



AGROFORESTRY AND FOREST RESTORATION FOR ECOLOGICAL CONNECTIVITY, POVERTY REDUCTION AND BIODIVERSITY CONSERVATION IN CERRO SAN GIL, CARIBBEAN GUATEMALA



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Summary:

AENOR has carried out the verification of Agroforestry and forest restoration for ecological connectivity, poverty reduction and biodiversity conservation in Cerro San Gil, Caribbean Guatemala. The project is a grouped project for the afforestation, reforestation and/or revegetation (hereafter referred to as “ARR”) of lands in Guatemala. The project started in 2013 and its main goals are: improve connectivity and / or continuity of forest cover without negative effects on biodiversity at the community and landscape level; improving food security and rural incomes; improving the conditions of conservation and protected area management at the regional level, including better community resilience to climate change; climate change mitigation; recover watersheds; reduce erosion; and generate sustainable incomes for farmers.

The implementing partner of this instance has been FUNDAECO, a local NGO, and technologies/procedures described in the PD were the following ones: logistical organization; training and sensitization; land preparation and planting; maintenance; plant protection; access to information and feedback; grievance redress procedures; and conflict prevention and resolution. In the first project activity instance, the afforestation and reforestation of degraded lands in 60 rural communities located in the buffer zone, multiple use zone and zones of influence of the Cerro San Gil Protected Area,

Department of Izabal, have been succeeded in using four different planting systems: mixed forest trees plantations, mixed fruit tree family orchards, rubber tree plantations and agroforestry systems.

In this second verification 141.68 ha corresponding to 57 properties have been removed from the original project area, representing 8.06% of the original project boundary reported at first verification event. Considering this exclusion, nowadays the project has established plantations on 1.615,91 ha of degraded and degrading land using the four different planting systems.

This is the second verification event, corresponding to the monitoring period from 20-July-2016 to 8-July-2021.

The purpose of the verification was to determine the conformance of the project with respect to the VCS Standard v4.1 and the validated PD and the assessment of the ex-post monitored anthropogenic GHG emissions reductions and/or removals that have occurred as a result of the project's activities. The scope of the verification was to assess the conformance of validated project, once implemented, with the VCS requirements and requirements in the validated PD. The process was performed through a combination of desk review, interviews, and communications with relevant personnel.

During the verification 1 CL and 5 CARs were raised. All these issues were appropriately closed by means of corrections, more clear explanations, and other supporting documents.

Once all issued detected were appropriately resolved, AENOR carried out this final verification report and deems with reasonable level of assurance that the project complies with all of the verification criteria. The assessment team has no restrictions or uncertainties with respect to the compliance of the project with the verification criteria, hence, the audit team concludes that the cumulative net GHG emissions reductions or removals of 253,880 tCO₂-e over the monitoring period has been quantified in accordance with VCS rules. A buffer discount rate of 12% was applied, resulting 223,415 VCU's eligible for issuance.

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1 INTRODUCTION

1.1 Objective

The objective of the verification audit was to conduct an independent assessment of the project to determine:

- The extent to which methods and procedures, including monitoring procedures, have been implemented in accordance with the validated project description (PD), including the monitoring plan.
- The extent to which GHG emission reductions and removals reported in the monitoring report (MR) are materially accurate.

1.2 Scope and Criteria

The scope of the verification audit was to verify the emissions reductions and/or removals of the project, Agroforestry and forest restoration for ecological connectivity, poverty reduction and biodiversity conservation in Cerro San Gil, Caribbean Guatemala against the Verified Carbon Standard, the identified methodology and the validated PD throughout the monitoring period from 20-July-2016 to 8-July-2021.

The objectives of this audit included a verification of the Project's calculated reductions and/or removals and the non-permanence risk assessment report with the Verified Carbon Standard requirements and any additional requirements of VCS AFOLU projects. In addition, the audit assessed the project with respect to the validated baseline scenarios presented in the PD.

In accordance with Section 4.1.8 of the VCS Standard, the criterion for validation and verification was the VCS Version 4, including the following documents:

- VCS Standard v4.1
- VCS Program Guide v4.0
- VCS AFOLU Non-Permanence Risk Tool v 4.0

Unless otherwise indicated, the assessment was performed against the most recent version of the relevant VCS guidance document.

1.3 Level of Assurance

The assessment was conducted to provide a reasonable level of assurance of conformance against the defined audit criteria and materiality thresholds within the audit scope. Based on the audit findings, a positive evaluation statement reasonably assures that the project GHG assertions are materially correct and is a fair representation of the GHG data and information.

All the versions of the verification report were subjected to an independent internal technical review before being submitted to the client to confirm that all verification activities had been completed according to the pertinent AENOR instructions required. The technical review was performed by a technical reviewer(s) qualified in accordance with AENOR's qualification scheme for VCS validation and verification.

The threshold for materiality with respect to the aggregate of errors, omissions, and misrepresentations relative to the total reported GHG emission reductions/removals was one percent (1%), as established for large projects by the VCS Standard.

1.4 Summary Description of the Project

The Agroforestry and forest restoration for ecological connectivity, poverty reduction and biodiversity conservation in Cerro San Gil, Caribbean Guatemala is a grouped project for the afforestation, reforestation and/or revegetation of lands in Guatemala. The project started in 2013 and its main goals are: improve connectivity and / or continuity of forest cover without negative effects on biodiversity at the community and landscape level; improving food security and rural incomes; improving the conditions of conservation and protected area management at the regional level, including better community resilience to climate change; climate change mitigation; recover watersheds; reduce erosion; and generate sustainable incomes for farmers.

The grouped project Agroforestry and Forest Restoration for Ecological Connectivity, Poverty Reduction and Biodiversity Conservation in Cerro San Gil is located in the Department of Izabal in Guatemala, including all its municipalities: Livingston, Puerto Barrios, Morales, Los Amates and El Estor.

The first instance for the second monitoring period has 1.615.91 ha.

The project starts, and implementation date is 26 August 2013 and will be operational until 25 August 2043. The emissions reduction for the current monitoring period (20-July-2016 to 8-July-2021.) is 223,415 tCO₂ tCO₂e. This is a grouped project.

2 VERIFICATION PROCESS

2.1 Method and Criteria

The verification was performed through a combination of document review and interviews with relevant personnel, as discussed in Sections 2.2 through 2.4 of this report. At all times, the project was assessed for conformance to the criteria described in Section 1.2 of this report. As discussed in Section 2.5, findings were issued to ensure that the project was in full conformance to all requirements.

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 was to present a risk assessment for determining the nature and extent of verification procedures necessary to ensure the risk of auditing error was reduced to a reasonable level. The Verification & Sampling Plan

methodology was derived from all items in our verification process stated above. Specifically, the sampling plan utilized the VCS guidance documents and ISO 14064-3. Any modifications applied to the Verification and Sampling plan were made based upon the conditions observed for monitoring in order to detect the processes with highest risk of material discrepancy.

The verification activities in which risks were assessed were the evaluations of the monitoring system (data flow, data control procedures, etc.) but mainly the quality of raw data as well as sources and the spreadsheet calculations. AENOR reproduced and verified 100% of sheets in the LV_Fundaeco_2021_2nd_verification_Field_data_GHG_estimations for the monitoring period 20-July-2016 to 8-July-2021 for the project area. The project boundary and reforested areas in the project area for the monitoring period were 100% checked using the GIS database.

The carbon stock changes, and the land used classes in the project area were also 100% verified and crosschecked with validated values. For data provided for the reference region, AENOR carried out onsite samples of data since they had already been previously validated and posed a lower risk to the emissions removals achieved by the project.

AENOR carried out a deep and meticulous review of the spreadsheets in order to verify the correct application of the methodology (formulae, equations.) and checked that data required calculating the GHG removals were appropriately provided. Based on the assessment carried out, AENOR confirms with a reasonable level of assurance that the claimed emission removals are free from material errors, omissions, or misstatements.

AENOR confirms that sufficient evidence was presented for the reported net anthropogenic GHG emission removals and that there is a clear audit trail that contains the evidence and records that validate the stated figure in this verification report since:

- Sufficient evidence available: The project participant has provided the 100% of data used in the calculations to achieve the final amount of GHG emission reductions reported.
- Nature of evidence: The raw data were collected from reliable sources. They are detailed in the project documents and have been provided to the verification team and were checked during the interviews.
- Cross-checked evidence: AENOR cross-checked the collected information through interviews with stakeholders and reproducing calculations.

Hence, AENOR confirms that the stated figures in the monitoring report are correct and confirms that is able to certify net anthropogenic GHG removals based on verifiable and reliable evidence.

2.2 Document Review

A detailed review of all project documentation was conducted to ensure consistency with, and identify any deviation from, VCS program requirements, the methodology (AR ACM0003 V 02.0), and the validated PD. Initial review focused on the MR and included an examination of the project details, implementation status, data and parameters, and quantification of GHG emission reductions and

removals. Documents reviewed included data from monitoring, carbon rights contracts, forest management agreements, maps and aerial images, monitoring and grievance SOPs, biomass and carbon calculation spread sheets, and responses to Corrective Action Requests (CARs) and Clarifications (CLs).

The verification included a review of the validated PD and MR, relative to the field conditions and interviews with project management staff and stakeholders. Modifications to the Verification and Sampling plan were made based upon the conditions observed for monitoring in order to detect the processes with highest risk of material discrepancy.

The VCS AFOLU Non-Permanence Risk Tool was used by the Project Proponent to assess overall project risk. AENOR reviewed the Non-Permanence Risk Report provided with the verification supporting documentation and confirmed that the Project adheres to the requirements set out in the VCS AFOLU Non-Permanence Risk Tool. Each risk factor was thoroughly assessed for conformance. The final score was calculated to be 12%.

For a listing of all documents received from the client for this verification, please see Appendix 1.

2.3 Interviews

Interviews were performed as part of the overall verification process which was additional to that provided in the project description, monitoring report and any supporting documents. The AENOR verification team met with individuals with various roles in the project. This included a series of interviews with in-country staff that support the mission of the project. In addition, interviews discussions were conducted with project members and leaders of the local communities. The following table summarizes the interviews carried out during the process.

Name	Title/Organization/Community
Shalon Yenga	Lead Conservation Farmer/ Ukanga Village/ Mpans
Danny Torres	Head of Climate Impact/Livelihoods Venture SAS
Rosa María Vidal	Expert climate change/ Livelihoods Venture SAS
José Antonio Navarro	Expert of forestry resources
Vairo San Mayor	Subdirector of Fundaeco
Andrés Bolom Figueroa	Representatives of Lampara Community
Vicente Caal Pop	Representatives of Lampara Community
Nolberto Chub Chocoi	Representatives of Lampara Community
José Mo	Representatives of the Creek Maya community
Hermelindo Choc Chin	Representatives of the Creek Maya community
Carlos Chacon	Private land owner

Due to the COVID-19 pandemic situation, all interviews were carried out through videoconference, as explained in Section 2.4. The interviews were carried out on October 14th, 2021.

2.4 Site Inspections

Due to the exceptional situation caused by the COVID-19 crisis and the travel restrictions established by governments for safety reasons, it was not possible to carry out a site visit as part of the verification process of the project.

In accordance with VERRA's COVID-19 Travel Guidance for Projects (dated 18 March 2020) and since that the VCS Programs does not explicitly mandate site visits, a remote visit was carried out and considering that a reasonable level of assurance was achievable by other means. AENOR as VVB proposed to carry out a remote verification audit that ensured the achievement of the assurance level required by the VCS program.

The remote audit was based on the following auditing techniques:

- Document review and cross checks between the information provided in the in the MR, the PD and supporting information and evidence provided by the PP Emissions calculations, GIS database, and supporting information and evidence provided.
- Review, based on the selected methodologies, tools and the other applied methodological regulatory documents, of the appropriateness of formulae and accuracy of calculations.
- Telephone, teleconference and/or e-mail interviews for the implementation of project activities and the elaboration of project's documents.

- Cross checks between information provided by interviewees to ensure that not relevant information has been omitted.

2.5 Resolution of Findings

All documentation provided by the PP was assessed against the applicable version of the relevant VCS guidance document. A clarification request (CL) and corrective action requests (CAR) were raised and submitted to the PP, which addressed them either by providing to the audit team the requested information or by making the appropriate corrections. Updated versions of the documentation were submitted by the PP and the audit team reassessed them against the guidance documentation. This process was repeated iteratively until all CL and CAR were fully closed. Specifically, 1 CL and 5 CARs were raised.

All findings issued by the AENOR audit team during the verification process have been closed. In accordance with Section 4.1.13 of the VCS Standard, all findings issued during the verification process, and the inputs for their closure, are described in Appendix 2 of this report.

2.5.1. Forward Action Requests

No FARs were raised to the PP during the verification process.

2.6 Eligibility for Validation Activities

AENOR holds accreditation for validation for the relevant sectorial scope 14 under which this project activity is classified.

3. VALIDATION FINDINGS

3.1 Participation under Other GHG Programs

The verification team is not aware of project involvement in other forms of environmental credits from its activities. The project has not been registered, and is not seeking registration, under any other GHG programs.

3.2 Methodology Deviations

Methodology deviations have not occurred in the second verification period.

3.3 Project Description Deviations

For this verification period, two project description happened, as explained below:

In this second verification 141.68 ha corresponding to 57 properties have been removed from the original project area, representing 8.06% of the original project boundary reported at first verification event. For the removals achieved in this verification period, the loss of ha has been taken into account, therefore the calculations are conservative.

These changes from the validated PD have occurred during this monitoring period. The deviation has been appropriately described and justified and do not affect the applicability of the methodology, the additionality of the project nor the appropriateness of the baseline scenario. Thus, the audit team considers the deviation to be valid and that the project remains in compliance with the VCS rules.

In this second verification event an alternative aboveground biomass allometric equation to the stem volume equation included in the PD, table 27, page 92 of the PD&MR is used for the larger forestry plantation trees.

The aboveground biomass of these trees is estimated using the allometric equation developed by Arreaga (2002) for sustainably managed forests in the Maya Biosphere Reserve, Petén, Guatemala. This equation has been changed because is used in the Guatemala's Reference Level of Forest Emissions and Removals (FRL) developed for the Emission Reductions Program Document (ER-PD) presented to the Forest Carbon Partnership Facility (FCPF) Carbon Fund.

For the long-term average estimations for this monitoring period is was conducted using the more updated forest management plan. An explanation of the different between the long-term average (1,102,524t CO₂e), that is significantly higher than the previous one (698,310 t CO₂e), has been included in the MR. AENOR deems correct that the estimation is consistent with those data obtained in this verification and the current forest management plan. Change in long-term average estimation is in compliance with the VCS Standard v4.1, section 3.18.

Therefore, AENOR deems that the deviations do not impact on the applicability of the methodology, the appropriateness of the baseline scenario described in the validated PD nor its additionality.

The Project remains in compliance with the VCS rules, it is completely implemented and discrepancies between the Project and the PD have been clearly commented in the MR and suitability assessed by AENOR.

3.4 Grouped Project

No new instances were added to the project during this monitoring period.

4. VERIFICATION FINDINGS

4.1 Project Implementation Status

The grouped project started with the implementation of the first project activity instance, which was implemented as described in the PD. No new project activities that lead to the intended GHG benefit commenced during the monitoring period.

This Agroforestry and Forest Restoration for Ecological Connectivity, Poverty Reduction and Biodiversity Conservation project in Cerro San Gil aims to afforest, reforest and restore through different planting systems. The project was implemented in multiple rural communities located in the buffer zone, multiple use zone and zones of influence of the Cerro San Gil Protected Area. Therefore, this project is aligned with Guatemala's sustainability policies and contributes to achieving different sustainable development policy objectives established at the national level.

During this monitoring period, 57 properties have been removed from the original project area. A total of 146.68 ha was excluded. The total area planted in this period, considering the areas that have been removed from the original project area, was 1.615,91 ha.

The implementing partner of this instance was FUNDAECO, a local NGO, and technologies/procedures described in the PD have been the following: Logistics organization, training and awareness, site preparation and planting, maintenance, plant protection.

The MR provides in its Section 3.1 a detailed description of the activities implemented by the project since its start. During this verification process, AENOR has not detected project changes in regards of the project title, its purposes and objectives. As such, the project activity accurately reflects the proposed project which includes all the plantations established between 2013 and 2016. Three strata were identified and a total of 200 sample plots have been measured. The second monitoring has been independent from the first one, updating and improving the stratification and the measurement protocol, as described in the SOP. FUNDAECO was in charge of the field measurements with the support of a forest carbon expert for sampling design and calculations.

During the verification process, the audit team checked the actual implementation of project activities through the analysis of evidence provided by the PP and through interviews to local stakeholders and project staff. No discrepancies have been found between the gathered evidence and the implemented activities reported in the MR, as well between the MR and the planned activities in the PD.

The project is designed as a grouped project, and then the inclusion of new instances is acceptable. For the present monitoring period, no new instances were included.

After the review of the MR, spreadsheet and the other document to support calculations such as GIS information, surveys and others, AENOR deems that project status is in compliance with applicable methodologies and implementation is in support of the VCS principles of Conservativeness and Accuracy.

Related to the compliance with the Monitoring Plan, section 4.3 of the MR provides information about the monitoring plan and actions carried out for the current monitoring period. AENOR reviewed the procedures put in place to perform the biomass inventories and deems that they are in accordance with the procedures described in the validated monitoring plan. AENOR checked the monitoring plan contained in the validated PD and compared it with the MR to verify whether there was any difference that would cause an increase in estimates of the GHG emission removals in the current monitoring period. AENOR has confirmed that there are no material discrepancies between the actual monitoring system, and the monitoring plan set out in the project description and the applied methodologies. Also, the project proponent effectively monitors the required parameters to determine the project's removals by sinks and emissions by sources as required by the monitoring plan and the applicable methodologies.

The parameters reported, including source, frequency and review criteria as indicated in the monitoring plan were verified to be correct and in line with the monitoring plan of the validated PD. As described in Section 4.4 of this verification report, the parameters, A_i , $ASHRUB_i$, n_i , $APLOT_i$, DBH , $D30$, H , T , $CCSHRUB_i$, $ADISP_t$, $AFMF_t$, $ABURN_{i,t}$ were monitored. Necessary management system procedures including responsibility and authority of monitoring activities have been verified to be consistent with the PD. Knowledge of personnel associated with the project activity was also found to be satisfactory.

Regarding leakage emission, they account 0. In this regard, AENOR has checked evidence provided which confirms the information included in the MR.

There is no evidence of double counting or that the project has participated nor been rejected under any other GHG programs. GHG emission reductions or removals generated by the project are not included in an emission trading program or any other mechanism that includes GHG allowance trading. The project has not received or sought any other form of environmental credit.

There are not previously validated methodology deviations for the first verification period, nor for this verification period.

According to Sustainable development, the project was implemented in multiple rural communities located in the buffer zone, multiple use zone and zones of influence of the Cerro San Gil Protected Area, Department of Izabal. These types of ARR projects implemented on degraded lands promote sustainable development of the region, bring benefits to the communities, improve connectivity and/or continuity of forest cover without negative effects on biodiversity at the community and landscape level, and protect existing natural resources. Therefore, this project is aligned with Guatemala's sustainability policies and contributes to achieving different sustainable development policy objectives established at the national level. The main sustainability policies of Guatemala are:

- Constitution of the Republic of Guatemala “Constitución Política de la República de Guatemala” (Articles 64, 97.126).
- Mitigation and Adaptation to Climate Change Law “Ley Marco para la reducción a la vulnerabilidad, Adaptación obligatoria ante el Cambio Climático y la Mitigación de Gases de Efecto Invernadero, Decreto 7-2013” (Articles, 15, 20) .
- Law for the protection and improvement of the environment “Ley de protección y mejoramiento del medio ambiente (Decreto 68-1986)” .
- Forestry Law “Ley Forestal, Decreto 101-96” (Articles, 6, 8, 46, 98).
- Protected areas Law “Ley de Áreas Protegidas, Decreto 4-89” (Articles, 5, 18, 20, 30, 33, 69).

Also, AENOR has checked that the project meets the Master Plan of the protected reserve “Plan Maestro de la Reserva Protectora de Manantiales Cerro San Gil” . This master plan aims to promote the improvement and diversification of production and marketing agriculture (e.g., black pepper, xate, cardamom, citrus, ...) and the development of alternative economic activities in critical areas and from traditional knowledge of natural resources.

AENOR deems correct that the project contributes to achieve the following SDGs:

- 1 No Poverty
- 2 Zero Hunger
- 4 Quality education
- 13 Climate action
- 15 life on land

After a complete review of the different documents provided and the information gathered through the remote audit process, AENOR is able to confirm that the project implementation is in accordance with the validated PD. There are not material discrepancies between project implementation and the project description, with the exception of the two project deviations described in section 3.3.

4.2 Safeguards

4.2.1 No Net Harm

The PDD indicated as a conclusion that the project activity does not have significant negative impacts affecting natural resources and communities. The only severe impacts were identified to occur during the site preparation activities and were not of concern during this monitoring period as those activities finalized during the previous monitoring period. These impacts were: activation of the erosive processes and deterioration of surface drainage pattern, both caused by the clearing of vegetation in order to increase plant survival. As to reduce these impacts, the mitigation action was to promote the manual cleaning just around the planting point. This was a short-term impact affecting only during the first months of planting activity, and that was mitigated as the new plantations are growing proving enough coverage to the soil.

Regarding socio-economic impacts, the Environmental Impact Assessment identifies only positive impacts, as the project plots are located over degraded cropland and degraded grasslands that were not producing benefits to their owners and will turn into productive parcels improving families' livelihoods.

Therefore, AENOR checked that no mitigation actions will be necessary.

4.2.2. Local Stakeholder Consultation

During this monitoring period the project staff-maintained communication and consultation with local stakeholders through group meetings in the case of community plots, and individual meetings or visits in the case of individual owned plots. During these meetings information such as project progress, specific technical recommendations, upcoming phases, and other outstanding subjects were discussed. The project staff prepared meetings reports and/or visit log sheets providing with a copy to the beneficiary. This log sheets registered both information provided by the project technician and inputs, needs and grievances presented by the beneficiaries.

No relevant changes were considered or implemented during this monitoring period. However, some project beneficiaries were not eligible to access to the National Forest Incentive Program, due to the program specific criteria and not the project, even when this is not considered as a project change and is not under FUNDAECO responsibility, the project staff timely informed to the affected beneficiaries.

Monitoring activities were carried on previous coordination with the project beneficiary and the monitoring Results are presented in a Monitoring brief report that is prepared in Spanish and that is made available in FUNDAECO offices. Once COVID-19 infection risk is reduced, FUNDAECO will organize meetings to present the monitoring report.

It is the opinion of AENOR, based on the information gathered during the audit process, that the PP communicates the necessary relevant information about the project implementation, risks, costs and benefits, relevant laws and regulations and the process of VCS Program to local stakeholders. All interviewed community members were aware of the nature of the project, its implementation, and its results, as well as the basics regarding the VCS program and the auditing process.

4.3 AFOLU-Specific Safeguards

The processes used to communicate and consult with local stakeholders during the monitoring period includes meetings and visits to the project beneficiaries, during these visits project beneficiaries presents doubts and/or complaints, which were registered by the PP in the "visit log sheet". Besides the visit sheets, grievances and complaints can be presented trough FUNDAECOs redress procedure. During the monitoring period 3 complaints were registered under this mechanism. The MR reports 3 grievances. The grievances have been addressed and closed. The PP has demonstrated that the 3 grievances have been managed following the Stakeholder Grievance Response SOP and it is in the way of being solved.

AENOR could check, through the Grievance logbook, these 3 complaints.

There are no updates to the property and land use rights of the local stakeholders. Project parcels and boundaries remains the same as in the last monitoring report, with the exception of the 57 properties that left the project activity, the project staff timely informed to the affected beneficiaries and the owners of these estates left the project and cleared their plantations. All project beneficiaries are voluntarily participating in the project and hold their legal land titles according to Guatemalan law.

The documentation reviewed and the interviews with local stakeholders confirmed that the project is mitigating its negative impacts. All interviewees have knowledge of the grievance and redress procedure and manifested that it is being properly implemented for the resolution of any conflict. The Stakeholder Grievance Mechanism of FUNDAECO is efficient in their design and are aligned with the principles set in by the validated PD. During the remote audit with the representatives of Lampara and Creek Maya community, it was checked that they were aware and have information and knowledge of the visit log sheet as well as the complaint and grievance book.

Based on the FUNDAECO Grievance Mechanism, it is the opinion of AENOR that the PP has taken the appropriate measures to ensure that the negative impacts on local stakeholders are reduced to the minimum and has developed and put in place actions to mitigate such impacts when necessary and mitigate risks local stakeholders face due to project implementation. It is the opinion of the audit team that the project generates a net positive impact to all stakeholders involved.

4.4 Accuracy of GHG Emission Reduction and Removal Calculations

All calculations of greenhouse gas emission removals were checked by the audit team. No errors were discovered that materially affect the stated greenhouse gas emission removals of the project during the monitoring period. The methods used to estimate greenhouse gas benefits of the project were consistent with the methodology and the validated part of the project.

Baseline emissions

In the Project, the baseline Net GHG removals by sinks are zero as it is explained in the MR section 5.1. As changes in the carbon stocks in the living biomass are accounted as zero, then changes in carbon stocks in baseline dead wood biomass can be estimated as zero as well. AENOR has checked and confirmed that this amount of baseline removals is zero and are in conformance with the methodology of the project.

Project emissions

Project net GHG removals by sinks

Procedure to be used for calculation of *ex ante* actual net GHG removals by sinks are detailed in the AR-ACM0003 methodology (Version 02.0) under the section 5.5 “Actual net GHG removals by sinks”.

The actual net GHG removals by sinks is 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 A/R CDM project activity, in year t, as estimated in the tool “Estimation of non-CO₂ GHG emissions resulting from burning of biomass attributable to an A/R CDM project activity”; t CO₂-e

Project Emissions considers five biomass, trees, shrub, dead wood, litter and soil.

Change in carbon stocks in project - $\Delta C_{P,t}$

$\Delta C_{P,t}$ is calculated using equation 3 of the methodology.

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

Where:

$\Delta C_{P,t}$ = Change in carbon stocks in project, occurring in the selected carbon pools, at time 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 stock s of trees and shrubs in A/R CDM project activities” activities”; tCO₂ 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 p roject activities”; tCO₂ e

$\Delta C_{DW_PROJ,t}$ = Change in carbon stock in dead wood in project in year t, as estimated in the tool “Estimation of carbon stocks and change in carbon stocks in dead wood and litter in A/R CDM project activities” activities”;tCO₂ e

$\Delta C_{LI_PROJ,t}$ = Change in carbon stock in litter in project in year t, as estimated in the tool “Estimation of carbon stocks and change in carbon stocks in dead wood and litter in A/R CDM project activities” activities”; t CO₂ e

$\Delta C_{SOC_PROJ,t}$ = Change in carbon stock in the soil organic carbon (SOC) pool within the project boundary, 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

Change in carbon stock in tree biomass - $\Delta C_{TREE_PROJ,t}$

Change in carbon stock in trees in a year is estimated as follows:

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

Where:

$\Delta C_{TREE,t}$ = Change in carbon stock in trees within the project boundary in year t; t CO2e

C_{TREE,t_2} = Carbon stock in trees within the project boundary at time t2; t CO2e.

C_{TREE,t_1} = Carbon stock in trees within the project boundary at time t1; t CO2e.

T = Time elapsed between two successive estimations (T=t2 – t1); yr

Carbon stock in trees biomass in project

Carbon stock in trees is estimated on the basis of the measurements of sample plots, that are installed in the stratas.

The used sampling design is “stratified random sampling”. Under this method, random sample plots are installed in the strata and measured. Number of sample plots and their allocation to strata is estimated by using the A/R methodological tool “Calculation of the number of sample plots for measurements within A/R CDM project activities”.

- Mean carbon stock in trees within the tree biomass estimation strata and the associated uncertainty are estimated as follows:

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

$$B_{TREE} = A \times b_{TREE}$$

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

$$u_C = \frac{t_{VAL} \times \sqrt{\sum_{i=1}^M w_i^2 \times \frac{s_i^2}{n_i}}}{b_{TREE}}$$

Where:

- C_{TREE} = Carbon stock in trees in the tree biomass estimation strata; t CO₂e
- CF_{TREE} = Carbon fraction of tree biomass; t C (t d.m.)⁻¹. A default value of 0.47 is used unless transparent and verifiable information can be provided to justify a different value.
- B_{TREE} = Tree biomass in the tree biomass estimation strata; t d.m.
- A = Sum of areas of the tree biomass estimation strata; ha
- b_{TREE} = Mean tree biomass per hectare in the tree biomass estimation strata; t d.m. ha⁻¹
- w_i = Ratio of the area of stratum i to the sum of areas of tree biomass estimation strata (i.e. $w_i = A_i/A$); dimensionless
- $b_{TREE,i}$ = Mean tree biomass per hectare in stratum i; t d.m. ha⁻¹
- u_c = Uncertainty in C_{TREE}
- t_{VAL} = Two-sided Student's t-value for a confidence level of 90 per cent and degrees of freedom equal to $n - M$, where n is total number of sample plots within the tree biomass estimation strata and M is the total number of tree biomass estimation strata
- s_i^2 = Variance of tree biomass per hectare across all sample plots in stratum i;
(t d.m. ha⁻¹)²
- n_i = Number of sample plots in stratum i

- Mean tree biomass per hectare in a stratum and the associated variance are estimate as follows:

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

$$s_i^2 = \frac{n_i \times \sum_{p=1}^{n_i} b_{TREE,p,i}^2 - \left(\sum_{p=1}^{n_i} b_{TREE,p,i}\right)^2}{n_i \times (n_i - 1)}$$

Where:

- $b_{TREE,i}$ = Mean tree biomass per hectare in stratum i; t d.m. ha⁻¹
- $b_{TREE,p,i}$ = Tree biomass per hectare in plot p of stratum i; t d.m. ha⁻¹
- s_i^2 = Variance of mean tree biomass per hectare in stratum i; (t d.m. ha⁻¹)²
- n_i = Number of sample plots in stratum i.

- Tree biomass per hectare in a plot is estimated by using the “Measurement of fixed area plots”. The plot biomass value (i.e. per-hectare tree biomass at the centre of the plot) is estimated as follows (all time-dependent variables relate to the time of measurement):

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

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

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

Where:

- $b_{TREE,p,i}$ = Tree biomass per hectare in sample plot p of stratum i; t d.m. ha⁻¹
- $B_{TREE,p,i}$ = Tree biomass in sample plot p of stratum i; t d.m.
- $A_{PLOT,i}$ = Size of sample plot in stratum i; ha
- $B_{TREE,j,p,i}$ = Biomass of trees of species j in sample plot p of stratum i; t d.m.
- $B_{TREE,l,j,p,i}$ = Biomass of tree l of species j in sample plot p of stratum i; t d.m.

- Biomass of a tree in a sample plot is estimated by using the following equation:

$$B_{TREE,l,j,p,i} = f_j(x_{1,l}, x_{2,l}, x_{3,l}, \dots) \times (1 + R_j)$$

Where:

$B_{TREE,l,j,p,i}$ = Biomass of tree l of species j in sample plot p of stratum i; t d.m.

$f_j(x_{1,l}, x_{2,l}, x_{3,l}, \dots)$ = Above-ground biomass of the tree returned by the allometric equation for species j relating the measurements of tree l to the above-ground biomass of the tree; t d.m.

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

Estimation of change in carbon stock in tree biomass (ΔC_{TREE}) have been done following next steps:

- Selection of the allometric equation.

Specific equations were developed in the first verification event for three different groups of species: i) rubber (hu), ii) forestry plantation (for) and iii) agroforestry plantation (agf) (see table below). Table 9 and 10 of the MR, explain the allometric equations used in this project activity.

- Calculation of change in carbon stock in tree biomass, the summary results of the estimation of bTREE (t d.m./ha) for the stratified random sampling are the following:

Stratum	Ai (ha)	APLOT (ha)	ni	wi	bTREE,i (t d.m./ha)
Forestal 0-10	164.44	0.0201	15	0.10	59.32
Forestal 10-30	149.30	0.0201	14	0.09	45.88
Forestal 30-100	203.06	0.0201	10	0.13	12.32
Hule 0-10/2013-14	374.74	0.0380	50	0.23	110.80
Hule 0-10/2015-16	387.06	0.0380	52	0.24	82.09
Hule 10-30	141.64	0.0380	19	0.09	121.55
Hule 30-100	46.87	0.0380	10	0.03	62.78
SAF	80.36	0.0201	17	0.05	24.59
Huerto	68.43	0.0707	13	0.04	9.54
Total	1,615.91	-	200	1.00	Weighted mean 58.76

Change in carbon stocks in dead wood and litter in project

Carbon in dead wood and litter was calculated using equations 9 and 15 of the tool “A/R Tool 12 estimation of carbon stocks and change in carbon stocks in dead Wood and litter in A/R CDM projects activities” of the AR-ACM0003 methodology, which accepts the use of a conservative default value, which relates the carbon content (in dead wood and litter) as a percentage of the total carbon in the tree's biomass.

$$C_{DW,i,t} = C_{TREE,i,t} \times DF_{DW}$$

Where,

$C_{TREE, i, t}$: Carbon stock in the biomass of trees in stratum i at a time point in year t (tCO₂e).
Conservative default value expressing carbon stock in dead wood as a percentage of carbon stock in tree biomass (tCO₂e).

$$C_{LI,i,t} := C_{TREE,i,t} \times DF_{LI}$$

Where,

$C_{LI, i, t}$: Carbon stock in litter in stratum i at a time point in year t (tCO₂e).

$C_{TREE,i,t}$ = Carbon stock in trees biomass in stratum i at a point of time in year t ; t CO₂ e.

DF_{LI} = Conservative default factor expressing carbon stock in litter as a percentage of carbon stock in tree biomass; per cent

AENOR has checked these equations in the excel file of “LV_FUNDAECO_2021_2nd_verification_Field_data_GHG_estimations.xlsx”

Carbon stock in shrub biomass in project

Changes in carbon stock in shrub biomass have been calculated using equations of section 3.2, equations 26 and 27 of AR-TOOL 14).

For the use of these equations CCSHRUB has been measured in each sample plot. All calculations are included in the Excel file “LV_FUNDAECO_2021_2nd_verification_Field_data_GHG_estimations.xlsx”, and results are summarized in table 13 of the MR.

Carbon stocks in soil organic carbon in project

The tool “Tool for the estimation of change in soil organic carbon stocks due to the implementation of A/R CDM project activity Version 1.1.0” was applied to estimate the soil organic carbon (SOC) stocks, as suggested by the tool. The increase in SOC content in the project scenario takes place at a constant rate starting from the year of planting.

The initial SOC stock at the start of the project is estimated as follows:

$$SOC_{INITIAL,i} = SOC_{REF,i} \times f_{LU,i} \times f_{MG,i} \times f_{IN,i}$$

Where,

$SOC_{INITIAL,i}$	SOC stock at the beginning of the A/R CDM project activity in stratum i of the areas of land; t C ha ⁻¹
$SOC_{REF,i}$	Reference SOC stock corresponding to the reference condition in native lands (i.e.: non-degraded, unimproved lands under native vegetation normally forest) by climate region and soil type applicable to stratum i of the areas of land; t C ha ⁻¹
$f_{LU,i}$	Relative stock change factor for baseline land-use in stratum i of the areas of land; dimensionless
$f_{MG,i}$	Relative stock change factor for baseline management regime in stratum i of the areas of land; dimensionless
$f_{IN,i}$	Relative stock change factor for baseline input regime (e.g. crop residue returns, manure) in stratum i of the areas of land; dimensionless
i	1, 2, 3 strata of areas of land; dimensionless

SOCREF and stock change factors (fLU, fMG and fIN) were obtained from tables 3, 4, 5 and 6 of the tool.

Estimations of $\Delta CSOC_{PROJ,t}$ for the second verification of the first project activity instance are summarized in the following table and included in the Excel file

“LV_FUNDAECO_2021_2nd_verification_Field_data_GHG_estimations.xlsx”.

Summary results of $\Delta CSOC_{PROJ,t}$ calculations are in table 14 of the MR.

Leakage

According the applied methodology the only leakage emissions that can occur are the GHG emissions due to displacement of pre-project agricultural activities. As described in the PD, no agricultural activities were displaced due to the project actives. Therefore, leakage is considered to be 0.

Based on the site visit and the evidence provided, AENOR deems this consideration as credible.

Net GHG Emission Reductions and Removals

According the applied methodology the net anthropogenic GHG removals by sinks are calculated as follows:

$$\Delta C_{AR-CDM,t} = \Delta C_{ACTUAL,t} - \Delta C_{BSL,t} - LK_t$$

Where:

$\Delta C_{AR-CDM,t}$	Net anthropogenic GHG removals by sinks, in year t; tCO ₂ -e
$\Delta C_{ACTUAL,t}$	Actual net GHG removals by sinks, in year t; tCO ₂ -e
$\Delta C_{BSL,t}$	Baseline net GHG removals by sinks, in year t; tCO ₂ -e
LK_t	GHG emissions due to leakage, in year t; tCO ₂ -e

The following table summarizes the results:

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	VCUs eligible for Issuance
2016	0	19,565.15	0	19,565.15	2,791	17,217
2017	0	51,861.34	0	51,861.34	6,223	45,638
2018	0	51,861.34	0	51,861.34	6,223	45,638
2019	0	51,861.34	0	51,861.34	6,223	45,638
2020	0	51,861.34	0	51,861.34	6,223	45,638
2021	0	26,869.67	0	26,869.67	3,224	23,646
Total	0	253,880	0	253,880	30,464	223,415

The total GHG benefit calculated as the sum of stock changes along the monitoring period (20-July-2016 to 8-July-2021) is 253,880 tCO₂e. The overall non-permanence risk rating was 12%. Therefore, the total number of credits to be deposited in the buffer account is 30,464 VCUs and the total VCUs to be issued are 223,415 VCUs.

The number of expected GHG credits in this second verification plus the number of credits issued in first verification event does not exceed the long-term average GHG benefit : VCUs < Long term average (257,573-30,464+ 54,782= 281,447< 1,102,524).Thus, the number of GHG credits eligible to be issued as VCUs in this monitoring period is 223,415t CO₂-e.

AENOR reproduced the calculations to achieve the same results and deems they are depicted clearly and correctly in the provided sheets. The AENOR verification team was able to trace calculations directly from the data sources of inventory's field measurements. Formulae used are in compliance with monitoring plan, MR section and methodology used. The default values used to determine the parameters are appropriate. Thus, the net amount of VCU to be issued is accurate and realistic.

In order to calculate the above terms, the monitoring report details the data and parameters used during the verification process. For each of them, AENOR checked its accuracy, consistency, and reliability by reproducing the spreadsheets calculations, verifying the correctness of formulae and methods used and crosschecking the data values with sources (Appendix 1).

AENOR carried out a deep review of the monitoring report section and the calculations.

AENOR verified the consistency and accuracy of each parameter detailed in the lists below by crosschecking the information in the MR section with the information in the PD section, as well as checking values and reproducing the calculations in the spreadsheet calculation package and did not find inconsistencies between them after the closing of CARs and CL requested. Therefore, AENOR deems that values reported for the parameters are accuracy and consistent.

Moreover, AENOR also verified a complete GIS package provided to cross check the information with data values used in calculations and monitoring report. Other default values used are from sources well accredited and verified.

AENOR did not find inconsistencies between the MR and spreadsheet calculation.

The following table summarizes the data and parameters monitored during the monitoring period and used by the PP to calculate the GHG emission removals, which has been assessed by AENOR:

Data/Parameter monitored	Value applied	Purpose of data/parameter	Assessment procedure and result
A _i Area of tree biomass estimation stratum i	Multiple values	Calculation of project emission	• Verified with GIS database. • Correctly inputted in the calculation spreadsheets.
A _{SHRUB,i} Area of tree biomass estimation stratum i	Multiple values	Calculation of project emission	• Verified with GIS database. • Correctly inputted in the calculation spreadsheets.
n _i Number of sample plots in stratum i	Multiple values	Calculation of project emission	• Calculated correctly in accordance with tool <i>Calculation of the number of sample plots for measurements</i>

Data/Parameter monitored	Value applied	Purpose of data/parameter	Assessment procedure and result
			<i>within A/R CDM project activities (version 02.1.0).</i> • Correctly inputted in the calculation spreadsheets.
$A_{PLOT,i}$ Size of sample plot in stratum i	Multiple values	Calculation of project emission	• Three different plot sizes have been considered for the second monitoring of the first project activity instance. • Correctly inputted in the calculation spreadsheets.
DBH Stem diameter at 1.3m per tree within sample plots	Multiple values	Calculation of project emission	• Values correctly measured. • Correctly inputted in the calculation spreadsheets.
D30 Stem diameter at 0.3m per tree within sample plots	Multiple values	Calculation of project emission	• Values correctly measured. • Correctly inputted in the calculation spreadsheets.
H Height per tree within sample plots	Multiple values	Calculation of project emission	• Values correctly measured. • Correctly inputted in the calculation spreadsheets.
T Year. Time period elapsed between two successive estimations of carbon stock in a carbon pool	4,95	Calculation of project emission	• Value consistent with registries and coherent throughout all documents.
$CC_{SHRUB,i}$ Crown cover of shrubs planted in the project in project stratum i at a given point of time in year t	N/A	Calculation of project emission	N/A
$A_{DISP,t}$ Area of land from which agricultural activity is being displaced in year t	N/A	Calculation of leakage	Activity displacement did not occur
$A_{FMF,t}$ Area of land subjected to use of fire to clear the land	N/A	Calculation of project emisissions	Only used whenever fire is used to clear the land of harvest residue prior to replanting of the land

Data/Parameter monitored	Value applied	Purpose of data/parameter	Assessment procedure and result
of harvest residue prior to replanting of the land in year			
$ABURN_{i,t}$ Area burnt in stratum i in year t; ha	0 ha	Calculation of project emission	Evidence provided by PP and site visit shown no signs of burning

In order to verify the accuracy and consistency of parameters monitored and used to calculate the removals achieved for the monitoring period, the AENOR verification team reproduced the calculations checking the correctness of the formulae applied and assumptions used, when applicable and that values used matched with data sources.

AENOR checked that the list of parameters to be monitored was complete and consistent with information in the monitoring plan of the PD document.

After a deep and thorough review and reproduction of calculations and the corresponding tracks to the other spreadsheets, AENOR deems the parameters monitored are correct, reliable, and consistent. Information in the monitoring report and it complies with the validated PD, the calculations provided and the applicable methodology. Then, the results showed in the monitoring report are reliable, consistency and accuracy.

AENOR did not find inconsistencies between the PD, technical annex, monitoring report and spreadsheet calculation.

After a deep and thorough review and reproduction of calculations and the corresponding tracks to the other spreadsheets, AENOR deems the parameters monitored and available at validation are correct, reliable, and consistent. Information in the monitoring report is in compliance with the PD, the calculations provided and the applicable methodology. Thus, the results showed in the monitoring report are reliable, consistent, and accurate.

4.5 Quality of Evidence to Determine GHG Emission Reductions and Removals

The data and parameters used to determine GHG emission removals are listed in Section 4 of the MR.

During AENOR's verification, the evidence provided by the PP was enough in both quantity and quality to support the determination of GHG emission removals reported by the project.

Quality assurance and control is an essential part of company procedures in order to assure the accuracy of inventory data, modeling results, and carbon accounting. Quality assurance procedures are done in

order to minimize and correct any potential data transcription, calculation, or formatting errors that may result in inaccurate carbon accounting results.

In accordance with VCS, the PP is committed to storing all project data in a secure and retrievable manner for at least two years after the end of the project crediting period. In order to facilitate project management and long-term accounting, all primary data outputs supporting annual verification including the spatial database is stored and maintained.

Roles and responsibilities are clearly identified in the MR. QA/QC procedures were developed by the PP for maintaining consistency and quality of field inventories over time. Interviews with the PP and inspection of data and results demonstrated that the PP possess all of the competencies required for reporting of GHG emissions removals in an accurate way.

Data presented to the audit team were clear and coherent and processing steps could be traced to the corresponding sections of the methodology and monitoring plan with transparency.

A robust quality assurance and quality control (QA/QC) method involving Standard Operating Procedures was implemented to ensure: (i) reliability of collection of field measurements, (ii) verification of the methods used to collect field data, (iii) verification of data entry and analysis techniques, (iv) verification of data maintenance and archiving and (v) upgrading of electronic data with technological changes.

Above procedures to ensure this are described in Section 4 of the MR, in terms of general QA/QC of the monitoring plan and specific QA/QC procedures applied to data and parameters monitored.

Throughout the verification, the PP demonstrated a commitment toward conservativeness and took all measures appropriate to ensure the reliability of evidence provided. Interviews conducted (oral evidence) are outlined in Section 2.3, and the final documents received from the PP supporting the determination of GHG removals can be viewed in Appendix 1.

AENOR deems that the PP performed good practices in this assessment and concludes that GHG reductions were quantified correctly in accordance with the PD and applied methodology, and that the evidence is sufficient in quantity and appropriate in quality to determine the GHG removals of the project.

AENOR has verified that monitoring crews implemented the monitoring plan as it is established in the MR. AENOR also could evidence during the remote visit that key workers are fully involved in monitoring events (training, measuring, archiving, reporting, quality control, etc.). QA/QC procedures are considered strict at identifying, reviewing, and handling inconsistencies found.

Roles and responsibilities are clearly identified in the project document as well as QA/QC procedures. Thus, the use of these procedures monitored to ensure that net anthropogenic GHG removals by sinks are measured and monitored precisely, and are credible, verifiable, and transparent. Training was held

for all relevant personnel on all data collection and analysis procedures. AENOR checks this against the monitoring report and other supported documents.

Regarding quality control during the data collection in field, the follow measures were designed by the PP:

- Ensure the collection and maintenance of reliable field data:
- Field-team members are fully aware of all procedures and of the importance of collecting data as accurately as possible.
- New staff has been adequately trained.
- Field teams installed 10 test plots and measured all pertinent components using the SOPs to estimate measurement errors.

Also, to verify that sample plots were installed, and the measurements taken correctly, a re-measurement of 10 (5%) of the plots by different crew members from the original field crews was performed at the end of the fieldwork. Key data points re-measured were: location and size of sample plots, number of trees per plot and tree's variables (e.g., DBH, and heights). The verifying crew was experienced in forest measurement and highly attentive to details. Field data collected at this stage was compared with the original data. Any errors discovered was expressed as a percentage of all plots that have been rechecked to provide an estimate of the measurement error, if difference in sample plot biomass between monitoring plots and re-measured plots is higher than 1% but less than 10%, a correction factor equal to the difference shall be applied, by reducing all the original data subtracting the amount of error, if the difference is higher than 10% all monitoring should be repeated.

During the remote interviews, the AENOR team discussed the implementation of quality control when the project team cross checked the accuracy of the data collected in the field and when the data was translated to the spreadsheets, with the project developer, the management team onsite, and representatives of the monitoring crews. Additionally, a video demonstration of the monitoring activities in the field were provided to the audit team. Original data sheets were provided to the verification team of AENOR. A random sample of these were selected and traced through to the corresponding excel spreadsheets with no errors observed. Finally, data management and archival system is also detailed in the MR.

Interviews with the PP, Agresta consultants and the management team in the project area and inspection of data and results demonstrated that the PP possess all the competencies required for reporting of GHG emissions removals on a accurate way.

Data presented to the audit team were clear and coherent and processing steps could be traced to the corresponding sections of the methodology and monitoring plan with transparency.

The monitoring plan provides means for internal data review and quality control, and the data presented by the project proponent included the results of these internal assessments. AENOR reviewed the

different procedures applied by Fundaeco and AENOR considers that information provided is sufficiency and the quality of that information is appropriate to determine the GHG removals.

During the remote process, AENOR verified the enforcement of the quality assurance and quality protocols and checked that all instruments used for the whole monitoring period were checked and in good conditions to be used. Furthermore, AENOR performed a consistency check in order to verify the consistency of the previous measurement and the re-measurement, and to verify the correctness of the reported results.

4.6 Non-Permanence Risk Analysis

PP has elaborated a VCS Non permanence Risk Report (NPRR) for the verification process according to the AFOLU Non-Permanence Risk Tool v4.0.

Below, it is explained the assessment and the issues raised on regard the non-permanence risk rating determined by the PP in the NPRR.

Risk factor	Risk Rating	Findings and mitigation activities	CARs/CLs
Internal Risks			
Project Management: It is assessed using table 1 of the VCS AFOLU Risk Tool.	-4 (total may be less than zero)	a) Most of the species uses are native. Risk rating=0 is justified. b)N/A Risk rating=0 is justified. c) In accordance with the evidence provided, Management team includes individuals with significant experience in all skills necessary to successfully undertake all project activities. FUNDAECO team has forest engineers with more than 10 of experience in ARR projects. Risk rating=0 is justified. d) All parcels reforested are less than a day of travel from the FUNDAECO offices. Risk rating=0 is justified. e) Management team, Fundaeco and livelihoods fund includes individuals with significant experience in AFOLU project design and implementation, carbon accounting and reporting Risk rating=-2 is justified. f) The project has an updated forest management plan. Risk rating=-2 is justified.	No corrective actions or clarifications were requested

Risk factor	Risk Rating	Findings and mitigation activities	CARs/CLs
Financial viability: It is assessed using table 2 of the VCS AFOLU Risk Tool.	0 (total may not be less than zero)	a) N/A Risk rating=0 is justified. b) Project economic cash flow breakeven point is greater than 7 and up to less than 10 year from the current risk assessment. Risk rating=2 is justified. c)-g) N/A Risk rating=0 is justified. h) Project has secured more than 80% of funding needed to cover the total cash out before the project reaches breakeven. Risk rating=0 is justified. i) Project has available as callable financial resources at least 50% of total cash out before project reaches breakeven. AENOR has checked the balance sheet Risk rating=-2 is justified.	No corrective actions or clarifications were requested.
Opportunity Cost: It is assessed using table 3 of the VCS AFOLU Risk Tool.	-2 (total may be less than zero)	a)-c) N/A Risk rating=0 is justified. d) Net positive community impacts are demonstrated. AENOR has checked the The approved Environmental Diagnostic of the project cites. Risk rating=0 is justified. e)-g) N/A Risk rating=0 is justified. h) Project is protected by legally binding commitment to continue management practices over the length of the project crediting period. Risk rating=-2 is justified. i) N/A Risk rating=0 is justified.	No corrective actions or clarifications were requested.
Project Longevity: It is assessed using table 4 of the VCS AFOLU Risk Tool.	15 (total may not be less than zero)	a) Not applicable Risk rating=0 is justified. b) 30-year project longevity Risk rating=15 is justified.	No corrective actions or clarifications were requested.
Total internal risk=9 (total may not be less than zero)			
External Risks			
Land Tenure and resources access/impact: It shall be assessed using table 6 of the Risk Tool.	3 (total may not be less than zero)	a) Ownership and resource access/use right are held by the landowners. The same entity Risk rating=0 is justified. b) N/A Risk rating=0 is justified. c) There are no disputes over land tenure or ownership of the project area in more than 5 % of the project area nor disputes over access/use rights (or overlapping rights). Risk rating=0 is justified.	No Corrective Actions or Clarifications were requested.

Risk factor	Risk Rating	Findings and mitigation activities	CARs/CLs
		d) In this second verification event there were 274.98 ha corresponding to 29 properties where field monitoring team was not able to access, But, The Project's technical team will continue to reach out to these landowners, especially at harvest time, to support them with training and technical assistance activities. Preservation of plantations was verified by visual inspection on high-resolution optical satellite imagery Risk rating=5 is justified e) Not applicable. f) Project area is protected by legally binding commitment to continue management practices that protect carbon stocks over the length of the project crediting period Risk rating = -2 is justified g) Mitigation: N/A Risk rating = 0 is justified	
Community engagement: It shall be assessed using table 7 of the Risk Tool.	-5 (total may be less than zero)	a) During the awareness campaigns of the project all residents within the area of influence that could be affected or benefited from its development were invited. Risk rating=0 is justified. b) The area where the awareness and plantation campaigns were conducted are within 20 km of the project boundary Risk rating=0 is justified. c) Mitigation: The project generates net positive impacts on the social and economic well-being of the local communities who derive livelihoods from the project area Risk rating= -5 is justified.	No Corrective Actions or Clarifications were requested
Political Risks: It shall be assessed using table 8 of the Risk Tool.	2 (total may not be less than zero)	a)N/A b) This score for Guatemala is -0.60, in accordance with World Bank Institute's Worldwide Governance Indicators (WGI). AENOR verified the value and reliability of source. Risk rating=4 is justified. c-e) N/A f) As a member of the Coalition of Rainforest Nations, Guatemala had taken an interest in a REDD-like mechanism since 2008. Guatemala's. Risk rating=-2 is justified.	No Corrective Actions or Clarifications were requested.
Total external risks=0 (Total may not be less than zero)			
Natural risks			
Fire Risk: It shall be assessed using	LS*M= 0.5	Insignificant. Less than every 10 years likelihood. Thus LS= 2 is reasonable.	No Corrective Actions or Clarifications were requested

Risk factor	Risk Rating	Findings and mitigation activities	CARs/CLs
table 10 of the Risk Tool.		Mitigation (M) measures: The Livelihood & FUNDAECO Management and Financial Plan includes specific measures to prevent and control forest fires. Permanent and temporary crews for preventing and fighting forest fires workers will be supported. There will be permanent patrols in this area and during the period of greatest risk of fire. Project proponent has proven history of effectively containing natural risk and prevention measures applicable to the risk factor are implemented Then, M=0.25 is reasonable.	
Pest and disease outbreaks: It shall be assessed using table 10 of the Risk tool.	LS*M=0.5	Minor (5% to less than 25% loss of carbon stocks) Less than 10 year Thus LS= 2 is reasonable. Mitigation (M) measures: The main disease that affects rubber plantations is a fungus called Microcyclus ulei¹⁴. This fungus attacks leaves of the rubber trees. Minor losses (5% to less than 25% of carbon stocks) by Microcyclus ulei are expected. Then, M=0.25 is reasonable.	No Corrective Actions or Clarifications were requested
Extreme weather: It shall be assessed using table 10 of the Risk tool.	LS*M=1	Minor 5% to less than 25% loss of carbon stocks. Thus LS= 2 is reasonable. Mitigation (M) measures: Species tolerant for wet soil conditions in areas where flooding risks exist. Then, M=0.5 is reasonable.	No Corrective Actions or Clarifications were requested
Geological risks: It shall be assessed using table 10 of the Risk Tool.	LS*M=1	No carbon stock losses expected to be caused by geological risks. Thus LS= 2 is reasonable. Mitigation (M) measures: Appropriate soil conservation practices. Then, M=0.5 is reasonable.	No Corrective Actions or Clarifications were requested
Other Natural Risks	N/A	N/A	No Corrective Actions or Clarifications were requested
Total natural risks=3			
OVERALL RISK RATING=-9+0+3=12.			

AENOR has checked that information provided in the NPRR for the monitoring period is consistent with supporting documents provided. The assumptions and justifications provided to determine the risk rating of each risk factor are elaborated and they are based on provided documents using conservative assessments. AENOR deems that information provided is reliable and appropriate from reliable sources, thus, the overall risk rating is credible and realistic. Thus, the overall risk rating of 12% is credible and realistic.

5. VERIFICATION CONCLUSION

AENOR has verified that the *Agroforestry and forest restoration for ecological connectivity, poverty reduction and biodiversity conservation in Cerro San Gil, Caribbean Guatemala* with the Verified Carbon Standard version 4.1 without qualifications or limitations. The project has been implemented in accordance with the validated Project Description and its validated variations.

AENOR is able to issue a positive verification opinion for the 257,573 tCO₂e of verified emissions removals, as reported in the Monitoring Report version 3.0 dated on 25 Abril 2022.

The verification assessment covered the monitoring period from 20-July-2016 to 8-July-2021 and verified that calculated emission reductions and/or removals were achieved during the monitoring period with a reasonable level of assurance. The overall non-permanence risk rating was 12%. Therefore, the total number of credits to be deposited in the buffer account is 30,464 VCUs and the total VCUs eligible for issuance are 223,415 VCUs.

Verification period: From 20-July-2016 to 8-July-2021.

Verified GHG emission reductions and removals in the above verification period:

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	VCUs eligible for Issuance
2016	0	19,565.15	0	19,565.15	2,791	17,217
2017	0	51,861.34	0	51,861.34	6,223	45,638
2018	0	51,861.34	0	51,861.34	6,223	45,638
2019	0	51,861.34	0	51,861.34	6,223	45,638
2020	0	51,861.34	0	51,861.34	6,223	45,638
2021	0	26,869.67	0	26,869.67	3,224	23,646
Total	0	253,880	0	253,880	30,464	223,415

Net change in carbon stocks: 253,880 tCO₂e.

Overall non-permanence risk rating: 12%

VCUs buffer to be deposited: 30,464 VCUs

Total VCUs eligible for issuance: 223,415 VCUs

Date: 13 June 2022



Lead Auditor
Elena Llorente Pérez

APPENDIX 1: LIST OF EVIDENCES PROVIDED

General documents
Monitoring report: - Final version: VCS MR v3.0 Previous monitoring report: - VCS MR v1.0 Previous verification report: - Validation and Verification Report v1 Project description: - Joint PD and MR v7
Implementation status support documents (Appendix B)
Videos from forestry equipment and measurement of the parcels: - Video testimony from Monitoring_team - Video testimony from Sample_Plot_establishment - Video testimony from Lampara Communy - Video testimony from Crek Maya Community. - Video sample plots measurements - Video "training.mp4". Other implementation documents: - -Excel owners no accessible - EIA CERRO SAN GIL - DIAGNOSTICO AMBIENTAL_INGRESADO A CONAP".
Community related SOPs & Grievances (Appendix E)
Grievances: FUNDAECO Grievance Mechanisms Grievance Logbook up to 2021-1
Carbon Accounting (Appendix G)
Spreadsheets: LV_Fundaeco_2021_2nd_verification_Field_data_GHG_estimations
Allometries: - 2002_Arreaga_Ecuacion_alometrica - Morales Ralda 2000 and PICA 2010, Allometric equation developed in Guatemala by Morales Ralda 2000 and PICA 2010 - Reforestation and agroforestry in Cerro San Gil, Guatemala - Documents with the field measurement in the field
Non-permanence Risk Report (Appendix H)
Non-permanence risk report: - Final version: NPRR Cerro San Gil Project v2.0
Supporting documents: - Cerro San Gil_NPR-Calculacion-V4 - Guatemala_summary_WGI Table - 2020_Profitability_calculation - LIVELIHOODS_FUNDAECO_Management___Financial_plan_20160908

- 2013-09-12 Fundaeco - Livelihoods Agreement signed APPENDIX
Spatial Data (Appendix I)
Shape files: - Monitored parcels - Plots second verification period
Biomass Inventory (Appendix P)
SOPs: - Control y Calidad Segundo Monitoreo Carbono - Plots quality control shapes - Loss event areas shape and report - Field data and calculations loss event. - QA_QC: The Standard Operating Procedures document (SOP)

APPENDIX 2: CLARIFICATIONS AND CORRECTIVE ACTIONS REQUESTED

Clarification Requests (CLs)

CL ID	01	Date: 18/10/2021
Description of CL		
Provide evidence of the following topics: 1. Section 2.3 related to AFOLU-Specific Safeguards states mentions that the EIA is found in the section 12.03 of the document. Please clarify in which document and provide evidence of that. 2. In the section 4.3, it is stated: To ensure the collection and maintenance of reliable field data: field-team members are fully aware of all procedures...; new staff has been adequately trained; field teams installed 10 test plots and measured all pertinent components.... 3. The support file called “EIA Cerro San Gil_Ingresado” does not work.		
Country participant response		Date: 28/10/2021
Section 2.3 refers to section 12.3 of the Environmental Impact Assessment document, which has been provided to Aenor in a new documentation shipment. It can be found in the document “3.pdf” within the folder entitled “DIAGNOSTICO AMBIENTAL_INGRESADO A CONAP”. Evidence of the installation of 10 test plots and their measurements can be found in the folder “2021_9_15_first sent to DOE\QA_QC”. The Standard Operating Procedures document (SOP) was provided to all field-team members. In addition, Agresta provided specific training which was attended by all field-team members. We provide video evidence of the training in the file “training.mp4”. The EIA has again been provided. Now is in the folder “DIAGNOSTICO AMBIENTAL_INGRESADO A CONAP”.		
Documentation provided by the Country Participant		
VVB Assessment	Date: 13/11/2021	
The documented evidence has been provided and it is considered correct.		

Corrective Actions Requests (CARs)

NC ID	01	Date: 18/10/2021
Description of NC		
The correct starting date of the second monitoring period should be established and correct in the MR and Excel, in accordance with the dates of the first monitoring period.		
Country participant response		Date: 28/10/2021
The start date has been corrected in the PD and in excel according to the dates of the first monitoring period.		
Documentation provided by the Country Participant		
VVB Assessment		Date: 13/11/2021
The correct date has been established, NC 01 is correct.		

NC ID	02	Date: 18/10/2021
Description of NC		
The following errors have been found according to the VCS MR template: 1. Section 1.1 occupies more than one page as indicated in the template. 2. Within section 1.1 is missing the summary description of the implementation status of technologies and there is some information that it is not needed in accordance with the template. 3. Section 3.1. the MR should be updated for this second monitoring period.		
Country participant response		Date: 28/10/2021

Section 1.1 has been modified to occupy only one page by removing information not required by the template and including a brief summary of the implementation status of the project. Section 3.1. has been updated including specific information from this second monitoring period such as risk rating and actual status of implementation of the project.	
Documentation provided by the Country Participant	
VVB Assessment	Date: 13/11/2021
The MR has been corrected and it is considered correct, NC 2 is closed.	

NC ID	03	Date: 18/10/2021
Description of NC		
The following errors have been found in the section 2, Safeguards: 1. The index of the MR does not show all the subsections of headline 2 Safeguards. 2. In the section 2.3 "AFOLU-Specific Safeguards" it is stated that 2 complaints were registered. However, in the grievance logbook 3 complaints are referred.		
Country participant response		Date: 28/10/2021
The formatting of all subsections under heading 2 Safeguards has been corrected and the MR index has been updated. In section 2.3 "AFOLU Specific Safeguards" the number of complaints has been corrected according to those registered in the corresponding the grievance logbook.		
Documentation provided by the Country Participant		
VVB Assessment		Date: 13/11/2021
The MR has been corrected and it is considered correct, NC 3 is closed.		

NC ID	04	Date: 18/10/2021
Description of NC		

The following errors have been found in the section 4, Data and Parameters:

1. In the section 4.3 it is stated that the current verification is the third, while in other parts of the document it is stated that this is the second verification.
2. Estimation of carbon stocks and change in carbon stocks in dead wood and litter in A/R CDM project activities is not tool AR-AM0014 as reported in the MR.

Please, clarify the value of the Change in carbon stock in litter for this second verification: 304.71 tCO₂e

Country participant response

Date: 28/10/2021

Current verification has been corrected in section 4.3. Now it refers to the second verification.

The value of "Change in carbon stock in litter" for this second verification has been corrected. Now is the same as in the "LV_Fundaeco_2021_2nd_verification_Field_data_GHG_estimations" spreadsheet: 352.68 tCO₂e.

The name of the tool used to estimate change in carbon stock in litter and deadwood has been corrected. The tool used was the A/R CDM Methodological "Tool for estimation of change in soil organic carbon stocks due to the implementation of A/R CDM project activities" (Version 1.1.0) AR-TOOL16.

AR-AM0014 has been changed in the body of the document to the methodology used (AR-ACM0003).

Documentation provided by the Country Participant

VVB Assessment

Date: 13/11/2021

The MR has been corrected and it is considered correct, NC 4 is closed.

NC ID

05

Date: 18/10/2021

Description of NC

Regarding the excel spreadsheet, the following errors have been found:

- Change in carbon stock in litter for this second verification, the correct formulas have not been applied.
- Change in carbon stock in dead wood, the correct formulas have not been applied.
- The loss event of this verification period has to be reported to VERRA.

Country participant response	Date: 28/10/2021
We do not consider that there is any error in the calculations of Change in carbon stock in litter and deadwood. Default values were applied. For example, in the case of deadwood: $dC_{DW(t1,t2)}(t1,t2) = \frac{(C_{DW,t2} - C_{DW,t1})}{T},$ $C_{DW,t1}$ and $C_{DW,t2}$ are carbon stock in dead wood within the project boundary in year 2016 and 2021 respectively. It was estimated as required per the VMTOOL12, however we are not using exactly CTREE, but ΔCTREE. Thus, it is not needed to subtract the carbon stock from the previous verification since we are working with increment values and not actual carbon stocks. I.e., the value of the previous verification is already subtracted because we are working with ΔCTREE_PROJ,i, where tree carbon stock from 1st monitoring is already deducted. The loss event was reported to VERRA on 16th September 2021. On 15th October 2021 VERRA informed that they would put the required credits on hold.	
Documentation provided by the Country Participant	
VVB Assessment	Date: 13/11/2021
The Excel was modified and the excel spreadsheet corrected. NC 5 is closed.	