generation and aggregation, recording, transfer and final transposition into the MR was also verified and found to be in compliance with the monitoring plan in the registered PDMR^{/PDMR/}.

⁵ Baseline emissions for 2021 are cumulative of baseline emissions for previous vintage from 05-April-2015 to 31-December-2020 for FMU 1, 2, 3, 4, 7 and 9 and current monitoring period from 01-January-2021 to 30-September-2022 for FMU 1 to 9.

4.6 Non-Permanence Risk Analysis

The project utilized the VCS Procedural Document “AFOLU Non-Permanence Risk Tool” Version 4.1^{/NPR/} to assess risk according to internal risk, external risk, natural risk and mitigation measures for minimizing risk. At all levels has been evaluated the rationale, appropriateness and justifications of risk rating chosen by PP.

Each risk category was calculated based on the VCS guidance and the input provided by the PP. The risk has been reassessed at time of the verification and with that prior to any issuance of VCUs. The information was verified and cross-checked through non-permanence risk report ^{/NPR/}, on-site visit of the project area and interviews conducted.

In summary, the PP have accounted for risk factors in a reasonable manner and have reached an overall risk rating that encompasses all risks of non-permanence; the project is able to effectively manage risks to project benefits during the monitoring period and project lifetime. Risk mitigation strategies were confirmed to have been implemented as planned in the validated PD and are summarized in the non-permanence risk assessment conducted by the project. During the verification activity no additional risks to project benefits are identified. The overall risk rating according to the applied tool is 15%. The verification team concludes that this risk rating is purely based on the tool cited above, according to VCS requirements. The non-permanence risk report^{/NPR/} is provided by PP. The risk analysis is assessed for its appropriateness. The overall risk rating for the specific monitoring period is 15% and it represents the buffer applied (VCUs that must be deposited in the AFOLU pooled buffer).

Internal risk:

Project management	
Risk factor	Assessment opinion
a)	The trees planted in this project comprise non-native species, mainly Eucalyptus spp. and Corymbia spp. Eucalypts have a track record in the region since around 50 years, and they haven't presented limitations in terms of affecting the water balance or invasion into native ecosystems. Hence, risk rating of 0 is accepted.
b)	The FMUS of the project are established in private Estancias of landowners. Most of the FMUs are continuously used for agricultural and cattle purposes, and there-fore cattle or agricultural workers are continuously covering the private property. This was confirmed via interviews held with field staff, technical staff, responsible for social affairs, and land owners. Hence, risk rating of 0 is accepted.
c)	The company UNIQUE Wood, with over 20 years of experience managing forests and over 9 years of experience with plantations, was contracted to manage the silvicultural aspects of the plantations, and they still these activities after the purchase of the areas by Forestal San Pedro. Three forest engineers with over 10 years of experience and overseen by an experience forest engineer with more than 25 years of experience in managing forest in Paraguay manage the plantations and work together to ensure the high

	quality of silvicultural system applied. In addition, the team includes two community liaison officers, who also conduct environmental, social and health and safety monitoring, and two ESG and FSC certification officer supporting the team. UNIQUE (Unique Wood Paraguay S.A. supported by Unique forest investment GmbH) has been contracted for managing forest plantations. The management team has significant experience with managing forest plantations according to IFC and FSC standards. UNIQUE has over 20 years of experience managing natural forests and over 9 years of experience with plantations in Paraguay, both under FSC certification. Hence, risk rating of -2 is accepted.
d)	UNIQUE Wood Paraguay is a Paraguayan company established in the country in 2001. Forest supervisors and community liaison officers are permanently deployed on site. Hence, risk rating of 0 is accepted.
e)	Forestal San Pedro contracted UNIQUE forestry and land use GmbH to develop this AFOLU, project, account for carbon from trees and other GHG sources, report and participate in validation and verification under respective VCS methodology and standard requirements. UNIQUE forestry and land use GmbH has a long track record in developing AFOLU Projects. Hence, risk rating of 0 is accepted.
f)	The project has adaptive management ^{/MP/} (operations plan, monitoring plan, roll out plan, feedback plan, supervisors, and internal control system) in place. The project is subject to regular reporting to investors, and its progress is supervised in quarterly Board Meetings by the investors, who monitor the project according to IFC Performance Standards. In addition, the project is FSC certified and subject to annual auditing by external third parties ^{/FSC/} . Hence, risk rating of -2 is accepted.
Total project management risk rating is -4.	

Financial viability	
Risk factor	Assessment opinion
a)	Not applicable
b)	Not applicable
c)	The audit team checked the project cash flow ^{/cash flow/} and can confirm the break-even point is between 4 and up to less than 7 years from the current risk assessment. The quality of the documentation is deemed to be sufficient to evaluate the risk correctly. Hence, risk rating of 1 is accepted.
d)	Not applicable
e)	Not applicable
f)	Not applicable
g)	Not applicable
h)	Not applicable

i)	The investor and its partners are guaranteeing the funding of the project. The project has financial resources at least 50% of total cash out before project reaches breakeven. Hence, risk rating of -2 is accepted.
Total financial viability risk rating is 0.	

Opportunity cost	
Risk factor	Assessment opinion
a)	Not applicable
b)	
c)	Not applicable
d)	Not applicable
e)	Agriculture presents higher IRR than forestry, with 124 % IRR, needed investments of 0.65 M USD, and a payback period of 2 years. Under the same conditions, forestry offers an IRR of 18 %, needs investments of 8.2 M USD, with a payback period of 6 years. The initial investment for forestry is much larger than for agriculture, and the payback period is much longer. However, the project started in 2015, and when analyzing the current NPV in 2023 and with a discount rate of 10% for both models, the forestry project shows a value 32% higher than agriculture. ^{/cash flow/} . This could be confirmed in the course of the field visit via interviews held with technical staff, plantation managers and land owners ^{/insp/} . Hence, risk rating of -2 is accepted.
f)	Not applicable
g)	Not applicable
h)	Not applicable
i)	Not applicable
Total opportunity cost risk rating is -2.	

Project longevity	
Risk factor	Assessment opinion
a)	The PP assumes a project lifetime of 40 years. The assumed project longevity assumes that, as soon as the project is established and the first income from land lease, share of wood sales and CO₂ certificates occurs, the reservations about the project turn into approval and the voluntary continuation of the project by the landowners in the form of a third, fourth rotation. The owners of the FMUs have signed letters^{/PLT/} agreeing, that a carbon project will be implemented, knowing that this results in requirements in regard to crediting period and project lifetime. The fincas represent 60% of the forest assets. Without legal agreement or requirement to continue the management practice, a score of 16 is acceptable.

	In view of the fact that the owners of the finances do not incur any losses through the project activity, on the contrary, there is added value both through the participation in the revenues of the wood sales and the sales of carbon credits, it can be concluded, that a second rotation will be conducted and thus the requirements in regard to crediting period and project lifetime will be met. The proposed assumption could be sustained via direct interviews with owners of the FMUs. Hence, risk rating of 16 is acceptable.
b)	Not applicable
Total project longevity risk rating is 16.	

External risks:

Land tenure and resource access/impacts	
Risk factor	Assessment opinion
a)	Not applicable
b)	Landowners and Forestal San Pedro have a leasing agreement^{/LA,Inf/} for 14 years (renewable) based on the Law 4890/13 of forestry area rights, where it was established the possibility of separating the owner of the land from the planted products in the area. Forestal San Pedro has legal documents confirming the legal right of the company of the use rights. Hence, risk rating of 2 is acceptable.
C to f	Not applicable
g)	As PP has implemented activities to resolve the disputes or clarify overlapping claims, the score is -2.
Total risk rating is 0.	

Community engagement	
Risk factor	Assessment opinion
a)	Not applicable
b)	Not applicable
c)	Although the most of the FMUs do not have communities nearby and none of the communities depend on the project's resources as set out by the standard, the project is maintaining good relations, as almost all operational staff working for San Pedro come from neighboring communities. The communities are well known and described listing joint activities, dependencies and contact persons^{/LSC/}. The consideration of socio-economic impacts for local stakeholders and contractors and their adequate processing is also controlled during the annual FSC Audits^{/FSC/}. The above mentioned was further confirmed by interviewing the field staff, community leaders. Hence, risk rating of -5 is acceptable.
Total risk rating is -5.	

Political risk	
Risk factor	Assessment opinion
a)	Not applicable
b)	Based on the WGI data http://info.worldbank.org/governance/wgi/index.asp of the most recent 5 years Paraguay has a governance score of -0377. Respective calculations have been provided and crosschecks with the World Bank Institute Worldwide Governance Indicators have been done. The source is provided by the VCS Standard and thus adequate. The calculation is correct. Hence, risk rate of 4 is acceptable.
c), d), e)	Not applicable
f)	The country has an established Designated National Authority under the CDM and has at least one registered CDM Afforestation/Reforestation project. Hence, risk rating of -2 is accepted.
Total risk rating is 2.	

Natural risk:

Fire	
Risk factor	Assessment opinion
Significance	Fire is a high risk in Eucalyptus plantations, which it might lead to the loss of several hectares and the complete carbon stock of them. Rural communities often use fire to renew pastures, that spreads out and leads to forest fires during the dry period. The management team has extensive experience with fire prevention and control in other projects. Using mitigation measures such as firebreaks, training, and early warning during the dry season, fires can be successfully controlled. The total loss of a significant part of the asset by fire is considered very unlikely. The above mentioned was further confirmed by interviewing the field staff, technical staff, plantation managers, landowners, community leaders ^{/IM/} . The fire risk significance is rated as 'minor' (5% to less than 25% loss of carbon stocks)." A minor significance rating is adequate and acceptable
Likelihood	Fires are a common problem in Paraguay and it is expected to happen less than every 10 years.
Score (LS)	5 is acceptable
Mitigation	The plantation area is always divided into compartments (smaller areas, 20-50 ha with similar characteristic, such as age and planted species), divided by roads or artificial firewalls which are established to minimize the risk of fire spread ^{/shp/} . Annually before the dry season, trainings take place with the operative staff for fire prevention and firefighting. Further, the company cooperates with neighbors to ensure early warning and cooperation.

	The above mentioned was further confirmed by interviewing the field staff, technical staff, plantation managers, landowners, community leaders^{/IM/} as well es in the course of the inspection of infrastructure and equipment^{/Inf/}. The establishment of adequate mitigation measures regarding fire outbreaks is also controlled during the annual FSC Audits^{/MA,1SA/}. It can be concluded that appropriate tools and equipment for fire prevention and firefighting have been established. A mitigation rating of 0.25 is adequate and acceptable.
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Pest and disease	
Risk factor	Assessment opinion
Significance	Eucalyptus sp. are vulnerable to pests and diseases such as the gall wasp <i>Lec-tocybe invasa</i>, the beetle <i>Costalimaita ferruginea</i>, and a fungal disease caused by the canker <i>Teratosphaeria zuluensis</i>, also known as <i>Coniothyrium zuluensis</i>. These pests affect mostly the quality of the timber and sometimes, to a certain degree, tree development, however, to date a significant growth stagnation or loss has not been detected and is considered minor (5% to less than 25% loss of carbon stocks). In cases of significant pests and disease outbreaks, the management team reacts quickly and seeks control the infestation. The above mentioned was further confirmed by interviewing the field staff, technical staff, plantation managers as well es in the course of the inspection of the forest stands respectively the re-measurement of sample plots. A minor significance rating is adequate and acceptable.
Likelihood	For the same reason areal outbreaks of significant pests and diseases are assumed to be very unlikely (every 25 to less than 100 years).
Score (LS)	2 is acceptable
Mitigation	Plantations are established with high density of trees and thinning is strong during the whole production cycle^{/MP/}. This allows to select the most promising trees and reduce the risks of losing the expected biomass. Clones that have shown to be particularly vulnerable to certain pests are not employed anymore. Acute infestations are controlled chemically when such method is effective, respective management plans are in place^{/SOP/}. The establishment of an adequate pest management is also controlled during the annual FSC Audits^{/FSC/}. A mitigation rating of 0.25 is adequate and acceptable.

Extreme weather	
Risk factor	Assessment opinion
Significance	In the region droughts and floods might occur in different moments of the year. Floods are unlikely to affect the plantations, as lower areas prone to flooding are excluded from the production area. Droughts do affect the development of plantations, however mostly younger plantations during the first months of planting. Most plants that are affected by drought during the first months of planting still show an acceptable

	development after a few months. It can be conclude that the effect is unlikely to be very high. Trees included in carbon verifications are at least one year old, thus it is less likely that they are significantly affected by extreme weather events. Storms and strong wind can significantly affect individual stands, as they already have in the past, leading to a loss of around 45 ha in one FMU. However it seems to affect only some specific clones and in areas that are not well protected from the wind. The above mentioned was further confirmed by interviewing the field staff, technical staff, plantation managers/IM/ as well es in the course of the inspection of the forest stands respectively the re-measurement of sample plots/Inf/. A minor significance rating is adequate and acceptable.
Likelihood	Droughts are expected relatively often, while floods are less likely to affect plantations (less than every 10 years).
Score (LS)	5 is acceptable
Mitigation	Areas affected by flooding are not planted^{/shp/}. Clone selection is conducted carefully and adapted to the site. Clones with more resistance to extreme weather are introduced in the areas more likely to be affected. Clones affected by storms will not be replanted. Trees included in the carbon monitoring are always at least 1 year old, and according to the experiences in the region, extreme weather such as droughts or floodings do not affect to older management units. A mitigation rating of 0.5 is adequate and acceptable.

Geological risk	
Risk factor	Assessment opinion
Significance	Not applicable as geological risk such as earthquakes and volcanos do not exist in the region.
Likelihood	Not applicable
Score (LS)	0 is acceptable
Mitigation	Not applicable

Other risks	
Risk factor	Assessment opinion
Significance	No other natural risks to the project activities and associated carbon removals are anticipated.
Likelihood	Not applicable
Score (LS)	0 is acceptable
Mitigation	Not applicable

Overall risk rating is:

Internal risk: 10

External risk: 0

Natural risk: 4.25

Total risk rating: 15%

Thus, the audit team concludes that the applied risk score of 15% is adequate for the project activity.

5 VERIFICATION OPINION

TÜV SÜD South Asia Private Limited has performed verification of the emission reductions reported for the project activity “Afforestation in cooperation with local landowners for Forestal San Pedro S.A.” in Paraguay VCS Registration Reference No. 2361, for the period 01-January-2021 to 30-September-2022, with regard to the relevant requirements for VCS Version 4.4.

The project proponent is Forestal San Pedro S.A., who is responsible for:

1. The preparation of greenhouses gas emissions data and the reported greenhouse gas emission reductions from the project on the basis set out in the monitoring plan contained in the registered PDMR, version 1.5 dated 09/03/2022;
2. The development and maintenance of records and reporting procedures in accordance with that plan, including the calculation and determination of greenhouse gas emission reductions of the project.

Based on the documented evidence and corroborated by an on-site assessment, TÜV SUD can confirm that:

1. The project has been implemented and operated as per the validated PDMR;
2. The monitoring plan in the registered PDMR is as per the applied baseline and monitoring methodology;
3. The monitoring report and other supporting documents provided are complete and verifiable and in accordance with the applicable VCS requirements and
4. Level of assurance on the quantity of GHG emission removal in tCO₂ equivalents achieved by the project during the verification period as provided in the project’s GHG statement is reasonable.

The GHG removals by sink were calculated correctly on the basis of the approved monitoring methodology AR-ACM0003 “Afforestation and reforestation of lands except wetlands”, version 02.0 and the monitoring plan in the validated PDMR. Hence it is certified that the GHG removals by sink from the project during the monitoring period amount as follows:

Verification period: From [01-January-2021] to [30-September-2022]

Verified GHG emission reductions and removals in the above verification period, broken down by calendar year:

Year	Baseline emissions or	Project emissions or	Leakage emissions (tCO ₂ e)	Net GHG emission reductions	Buffer pool	VCUs eligible
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	removals (tCO ₂ e)	removals (tCO ₂ e)		or removals (tCO ₂ e)	allocation (15%)	for issuance
01-January - 2021 ⁶ to 31- December- 2021	825	258,937	-	258,112	38,717	219,396
01- January- 2022 to 30- September- 2022	0	176,067	-	176,067	26,410	149,657
Total	825	435,004	-	434,179	65,127	369,052

For the total Monitoring period 01-January-2021 to 30-September-2022: the value is gross of the 15% (**65,127 tCO₂e**) buffer withholding based on the non-permanence risk assessment tool. This results in **369,052 tCO₂e** equivalent of credits eligible for issuance as VCUs.

Ex-ante emission reductions/ removals	Achieved emissions reductions or removals (tCO ₂ e)	Percent difference	Justification for the difference
785,839	632,699	-20%	Reduction of root-shoot value, tree growth slower than estimated in some areas and area lost as reported in Table 5 reducing the expected area.

⁶ Baseline emissions for 2021 are cumulative of baseline emissions for previous vintage from 05-April-2015 to 31-December-2020 for FMU 1, 2, 3, 4, 7 and 9 and current monitoring period from 01-January-2021 to 30-September-2022 for FMU 1 to 9.

APPENDIX 1: ABBREVIATIONS

Abbreviations	Full Texts
ARR	Afforestation, Reforestation and Revegetation
AFOLU	Agriculture, Forestry and Other Land Use
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CL	Clarification Request
CLO	Community Liaison Officer
CO ₂	Carbon dioxide
CO ₂ e	Carbon dioxide equivalent
DBH	Diameter at Breast Height
DRSF	Derecho Real de Superficie Forestal
ER	Emission Reductions
FAR	Forward Action Request
FMU	Forest Management Unit
FSC	Forest Stewardship Council
GHG	Greenhouse gas(es)
GS	Gold Standard
GBH	Girth at Breast Height
Ha	Hectare
HSWD	Harmonized World Soil Database
IPCC	Intergovernmental Panel on Climate Change
ISO	International Organization of Standardization
IRR	Internal Rate of Return
MP	Monitoring Plan
MR	Monitoring Report
MoM	Minutes of Meeting

NGO	Non-governmental Organization
NPRT	Non-Permanence Risk Tool
NPR	Non-Permanence Risk Analysis Report
NPV	Net Present Value
LULUCF	Land Use, Land-Use Change and Forestry
PDMR	Joint Project Description Monitoring Report
PP	Project Proponent
PSP	Permanent Sample Plots
SOC	Soil Organic Carbon
UNFCCC	United Nations Framework Convention on Climate Change
VCS	Verified Carbon Standard
VCU	Verified Carbon Unit
VVB	Validation/Verification Body

APPENDIX 1: DOCUMENTS REVIEWED OR REFERENCED

No.	Title	References to the document
1	/METH/	Afforestation and reforestation of lands except wetlands
2	Methodological tool	Calculation of the number of sample plots for measurements within A/R CDM project activities, Version 02.1.0
3	Methodological tool	Estimation of non-CO ₂ GHG emissions resulting from burning of biomass attributable to an A/R CDM project activity, Version 4.0.0
4	Methodological tool	Estimation of carbon stocks and change in carbon stocks in dead wood and litter in A/R CDM project activities, Version 03.1
5	Methodological tool	Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities, Version 04.2

6	Methodological tool	Estimation of the increase in GHG emissions attributable to displacement of pre-project agricultural activities in A/R CDM project activity, Version 02.0
7	Methodological tool	Tool for estimation of change in soil organic carbon stocks due to the implementation of A/R CDM project activities, Version 01.1.0
8	Methodological tool	Combined tool to identify the baseline scenario and demonstrate additionality in A/R CDM project activities, Version 01
9	/PDMR/	VCS PDMR, Version 1.5 dated 09/03/2022
10	/FVR/	FVR, Version 1.4 dated 11/03/2022
13	/MR/	VCS MR, version 1 dated 31/05/2023, version 1.1 dated 14/09/2023, version 2.0 dated 08/03/2024, version 2.1 dated 11/06/2024
14	/ER/	VCS ER, version 1 dated 31/05/2023, version 1.1 dated 14/09/2023, version 2.0 dated 08/03/2024, version 2.1 dated 11/06/2024
15	/shp/	Shapefiles of project boundary, satellite images (2005-2022)
16	/fsc/	<u>FSC Search</u> , Certificate no. GFA-FM/COC-005670
17	/MP/	Adaptive management plan
18	/NPR/	Non-permanence risk analysis report
19	/DRSF/	Notarized transfer deeds of FMUs
20	/PLT/	Signed letters of property owners: 2021-04-07 Carta firmada_Rancho ZS 2021-04-28 Carta firmada_Cerro Verde 2021-05-07 Carta firmada_Rancho 068 2021-06-24 Carta firmada_Cerrito
21	/LSC/	Local stakeholder consultation meeting records, grievance register, ongoing feedback mechanism
22	/SOP/	Internal procedures on calibration, inventory, emergencies
23	/AD/	1. Paraguay Agricultural Sector Risk Assessment; Identification, prioritization, strategy and action plan; World Bank Group Report No. 93943-PY, June 2015 2. Forest plantations in Paraguay: Historical developments and a critical diagnosis in a SWOT-AHP framework; Szulecka et al, 12 November 2016
24	/cash flow/	Cashflow Calculations, Land use comparison San Pedro.xlsx
25	/inv/	Inventory records

26	/spi/	Sampling plot survey records of site audit
27	/interview records/	List of interviewees in site audit
28	/Insp/	On-site audit records
29	/policy/	<u>Microsoft Word - 2023 Unique Environmental Social and Governance Policy PV en (unique-wood.com)</u>
30	/GIS/	Satellite imagery for FMUs, software QGIS
31	/FVR/	Validation and Verification report prepared by TÜV NORD CERT GmbH version 1.4 dated 11/03/2022
32	/PDMR/	Registered PDMR version 1.5 dated 09/03/2022
33		2022 Registros de trabajadores FSP_Compendio.xlsx (record related to community development)
34		2023-08-10-Resumen_Ventas_Juilo 2023.xlsx
35		Forestal San Pedro- Diligencia Debida de Oronoz
36		Evaluacion ecologica y Linea de base Ambiental for estancia Oronoz
37		Estancia Oronoz- soils and land use
38		CARACTERISTICAS MORFOLOGICA DEL SUELO DE LA ESTANCIA ORONoz S.A
39		Letter of intention on long-term commercial relationship by Paracel S.A.
40		Carta no vinculante de Manifiesto LV_DH
41		Carta no vinculante de Manifiesto_R068
42		Acuse Carta Intencion no vinculante Cerro_verde
42	/actividades/	2023-01-27-FSP_2ndverific_Oronoz.xlsx
43		Ejemplo_inventario.xlsx
44		Cension de derechos y obligaciones del contrato de reforestacion (multiple)

APPENDIX 2: CLARIFICATION REQUESTS, CORRECTIVE ACTION REQUESTS AND FORWARD ACTION REQUESTS

CL ID	CL 1	Section no.	1.11	Date: 20/08/2023
Description of CL				
1. SDG contribution evidence is required for the following reported facts in MR: a. 160 full time jobs since 2014. And in 2022 alone jobs provided were 105. b. 30,000m³ of produced log. c. In 9.2.2, contribution to employment in manufacturing sector is claimed; however, data of employment generation in the manufacturing process is not provided for the current monitoring period. Contributions over project lifetime per FTE is left blank. 2. For SDG 13, reported figure of 500,000 tCO_{2e} removals don't add up to removals from previously certified and the current monitoring period. The expected removals in project's period don't match with PD. Please clarify. 3. Inconsistency observed in forest area cover reported under 15.1: 4309 ha vs 4263 ha in 3.3 of MR vs 4328 ha in 1.1 of MR. Please clarify basis of reporting 5733 ha.				
Project participant response				Date: 19/09/2023

1a) The compilation of labour records is provided exhibiting details of the 2022 labour records and a historic summary since 2014 (2022 Registro de trabajadores FSP Compendio). This includes direct and subcontracted labour. The value of 160 FTE since 2014 has been updated to a more accurate value of 158 FTE.

1b) According to our timber monitoring (see 23-08-10-Resumen_Ventas_Julio_2023), between 2020 and September 2022, FSP produced and sold 26,976 m³ of logs. This value has been updated in the MR, Section 1.11, 9.2.1.

1c) According to information gathered by unique land use through due diligences and different studies, the plywood industry creates 5 FTE per 1,000 m³ roundwood intake. Therefore, if we estimate the 26,976 m³ to be produced in 3 years, the FTE produced in the industry by the activity of FSP is 45 (additional to the 160 FTE provided by forest management activities).

2) In the first verification, the project proponent claimed 198,528 tCO_{2e}, resulting in 158,816 tCO_{2e}, credits eligible to be issued after buffer. In the second verification, the project proponent claims 454,222 tCO_{2e}, that after buffer results in 386,089 tCO_{2e}. Therefore, the value is 652,750 tCO_{2e} (198,528 tCO_{2e} + 454,222 tCO_{2e}) and this has been updated in the chapter as per “more than 650,000 tCO_{2e}”.

3) The paragraph was confusing since the total area of the plantation project and the area included in the carbon project was mixed. To clarify the actual situation of the plantations, the paragraph was rewritten: To date, FSP manages and maintains 4,260.5 ha of existing plantations under the carbon project. 306.5 ha of this area was established in 2022 in agricultural land. Please note that the total area managed and planted by the company is larger and corresponds to over 6,000 ha.

Documentation provided by project participant

X	Changes in the MR	Section(s):1.11	New version no:1.1
	Changes in ER xls	Worksheet(s):	New version no:
X	Other:	Supporting documentation: 1) 2022 Registro de trabajadores FSP Compendio (Workers registry) 2) 2023-08-10 Resumen_Ventas_Julio_2023 (Sales report)	

VVB assessment

Date: 03/10/2023

Response provided by PP has been found acceptable. CL 1 is closed.

CL ID	CL 2	Section no.	1.10	Date: 20/08/2023
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Description of CL			
Please clarify how the project's GHG removals are not part of supply chain and potential risk of scope 3 emissions double claiming is avoided in line with 3.23.7-3.23.9 of VCS standard. MR should provide description on this in 1.10.			
Project participant response			Date: 19/09/2023
Forestal San Pedro establishes forest plantations and sells the wood for further processing. The scope of the carbon certification only encompasses land use, meaning all emission reduction that occurs after harvesting is not captured by this certificate. In case in the future any methodology under any standard allows to account for harvested wood products affecting the value chain, the ownership and scope must be defined further downstream in the value chain. To ensure full compliance with the standard unique has included a statement in its webpage, according to VCS Standard 4.4. section 3.23.8.: 3.23.8 Where a project's GHG emission reductions or removals are in a supply chain, and the producer(s) or retailer(s) of the impacted good or service are unknown, not involved in the project or do not have a website, the project proponent shall post a public statement on their website. The statement shall say: "VCUs may be issued for the greenhouse gas emission reductions and removals associated with [name of good or service] [describe the region or location, including organization name(s), where practicable]." The public statement shall be issued at the project's start date and remain posted for the project crediting period. Please see: https://www.unique-forestinvestment.de/ The statement is as follows and links each certified project to its registry at Verra: *Verified Carbon Units (VCUs) may be issued for the greenhouse gas emission reductions and removals associated to the carbon certification before Verra for <u>Forestal San Pedro</u>, <u>Forestal Apepu</u>, and <u>Forestal Azul</u> in relation to its plantation activities in Eastern Paraguay.			
Documentation provided by project participant			
	Changes in the MR	Section(s):	New version no:
	Changes in ER xls	Worksheet(s):	New version no:
X	Other:	Changes in website	
VVB assessment			Date: 03/10/2023
Response provided by PP has been found acceptable. CL 2 is closed.			

CL ID	CL 3	Section no.	3.1, 3.3	Date: 20/08/2023
Description of CL				
In 3.1 and 3.3 of MR, there are following clarifications sought: 1. As per TUV Nord verification report and 3.1 of current MR, 1st instance consisted of 4018 ha of existing plantation in 9 FMUs and eligible project area for verification period of 2015-2020 was 1518 ha. However, in the table included in MR mentions total planted area for 2015-2020 as 4182 Cha which is not in line with TUV report and value reported in 3.1 of MR. Further, carbon certifiable area in this section is reported as 3954 ha for 2015-2020 which doesn't match with 3.1 of MR. It is unclear from the MR how PP has accounted both the values. 2. In 3.1 of MR, PP has reported loss of 45.5 ha in FMU 1 due to storm in Aug'22 and 19 ha due to site conditions, 0.5 ha due remapping which sums up to 65 ha. The total loss value is inconsistent with 1.1 of MR. Also, the values provided table in the section doesn't add up to 19 ha of loss due bad site conditions and the same table provides 1.5 ha loss due to remapping which is inconsistent with the description provided. The total of net area comes to 4261.5 ha and not 4263.5 ha. PP is requested to provided GIS imagery for the total loss occurred during the monitoring period to cross verify and correct the inconsistencies according to data obtained from this imagery.				
Project participant response				Date: 19/09/2023

- 1) The validated area in the PDD was 4,018.5 ha in 9 FMU planted between 2015 and 2020. However at the time the first verification was conducted, the notarized transfers of the “forestry surface rights” were only available for 3 FMUs, comprising 1,518 ha of the total area. The 4,182 ha was referring the actual area planted by the company within the scope of the carbon project (not all planted area was certifiable under Verra standards). In order to avoid confusion, Table 6 has been updated leaving only the areas relevant under the carbon project.
- In the corrected Table, the first column indicates the area as in the PDD, and the second column includes an updated status of that area, with a net loss of 64.5 ha due to storm, remapping and site conditions. This results in 3,954 ha, included in the scope of the second verification.
- The second instance, 306.5 ha, were planted in 2022 and therefore included as second project instance. However, no carbon is claimed for second instance yet as these were too young at the time of the audit.

.Year	Carbon certifiable area in PDD	Carbon certifiable area in 2 nd monitoring (ha)	Status
2015 - 2020	4,018.5	3,954.0	First project instance
2021 - 2022	-	306.5	Second project instance
Total	4,018.5	4,260.5	

- 2) **In 3.1 of MR, PP has reported loss of 45.5 ha in FMU 1 due to storm in Aug'22 and 19 ha due to site conditions, 0.5 ha due remapping which sums up to 65 ha. The total loss value is inconsistent with 1.1 of MR.** These values were wrongly rounded up in section 1.1. The correct areas discounted are: 45.5 ha storm, 18.5 ha site condition, 0.5 ha remapping, with a total of 64.5 ha. These values have been updated in section 1.1.
- Also, the values provided table in the section doesn't add up to 19 ha of loss due bad site conditions and the same table provides 1.5 ha loss due to remapping which is inconsistent with the description provided. The total of net area comes to 4261.5 ha and not 4260.5 ha.** The correct area for site condition was 18.5 ha. The map shows a loss of 1.5 ha in two FMU due to remapping and a gain of 1 ha in FMU 5 due to remapping. Therefore, the total loss due to remapping was 0.5 ha. Therefore, the net loss corresponds to 19 ha.
- PP is requested to provided GIS imagery for the total loss occurred during the monitoring period to cross verify and correct the inconsistencies according to data obtained from this imagery.** The GIS imagery has been shared, as well as the QGIS project and the kml files.

X	Changes in the MR	Section(s):1.1 & 3.1 & 3.3	New version no:1.1
	Changes in ER xls	Worksheet(s):	New version no:
X	Other:	Supporting documentation QGIS project and kml files	
VVB assessment			Date: 03/10/2023
Response provided by PP has been found acceptable. CL 3 is closed.			

CL ID	CL 4	Section no.	3.3, 4.3	Date: 20/08/2023
Description of CL				
Following clarifications are sought on eligibility of new added FMU 10 of 309.5 ha in the project area: 1. PP is required to provide shape files, satellite imagery and/or photographs/evidence for this area (1) no drainage or conversion of primary natural forest took place on the project area, (2) area where any clearings of deforestation by the owner took place within last 10 years from the date of plantation on FMU 10 and (3) the activities did not degrade hydrological functions (4) condition prior to project initiation on FMU 10 (5) project ownership held by the PP (6) start date of plantation on this FMU. 2. It is not clear if the PP has carried out separate additionality assessment for FMU 10 or has revised additionality done at validation for the entire project to include FMU 10. If neither is done, PP to clarify the how the approach meets 3.6.16 & 3.16.17. 3. PP to clarify if it has revised project location information in the PD for FMU 10 as per 3.16.17 and 3.11 of VCS standard. Provide KML file using geodetic polygons. 4. Please provide soil analysis report for FMU 10 to verify soil composition as described in 3.3 of MR. PP explains in this section that spacing of 6 X 2 m is maintained on FMU 10 to avoid soil disturbance of 10% or greater. However, information reported in 4.3 does not contain this spacing while sampling plot size. PP is to clarify how sampling plot area calculation covers all spacing sizes.				
Project participant response				Date: 19/09/2023

1. The final added area is 306.5 ha. The evidence requested is included in the supporting documentation, as follows:
 - (1) the satellite imagery of Oronoz of the area before planting used for the calculation of the baseline shows that no natural forest was deforested since the complete area was used for agriculture for the last years. Also, since the land use before was mechanized high input agriculture, no drainage was required. Agriculture needs good natural drainage. Supporting documentation: GIS – photograph Oronoz2022.jpeg
 - (2) No deforestation took place since 2012. Supporting documentation: GIS – photograph Oronoz2012.jpeg
 - (3) (4) Section 3.3 has been updated with information regarding the soil analysis conducted, as well as the results of the social due diligence and environmental baseline realized previous to the plantation. Also, the plantations were established in the same manner as the rest of the FMUs. In 2022, the new site has been included into the scope of the FSC certification.
 - (5) In supporting documentation, the forestry surface rights contract is provided.
 - (6) The start date of the FMU 10 was 01-08-2022. This information has been added to the MR.
2. The project proponent has evaluated whether the new site complies with the baseline that determines additionality, as is shown in the evidence provided. The section 3.3 has been modified to show compliance with section 3.6.16 and 3.6.17.
3. More detailed information has been added to the section 3.3 and kml of the new FMU 10 and a GIS project with all shapefiles (baseline, imagery 2022 and 2012 for deforestation analysis, etc). has been added as supporting documentation.
4. The table in section 4.3 has been updated as shown below. Soil analysis map and report are available as part of the supporting documentation, as well as the link for the Harmonized World Soil Database (<https://iiasa.ac.at/models-tools-data/hwsd>), where the table in the MR was extracted.

Table 1. PSP size depending on planting density

Spacing	Plot size (m2) – 20 trees
9 x 2.5	250
5 X 2	200
6 x 2	240
8 x 3	480

Documentation provided by project participant			
X	Changes in the MR	Section(s):3.3	New version no:
	Changes in ER xls	Worksheet(s):	New version no:
X	Other:	Supporting documentation QGIS project and kml files and photographs. Soil and land use analyse, soil study, social due diligence and biodiversity baseline, forestry surface rights.	
VVB assessment			Date: 03/10/2023
Response provided by PP has been found acceptable. CL 4 is closed.			

CL ID	CL 5	Section no.	2.1	Date: 20/08/2023
Description of CL				
1. Provide basis that project currently involves 23 beneficiaries participating in a long-term cooperation project to produce timber on smallholder land. 2. Provide average quantities for lime, fertilizer and pesticides for ant and weed control and explain how they are lower than agriculture and roughly the same to beef production. 3. Please clarify what type of exotic species are planted in the project area to prevent invasive behaviour of Eucalyptus.				
Project participant response				Date: 19/09/2023

1. Evidence on the 23 beneficiaries of the outgrower scheme is provided in the supporting documentation.
2. In general, the inputs used for forestry are:
 - Ant control – Fipronil – between 4 gram of baits per ha and year with concentration of the active principle of 0,01 %.
 - Weed control – Glyphosate – between 4-7 litres/ha for a whole forestry cycle (12 years), usually all in the first two years.
 - Fertilizer – 100 gr/plant one time during planting.
 - Lime – on acidic soils where needed (on about 20-30 % of the area), one time during soil preparation, around 200 kg/ha.
 - Punctual uses of other products in cases of specific pests or diseases.

Beef production requires the following inputs:

- Weed control - 3 litres / ha of 2,4-D every time a new pasture is planted and approximately 1 litre/ha every 2-3 years to maintain the quality of the pasture.
- Lime -on acidic soils where needed, the quantity is very similar to the soil preparation of forestry.

Lime and fertilizers are subject to a one-time use, which is comparable to cattle ranching, where these products are used only when sowing pasture (which might be used for 10-20 years before renewal).

The use of products for weed control is similar to forestry. For forestry all weed control is used during the first 2 years, and in beef production this activity needs to be repeated every 2-3 years.

An assessment conducted in 2019 showed that cattle ranchers do not use pesticides (according to information provided by their managers), except for Rancho 068, where Fipronil is used to combat termites. Therefore, the main difference between cattle and forestry is the use of Fipronil. However, beef production has a strong impact on soil organic carbon. Measurements of direct net CO₂ fluxes have generally indicated that most annual cropping systems emit CO₂ (Baker and Griffis, 2005; Glenn et al., 2010; Kutsch et al., 2010; Maas et al., 2013; Taylor et al., 2013), whereas perennial systems sequester CO₂ (Hussain et al., 2011; Taylor et al., 2013).

https://www.researchgate.net/publication/339221032_Beef_cattle_production_impacts_soil_organic_carbon_storage

Regarding agriculture, the inputs are much higher compared to the other two land uses. Intensive soy production in Paraguay requires at least 8 litres of Glyphosate a year, which makes about 100 liters/ha in 12 years (compared to 4-7 liters/year for plantation forestry in once cycle).

- 3) The project does not plant exotic species to prevent invasive behaviour of Eucalyptus. However, the company does take several measures to ensure that the plants do not spread. Although Eucalyptus have shown invasive behaviour in regions like South Africa, in tropical and sub-tropical regions employing the species planted in Forestal Apepu (*E. grandis*, *E. urophylla*, *E. camaldulensis*), the invasive potential of eucalypt species is deemed low. According to Stanturf et al. (2013), a review of general experience of Eucalyptus around the world (e.g., Brazil, Chile, and Australia) and the experience from regions similar to the Lower Coastal Plain (e.g., China and Brazil) concluded that the potential for Eucalyptus invasiveness is generally low due to poor dispersal, small seeds with limited viability that require bare soil to germinate, and light demanding seedlings that do not grow successfully under closed forest or understory canopies.

This is consistent with our experience, as eucalypts have not been found invading natural forest throughout the project history and other similar projects. Regarding the concern with invasiveness, the management team has not had any experience with eucalypts invading any of the natural sites in production sites, on all areas managed by Unique since 2011. When the team started with plantations forestry, invasiveness was monitored, however monitoring was discontinued as not considered relevant. This was subject to third party verifications by FSC auditors.

Only clones are planted that do not repropagate, i.e. they have if then only a very limited capacity to reproduce seeds and spread. Thus invasiveness is not expected respectively such a risk is very limited. This could be observed in the field as well as can be considered common knowledge of managing industrial level estates of fast-growing eucalyptus clones.

The consideration of environmental impacts and their adequate processing is also controlled during the annual FSC Audits which also includes the monitoring of any invasive behaviour of the planted eucalypt clones.

Also, risk of invasive behaviour is further minimized/controlled through following practices:

- The project employs mainly clones with limited seed dispersion capabilities.
- Plantations are combined with grazing systems where cattle controls any unwanted regeneration.

https://www.researchgate.net/publication/302982660_Assessing_the_invasive_potential_of_commercial_Eucalyptus_species_in_Brazil_Germination_and_early_establishment

<https://www.hindawi.com/journals/ijfr/2013/463030/>

Reasons for selecting Eucalyptus are:

- **Track record and R&D:** Paraguay has been highly deforested, but differently to neighboring countries like Brazil, Chile, or Uruguay, plantation forestry has been scarce. The plantation forestry sector is slowly developing, but in general there is little knowledge and experience. To date, by far, eucalyptus is the most widely planted species (> 90 % of the plantation area in the country) and the only one with some established track record. Much of the long track record regarding research and development about this species also

comes from Brazil. When conducting private investments, forestry is already considered of relatively high risk in the country. Therefore, employing species with no track record with be unacceptable by private investors due to high risk. Forestal Apepu's approach therefore is to introduce other species through trials, mixing them with eucalyptus and building up knowledge to foster future diversification.

- **Origin of genetic material / R&D / Track record:** The development of professional nurseries has been limited, and to date, the only genetic material that can be obtained with high quality is from eucalyptus. To date, there is no availability of certified genetic material of other species.
- **Performance/Productive:** Eucalyptus render high yields brought about by rapid growth rate (between 25 and 40 m³/ha/year) and shorter harvesting rotations (generally between 7 and 15 years). This makes them suitable for developing financially viable forestry projects. In the context of deforestation and forest degradation in Paraguay, they may also reduce the pressure on natural forests.

Documentation provided by project participant

	Changes in the MR	Section(s):	New version no:
	Changes in ER xls	Worksheet(s):	New version no:
X	Other:	Evidence for outgrowers	

VVB assessment

Date: 03/10/2023

Response provided by PP has been found acceptable. CL 5 is closed.

CL ID	CL 6	Section no.	5.2	Date: 20/08/2023
Description of CL				
Project start date is 05/04/2015 which is the date on which project started generating GHG removals as per VCS standard. However, PP has chosen 2nd verification period with the start date of 01/03/2015 which is appropriate as the crediting period starts from 05/04/2015. Secondly, PP has calculated and reported GHG removals for 2nd verification period 01/03/2015 to 30/09/2022. VCUs certified & issued for 1st verification period correspond to 05/04/2015 to 31/12/2020 for 1518 ha in FMU 5, 6 and 8. There is an overlap observed in both the monitoring periods. PP is to clarify basis for selecting the period having overlap with previous period and whether there is an GHG removals overlap with 1518 ha of land considered for 1st verification.				
Project participant response				Date: 19/09/2023

- 1) The Monitoring period has been updated in the first page of the document: 05-04-2015 – 30-09-2022. In the section 5.2 the date was correct (05-04-2015).
- 2) First verification included 3 FMUs with an area of 1,518 ha for the period 05/04/2015 to 31/12/2020. The reason to not include all FMUs during the first verification was the lack of the documentation regarding to property rights (see FAR 1). This issue has been solved and therefore the 6 FMUs can now be added to the second verification. The second verification includes all remaining 6 FMUs for the period 05/04/2015 to 30/09/2022 and the 3 FMUs already verified for the period 01/01/2021 to 30/09/2022. No GHG removals overlap applies, since the carbon sequestered in the first verification has been discounted for the calculations in the second verification.

Documentation provided by project participant

X	Changes in the MR	Section(s): First page	New version no:
	Changes in ER xls	Worksheet(s):	New version no:
	Other:		

VVB assessment
Date: 03/10/2023

Response provided by PP has been found acceptable. CL 6 is closed.

CL ID	CL 7	Section no.	FAR 1 from validation	Date: 20/08/2023
Description of CL				
Please present evidence of the notarized transfers of the “forestry surface rights” of the remaining FMUs:				
FMU1: Rancho ZS				
1. FMU2: Rancho 068				
2. FMU3: Don Honorio				
3. FMU4: Loma Vistosa				
4. FMU7: Cerrito				
5. FMU9: Cerro Verde				
Project participant response				Date: 19/09/2023
Please see evidence of ownership.				
Documentation provided by project participant				

	Changes in the MR	Section(s):	New version no:
	Changes in ER xls	Worksheet(s):	New version no:
X	Other:	See folder CL8A: the 6 remaining documents are attached.	
VVB assessment			Date: 03/10/2023
Response provided by PP has been found acceptable. CL 7 is closed.			

CL ID	CL 8	Section no.	FAR 2 from validation	Date: 20/08/2023
Description of CL				
PP is requested to present the leasing contract extensions in order to ensure the required project crediting period of 20 years for all the FMUs.				
Project participant response				Date: 19/09/2023
All forestry surface rights are secured for a minimum of 14 years. When this project started, all property owners were used to produce annual crops and/or livestock. Negotiating contracts with long timeframes was a challenge, as this was very foreign in a country without plantation forestry tradition. Besides lease fees, all property owners participate in wood sales and carbon credit production. However, at the moment, the oldest plantations are 9 years old, and initiating third thinning. The project proponent will initiate negotiations for a second cycle when the time for clear cut (between year 12 and 14) comes closer, as negotiations will be easier once revenues for final cut start to be realized, when the most important revenues will be realized. At the moment, a pulp mill is being constructed in Eastern Paraguay, which will start its operations between 2026 and 2027, requiring more than 6 million m³ of wood per year. Therefore, the market is dynamic at the moment, and in a few years, there will be enough market incentives for property owners to continue with a second rotation, after the experience with the first rotation. The project proponent is already in the process of securing permanence: - The property owners are signing interest letters to continue the production for a second rotation (see letters in the supporting documentation) The investor of Forestal San Pedro is securing more land in the country, meaning operations are being expanded, with potential of compensating any areas in case there is a problem with renewing any lease contract				
Documentation provided by project participant				

	Changes in the MR	Section(s):	New version no:
	Changes in ER xls	Worksheet(s):	New version no:
X	Other:	Letters of interest uploaded	
VVB assessment			Date: 03/10/2023
FAR remains open. VVB conducting 3 rd verification should confirm leasing contract extensions in order to ensure crediting period of 20 years.			

CAR ID	CAR 1	Section no.	5.4	Date: 20/08/2023
Description of CL				
PP has not provided long term average explanation including LTA calculation for each stratum for 1 st and 2 nd instance included in the current monitoring period as per LTA VCS guidance.				
Project participant response				Date: 19/09/2023

The calculation of bTree has been compared with the LTA estimated in Ex-Ante. In stratum 714_1000, the LTA has been reached and only in the stratum 2015_1000, and only the LTA has been claimed.

LTA Calculation

Tree_Density	Ante LTA	A - bTREE
714	190,2	110,37
1000	213,0	123,60
476/416	191,4	111,09

Values						LTA EVALUATION			
Mittelwert von Year of planting	Average of Tree_Density	Average of bTREE,i	Var of bTREE,i	Count of bTREE,i2	StdDev of bTREE,i	Average bTREE, i t CO2e to compare LTA	LTA Ex Ante	Δ LTA, t CO2e to reach LTA	Average bTREE correction LTA
2015	714	84,29	486,58	229	22,06	145,26	190,2	44,94	84,3
2015	1000	145,87	1247,25	104	35,32	251,38	213,0	-38,38	123,6
2016	714	103,17	213,62	26	14,62	177,80	190,2	12,40	103,2
2016	1000	121,29	1692,89	50	41,14	209,02	213,0	3,98	121,3
2017	714	86,91	418,46	357	20,46	149,77	190,2	40,43	86,9
2018	714	53,74	134,85	48	11,61	92,61	190,2	97,59	53,7
2019	476	32,02	81,09	6	9,00	55,19	191,4	136,26	32,0
2020	417	12,52	50,32	20	7,09	21,57	191,4	169,87	12,5
Grand Total		91,98	1279,35	840	35,77	158,52			

Documentation provided by project participant

	Changes in the MR	Section(s):	New version no:
X	Changes in ER xls	Worksheet(s): 20230914 San Pedro Ex-Post carbon calculation M2	New version no:
	Other:		

VVB assessment

Date: 03/10/2023

Response provided by PP has been found acceptable. CAR 1 is closed.

CAR ID	CAR 2	Section no.	4.2	Date: 20/08/2023
Description of CL				
1. PP has not provided values of A_i measured for the monitoring period in 4.2 of MR.				
Project participant response				Date: 19/09/2023
The area has been updated in the table corresponding to Area of biomass stratum i:				
Stratum (Year_tree density)		Area (ha)		
2015_714		868		
2015_1000		439.5		
2016_714		199.5		
2016_1000		185.5		
2017_714		1747.5		
2018_714		377		
2019_476		22		
2020_416		115		
Documentation provided by project participant				
X	Changes in the MR	Section(s):4.2	New version no:	
	Changes in ER xls	Worksheet(s):	New version no:	
	Other:			
VVB assessment				Date: 03/10/2023
Response provided by PP has been found acceptable. CAR 2 is closed.				

CAR ID	CAR 3	Section no.	4.2	Date: 20/08/2023
Description of CL				
Please clarify/correct following in the MR:				
1. For n_i PP has mentioned values only for first instance. Please provide values for FMU 10 as well.				
2. For $A_{p,i}$, PSP size doesn't match with 4.3 of MR. Also, the calculation of PSP size has not considered 6 X 2 m spacing.				
Project participant response				Date: 19/09/2023

1. FMU10 was planted in 2022 and included in the MR as a second instance project. However, by the time of the current monitoring, trees were too young and were not included as part of the verification.
2. Table 8 in section 4.2 has been updated (see below), including the spacing 6 x 2. The Spacing and size of the PSP is not part of the excel used to calculate the carbon M2 (20230914 San Pedro Ex-post carbon calculation M2). The values introduced in the excel are already hectare volume information, calculated previously in the inventory conducted by the company. The inventory can be found in supporting documentation.

Table 2. PSP size depending on planting density

Spacing	Plot size (m2) – 20 trees
9 x 2.5	250
5 X 2	200
6 x 2	240
8 x 3	480

Volume / ha has been calculated in the statistic program R. It is not possible to extract the total area. The screenshots below show how volume is calculated in the program based on the initial density (same as the calculation of the plot size in the table above).

The image displays two screenshots of the RStudio IDE, showing R code for data processing and plotting. The top screenshot shows a script with various data manipulation steps, including filtering, calculating area, and summing values. The bottom screenshot shows a similar script with additional steps for selecting trees and calculating area.

Top Screenshot Code:

```

32 dashboardTreeData_por_plot_activos<-inventoryTree2021%>%#Arboles activos
33 filter(Plot_id == current_plot, rodal_activo=="Yes")
34
35 dashboardTreeData_por_plot_raleo<-inventoryTree2021%>%#Arboles a raleo
36 filter(Plot_id == current_plot, rodal_activo=="Yes", Marcado_raleo=="Yes")
37
38 #Area parcelas
39 factor_parcela<-ifelse(dashboardTreeData_por_plot_vivos$plot_type[1]=="chica",20,40)
40 superficie_parcelas<-(10000/current_densidadPlantacion)*factor_parcela
41
42
43 # G_ha
44 suma_area_plot_vivos<-sum(dashboardTreeData_por_plot_vivos$S_Act_and_Inactivo)
45 G_ha_vivos<-10000*suma_area_plot_vivos/superficie_parcelas
46
47 suma_area_plot_activos<-sum(dashboardTreeData_por_plot_activos$S_Act_and_Inactivo)
48 G_ha_activos<-10000*suma_area_plot_activos/superficie_parcelas
49
50 # vol_ha
51 suma_vol_plot_activos<-sum(dashboardTreeData_por_plot_activos$Vol_Act_and_Inact)
52 vol_ha<-10000*suma_vol_plot_activos/superficie_parcelas
53
54 # vol_ha_a_raleo
55 suma_vol_plot_raleo<-sum(dashboardTreeData_por_plot_raleo$Vol_Act_and_Inact)
56 vol_ha_a_raleo<-10000*suma_vol_plot_raleo/superficie_parcelas
57
58 # Alt_Dominante
59 index_Alturadominante<-which(Alt_dominante_plot_Metodo1$Plot==current_plot)
60 Alt_Dominante_Metodo1<-Alt_dominante_plot_Metodo1$Hdom[index_Alturadominante]
61 Alt_Dominante_Metodo2<-Alt_dominante_plot_Metodo2$Hdom[index_Alturadominante]
62
63 # mean_Height
64 mean_Height<-ifelse(nrow(dashboardTreeData_por_plot_activos)==0,NA,mean(dashboardTreeData_por_plot_activos$Estimated_height_Solo_Activo, na.rm = TRUE))
65
66 # min_height
67 min_Height<-ifelse(nrow(dashboardTreeData_por_plot_activos)==0,NA,min(dashboardTreeData_por_plot_activos$Estimated_height_Solo_Activo, na.rm = TRUE))
68

```

Bottom Screenshot Code:

```

21 index_datosEstrato<-which(reference_dataset$Estrato==current_estrato)
22 current_areabloque<-reference_dataset$area total del bloque[index_datosEstrato];current_areabloque<-current_areabloque[1]
23 current_densidadPlantacion<-reference_dataset$dens_plant[index_datosEstrato];current_densidadPlantacion<-current_densidadPlantacion[1]
24
25 reference_dataset%>%
26 filter(Estrato==current_estrato)
27
28 # selection of the trees from this plot
29 dashboardTreeData_por_plot_vivos<-inventoryTree2021%>%#Arboles vivos
30 filter(Plot_id == current_plot)
31
32 dashboardTreeData_por_plot_activos<-inventoryTree2021%>%#Arboles activos
33 filter(Plot_id == current_plot, rodal_activo=="Yes")
34
35 dashboardTreeData_por_plot_raleo<-inventoryTree2021%>%#Arboles a raleo
36 filter(Plot_id == current_plot, rodal_activo=="Yes", Marcado_raleo=="Yes")
37
38 #Area parcelas
39 factor_parcela<-ifelse(dashboardTreeData_por_plot_vivos$plot_type[1]=="chica",20,40)
40 superficie_parcelas<-(10000/current_densidadPlantacion)*factor_parcela
41
42
43 # G_ha
44 suma_area_plot_vivos<-sum(dashboardTreeData_por_plot_vivos$S_Act_and_Inactivo)
45 G_ha_vivos<-10000*suma_area_plot_vivos/superficie_parcelas
46
47 suma_area_plot_activos<-sum(dashboardTreeData_por_plot_activos$S_Act_and_Inactivo)
48 G_ha_activos<-10000*suma_area_plot_activos/superficie_parcelas
49
50 # vol_ha
51 suma_vol_plot_activos<-sum(dashboardTreeData_por_plot_activos$Vol_Act_and_Inact)
52 vol_ha<-10000*suma_vol_plot_activos/superficie_parcelas
53
54 # vol_ha_a_raleo
55 suma_vol_plot_raleo<-sum(dashboardTreeData_por_plot_raleo$Vol_Act_and_Inact)
56 vol_ha_a_raleo<-10000*suma_vol_plot_raleo/superficie_parcelas
57
58

```

Documentation provided by project participant			
X	Changes in the MR	Section(s): 4.3 and Ap,I in 4.2	New version no:
	Changes in ER xls	Worksheet(s):	New version no:
	Other:	Supporting documentation:	
VVB assessment			Date: 03/10/2023
Response provided by PP has been found acceptable. CAR 3 is closed.			

CAR ID	CAR 4	Section no.	ER	Date: 20/08/2023
Description of CL				
There are some calculations in the ER sheet (VCS table, Reference M1, carbon calculations) which does not have any heading making it difficult to identify what are these values and where they are used in the calculation.				
Project participant response				Date: 19/09/2023
The Excel has been cleaned and explained in a call with the auditor to ensure the correct comprehension of all calculations.				
Documentation provided by project participant				
	Changes in the MR	Section(s):	New version no:	
X	Changes in ER xls	Worksheet(s): 20230914 San Pedro Ex-Post carbon calculation M2		New version no:
	Other:			
VVB assessment				Date: 03/10/2023
Response provided by PP has been found acceptable. CAR 4 is closed.				

FAR ID	1	Section no.	-	Date: 20/06/2024
Description of FAR				

PP has reported area loss in FMU 1, FMU 8 and FMU 9 due to storm and bad site conditions as per given below:

FMU no.	Area loss
FMU 1	44,5ha
FMU 8	14 ha
FMU 9	7 ha

VVB verifying the next monitoring period shall check change in the planting date for these areas located within an already verified FMUs.

Project participant response

Date:

Documentation provided by project participant

Changes in the MR	Section(s):	New version no:
Changes in ER xls	Worksheet(s):	New version no:
Other:		

VVB assessment

Date:

FAR ID 2 **Section no.** **Date: 09/10/2024**

Description of FAR

PP is requested to provide documentary evidences that the project is not claiming double accounting of emission reductions regarding the GCF investment in the project at each verification. During this verification, the PP has demonstrated that VCUs issued by the project are in fact deducted from the mitigation impact reporting to the GCF. Questions related to the risk of double accounting are addressed in the letter "2024-09-18 Letter on GCF double accounting signed Annexes" with appropriate evidence attached. In this letter the PP shows how VCUs emitted are deducted from the impact mitigation report to GCF. The justification was considered appropriate. However it is necessary to evaluate the deduction of VCUs at each verification to avoid double accounting, resulting in a permanent FAR. VVB conducting 3rd verification should confirm that the latest VCUs emitted were in fact deducted from the GCF mitigation impact report.

Project participant response

Date:

Documentation provided by project participant

Changes in the MR	Section(s):	New version no:
Changes in ER xls	Worksheet(s):	New version no:
Other:	Letters on GCF double accounting	

VVB assessment	Date: