

VALIDATION & VERIFICATION REPORT

REFORESTATION WITH TEAK - CO₂E

TEAKMEX

Document Prepared By AENOR INTERNATIONAL S.A.U
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Summary:	

The purpose of the visit assessment was to determine the conformance of the project with respect to the VCS Version 3.7 Standard and information provided in the P.D. The field visit took place from May 14 2018 to May 16 2018 in which the audit team visited the project area, interviewed key stakeholders and staff, and also reviewed the PD, and supporting documents. The scope of the validation and verification was to assess the conformance of information in the P.D with the VCS requirements.

The project area covers 4,011.96 hectares of forest established along the departments five municipalities: Balancán (Tabasco), Huimanguillo (Tabasco), Tenosique (Tabasco), Palenque (Chiapas), and Candelaria (State of Campeche) in United States of Mexico.

This validation & verification report has been submitted to the PP in which 4 CARs and 6 CLs were reported (see validation & verification protocol in appendix 2) for VCS. However, all these issues raised during the validation & verification process where appropriately closed by means of corrections, more clear explanations and other supported documents. Hence, once all issued detected were appropriately solved, AENOR carried out a final validation & verification report and deems with reasonable level of assurance that the project complies with all of the validation & verification criteria for VCS. The assessment team has no restrictions or uncertainties with respect to the compliance of the project with the validation & verification criteria, hence, the audit team concludes that the net GHG emissions reductions or removals, for the lands included in the project boundary at validation & verification stage has been quantified in accordance with VCS rules. AENOR assessed the calculations and can confirm estimated GHG emission reductions removals are correct, the project expects to avoid annual average net emissions of 16,203 t CO₂. t CO₂e for the whole crediting period.

The verification assessment covered the monitoring period from 30 May 2013 to 01 October 2017 and verified that calculated emission reductions and/or removals achieved during the monitoring period with a reasonable level of assurance are 198,325 tonnes CO₂e.

Table of Contents

1	Introduction	6
1.1	Objective	6
1.2	Scope and Criteria	6
1.3	Level of Assurance.....	7
1.4	Summary Description of the Project	7
2	Validation and verification Process.....	8
2.1	Method and Criteria.....	8
2.2	Document Review	8
2.3	Interviews	8
2.4	Site Inspections.....	9
2.5	Resolution of Findings.....	9
2.5.1	Forward Action Requests.....	9
3	VALIDATIONS FINDINGS	10
3.1	Project Details	10
3.1.1	Project scope, type, technologies, measures implemented and eligibility of the project	10
3.1.2	Project proponent and other entities involved in the project	10
3.1.3	Project start date	10
3.1.4	Project Crediting Period	10
3.1.5	Project scale and estimated GHG emissions or removals.	11
3.1.6	Project Location.....	11
3.1.7	Project compliances with applicable laws, statues, and other regulatory frameworks	11
3.1.8	Ownership and other programs.....	12

3.1.8.1	Project Ownership	12
3.1.8.2	Emissions trading programs and other binding limits.....	12
3.1.8.3	Participation under other GHG programs.....	12
3.1.8.4	Other forms of environmental credit sought or received	12
3.1.8.5	Rejection by other GHG programs	12
3.1.9	Additional information relevant to the project	12
3.1.9.1	Eligibility criteria for grouped projects.....	12
3.1.9.2	Leakage management for AFOLU projects.....	14
3.1.9.3	Commercially sensitive information	14
3.1.10	Sustainable development Contributions.....	14
3.2	Participation under Other GHG Programs	14
3.3	Application of Methodology	14
3.3.1	Title and Reference	14
3.3.2	Applicability	15
3.3.3	Project Boundary.....	16
3.3.4	Baseline Scenario	17
3.3.5	Additionality	22
3.3.6	Quantification of GHG Emission Reductions and Removals	24
3.3.7	Methodology Deviations	40
3.3.8	Monitoring Plan	40
3.4	Non-Permanence Risk Analysis.....	41
4	Safeguards.....	48
4.1	No Net Harm	48
4.2	Environmental Impact	49

4.3	Local Stakeholder Consultation	49
4.4	Public Comments	49
5	VERIFICATION FINDINGS	50
5.1	Accuracy of GHG Emission Reduction and Removal Calculations	50
5.2	Quality of Evidence to Determine GHG Emission Reductions and Removals	60
6	Validation and Verification conclusion	61
	APPENDIX I: LIST OF EVIDENCE PROVIDED	63
	APPENDIX 2: FINDINGS	67

1 INTRODUCTION

1.1 Objective

The purpose of the validation & verification audit activity was to conduct an independent assessment of the project in order to determine whether the project complies with the validation & verification criteria as set out in the guidance documents listed in Section 1.2 of this report, including the monitoring procedures and that the GHG emission reductions and removals reported in the monitoring report are materially accurate.

1.2 Scope and Criteria

The scope of the validation and verification audit is to validate and verify the emissions reductions of the proposed project activity in Mexico against the Verified Carbon Standard, the identified methodology and associated tools.

The objectives of this audit included a validation and verification of the projects calculated emission reductions with the Verified Carbon Standard requirements and any additional requirements of VCS AFOLU projects, besides the assessment of the additionality and the risk assessment report.

The scope was defined as follows:

- The project and its baseline scenarios;
- The physical infrastructure, activities, technologies and processes of the project;
- The GHG sources, sinks and/or reservoirs those are applicable to the project;
- The types of GHGs that are applicable to the project; and
- The project crediting period, as discussed in Section 3.1.4 of this report

Standard Criteria: In accordance with Section 5.3.1 of the VCS Standard, the criterion for validation and verification was the VCS Version 3.7, including the following documents:

- VCS Program Guide v 3.7
- VCS Standard 3.7
- VCS AFOLU Requirements v.3.6
- VCS AFOLU Non-Permanence Risk Tool v 3.3

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

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 assertion is materially correct and is a fair representation of the GHG data and information.

All the revisions of the validation and verification report before being submitted to the client were subjected to an independent internal technical review to confirm that all validation and 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.

Name	Position in the Team
Jose Luis Fuentes Pérez	Lead auditor
Sergio Guzmán	Auditor
Elena Llorente Pérez	Auditor

Validation and Verification team.

1.4 Summary Description of the Project

The project "Reforestation with Teak - CO2e TEAKMEX is developed in during the first phase of the grouped project spans 4,011.96 ha, across 97 instances (properties) located in five municipalities: 16 properties in Balancán (Tabasco), 54 properties in Huimanguillo (Tabasco), 13 properties in Tenosique (Tabasco), 2 properties in Palenque (Chiapas), and 12 properties in Candelaria (State of Campeche).

The purpose of the project is the forestry project "Reforestation with Teak - CO2e TEAKMEX" is an ARR grouped reforestation carbon project based on the planting of *Tectona grandis*.

The project will significantly contribute to the sustainable development of these Mexican states through creating a sustainable supply chain for Teak. This involves: i) providing formal employment opportunities in regions largely characterized by informality; ii) converting land that has previously been cleared for livestock and agriculture purposes into forested lands, so increasing carbon sequestration for the mitigation of global warming; and iii) maintaining fixed conservation areas within commercial plots, in order to enhance and conserve biodiversity in these lands.

The project activity started on June 30th, 2013. The early-stage revenues derived from the resulting carbon credits contribute to the success of forestry projects because the income is used as a resource to overcome several obstacles faced by the project activity. Implementation of the project is expected to create positive net climate change impacts.

2 VALIDATION AND VERIFICATION PROCESS

2.1 Method and Criteria

The validation and verification was performed through a combination of document review, interviews with relevant personnel and on-site inspections, 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.

2.2 Document Review

The Project Description and Monitoring Report submitted by the PP were reviewed against the approved methodology and against VCS requirements. Additional background documents related to the project design, baseline, additionality and monitoring plan were also made available before and during the on-site visit in Mexico along with the non-permanence risk report.

To address the corrective actions and clarification requests that arose from the desk review and on-site visit, the consultants revised the project description and monitoring report document version and developed a final version 4 dated on 2 October 2018.

2.3 Interviews

The AENOR validation and verification team composed of Sergio Guzmán conducted interviews with project developers in Mexico and the project site (Tabasco, Campeche and Chiapas provinces) to confirm selected information and to resolve issues identified in the document review.

From 14 May to 16 May 2018, the AENOR validation and verification team carried out the visit to the project site. The list of the interviewed people is below detailed.

Audit date	Name	Title /organization/community
14/05/2018	Víctor Hugo Fernández	Agropecuaria Santa Genoveva S.A.P.I. de C.V.
14/05/2018	Daniela Herrera Serna	South Pole
16/05/2018	Lic. Francisco Lastra Bastar	Gerente Estatal de CONAFOR
16/05/2018	Lic. Florizel Medina Pereznieto.	Forest Administration Chief. Agroempresa Forestal
16/05/2018	Ing. Francisco Rivera.	Delegado Federal de la SEMARNAT
16/05/2018	Ing. Andrés Gamas.	Jefe del Departamento de Plantaciones Forestales
16/05/2018	Ing. Francisco Suarez Quiñones.	Departamento de Plantaciones Forestales
16/05/2018	Lic. Francisco Lastra Bastar.	Gerente Estatal de CONAFOR
16/05/2018	Biol. Ludivina Interian Sosa.	Jefe del Área Forestal. SEMARNAT

List of interviewed representatives and participants of the meetings

2.4 Site Inspections

The objectives of the on-site inspections performed were mainly to cross check the description provided in the P.D related to the environmental conditions of the project area, but also:

- Ensure that the geographic area of the project, as reported in the PD and Monitoring report and the accompanying KML file, is in conformance with Section 3.11.1 of the VCS Standard;
- Perform a risk-based review of the project area to ensure that the project conforms to all other requirements of the VCS rules and the methodology.
- Observe the Project Proponent's field inventory crews collecting and recording data in order to assess whether data collection techniques conform to the monitoring plan and related documentation and to evaluate data quality control systems.
- Select samples of data from on-the-ground measurements for validation and verification in order to meet a reasonable level of assurance and to meet the materiality requirements of the project, as required by Section 5.1.3 of the VCS Standard;
- Perform a risk-based review of the project area to ensure that the project is in conformance the eligibility requirements of the VCS rules and the applicability conditions of the methodology; and

In fulfilment of the above objectives, the audit team performed an on-site inspection of the project area on the dates detailed above observing the project area and vicinity to assess whether conditions are as described in the Project Plan. The audit team collected GPS tracking data and waypoints and took photographs to help correlate observations with mapping data supplied by the client in a KML file. The audit team observed inventory foresters and assistants collect field data on a sample of previously measured inventory plots, checking measurements and observing field procedures.

2.5 Resolution of Findings

A total number of 4 CARs and 6 CLs were raised during this validation and verification process.

All findings issued by the AENOR audit team during the validation and verification process have been closed. In accordance with Section 5.3.6 of the VCS Standard, all findings issued during the validation and verification process, and the inputs for their closure, are described in Appendix 2 of this report.

2.5.1 Forward Action Requests

No Forward Action Requests were raised to the PPs during this process.

3 VALIDATION FINDINGS

3.1 Project Details

3.1.1 Project scope, type, technologies, measures implemented and eligibility of the project

The project is classified under sectoral scope 14 “Agriculture, Forestry and Land Use (AFOLU)”. As described in Section 4.2 of the VCS AFOLU Requirements, the project is eligible under the category of Afforestation, Reforestation, and Revegetation (ARR project).

Furthermore, according to its scale it is classified as “project”, lower than 300,000 tn CO₂/year.

3.1.2 Project proponent and other entities involved in the project

The project is proposed by “Agropecuaria Santa Genoveva S.A.P.I. de C.V.” The other entities involved in the project are “South Pole Carbon Mexico S.de R.L.de C.V.”

Contact information and description of roles and responsibilities provided in the PD and Monitoring Report complies with the VCS requirements.

The audit team finds that contact and entity information provided in the PD conforms to the VCS requirements.

3.1.3 Project start date

According to VCS Program Definitions 3.7, 6g project start date is the date on which the project began generating GHG emission reductions or removals. According to the VCS AFOLU Requirement version 3.5, in section 3.2 is stated that the project start date of an AFOLU project is the date when activities that lead to the GHG emission removals are implemented.

Taking into account the definition above, the project start date is June 30th 2013, the date on which began the project activities, concretely, seeding activities began on this date in plot 42, farm Doña Carmina.

This event corresponds to the first activity, the earliest activity that leads the GHG removal of the project. AENOR has checked with the submitted record, production orders of the different plots that established date is appropriate and consistent. Then, in opinion of AENOR is considered reasonable and correct based on the VCS requirements for starting date.

3.1.4 Project Crediting Period

Grouped project has a crediting period will be of 36 years, The period starts on *June 30th, 2013*, and ends on *May 31st, 2049*.

In this regard, AENOR can confirm that PPs have developed credible and robust plan for managing and implementing the project over the crediting period in compliance with section 3.3.1 of AFOLU Requirements.

According to the VCS Standard version 3.5, the crediting period of AFOLU projects will have a minimum of 20 years and a maximum of 100 years. Therefore, the project activity is in line with the length of the crediting period, and it has the option to renew three more times.

3.1.5 Project scale and estimated GHG emissions or removals.

The project is classified as “project” according its scale (less than or equal to 300,000 tonnes of CO₂e per year); it will remove an average of 38,427 tCO₂ per year during the 36 years of crediting period.

3.1.6 Project Location

The project area is located in the region of expansion of the grouped project covers the states of Tabasco, Chiapas and Campeche in the United States of Mexico.

The project area included during the first phase of the grouped project spans 4,011.96 ha,: 16 properties in Balancán (Tabasco), 54 properties in Huimanguillo (Tabasco), 13 properties in Tenosique (Tabasco), 2 properties in Palenque (Chiapas), and 12 properties in Candelaria (State of Campeche). The location of the project area of the first phase of the grouped project has been presented in different SIG files. The coordinates of project area has been provided.

The location of project lands across 97 instances (properties) located in five municipalities included in the project boundary has been provided. Regarding conditions prior to the project initiation, section 1.10 of the P.D and monitoring report described in a complete way the climate, hydrology, ecological, biodiversity and socio-economic aspects for the areas involved in the project. During the onsite visit, AENOR verified that project is being implemented in low productivity soils, degraded, that has been dedicated to grazing.

3.1.7 Project compliances with applicable laws, statues, and other regulatory frameworks

Section 1.11 of the PD and Monitoring Report provides information related the compliance with the applicable laws, statues and other regulatory frameworks. The main and relevant Laws were detailed and its enforcement analysed in the PD. According to the information provided and assessed during the on-site visit, the project fulfils with laws mentioned in the P.D and Monitoring Report as it could be verified during site visit. Moreover, the design and targets looked for by the project match with most of the issues promoted by the affected laws. Thus, AENOR deems that project complies with applicable laws, statues, and other regulatory frameworks.

3.1.8 Ownership and other programs

3.1.8.1 Project Ownership

Ownership certificates and titles stating that the land units within project boundaries are owned by the Agropecuaria Santa Genoveva S.A.P.I. of C.V (AGSA).

The audit team has checked that evidence and finds that the Project Proponent's project ownership is unconditional, undisputed, and unencumbered, in accordance with VCS requirements.

3.1.8.2 Emissions trading programs and other binding limits

GHG removals generated by the project will not be used for compliance with binding limits to GHG emissions since such limits are not enforced in Mexico, and there is no emissions trading program in place in the country.

3.1.8.3 Participation under other GHG programs

As the project has not been registered under any other GHG program, this section is not applicable.

3.1.8.4 Other forms of environmental credit sought or received

As the project has not sought or received other forms of environmental credit, this section is not applicable.

3.1.8.5 Rejection by other GHG programs

The project has never applied neither has been rejected by other GHG programs, then, this section is not applicable.

3.1.9 Additional information relevant to the project

3.1.9.1 Eligibility criteria for grouped projects

An eligibility analysis has been developed considering all the eligibility criteria proposed by VCS to define the project area of the first instance. In order to comply with the new eligible areas the following analysis has been carried out an Analysis of forest/non-forest for the period 2002 – 2012.

For an area to be considered eligible, it must not meet the definition of forest¹ for a minimum period of 10 years prior to the start of the project. A historical forest cover search and analysis was carried out using the information from the Global Forest Change 2000-2016.

Global Forest Change 2000-2016 is a global loss and gain forest coverage map for the period 2000 to 2016, constructed by the University of Maryland² Department of Geographic Sciences, based on Landsat TM, ETM +, and OLI images with a size of pixel of 30 m representing a scale of 1: 100,000.

The results of the map and the Landsat images have been validated by AENOR.

Areas that are eligible for a carbon project according to the analysis described above are presented in the below table. A map of the eligible areas planted in the period 2013-2017 is available online and the audit team finds that the information provided in the PD and the Monitoring Report conforms to the VCS requirements.

Eligibility of the first instance:

Strata	Year of establishment	Eligible Area (ha)
1.1	2013	424.14
1.2	2014	125.02
1.3	2016	591.27
1.4	2017	163.21
2.1	2014	1052.15
2.2	2015	1145.84
3.1	2013	377.72
3.2	2014	26.92
3.3	2017	105.69
Total		4011.97

3.1.9.2 Leakage management for AFOLU projects

As explained in section 3.3 of the PD and Monitoring Report, the project does not displace pre-project agricultural activities. Thus, neither a leakage management plan nor leakage mitigation measures are required. See section 3.2.6.3. for more details.

3.1.9.3 Commercially sensitive information

No commercially sensitive information has been excluded from the public version of the project description.

3.1.10 Sustainable development Contributions

The project is designed to contribute to the Mexico's goals defined to reach the Sustainable Development Goals by increasing labour demand from the local population, adding value to wood products and diversifying the regional production will lead to higher economic revenues for the region, promoting an integrated management scheme with the ecosystem, creating and developing a new mechanism to finance projects in the forestry sector, and generating net anthropogenic CO2 removals by sinks.

Thus, AENOR assessed the sustainable contributions to the sustainable development through the review of the project design document but mainly through the review of evidence provided, site visit and interviewing to the local stakeholders.

3.2 Participation under Other GHG Programs

This project is seeking only registration under the VCS Program.

3.3 Application of Methodology

3.3.1 Title and Reference

The CDM consolidated methodology AR-ACM0003: "Afforestation and reforestation of lands except wetlands" v2.0 is applied to this project activity.

Besides the methodological document, the following tools are applied:

- "Combined tool to identify the baseline scenario and demonstrate additionality in A/R CDM project activities", Version 01
- Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities", Version 04.2

- “Estimation of carbon stocks and change in carbon stocks in dead wood and litter in A/R CDM project activities”, Version 03.1
- “Estimation of non-CO2 GHG emissions resulting from burning of biomass attributable to an A/R CDM project activity”. Version 04.0.0
- Estimation of the increase in GHG emissions attributable to displacement of project agricultural activities in A/R CDM project activity Version 02.0.

3.3.2 Applicability

The final P.D states all evidence used to demonstrate each condition of the applicable methodology. Complete explanations are included in P.D. In opinion of AENOR, the evidence and explanations confirm the fulfilment of the project with the methodology. The assessment was carried out for each applicability criterion and included, among others, the review of evidence and sources provided in the P.D and the compliance check of the local project setting with the applicability conditions in regard to baseline setting and eligible project measures as follows:

Assessment of applicability conditions:

(a) The land subject to the project activity does not fall in wetland category.

This was confirmed during site visit and other supported documents provided even descriptions in the PD.

(b) 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 these lands are included within the project boundary:

(i) Land containing organic soils;

(ii) Land which, in the baseline, is subjected to land-use and management practices and receives inputs listed in appendices 1 and 2 to this methodology.

The PD describes in section 2.2 the conditions under project activities could affect to the soil disturbance. Data are provided and limits are fulfilled.

Regarding the compliance of the applicability conditions of the tools contained within the methodology and applied by the project,

AENOR, based on records provided including spreadsheets calculations of the emissions reductions, has verified that applicability conditions of the different tools are complied. In conclusion, the project activity complies with the applicability conditions of the methodology, and any tools or modules selected by the project proponent.

3.3.3 Project Boundary

Regarding the Carbon Stock Changes and taking into account the applicable methodology, the chosen carbon pools and GHG accounted are the following:

Carbon pools		Selected?	Justification/Explanation
Baseline and Project scenario	Above-ground biomass	Yes	This is the major carbon pool subjected to project activity.
	Below-ground biomass	Yes	Carbon stock in this pool is expected to increase due to the implementation of the project activity.
	Dead wood Litter and	Yes	Carbon stock in these pools may increase due to implementation of the project activity.
	Soil organic carbon	Excluded	Carbon stock in these pools may not increase due to implementation of the project activity.

Carbon pools and GHG sources.

Source		Gas	Included?	Justification/Explanation
Baseline	Burning of woody biomass	CO ₂	No	Potential emissions are negligibly small as there is no burning of woody biomass.
		CH ₄	No	
		N ₂ O	No	
Project	Burning of woody biomass	CO ₂	No	Potential emissions are negligibly small as there is no burning of woody biomass.
		CH ₄	No	
		N ₂ O	No	

According to the VCS requirements, sources of emissions that are expected to increase in the project scenario compared to the baseline case must be included if the exclusion would lead to a significant overestimation of the total net anthropogenic GHG emission reductions generated during the fixed baseline period. Furthermore, that sources considered insignificant according to the latest VCS AFOLU requirements can always be neglected. In this regard, the following GHG sources may be deemed insignificant and need not to be accounted for in the case of ARR projects:

- N₂O emissions from project activities that apply nitrogen containing soil amendments and N₂O emissions caused by microbial decomposition of plant materials that fixes nitrogen.
- GHG emissions from the removal or burning of herbaceous vegetation and collection of non-renewable wood sources for fencing of the project area.
- Fossil fuel combustion from transport and machinery use in project activities.

Taking into account the justifications, assumptions and supporting information provided and the design of the project, AENOR deems that project boundary is correctly defined and in compliance with the applicable methodology and VCS requirements.

3.3.4 Baseline Scenario

The baseline scenario of the proposed project activity has been defined using the “Combined tool to identify the baseline scenario and demonstrate additionality in A/R CDM project activities”, version 01.

AENOR, based on evidence provided and detailed in the P.D and appendix 1 of the present report, validated that baseline scenario was appropriately determined for the project area.

Based on the combined tool, the following steps were applied and appropriately developed and justified in the P.D:

Step 1. Identification of alternative scenarios

Sub-step 1a. Identify credible alternative land use scenarios to the proposed project activity

The following baseline scenarios were identified:

Alternative 1: Agriculture

Land used for agriculture and pasture has increased over time in Mexico. By 1993, this type of anthropic coverage had increased by 6.5 million ha to cover a total area of 46.8 million ha. This increase happened at a rate of 380,000 ha per year. By 2002, the area dedicated to agriculture and grasslands for livestock had also increased by almost 3 million ha to reach a total area of 49.8 million ha. According to the Agricultural Census Framework 2016, the total area of agricultural activities reached 49.9 million ha (94.6% of which is open-air agriculture) in about 6.5 million productive units across the country. Because of this, Mexico has established itself as one of the main producers and exporters of food in the world, positioning the agri-food sector as one of the main engines of the national economy.

Documented evidences for the Surface dedicated to open-air agricultural production by federative entity in the reference area of the project in Mexico have been provided.

AENOR could verify during the onsite visit to the places that agricultural production was an extensive practice in the country.

Alternative 2: Cattle

At present, livestock production is an important economic activity in Mexico. It occurs across rural parts of the country, even in adverse environmental conditions that are prohibitive to other productive activities³. In 2016, the livestock production area was 480,674 km², (24.5% of the total area of the country) and was distributed between 830,127 communal, private and public land plots⁴. Mexico is the seventh highest producer of bovine animal protein worldwide; the country shows high development potential and competitive advantages in this sector.

Documented evidences for the Area dedicated to cattle production by state and type of producer in the reference area of the project in Mexico have been provided.

AENOR could verify during the onsite visit to the places that cattle production was an extensive practice in the country.

Alternative 3: Forest plantations not certified under the VCS

The promotion of commercial forest plantations has been identified as a priority in Mexico. This strategy aims to increase forest production and help reduce the deficit in the supply of raw forest materials, while generating economic opportunities in different rural areas in the country. However, the establishment of forest plantations as an economic activity requires significant investment and has long payback periods. In addition to the technological requirements for the preparation of land, the management needs of plantations are high. As a result, commercial forests are supported by government incentives that aim to reduce the costs and risk of investments.

The proposed project activity complies with the applicable laws as identified in section 1.11 of the P.D. On the other hand, the continuation of the current situation also fulfils with the applicable laws, then, both, the implementation of the project activity without carbon credits and the continuation of the pre-project baseline scenario fulfil with the enforced mandatory applicable laws and regulations.

STEP 2. Barrier analysis

Sub-step 2a. Identification of barriers that would prevent the implementation of at least one alternative land use scenarios.

The following barriers were identified and justified by PP in the forestry sector:

Time: The document “Forest Program for the Development of Commercial Plantations (PRODEPLAN) and the Specific Institutional Intervention Programs 2014-2018” published by CONAFOR and provided to

³ Article - Livestock in Mexico. Shared Risk Trust (FIRCO). Retrieved from <https://www.gob.mx/firco/articulos/la-ganaderia-en-mexico?idiom=es>.

⁴ Update of the Agricultural Census Framework 2016. National Institute of Statistics and Geography (INEGI). Retrieved from <http://www.beta.inegi.org.mx/proyectos/agro/amca/>.

AENOR highlights that the timber species can only be exploited after 10 years, so the forests do not generate much income and economic opportunities. The long wait for a return on investment can be demotivating for investors.

Financing and investment: The project justifies the lack of adequate financing.

The document “Forest Program for the Development of Commercial Plantations (PRODEPLAN) and the Specific Institutional Intervention Programs 2014-2018” published by CONAFOR and provided to AENOR highlights that forestry sector has had difficulty gaining access to bank. There is a lack of adequate financing as financial institutions perceive forestry to be a high-risk business. This perception can be attributed to the large productive periods and the little entrepreneurial culture of the producers to seek financing and lack of guarantees by the producers.

Access and land tenure: The PD confirms that there is significant irregularity and insecurity in the possession of the properties and in the low productive organization as confirm in the “Forest Program for the Development of Commercial Plantations (PRODEPLAN) and the Specific Institutional Intervention Programs 2014-2018” published by CONAFOR.

Technology: The PD confirms that there is little research into the adaptation and resistance of plant species, quality of seeds, and preparation of soil and crops. Besides, a lack of infrastructure and access to technologies has been identified. In terms of technical assistance, there is a shortage of trained technical professionals in the sector. This results in little local knowledge and experience in the prevention of fires, pests and diseases in the plantations, and has created a dependence on external experts. AENOR has assessed this against “Forest Program for the Development of Commercial Plantations (PRODEPLAN) and the Specific Institutional Intervention Programs 2014-2018” and Specific Institutional Intervention Programs 2014-2018”

Markets: The document “Forest Program for the Development of Commercial Plantations (PRODEPLAN) and the Specific Institutional Intervention Programs 2014-2018” *published by CONAFOR and provided to AENOR highlights* Commercialization of the products is limited due to the high geographical dispersion and variability in the raw material (type of species, sizes, type of use).

Transportation and road infrastructure:

AENOR based on this Study of Trends and Perspectives of the forestry sector in Latin America to the year 2020 published by FAO has checked that the network of forest roads is poor and transport costs are high. The national transportation costs can represent 40-60% of the total extraction cost depending on the state of the forest roads.

In conclusion and based on these reliable and recognized sources, the justifications about the project activities and their nature, AENOR deems that the identification of the barriers in the forestry sector is appropriately justified and deems credible.

Furthermore for the alternative of agriculture, AENOR based on the Document “The great challenges and perspectives for agriculture and the rural sector in Mexico in the 21st century” published by the Mexican

Government has checked that the main barriers identified are related to land tenure, financing, technology and institutional framework:

Access and land tenure: a problem by the system of inheritance rights that has historically characterized the processes of land legitimization in Mexico. This situation has important repercussions on the migration of the economically active agricultural population, on the low profitability of rural households and the lack of association farming and the weakening of economies of scale.

Technology: There is an existence of technological gap in the Mexican countryside that carries to low technological development for producers in transition (the majority of producers in Mexico); the existence of agricultural areas with poor quality soils, systems with overexploitation of inputs and machinery, economic inefficiency and depletion of resources, poor evaluation of production systems to promote improvements in the supply chains, a low number of Mexican academic researchers in proportion to the population, the weakness of research institutions and low investment in technological development.

Financing and investment: the PD justifies the low access to financing stands out because the Mexican financial system does not fulfill its role of intermediation between savings and loans. This is because its priority is to generate profitability in the shortest amount of time possible, and not in the selection of projects with economic development potential, which has discouraged the permanence of agricultural systems in rural areas. On the other hand, the resources allocated to agriculture are directed, primarily, to social spending, since only 12.5% can be classified as support for production due to the great dispersion and lack of articulation of the programs oriented towards the agricultural sector. AENOR based on the document “Análisis de los Problemas de Desarrollo del Medio Rural de México” published by the Interagency Group for Rural Development in Mexico has assessed the financing and investment barrier for this project activity.

Institutional barriers: low territorial presence of the relevant institutions has been identified, which also generates financing barriers. It is estimated that 30% of the country's municipalities do not have financial services, including ATMs.. On the other hand, the level of organization of farmers, especially poor farmers in marginalized areas, remains low and weaknesses in agricultural training and advice have been identified. Many systems have not provided sufficient resources to train their personnel and update their knowledge and interaction with specialists in the sector remains very low.

PP provides in the PD data sources that confirm these barriers.

Thus, AENOR based on information and justification provided deems as credible and reasonable the *consideration of the barriers: Access and land tenure, Technology, Financing and investment and Institutional.*

Sub-step 2b. Elimination of land use scenarios that are prevented by the identified barriers.

Extensive livestock farming is the only land use alternative that does not face any of the identified barriers.

Therefore the following list of land use scenarios and the barriers identified are shown:

Alternative land use	Type of barrier
Livestock	No barrier. These has been crosschecked against the article “Livestock in Mexico” published by the Mexican Gorvernment.
Forest plantations not certified under VCS	Time, financing, access and land tenure, technology, markets and transportation infrastructure.
Agriculture	Access and land tenure, technology, financing and institutional barriers.

As analysed above, the project without being registered as an A/R CDM or VCS project activity faces several barriers preventing its development. Meanwhile, the continuation of the current land-use - extensive livestock production – does not face any barrier.

Based on this report carried out by PP to demonstrate Article - Livestock in Mexico. Fideicomiso de Riesgo Compartido (FIRCO)., AENOR deems reasonable this barrier.

Definitively, the incomes from the carbon credit sales will contribute to alleviate and overcome all these identified barriers.

Accordingly, the outcome of sub-step 2b is the land use scenario that is not prevented by any barrier which is the continuation of the current land use, i.e, livestock.

As above demonstrated, forestation without being registered as a VCS is not included in the list of land use scenarios that are not prevented by any barrier and the list contain only one land use scenario.

Therefore, according to the decision tree of sub-step 2b of the tool, it is concluded that Scenario 1 (Continuation of the current situation: livestock) is the baseline scenario and Project participant continues with the Step 4 “Common practice analysis”.

AENOR deems that assumptions, justifications and data used in the identification of the baseline scenario are appropriately justified and can be deemed reasonable.

Documentary evidence used in determining the baseline scenario is relevant, and correctly quoted and interpreted in the project description.

Relevant national and/or sectoral policies and circumstances have been considered and are listed in the project description.

The procedures for identifying the baseline scenario have been correctly followed according to the steps in the combined tool and the identified scenario reasonably represents what would have occurred in the absence of the project.

Thus, AENOR considers that the identified baseline scenario is correctly justified.

3.3.5 Additionality

According to the “Combined tool to identify the baseline scenario and demonstrate additionality in A/R CDM project activities”, the previous steps shall be complemented with an analysis of the extent to which forestation activity has already diffused in the geographical area of the proposed VCS project activity. This test is a credibility check to demonstrate additionality which complements the barrier analysis (Step 2) above conducted.

Step 4. Common practice analysis

Considering the paragraphs 32 and 33 of the “Combined tool to identify the baseline and demonstrate additionality in A/R CDM project activities”, the PPs identified a list of similar potential forestation activities to the one proposed as the VCS grouped project that have been implemented previously or are currently underway in the geographical area of the project, i.e., States of Tabasco, Chiapas and Campeche. However, the additionality assessment was carried out to demonstrate that proposed grouped project activity is not common practice in either the grouped geographical region or the whole country, Mexico. Other registered Carbon Schemes project activities have not been included in the analysis.

To perform the additionality assessment an official data source from the National Forestry Commission (CONAFOR) was used. Based on “Program for developing Forest Commercial Plantations” by CONAFOR the following activities were assessed and this table also presents the main differences with the grouped project:

Company	Location	Plantation Description	Difference between AGSA and the company
Proteak Uno S.A.P.I.B	Tabasco	8,300 ha of teak including the operation in Costa Rica and Colombia	Currently diversified with the acquisition of FOMEX that supplies the eucalyptus wood for its MDF plant. AGSA only has plantations in Mexico.
Forestales Operativas de México S.A. de C.V.	Tabasco	Over 9,000 ha of eucalyptus	Currently integrated to Proteak Uno S.A.P.I.B.
Promotora de plantaciones del sureste S.A. de C.V.	Tabasco	Producer of eucalyptus and gmelina	Business plan completely different with regards to species, use and rotation cycle.
Forestales Mexicanos de C.V.	Tabasco	Rubber and palm oil producer	Dedicated to palm oil and rubber ⁵ .
Ejido San Jerónimo Tulija	Chiapas	Use of natural forest	Use of natural forest is a business model totally different from the teak plantation.

⁵ <http://www.induagro.com.mx/HOMEFM/HOMEFM.html>

Company	Location	Plantation Description	Difference between AGSA and the company
Plantaciones de Hule de Palenque S.A. de C.V.	Chiapas	Rubber production	The project scale is in the order of 3,000 ha, focusing only on obtaining latex. ⁶ Species and rotation cycle are different from teak plantations.
Unión de Silvicultores de la región de Escárcega S.P.R. de R.L	Campeche	Small-scale planters supporting the social sector	Managing economic support from government institutions to support the social sector in small areas of the State of Campeche.
Agroindustria Agua Fría S.P.R. de R.L. de C.V.	Campeche	Gmelina Producer	Species and rotation cycle are different from teak plantations.
Rancho Chaparral S.P.R. de R.L.	Campeche	Gmelina Producer	Integrated to Industrial Agroindustria Agua Fría S.P.R. de R.L. de C.V. Species and rotation cycle are different from teak plantations.
PROFORCA S.A de C.V.	Campeche	Individual producer	Plantation with little management, without surface growth over time.

AENOR checked with the official report “Program for developing Forest Commercial Plantations” by the National Forestry Commission (CONAFOR), that list is complete and information provided is credible and reliable.

In addition to the differences presented in the above table, AGSA has been a pioneer in the following aspects:

- AGSA was the first company to secure financing through the Mexican Stock Exchange to finalize its business plan to establish around 20,000 ha of teak.
- Use of technology, with a focus on experimentation for the development of its operations. In 2006 the production of Teak clones began. Since 2014, these clones have been planted commercially, after selecting the best specimens.
- Despite the unsuccessful effort to promote forest plantations in the area, especially in the States of Tabasco and Campeche, Agropecuaria Santa Genoveva (AGSA) has been the main planter in these locations. According to the Special Forestry Development Program from 2013 to 2018, AENOR has checked that, it was planned to establish 7,500 hectares throughout the State of

⁶ <http://www.agros.com.mx/es-mx/Empresas-del-Grupo/Hule>

Tabasco, averaging around 30 ha per planter. Recently (between 2013 to 2017), AGSA has planted in the State of Tabasco 4,312 ha of teak, more precisely in the municipalities of Tenosique, Balancán and Huimanguillo (AGSA statistics), areas of land that used to be livestock intensive.

Therefore, AGSA forestry projects that exist in the expansion area of the grouped project are very different in their conception of business, both in scale and focus, with regards to forest and/ or industrial production. The proposed project activities aim to change the land use from livestock and extensive agriculture to activities with a less negative impact on the land. This will allow for the recovery of the natural environment and connectivity between forest cover. The financial income from carbon sequestration will help AGSA to tackle the barriers presented and continue with the activities of plantation expansion and maintenance.

Therefore, the scale, the technology, the design and commitments and goals the Reforestation with Teak - CO₂e TEAKMEX project and AGSA are not similar, then not comparable.

Hence, after the assessment of the explanations and justifications in the P.D and the review of the submitted evidence, also detailed in the project document, AENOR deems credible and reliable the supported documents provided. The information described in the P.D is consistent with them. Thus, it can conclude that there are several characteristics that make each activity different, not similar to the Reforestation with Teak - CO₂e TEAKMEX, then, not comparable. Thus, the project activity is not the baseline scenario, it is not the common practice and hence, it is additional.

The incomes from VCUs will help to overcome the faced barriers by the project and will alleviate the expected long time period for revenues.

3.3.6 Quantification of GHG Emission Reductions and Removals

Procedures for quantifying the baseline emissions from unplanned deforestation were conducted in accordance with the methodology "AR-ACM0003: Afforestation and reforestation of lands except wetlands", Version 02.0. The validation team performed an intensive quantification review of all input data, parameters, formulas, calculations, conversions, statistics and resulting uncertainties and output data to ensure consistency with the VCS documentation, methodology modules, and the PD. Further, the validation team reproduced calculations for selected samples to ensure accuracy of the results. Conversion factors, formulas, and calculations were provided by project proponents in spreadsheet format to ensure all formulas were accessible for review. The validation team recalculated subsets of the analysis to confirm correctness. Project proponents also provided a step-by-step overview of select calculations to ensure the validation team understood the approach and could confirm its consistency with the methodologies and PD. Where applicable, references for analysis methods or default values were checked against relevant scientific literature for best practice.

The net anthropogenic GHG removals by sinks shall be 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 ; tCO₂-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}

3.2.6.1 Baseline Emissions.

The baseline emissions estimation was carried out using the A/R Methodological AR-TOOL 14 “Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities Version 04.2”.

In order to estimate baseline emissions, these are the three types of vegetation present in the project area before the start of the project activities:

- Scattered trees and shrubs in a grassland matrix;
- Trees in conservation areas around the grassland matrix; and
- Citrus shrubs in the locality of Huimanguillo.

Trees

According to the AR-TOOL 14, carbon stock in trees in the baseline can be accounted as zero if all the conditions in the methodology are met.

The trees present in the project area are mainly located in conservation areas. These are maintained during the project lifetime and not counted in the plot monitoring because only teak trees are quantified. Therefore, the baseline emissions change due to changes in the carbon stocks of trees was accounted as zero.

Shrubs

Grassland baseline

According to point 12 of the conditions under which carbon stock and change in carbon stock may be estimated as zero, the tool establishes that trees and shrubs in the baseline may be accounted as zero in the case that the land is subjected to periodic cycles which is the case of the livestock farming baseline in the project area.

According to point 13 of the tool, the carbon stock of shrubs would be estimated as zero for the grassland baseline. AENOR deems reasonable and appropriate changes in carbon stocks in the baseline may be accounted as zero.

Citrus crop baseline

According to section 10 of the AR-TOOL 14, the annual change in carbon stock in shrubs must be estimated as follows: ç

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

Where:

$\Delta C_{SHRUB,t}$	Change in carbon stock in shrubs within the project boundary in year t between times t ₁ and t ₂ ; t CO ₂ -e
C_{SHRUB,t_1}	Carbon stock in shrubs within the project boundary at time t ₂ ; t CO ₂ e
C_{SHRUB,t_2}	Carbon stock in shrubs within the project boundary at time t ₁ ; t CO ₂ e
T	Time elapsed between two successive estimations (T= t ₂ – t ₁); yr

In the case of areas localized in Huimanguillo, where there is a citrus crop baseline, the citrus increment is considered to be zero as the citrus plantation is managed to maintain the tree characteristics that allow harvesting activities. Then, $\Delta C_{SHRUB,t}$ is assumed to be zero.

AENOR deems reasonable and appropriate changes in carbon stocks in shrubs may be accounted as zero and has crosschecked this information against the supporting document "Crecimiento y rendimiento del limón mexicano en altas densidades de plantación en el trópico." Published by Medina-Urrutia, V. M., S. Becerra-Rodríguez, and E. Ordaz-Ordaz."

Dead wood and litter

In the areas where grassland is the baseline scenario, no emissions or removals are attributed to dead wood and litter. Therefore, AENOR deems reasonable that management activities include the cleaning of intercrop corridors and so an accumulation of carbon due to dead wood and litter is not expected.

Soil

In the land use before the project, the amount of organic matter inputs was low, due to the management practices: slash and burn to prepare the land for livestock activities and intercrop corridor maintenance in the citrus plantation. Therefore, AENOR deems considerable that an increase in the soil carbon stock in the baseline is not expected.

3.2.6.2 Project Emissions

The actual net GHG removals by sinks shall be 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

Change in the carbon stocks in project, occurring in the selected carbon pools. in year t; t CO₂-e

GHG emissions resulting from the removal of herbaceous vegetation, combustion of fossil fuels, fertilizer application, use of wood, decomposition of litter and fine roots of N-fixing trees, construction of access roads within the project boundary, and transportation attributable to the project activity will be considered insignificant and therefore accounted as zero, in accordance with section 5.5 of the AR-ACM0003 methodology.

Increase in non-CO₂ GHG emissions ($GHG_{E,t}$) within the project boundary as a result of the implementation of the A/R VCS project activity in year t. as estimated in the Annex 31 "Estimation of non-CO₂ GHG emissions resulting from burning of biomass attributable to an A/R CDM project activity version 04.0.0"; t CO₂-e. Considering equation 1 of this tool:

$$GHG_{E,t} = GHG_{SPF,t} + GHG_{FNF,t} + GHG_{FF,t}$$

Where:

- $GHG_{E,t}$ = Emission of non-CO₂ GHGs resulting from burning of biomass and forest fires within the project boundary in year t; t CO₂-e
- $GHG_{SPF,t}$ = Emission of non-CO₂ GHGs resulting from use of fire in site preparation in year t; t CO₂-e

$GHG_{FMF,t}$ = Emission of non-CO2 GHGs resulting from use of fire to clear the land of harvest residue prior to replanting of the land or other forest management. in year t; t CO2-e

$GHG_{FF,t}$ = Emission of non-CO2 GHGs resulting from fire. in year t; t CO2-e

t = 1.2.3. ... years counted from the start of the project activity

According to the tool "Estimation of non-CO2 GHG emissions resulting from burning of biomass attributable to an A/R CDM project activity", the emission of non-CO2 GHGs resulting from burning of biomass and forest fires within the project boundary in year t is an estimate based in three sources: i) burning of biomass and forest fires within the project boundary; ii) use of fire in site preparation; and iii) use of fire to clear the land of harvest residue prior to replanting of the land or other forest management. Source i) is not considered in the ex-ante estimations as the risk of fires is low.

AENOR has assessed the calculation of the project emissions and considers it is corrected.

3.2.6.3 Calculation of Leakage.

According to AR-TOOL15 "Estimation of the increase in GHG emissions attributable to displacement of pre-project agricultural activities in A/R CDM project activity" Version 2.0, leakage is all those emissions which occur when the displacement of pre-project agricultural activities leads to an increase in GHG emissions relative to the GHG emissions attributable to the activity as it exists within the project boundary. According to Equation 1 of AR-TOOL15 and the behaviour of the agricultural activities in the project scenario, leakage emissions resulting from displacement of activities are estimated as follows:

$$LK_{AGRIC, t} = \frac{44}{12} * (\Delta C_{BIOMASS,t} + \Delta SOC_{LUC,t}) = 0$$

$$\Delta C_{BIOMASS,t} = [1.1 \times b_{TREE} \times (1 + R_{TREE}) + b_{SHRUB} \times (1 + R_s)] \times CF \times A_{DISP,t}$$

$$\Delta SOC_{LUC,t} = SOC_{REF} \times (f_{LUP} \times f_{MGP} \times f_{INP} - f_{LUD} \times f_{MGD} \times f_{IND}) \times A_{DISP,t}$$

Where:

$LK_{AGRIC, t}$ = Leakage emissions resulting from displacement of agricultural activities in year t; t CO₂e

$\Delta C_{BIOMASS,t}$	= Decrease in carbon stock in the carbon pools of the land receiving the activity displaced in year t; t d.m
CF	= Carbon fraction of woody biomass; dimensionless
$A_{DISP,t}$	= Area of land from which agricultural activity is being displaced in year t; ha
b_{tree}	= Mean above-ground tree biomass in land receiving the displaced activity; t d.m. ha ⁻¹
R_{tree}	= Root-shoot ratio for trees in the land receiving the displaced activity; dimensionless.
b_{SHRUB}	= Mean above-ground shrub biomass in land receiving the displaced activity; t d.m. ha ⁻¹
R_s	= Root-shoot ratio for shrubs in the land receiving the displaced activity; dimensionless
$\Delta SOC_{LUC,t}$	= Change in soil organic carbon (SOC) stock due to land-use change in the land receiving the displaced activity in year t; tC ha ⁻¹
SOC_{REF}	= SOC stock corresponding to the reference condition in native lands by climate region and soil type applicable to the land receiving the displaced activity; t C ha ⁻¹
$f_{LUP}, f_{MGP}, f_{INP}$	= Relative SOC stock change factors for land-use, management practices, and inputs respectively, applicable to the receiving land before the displaced activity is received; dimensionless
$f_{LUD}, f_{MGD}, f_{IND}$	= Relative SOC stock change factors for land-use, management practices, and inputs respectively, applicable to the receiving land after the displaced activity has been received; dimensionless
t	= 1, 2, 3, years elapsed since the start of the A/R CDM project activity.

Leakage due to displacement of livestock activities

In general, the owners of the acquired livestock lands are adults who sold their lands with the intention of moving away from field-based activities in particular moving to some cities and/or migrating to areas already degraded, which therefore presents no displacement of emissions.

- Migration phenomenon

Mexico is experiencing a decrease in its rural population, which is attributed to an emigration phenomenon from rural to urban areas. In the case of the expansion area of the grouped project, the states of Chiapas and Tabasco, where the majority of the activity instances included during the validation

are located, the population that is emigrating is bigger than the population that is immigrating, so resulting in an overall decrease in the rural population.

- **Livestock activity**

The south of Mexico, where the expansion area of the project is found, has been impacted for decades by policies that incentivise agricultural production. The best example of this is the National Tree Clearing Program (in Spanish, PRONADE), where the Government allocated land to peasants and the National Commission of DESMONTES provided loans to farmers to encourage them to remove vegetation from their lands, as well as the National Farming Program to incentivise changing land use from forest to pasture or agriculture. Following these policies, from the 1970s to 1985, the farming sector showed considerable growth and the area of land devoted to livestock cultivation and foraging increased by more than 100%.

AENOR has assessed this information against the following documents “La legislación forestal y su efecto en la restauración en México” published by the Mexican Government and “Efectos ambientales del Programa Nacional de Desmontes, 1972-1982” published by the National Tree Clearing Program.

Leakage due to displacement of agriculture activities

In the case of Huimanguillo, the company that owned the citrus crops was liquidated and therefore is not expected to establish crops in other areas, so leakage will not be considered.

The project scenario does not consider likely the displacement of agricultural activities outside the project boundary, so the leakage emission is accounted as zero, given that non-decreasing carbon stocks (biomass and SOC) are expected from lands outside the project boundary associated with those activities.

Calculation of ex-ante estimation of total net GHG emissions reductions

According to the “AR-ACM0003 A/R Large-scale Consolidated Methodology: Afforestation and reforestation of lands except wetlands Version 02.0. If biomass distribution over the project area is not homogeneous, stratification should be carried out to improve the precision of biomass estimation. Different stratifications may be appropriate for the baseline and project scenarios in order to achieve optimal precision of estimation of net GHG removals by sinks. In particular:

- a) For baseline net GHG removals by sinks, it is usually sufficient to stratify the area according to major vegetation types and their crown cover and/or land use types; In the case of project area of the first instance, there are two major vegetation type that consists in grassland with little to no baseline vegetation existing within the actual planting area and citrus plantation.

- b) For actual net GHG removals by sinks the stratification for ex ante estimations is based on the project planting/management plan. In the case of project area of the first instance, stratification included the growth quality, the year of establishment and the precipitation range.

The following stratification has been made, Stratification for ex ante actual net GHG removals by sinks of the first instance of the grouped project

Strata	Year of establishment	Area (ha)	Description
1.1	2013	424.14	Growth quality: "Excelente Semilla" Precipitation: >1,600 mm
1.2	2014	125.02	
1.3	2016	591.27	
1.4	2017	163.21	
2.1	2014	1052.15	Growth quality: "Alto"
2.2	2015	1145.84	
3.1	2013	377.72	Growth quality: "Excelente Semilla" Precipitation: 1000-1,600 mm
3.2	2014	26.92	
3.3	2017	105.69	

Growth quality models and Guidande for the Establishment and Measurement of Plots for the Monitoring and Evaluation of Tree Growth in Research and Reforestation Programs have been applied.

The values and estimates presented in the PD are considered reasonable based on the documentation reviewed, further references and the result of the interviews during the onsite visit.

Estimating carbon stock in trees at a point in time:

The following tool has been used to estimate the carbon stock in tree biomass: "Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities AR-TOOL14 Version 04.1". The method "b) Estimation by modelling of tree growth and stand development" has been used. The estimation method is explained below.

Step 1: Volume estimation

Volume estimation depending on diameter and height

The volume estimation per tree depending on diameter and height is found using the Tamarit equation (Tamarit, 2013):

$$V = 0.000059 * DBH^{1.866203} H^{0.932461}$$

$$V = \text{Tree volume; m}^3$$

DBH = Diameter at Breast Height; cm

H = Total height; m

Volume estimation depending on diameter and height

With the data per hectare (volume, diameter, height, age) of all the plots established, a set of growth model equations was adjusted by the project proponent following the steps described below

- Adjustment of a statistical model that represents the growth in the diameter at breast height (DBH) and year (t) of the plantation. The equation adjusted was based on the model presented by the article "Tablas de rendimiento de teca para el estado de Campeche"⁷:

- $X = Ae^{x^{\frac{B}{C}}}$

- Where:

X = Diameter at breast height (DBH) or height (data from the permanent plots⁸)

x = Age of the plantation

A, B, C = Regression parameters

-

Different measurements of the permanent plots during 2013-2017 were made, it was concluded that, in general, the plantations established since 2013 have been growing at high yields, with most plots being catalogued as 'Excellent Seed' and 'Excellent Clone'. However, AGSA has recommended against cataloguing any site as 'Excellent Clone' because the plots are young, and their performance can diminish with age. Therefore, two growth qualities of volume-by-age data were used: 'Excellent Seed' and 'High'.

AENOR deems appropriate the cataloguing of the plots in accordance with the supporting documentation.

Step 2: Biomass estimation

The estimation of tree biomass was calculated according to equation 5 Appendix 1 of the AR-TOOL14:

$$b_{TREE} = [V_{TREE} \times D \times BEF_2] \times (1 + R)$$

⁷ Article presented as supporting document [Supporting documents\Estimations\Tablas rendimiento Teca p Campeche].

⁸ The average measurements are used at the permanent plot level.

b_{TREE} = Mean tree biomass per hectare in the tree biomass estimation strata; t d.m. ha⁻¹

V_{tree} = Mean tree volume per hectare in the tree biomass estimation strata; m³ ha⁻¹

D = Basic wood density; t m⁻³

BEF_2 = Biomass Expansion Factor; dimensionless

R = Root-to-shoot ratio; dimensionless

Step 3: mean carbon stock estimation and mean carbon stock in terms of CO2e

The estimation of the mean tree carbon per hectare in the tree biomass estimation strata was calculated according to equation 13 of the AR-TOOL14:

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

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

The estimation of the mean carbon stock in trees within the tree biomass estimation strata was calculated according to equation 12 of the AR-TOOL14:

$$C_{TREE} = \frac{44}{12} \times C_{tree}$$

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

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

Parameters used for the estimation of tree biomass and mean carbon stock.

Parameter	Symbol	Value	Source
Basic wood density (t m ⁻³)	D	0.59	Rodríguez Anda, Fuentes T., & Silva Guzmán (2012)
Biomass Expansion Factor (dimensionless)	BEF2	1.50	IPCC (2003)
Root-to-shoot ratio (dimensionless)	R	0.37	IPCC (2006)
Carbon fraction of tree biomass; t C (t d.m.) ⁻¹	CFTREE	0.47	

$$C_{tree(tCO_2e)} = \frac{44}{12} \times C_{tree}$$

AENOR deems values as correct and consistent with the sources.

Step 4: dead wood

Estimations were done in accordance with the AR -TOOL 12 “Estimation of carbon stocks and change in carbon stocks in dead wood and litter in A/R CDM project activities version 03.1”. Values of the conservative default-factors expressing carbon stock in dead wood as a percentage of carbon stock in tree biomass were selected according to the guidance provided in the methodological tool.

Conservative default-factor based method for estimation of carbon stock in dead wood

The project proponent will not make sampling-based measurements to estimate carbon stock in dead wood for all strata to which this default method is applied. The carbon stock in dead wood was estimated as indicated in equation 9 of the tool, using the default values presented in **¡Error! No se encuentra el origen de la referencia.:**

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

Where:

$C_{DW,i,t}$ = Carbon stock in dead wood in stratum i at a given point of time in year t; t CO₂e

$C_{TREE,i,t}$ = Carbon stock in trees biomass in stratum i at a point of time in year t. as calculated in the tool “Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities”; t CO₂e

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

i = 1. 2. 3. ... biomass estimation strata within the project boundary

t = 1. 2. 3. ... years elapsed since the start of the A/R project activity

Step 5: Litter

Estimations have been made in accordance with the tool “Estimation of carbon stocks and change in carbon stocks in dead wood and litter in A/R CDM project activities version 03.1”. Values of the conservative default-factors expressing carbon stock in litter as a percentage of carbon stock in tree biomass were selected according to the guidance provided in the methodological tool.

Conservative default-factor based method for estimation of carbon stock in litter (CLI)

Estimations were done in accordance with the tool “Estimation of carbon stocks and change in carbon stocks in dead wood and litter in A/R CDM project activities version 03.0”. For all strata to which this default method is applied, the carbon stock in litter will be estimated as is indicated in equation 15 of the tool, using the default values presented in **¡Error! No se encuentra el origen de la referencia.:**

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

Where:

$C_{LI,i,t}$ = Carbon stock in litter in stratum i at a given point of time in year t; t CO₂e

$C_{TREE,i,t}$ = Carbon stock in trees biomass in stratum i at a point of time in year t. as calculated in tool “Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities”; t CO₂e

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

i = 1. 2. 3. ... biomass estimation strata within the project boundary

t = 1. 2. 3. ... years elapsed since the start of the A/R project activity

Conservative default factor expressing carbon stock in dead wood and litter.

Parameters	Symbol	Value (%)	Comments
Conservative default factor expressing carbon stock in dead wood as a DW percentage of carbon stock in tree biomass.	DFDW	1	Biome: tropical Elevation: <2,000m Precipitation 1000 -1,600 mm.yr-1
		6	Biome: tropical Elevation: <2,000m Precipitation >1,600 mm.yr-1
Default factor for the relationship between carbon stock in litter and carbon stock in living trees.	DF _{LI}	1	Biome: tropical Elevation: <2,000m Precipitation 1000 -1,600 mm.yr ⁻¹

AENOR deems values as correct and consistent with the sources.

Step 6: carbon stock in trees at a point of time

Change in the carbon stocks in the selected carbon pools in the year t were calculated according to the AR-ACM0003 methodology:

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

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. 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"; t CO2-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"; t CO2-e

The P.D describes in an appropriate way with evidence and justifications how the project activity fulfils with the applicability conditions of the tool.

The net anthropogenic GHG emission reduction of the proposed project activity is 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; t CO2-e
$\Delta C_{ACTUAL,t}$	= Actual net GHG removals by sinks. in year t; t CO2-e
$\Delta C_{BSL,t}$	= Baseline net GHG removals by sinks. in year t; t CO2-e
LK_t	= GHG emissions due to leakage. in year t; t CO2-e

To calculate the **actual net GHG removals** by sinks, the methodology established the following formula:

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

Where:

$\Delta C_{ACTUAL,t}$ = Actual net GHG removals by sinks.
 $\Delta C_{P,t}$ = Change in carbon stock in Project.
 $GHG_{E,t}$ = Increase in non CO2 GHG emissions within the Project boundary due to the Project activity.

Once all parameters of the formula $\Delta C_{AR-CDM,t} = \Delta C_{ACTUAL,t} - \Delta C_{BSL,t} - LK_t$ are calculated for the 60 years of the crediting period, the final results are provided.

In addition, the Non Permanence Risk was calculated according to the tool risk report. A detailed validation assessment carried out by AENOR is provided in sections below. The overall risk rating is 14%.

The results are shown below.

Year	Estimated baseline emissions or removals (tCO ₂ e)	Estimated project emissions or removals (tCO ₂ e)	Estimated leakage emissions (tCO ₂ e)	Estimated net GHG emission reductions or removals (tCO ₂ e)
2012	0	111,492	0	111,492
2013	0	11,713	0	11,713
2014	0	-109,606	0	-109,606
2015	0	34,771	0	34,771
2016	0	62,162	0	62,162
2017	0	105,218	0	105,218
2018	0	110,618	0	110,618
2019	0	142,854	0	142,854
2020	0	99,456	0	99,456
2021	0	108,992	0	108,992
2022	0	134,574	0	134,574
2023	0	28,360	0	28,360
2024	0	47,179	0	47,179
2025	0	73,906	0	73,906
2026	0	71,760	0	71,760
2027	0	115,568	0	115,568
2028	0	156,090	0	156,090
2029	0	157,374	0	157,374
2030	0	157,109	0	157,109
2031	0	-320,592	0	-320,592
2032	0	-418,661	0	-418,661
2033	0	-398,670	0	-398,670
2034	0	-285,041	0	-285,041

Year	Estimated baseline emissions or removals (tCO ₂ e)	Estimated project emissions or removals (tCO ₂ e)	Estimated leakage emissions (tCO ₂ e)	Estimated net GHG emission reductions or removals (tCO ₂ e)
2035	0	-86,094	0	-86,094
2036	0	105,218	0	105,218
2037	0	110,618	0	110,618
2038	0	142,854	0	142,854
2039	0	99,456	0	99,456
2040	0	108,992	0	108,992
2041	0	134,574	0	134,574
2042	0	28,360	0	28,360
2043	0	47,179	0	47,179
2044	0	73,906	0	73,906
2045	0	71,760	0	71,760
2046	0	115,568	0	115,568
2047	0	156,090	0	156,090
2048	0	157,374	0	157,374
2049	0	157,109	0	157,109
Total	0	1,619,592	0	1,619,592

According to VCS AFOLU requirements, GHG benefit must not exceed the long term GHG benefit. The period over which the long term average GHG benefit is calculated is 36 years. The total GHG benefit is calculated as the average of the total carbon stocks along the 36 year period, which resulted in 16,203 t CO₂.

Estimated GHG removals for the project crediting period, includes VCS buffer. The calculation of the emission reductions follows the VCS AFOLU Requirements for ARR projects with harvesting and the AFOLU Guidance “Example for Calculating the Long-Term Average Carbon Stock for ARR Projects with Harvesting”, with a long-term average GHG benefit of 709.861 tCO₂, considering the buffer account which is 99,381 tCO₂ the Maximum VCU allowed for the project activity are 583.326 t CO₂.

AENOR assessed the calculations of baseline stocks and removals, project emissions, leakage, expected net anthropogenic GHG removals by sinks and uncertainties.

As the proposed project is an ARR project, harvests were also assessed, according to sections of the AFOLU Requirements. Correctness of calculations can be confirmed as they were replicated by the audit team using the information provided.

The values and estimates presented in the PD are considered reasonable based on the documentation reviewed, further references and the result of the interviews during the onsite visit.

Based on the information reviewed it can also be confirmed that the sources used are correctly quoted and interpreted in the PD and supporting documents. All assumptions and data indicated in the PD and all relevant sources were checked and confirmed. Detailed information on the verification of parameters used in the equations is presented in the protocol.

In essence, the methodology was correctly applied following the requirements. All values in the PD are considered reasonable in the context of the proposed VCS project activity. Data sources are quoted correctly. Hence, the calculation of baseline stocks and removals, project emissions, leakage and the expected net anthropogenic GHG removals by sinks are considered correct.

3.3.7 Methodology Deviations

No deviations were detected from the applicable methodology.

3.3.8 Monitoring Plan

The monitoring plan presented in the PD complies with the requirement of the methodology. The assessment team checked all parameters presented in the monitoring plan against the requirements of the methodology. For the monitoring of carbon stock changes the requirements and parameter list as per methodology and associated tools were followed.

The list of parameters available at validation and the values used was also checked by AENOR and it is deemed complete and consistent with calculations and assumptions considered. The list is the following: $V_{TREE,j,p,i}$, D_j , BEF , R , CF , DF_{DW} , DF_{LI} , SOC_{REF} , $f_{LU,i}$; $f_{MG,i}$; and $f_{IN,i}$.

The list of parameters to be monitored is the following: A_i , A_i ; N , n_i , Plot Location, DBH, H and T

In addition, all activities performed for all strata will be recorded and relevant parameters quantified for verification that the applicability conditions of the methodology have been met, for verification of changes in carbon stocks in the selected pools and for verification of project emissions and leakage.

The procedures described in section 4 of the PD were reviewed by the AENOR team on paper and through communications with the PPs and cross-checked against the applicable methodology and associated tools and found to be in compliance with methodological requirements, and good practice as defined e.g. in the IPCC GPG LULUCF.

The major parameters to be monitored were discussed with the PPs, as well as main processes, data management, quality assurance and quality control procedures that will be implemented in the context of the project.

In the opinion of the AENOR team all necessary parameters required by the selected approved methodology are contained in the monitoring plan. They are clearly described and the means of monitoring described in the plan comply with the requirements of the methodology. Tables in section 4 of the PD detail the different data variable to monitor along with the data unit, recording frequency, purpose of data, etc. Thus, the monitoring plan is in compliance with the applicable methodology.

The sampling design and stratification is also detailed in section 4 of the PD. Equations for the estimation of the sample size have been checked by the audit team. Permanent sampling plots will be used for sampling over time to measure and monitor changes in carbon stocks of above and below ground biomass. Depending on the total area of the forest management plot, the number of permanent monitoring plots (PPM) to be established is determined.

For forest lots in which planting began with 1,250 trees per hectare, permanent plots of 20 m by 40 m have been established, resulting in 800 m², which contained 100 trees at the start. For forest lots in which planting started with 816 trees per hectare, permanent plots of 35 m by 35 m have been established, also containing 100 trees in a 1,225 m² area.

All the plots monitored during the period 2013-2017 have an area of 1,225 m².

The number of plots required for measuring the variation within the project boundary and strata shall be estimated by using the CDM tool “A/R Methodological Tool” for “Calculation of the number of sample plots for measurements within A/R CDM project activities”

In opinion of the AENOR assumptions considered for sampling design are reasonable and credible and consistent with calculation, thus, AENOR deems the sampling plan correct.

After the review of evidence provided by the PP, the interview and communications with PP, AENOR confirms that monitoring arrangements described in the monitoring plan are feasible within the project design and that the means considered for the implementation, including data management, quality and assurance control procedures, are sufficient to ensure that the GHG net anthropogenic removals achieved resulting from the proposed VCS project activity can be reported ex post and verified. Therefore, in opinion of the AENOR validation team the PP will be able to implement the monitoring plan.

3.4 Non-Permanence Risk Analysis

PP has elaborated VCS Non permanence Risk Report for the validation process according to the AFOLU Non Permanence Risk Tool v.3.3.

Below, it is explained the assessment of the non-permanence risk rating determined by the project participant in the report dated on 25 April 2017 version 04 and issues raised to them in this regard.

Risk factor	Risk Rating	Findings and mitigation activities	Corrective Actions/Clarifications
Internal Risks			
Project Management: It is assessed using table 1 of the VCS AFOLU Risk Tool.	-4	a) Teak (<i>Tectona grandis</i> L.f.), a tree species native to Southeast Asia, has been successfully introduced in reforestation activities in tropical countries where economic strategies have been developed to commercialize its production. Teak has been widely grown in both industrial plantations and small community woodlots Risk rating=0 is justified. b) No on-going enforcement issues or disputes have been identified in relation to the ownership of the planting area. The property is delimited as private land. Agropecuaria Santa Genoveva S.A.P.I. of	No Corrective Actions or Clarifications were requested

		C.V. possesses the legal tenure of all properties partaking in the project. Risk rating=0 is justified. c) In accordance with the evidence provided, The company has nine years of experience in the establishment and management of forest plantations of Teak (<i>Tectona grandis</i>), as well as four environmental quality certifications and a Forest Stewardship Council (FSC) certificate. Then rating=0 is correct. d) Agropecuaria Santa Genoveva S.A.P.I. of C.V. has a complete organizational chart that specifies the divisions of the company that will oversee the establishment, management and care of the areas involved in the project. Risk rating=0 is justified. e) The carbon project developer, South Pole Group, has extensive technical expertise in developing AFOLU projects, as well as in-depth knowledge of national and international carbon markets Then, it is well justified the rating=-2. f) Each of the areas within the project has a Simplified Forest Management Program that establishes the general guidelines for the establishment and management of forest plantations, then, rating = -2 is correct.	
Financial viability: It is assessed using table 2 of the VCS AFOLU Risk Tool.	1	a) In accordance with the evidence provided, project cash flow breakeven point is greater than 10 years given the current risk assessment Thus, the rating chosen=3 is correct.	No Corrective Actions or Clarifications were requested

		b)- g) These sections are not applicable. Thus, the rating chosen=0 is correct. h) Project has secured 80% or more of the funding needed to cover the total cash out before the project reaches its breakeven point. i) Forestry activities were financed in full through a trust agreement acquired by Agropecuaria Santa Genoveva S.A.P.I. of C.V. with the financial entity BBVA Bancomer Servicios. The rating assigned (-2) is correct.	
Opportunity Cost: It is assessed using table 3 of the VCS AFOLU Risk Tool.	- 6	a)-e) Not applicable. Rating chosen = 0 is correct. f) Net Present Value (NPV) of the project activities is expected to be at least 50% more profitable than the most profitable alternative land use. According to cost-effectiveness studies conducted by Rivera-Céspedes (n.p.). the NPV is always higher for Teak forest plantations for the entire harvesting season when compared to extensive livestock farming. The rating assigned (-4) is correct. g) Not applicable. Rating chosen = 0 is correct. h) The project has management practices that protect the credited carbon stocks over the duration of the project crediting period. The rating assigned (-2) is correct. i) Not applied. Thus, rating = 0	No Corrective Actions or Clarifications were requested
Project Longevity: It is assessed using table 4 of the VCS AFOLU Risk Tool.	17	a) Without legal agreement or requirement to continue the management practice. the rating = 17 is correct.	No Corrective Actions or Clarifications was requested.

		b) Not applied. Thus, rating = 0	
Total internal Risk= -4+1-6+17= 8			
External Risks			
Land Tenure and resources access/impact: It shall be assessed using table 6 of the Risk Tool.	0 (total may not be less than zero)	a) BDU Project operated and administered by Agroempresa Forestal (AF) on behalf of "Fideicomiso Financiero Forestal Bosques del Uruguay" (the trust fund). The latter is the land owner and the entity that finances the project activities. The trust fund has the property rights on the project land, demonstrated by the available notarial certificates and no disputes over the tenure or use of the land are present. Then, rating chosen = 0 is correct. b-e) Not applicable. Then rating =0 is correct. f)The project will have management practices that protect the credited carbon stocks over the duration of the project crediting period. The company therefore ensures the permanence of the carbon stock in the project area for at least that time period. Then rating =-2 is correct. g) There are currently no land disputes. However, in future, potential, disputes over land tenure, the project will endeavor to resolve said disputes or clarify overlapping claims. Then rating =-2 is correct.	No Corrective Actions or Clarifications was requested.
Community engagement: It shall be assessed using table 7 of the Risk Tool.	0	a) There are no households within the project area. Thus, rating =0 is correct.	No Corrective Actions or Clarifications was requested.

		b) Less than 20% of households within 20 km of the outside of the project boundary are reliant on the project area and they have been informed of the project through local consultation. Thus, rating =5 is correct. c)Mitigation: The project generates a net positive impact on the social and economic wellbeing of the local communities who derive their livelihoods from the project area. The project is a potential generator of employment and the planting stages have created opportunities. Thus, rating =-5 is correct	
Political Risks: It shall be assessed using table 8 of the Risk Tool.	0	a)-b) not applicable c) Mexico's governance score, calculated using the Mean Governance Scores across the six World Bank Institute's Worldwide Governance Indicators (WGI), is -0.17. Then, rating= 2 is correct. d)-e) not applicable f) Mitigation: Mexico is member of the World Bank Forest Carbon Partnership Facility (FCPF) and has signed a Participation Agreement to join the Readiness Fund. Mexico is implementing a REDD+ policy framework covering key components such as GHG credit ownership, clear government authority over REDD+ projects. Then, rating= -2 is correct.	No Corrective Actions or Clarifications was requested.
Total external risks= 0 + 0+ 0= 0			

Natural Risks			
Fire Risk: It shall be assessed using table 10 of the Risk Tool.	LS*M=2.50	Significance and likelihood (LS): Minor (between 5% and 25% loss of carbon stocks) Campeche, Chiapas and Tabasco are some of the states with the largest areas to have been affected by forest fires in Mexico. According to statistics from the National Forest Fire Program of the Mexican National Forestry Commission (CONAFOR), in 2016 approximately 448 forest fires were reported in these three states alone. Then a score of 5 is considered conservative Mitigation (M): The project has designed the Program for the Prevention, Combat and Termination of Forest and Industrial Fires in the Candelaria, Tabasco and Chiapas sites. This program schedules activities to prevent forest and industrial fires, as well as activities that help control, combat or end fires that may arise. Thus, mitigation discount applied of 0.5 is correct	No Corrective Actions or Clarifications were requested
Pest and disease outbreaks: It shall be assessed using table 10 of the Risk tool.	LS*M=2.50	Significance and Likelihood (LS): Minor (between 5% and 25% loss of carbon stocks) At plantation level, the most damaging insects are <i>Maconellicoccus hirsutus</i> (Hemiptera: Pseudococcidae), known as pink hibiscus cochineal. It is a polyphagous insect that has been reported to be one of the most important	No Corrective Actions or Clarifications were requested

		pest species in the Caribbean (Kairo et al. 2000). It threatens more than 170 plant types including crops, ornamental, fruits, weeds and timber forest trees such as Teak (<i>Tectona grandis</i>), where high populations have been found in the apical part of the tree (Villareal et al. 2011; Martínez-Rivero 2007). Then a score of 5 is considered conservative. Mitigation (M) Cochineal monitoring and control plans have been created by the project to standardize monitoring protocols in the Teak plantations to try to prevent and/or reduce its effects on the trees. The monitoring is done depending on a lot categorization – for example, lots may be categorized as being without reports of pests, having controlled pest status, or having [a large-number] of pests. Thus, mitigation discount applied of 0.5 is correct.	
Extreme weather: It shall be assessed using table 10 of the Risk tool.	LS*M=1	Significance and Likelihood (LS). Insignificant (less than 5% loss of carbon stocks) The successful survival of the Teak in the planted sites, given that Teak cannot survive flooding, is an indicator that the area of the project has a low flood risk. Mitigation (M): Not applied.	
Geological risks: It shall be assessed using table 10 of the Risk Tool.	LS*M=0	Significant and Likelihood (LS). o loss	No Corrective Actions or Clarifications was requested.

		With respect to earthquake risks, the project areas are in B and C zones, according to the seismic regions as defined by the Mexican Federal Electricity Commission (CEF). Likelihood frequency is not applicable. Thus, it is reasonable the value LS= 0 is considered correct. Mitigation (M): Not applicable.	
Total Natural Risks= 2.50+2.50+1+0= 6			
OVERALL RISK RATING: It shall be calculated according to table 11 of the Risk Tool.			
OVERALL RISK RATING= 7.80+0+6=14, then a minimum risk of 14% is considered.			

The non-permanence risk deduction to be applied for the project is 14%.

AENOR has checked that information provided in the Non Permanence Risk Report is consistent with documents of support provided. AENOR deems that information provided is reliable and appropriate, thus, the overall risk rating is credible and realistic.

4 SAFEGUARDS

4.1 No Net Harm

Potential negative environmental and socio-economic impacts as well as steps taken to mitigate them are described in the PD and the monitoring report.

The project is not expected to generate negative impacts on the environment and the community, as long as the proposed mitigation measures are followed. Support already exists for the non-harmful impacts of the project in the form of the certification for Environmental Compliance, which was granted to the project by the Secretary of Environment and Natural Resources.

Regarding social impacts, a summary of the social impacts of the project is presented in the PD. The main fear that employees expressed during the local consultation was the use of agrochemicals, for which protocols have been checked. In addition, AGSA complies with what is stipulated in the Official Mexican Standard for the use of agrochemicals and the guidelines established by the FSC.

Documents supporting this information were provided to AENOR and confirm the explanations.

4.2 Environmental Impact

According to the information checked by AENOR during the on-site visit an Environmental Impact Assessment is not legally required for the commercial forest plantations, they are exempted from this obligation since the paragraph VI of the Article 28, of the General Law of Ecological Balance and Environmental Protection in Mexico was cancelled.

Commercial forest plantations with sustainable management reduce the pressure on natural forests, protect soil, capture carbon and generate economic income for rural communities. Teak (*Tectona grandis*) is an important exotic species for commercial forest plantations in Mexico. The PD details the main impacts of the project with the mitigation activities in case negative effects, however, the balance of the impact is positive.

4.3 Local Stakeholder Consultation

The veracity of the local stakeholder consultation was verified during the on site visit. AENOR checked evidence of the different meetings carried out for information about the project in the project boundary. Evidence (Presentation of the stakeholders consultation, Surveys of the stakeholders consultation, Summary of the surveys comment) confirm that information in PD is credible and consistent.

Surveys were applied in the five municipalities where the plantations to be certified are located. In total, there were 77 surveys distributed: 57 to people who work in AGSA, 6 to people who work for a contractor that provides specialized services to AGSA, 7 to public officials and 7 to community members not affiliated with the company.

By means of documents reviewed and the interviews performed, AENOR considers that the summary of the comments received during the consultation process included in the PD is complete. The main conclusions of the meetings and opinions collected from meetings are included in the PD.

Hence, in the opinion of the AENOR team the local stakeholder consultation process was suitability performed.

4.4 Public Comments

Not applicable. However, during the validation and verification process public comments were not received in AENOR or noticed from VCS Staff about the project.

5 VERIFICATION FINDINGS

5.1 Accuracy of GHG Emission Reduction and Removal Calculations

All calculations of greenhouse gas emission reductions and removals were checked by the verifier. No errors were discovered that materially affect the stated greenhouse gas emission reductions and removals of the project. The methods used to estimate greenhouse gas benefits of the project were consistent with the methodology and the validated project document.

Baseline Scenario Emissions.

In this project the baseline Net GHG removals by sinks is zero as it is explained in this validation and verification report.

AENOR has checked and confirmed that this amount of baseline removals are zero and are in conformance and have followed the methodology in the P.D.

Calculation of Project Emissions.

The 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 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

Related to the changes in the carbon stocks in the project, are estimated in accordance with location planted area presented in the PD and the stratification presented on page 108 of the PD.

In Accordance with the “AR-ACM0003 A/R Large-scale Consolidated Methodology: Afforestation and reforestation of lands except wetlands Version 02.0”: If biomass distribution over the project area is not homogeneous, stratification should be carried out to improve the precision of biomass estimation. Different stratifications may be appropriate for the baseline and project scenarios in order to achieve optimal precision of estimation of net GHG removals by sinks. In particular:

So the actual net GHG removals by sinks the stratification for ex post estimations is based on the actual implementation of the project planting/management plan.

In the case of project area monitored for the period 2013-2016, the stratification has included the growth quality and the year of establishment, as stated in the below table:

Strata	Year of establishment	Area (ha)	Growth quality
I	2013	908.76	Excellent Clon
II	2013	130.78	High
III	2013	109.96	Excellent Seed
IV	2013	39.51	Mean
V	2014	1,168.64	Excellent Clon
VI	2014	38.02	Low
VII	2015	986.11	Excellent Clon
VIII	2015	136.38	High
IX	2015	28.07	Mean
X	2016	443.84	Low
XI	2016	174.37	Mean

In order to estimate the carbon stock in tree biomass at a point in time, the tool “Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities AR-TOOL14 Version 04.1” has been used and option b) has been selected “Estimation by measurement of sample plots”.

A plot biomass value has been estimated from direct measurements conducted on trees in the sampling plots.

Step 1: Volume estimation

The volume estimation depending on diameter and height has been calculated per tree depending on diameter and height is found using the Tamarit equation (Tamarit, 2013).

$$V = 0.000059 * DBH^{1.866203} H^{0.932461}$$

V = Tree volume; m³

DBH = Diameter at Breast Height; cm

H = Total height; m

According to the point 1.7 of the Methodological tool “Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities”, for ex-post estimation, the volume equation used must be demonstrated to be appropriate for the purpose of estimation of tree biomass by applying the tool “Demonstrating appropriateness of volume equations for estimation of aboveground tree biomass in A/R CDM project activities Version 01.0.1”. The equation used complies with the criteria presented in section 5.C: the equation was derived from a data set of at least 30 sample trees, and the value of coefficient of determination (R²) was not less than 0.85.

AENOR can confirm that equations are correctly used in calculations considering the different DBH measures.

Step 2: Biomass estimation

The estimation of tree biomass has been calculated according to equation 5 Appendix 1 of the AR-TOOL14:

$$b_{TREE} = [V_{TREE} \times D \times BEF_2] \times (1 + R)$$

b_{TREE} = Mean tree biomass per hectare in the tree biomass estimation
strata; t d.m. ha⁻¹

V_{tree}	=	Mean tree volume per hectare in the tree biomass estimation strata; m ³ ha ⁻¹
D	=	Basic wood density; t m ⁻³
BEF_2	=	Biomass Expansion Factor; dimensionless
R	=	Root-to-shoot ratio; dimensionless

Step 3: mean carbon stock estimation and mean carbon stock in terms of CO₂e

The estimation of the mean tree carbon per hectare in the tree biomass estimation strata was calculated according to equation 13 of the AR-Tool 14:

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

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

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

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; dimensionless
$b_{tree,i}$	=	Mean tree biomass per hectare in stratum i; t d.m. ha ⁻¹

The estimation of the uncertainty was calculated according to equation 15 of the AR-Tool14:

$$u_c = \frac{t_{VAL} \times \sqrt{\sum_{i=1}^M w_i^2 \times \frac{S_i^2}{n_i}}}{b_{tree}}$$

u_c = Uncertainty

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

w_i = Ratio of the area of stratum i to the sum of areas of tree biomass estimation strata; dimensionless

S_i^2 = Variance of tree biomass per hectare across all sample plots in stratum i ; (t d.m. ha⁻¹)

b_{TREE} = Mean tree biomass per hectare in the tree biomass estimation strata; t d.m. ha⁻¹

n_i = Number of sample plots in stratum i .

The estimation of the mean carbon stock in trees within the tree biomass estimation strata was calculated according to equation 12 of the AR-Tool 14:

$$C_{TREE} = \frac{44}{12} \times C_{tree}$$

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

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

The parameters used for the estimation of the tree estimation and the mean carbon stock are the following.

Parameter	Symbol	Value	Source
Basic wood density (t m ⁻³)	<i>D</i>	0.59	Rodríguez Anda, Fuentes T., & Silva Guzmán (2012)
Biomass Expansion Factor (dimensionless)	<i>BEF₂</i>	1.50	IPCC (2003)
Root-to-shoot ratio (dimensionless)	<i>R</i>	0.37	IPCC (2006)
Carbon fraction of tree biomass; t C (t d.m.) ⁻¹	<i>CF_{TREE}</i>	0.47	

Step 4: dead wood

A conservative default-factor value of 6% and 1% has been applied according to the precipitation range.

AENOR confirms that default values established were applied in calculations and they match with values determined at validation.

Step 5: Litter

A conservative default-factor value of 1% was applied.

AENOR confirms that default values established were applied in calculations and they match with values determined at validation.

Step 6: carbon stock in trees at a point of time

Change in the carbon stocks in the selected carbon pools in the year t have been calculated according to the AR-ACM0003 methodology:

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

- 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 . 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”; t CO₂-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”; t CO₂-e

As mentioned above, AENOR reproduced the calculations and deems that equations applied are appropriate as they correspond to the ones indicated in the PD monitoring section, default values to convert the Above to Below ground biomass and carbon fraction are also appropriately used.

AENOR verified that the project used the steps of the tool. The areas of land were stratified.

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 .

Increase in non-CO₂ GHG emissions ($GHG_{E,t}$) within the project boundary as a result of the implementation of the A/R VCS project activity in year t . as estimated in the Annex 31 “Estimation of non-CO₂ GHG emissions resulting from burning of biomass attributable to an A/R CDM project activity version 04.0.0”; t CO₂-e. Considering equation 1 of this tool:

$$GHG_{E,t} = GHG_{SPF,t} + GHG_{FMF,t} + GHG_{FF,t}$$

Where:

$GHG_{E,t}$ = Emission of non-CO₂ GHGs resulting from burning of biomass and forest fires within the project boundary in year t ; t CO₂-e

$GHG_{SPF,t}$ = Emission of non-CO₂ GHGs resulting from use of fire in site preparation in year t ; t CO₂-e

$GHG_{FMF,t}$	=	Emission of non-CO2 GHGs resulting from use of fire to clear the land of harvest residue prior to replanting of the land or other forest management. in year t; t CO2-e
$GHG_{FF,t}$	=	Emission of non-CO2 GHGs resulting from fire. in year t; t CO2-e
t	=	1.2.3. ... years counted from the start of the project activity

According to the tool "Estimation of non-CO2 GHG emissions resulting from burning of biomass attributable to an A/R CDM project activity", the emission of non-CO2 GHGs resulting from burning of biomass and forest fires within the project boundary in year t is an estimate based in three sources: were considered to be zero, as the project activities did not include the use of fires to prepare land. Considering the previous description, non-CO2 GHG emissions ($GHG_{E,t}$) are considered to be zero.

AENOR has checked the summary calculation spreadsheet and find it consistent with data in the PD, monitoring section and consistent with data presented.

Calculation of Leakage

The total amount applied in this monitoring report for leakage was = 0 ton CO2 –e.

For this monitoring period, the PPs provided evidence included in the project. Based on this evidence, the Leakage is reported to be zero.

Net GHG Emission Reductions and removals due to the project

According to equation 5 of the methodology AR-ACM0003 v2.0, net anthropogenic GHG removals by sinks shall be 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; t CO2-e
$\Delta C_{ACTUAL,t}$	=	Actual net GHG removals by sinks. in year t; t CO2-e
$\Delta C_{BSL,t}$	=	Baseline net GHG removals by sinks. in year t; t CO2-e
LK_t	=	GHG emissions due to leakage. in year t; t CO2-e

LK_t is considered as 0 according the above sections.

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

The following table summarizes the results:

The total GHG benefit calculated as the sum of stock changes along the monitoring period (30-06-2013 to 01-10-2017) is **198,325 tCO₂e**.

Year	Estimated baseline emissions or removals (tCO ₂ e)	Estimated project emissions or removals (tCO ₂ e)	Estimated leakage emissions (tCO ₂ e)	Estimated net GHG emission reductions or removals (tCO ₂ e)
2013	-	15,589	-	15,589
2014	-	-	-	-
2015	-	-	-	-
2016	-	66,108	-	66,108
2017	-	116,628	-	116,628
Total	-	198,325	-	198,325

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, P.D and methodology like the default values used to determine the parameters, they are appropriate. Thus, the net amount of VCUs 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 and the calculations.

AENOR verified the consistency and accuracy of each parameter detailed in the lists below by crosschecking the information in the M.R with the information in PD as well as checking values and

reproducing the calculations in the spreadsheets calculation package and did not find inconsistencies between them after the closing of CARs and CLs 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 validated at validation stage.

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

On the other hand the list of parameters monitored is the following:

- A. The project Area has been delineated on the ground using GPS, the value applied is 3,743.06.
- A_i. The Area of stratum I was delineated on the ground using GPS. Different values are applied in accordance with the stratified area.
- N. Number of plots established in the project area. Calculation of the sampling error has been provided to AENOR, since the error is less than 10%, more plots were not established. 202 permanent plots have been established.
- n_i. Number of plots to be established in each stratum. The value has been estimated using the total number of plots and the area of each stratum.
- Plot Location. The permanent sampling plots coordinates have been taken in the data field sampling. Monitoring, GPS, Shape plots are provided to AENOR.
- DBH. Data provided in ex post estimations.
- Height. Data provided in ex post estimations.
- T. Period elapsed between two successive estimations of carbon stock in trees and shrubs. t₂-t₁:2017-2013.

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 P.D.

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 is in compliance with the PD, the calculations provided and the applicable methodology. Then, the results showed in the monitoring report are reliable, consistency and accuracy.

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

5.2 Quality of Evidence to Determine GHG Emission Reductions and Removals

The actual GHG removals were calculated by applying standard operation procedures in measuring the PSPs. These plots were randomly selected and the sampling design is directly related with the number of strata. Monitoring crew members were trained before the monitoring event. The implementation of the inventory techniques is part of the training sessions. For measuring the diameter at breast height, the monitoring crews use measuring tapes.

Apart from the tape, other equipment are used in the measuring activities such as clinometers or GPS. These are detailed in the monitoring report. The GPS is very relevant in monitoring events. All the monitoring crews have one GPS in which all the project boundaries and PSP location appears as reference. Training to use the GPS is given in order to provide the monitoring crew members with the tools to make decisions in the fields.

AENOR has verified that monitoring crews implemented the monitoring plan as it is established in the validated P.D. AENOR also could evidence during on site 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 monitoring report and QA/QC procedures

AGSA will be responsible for the centralized documentation of all project planning and implementation. Quality assurance (QA) and quality check (QC) procedures will be implemented and 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 is held for all relevant personnel on all data collection and analysis procedures.

Steps are taken to control mistakes in sampling and data analysis in order to develop a credible plan for measuring and monitoring carbon stock change in the project. The same procedures shall be used throughout the project lifetime to ensure continuity:

- In the software used by the company (Mirasilv), there is a model which can review successive measurements of diameter and height to check their consistency. This is the first review that is done in the process.
- Furthermore, the forest auditor will issue a comparative report on the height of trees to provide investors with an independent opinion on the quality of the information. This will be based on measurements taken from 10 trees in a randomly-selected 10% of the land plots. If there are inconsistencies in the data with that of Mirasilv, a supervisor shall undertake a field-site revision of the data.

In this regard, during the field verification, the AENOR team witnessed the implementation of quality control when the PP cross checked the accuracy of the data collected in the field and also when the data was translated to the spreadsheets. The monitoring report described the QC/QA for data entry. An

important number of the total sheets were reviewed by AGSA and no errors were detected. 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 monitoring report.

Roles and responsibilities along with data management and archival system are also detailed in the monitoring report and other supported documents.

Interviews with the project proponent and inspection of data and results demonstrated that the project proponents possess all of the competencies required for reporting of GHG emissions reductions on 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 AGSA and AENOR considers that information provided is sufficiency and the quality of that information is appropriate to determine the GHG removals.

During the site visit, 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 stand growth.

6 VALIDATION AND VERIFICATION CONCLUSION

AENOR has performed the validation and the verification of the A/R Grouped project “Reforestation with Teak - CO2e TEAKMEX”, in Mexico, and has verified that the project is in compliance with the Verified Carbon Standard version 3.7 and the AFOLU requirements v.3.6 without qualifications or limitations. The project is located in Mexico and covers 4,011.96 hectares.

The validation and verification process was performed on the basis of all issues and criteria of VCS. The conclusions of this report show, that the project, as it was described in the project documentation, is in line with all criteria applicable for the validation and verification.

The verification assessment covered the monitoring period from 30 May 2013 to 01 October 2017 and verified that calculated emission reductions and/or removals were achieved during the monitoring period with a reasonable level of assurance.

AENOR is able to issue a positive verification opinion for the 198,325 tonnes CO₂e as reported in the Joint project description and monitoring report Monitoring Report for the reporting period 30 May 2013 to 01 October 2017.

Verification period: 30-06-2013 to 01-10-2017

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	VCUs
2013	-	18.127,58	-	18.127,58	2.537,86	15.589,72
2014	-	-	-	-		-
2015	-	-	-	-		-
2016	-	58.743,32	-	58.743,32	8.224,07	50.519,26
2017	-	58.743,32	-	58.743,32	8224,07	50.519,26
Total	-	135.614,23	-	135.614,23	18.985,99	116.628

Buffer: 14%

Date: 11 July 2019

José Luis Fuentes Pérez

Team Leader



APPENDIX I: LIST OF EVIDENCE PROVIDED

1. Final project document and monitoring report version 4 dated on 02 October 2018.
2. First P.D.
3. Applicable methodology and tools referenced in the final PD and the monitoring report.
4. GIS files.
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APPENDIX 2: FINDINGS

CAR ID	01	Section no.	1.13	Date: 03/05/2018
Description of CAR				
The project crediting period in section 1.6 of the PDD is not correct.				
Project participant response				Date: 01/07/2018
Section 1.13 "Eligibility criteria" was updated with the inclusion of the criteria required by VCS.				
Documentation provided by project participant				
Updated PD				
DOE assessment				Date: 17/07/2018
The CAR was closed. The PD was updated.				

CAR ID	02	Section no.	3.1	Date: 03/05/2018
Description of CAR				
Regarding section 3.1 of the PDD, the version tool (to estimate carbon stock in trees and shrubs) considered is obsolete. Moreover, the consideration of citrus plantation as trees or shrubs shall be clarified in the section in order to check the approaches followed, for example, the compliance with the applicability condition a) of the above tool for citrus baseline. In the grassland baseline bullet, the ex-ante assessment detailed is under project scenario but the approach under the baseline scenario is not provided nor do the conditions consider of the item 12 of the AR-TOOL 14. The assessment for the pools dead wood and litter, in the baseline scenario are not provided in section 3.1. •				
Project participant response				Date: 01/07/2017
The version of the tool used was 04.2; the mistake was corrected in the PDD. A clarification regarding the types of vegetation present in the project area before the start of the project activities was added to the section. An evaluation of item 12 of the AR-TOOL 14 was included.				
Documentation provided by project participant				
Updated PD				
DOE assessment				Date: 17/07/2018
The CAR was closed. The PD was updated.				

CAR ID	03	Section no.	4	Date: 03/05/2018
Description of CAR				
Regarding information shown in section 3.4 of the PDD and the emission reduction calculation spreadsheets, the following issues are detected:				
○ Provide data source or formula applied to determine the values of cells C13 and C14 of sheet “key data” in the spreadsheet “180115 ex ante estimations”. ○ ○ Provide information on how the diameter and height models and their coefficients in the sheet “modelos de calificación” of the spreadsheet “growth model” have been determined and what package of data are used to determine them. ○ The used of the Rj value (sheet “key data”, cell C7 and C8) in cells of columns F and G of the sheet “estimation” of “180115 ex ante estimations” is not correct. The Rj values are not applied appropriately considering the criterion > or < 75 tn/ha. ○ In Cells of column K of “estimation” sheet in “180115 ex ante estimation”, the formula for strata 2 is not correct (you are using values of column G instead of I). Moreover, clarify why a value of DFdw=6% is used for “high level” instead of 1% if the precipitation is not a criterion specified in table 10 of the PDD. ○ Cells in column N of “estimation” sheet in “180115 ex ante estimation” is not correct. (You are applying values of column G instead of I.) ○ Cells in columns P and Q (same sheets) are not correct. Strato 2 must be I+K+N and strata 3=H+L+M. ○ Values in column AA are not correct (strata 3 is considered), AB (it happens the same), AC (strata 2 is considered), AD, AE (it happens the same). ○ In the column AT are discounted the citrus baseline emissions, but value considered is per hectare not for the whole area of the farms. ○ In the columns X,Y,Z the first 18 years cycle is not complete. The last year is not considered. And for the second cycle of 18 years the corresponding years until 2049 shall be provided in the spreadsheets. Please, review this matter from X to AE column. ○ Cell AO39 of the “estimations” sheet shows value =1. Please, clarify it. ○ The data of cells AR5 and AR6 of the “estimation” sheet are obtained using 1053,06 hectares and 1150,56 ha in 2014 and 2015 respectively. However, these data that also figure in “key data sheet” do not match with the hectares in table 10 of the PDD. Hence, clarify or correct this matter. ○ The formulas in cells of column AT of “estimation sheet” do not include the leakage term. They shall be included although its value is zero. ○ The Long Term Average is not correctly calculated as requested by the AFOLU standard. the formula is not correct from cell AU7 of the “estimation sheet”.				
Project participant response				Date: 01/07/2017
The formula in the cells of the different columns were updated with the correct value. The carbon estimations file was updated. Citrus plantation carbon stock was considered under project emissions, not baseline emissions. The value applied consisted of the multiplication of the carbon stock per hectare by the total area of the strata.				
Documentation provided by project participant				
Updated PD and calculations.				
DOE assessment				Date: 17/07/2018
The CAR is closed. After checking information in the Excel and cross-checked with the PD, spreadsheets and other supporting documents, values and formulas are correct and consistent.				

CAR ID	04	Section no.	5	Date: 10/09/2018
Description of CAR				
The monitoring period does not coincide with the Excel provided and the Monitoring Report				
Project participant response				Date: 17/09/2018
The Monitoring Report has been modified.				
Documentation provided by project participant				
Updated PD and Monitoring Report.				
DOE assessment				Date: 22/09/2018
The CAR is closed. After checking information in the PD, spreadsheets and other supporting documents, values and formulas are correct and consistent.				

CL ID	01	Section no.	1.9	Date: 03/05/2018
Description of CL				
Regarding the project location and project boundary description in section 1.9 of the PDD: -The number of instances to be included at validation shall be clarified. -The grouped project area shall be identified in the KMZ file and a clear traceability shall be provided by means of codes or whatever between farms in the KMZ file and maps provided for each farm. -The number and location of original farms with citrus at the baseline shall be clearly identified in the PDD description.				
Project participant response				Date: 01/07/2018
A new column with the name of the property (farm) was added to the shape of the project area. The property name is the same in the shapefile and in the PDF maps. The KMZ file was updated with the last version of the project area shapefile.				
Documentation provided by project participant				
Project area shapefile				
DOE assessment				Date: 17/07/2018
The CL is closed. Assessment is reasonable and reliable evidence has been provided.				

CL ID	02	Section no.	1.11	Date: 03/05/2018
Description of CL				
It shall be provided further clarifications, explanations regarding the fulfilment of the project activity with the legal requirements, laws, statutes... as the joint PDD and M.R template requires in section 1.11.				
Project participant response				Date: 01/07/2018
Section 1.11 was updated.				
Documentation provided by project participant				
P.D version 03				
DOE assessment				Date: 17/07/2018
The CL is closed. Assessment is reasonable and reliable evidence has been provided.				

CL ID	03	Section no.	1.9	Date: 03/05/2018
Description of CL				
Regarding the project ownership, further information shall be provided to demonstrate the fulfilment with the requirement of section 3.4.10 5) of the VCS Standard : 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).				
Project participant response				Date: 01/07/2018
Section 1.12.1 was updated. The evidence of project ownership for each project activity instance, held by AGSA from the respective start date of each project activity instance, is presented as a supporting document [Supporting documents\Land tenure\Properties titles]. All the properties were acquired before the establishment of the plantation. The document [Supporting documents\Land tenure\Proof of ownership\Proof of ownership\Relationship_acquisition_plantation year] presents the relationship between the year of the plantation's establishment and the acquisition of the properties for the locations visited in the validation site-visit. In the folder [Supporting documents\Land tenure], the land titles of the properties visited are presented, and the property owner and the year of acquisition are highlighted in all documents. .				
Documentation provided by project participant				
The document [Supporting documents\Land tenure\Proof of ownership\Proof of ownership\Relationship_acquisition_plantation year]				
DOE assessment				Date: 17/07/2018
The CL is closed. Assessment is reasonable and reliable evidence has been provided.				

CL ID	04	Section no.	1.13	Date: 03/05/2018
Description of CL				
Provide evidence of the environmental certification by PROFEPA related to the SDG 15 included in section Sustainable Development of the PDD.				
Project participant response				Date: 01/07/2018
Section Sustainable Development was updated with a footnote: Proof of certification is presented as supporting document [				
Documentation provided by project participant				
Supporting documents\PROFEPA certification				
DOE assessment				Date: 17/07/2018
The CL is closed. Assessment is reasonable and reliable evidence has been provided.				

CL ID	05	Section no.	4.3.2.1.	Date: 03/05/2018
Description of CL				
Information about the uncertainty calculation shall be provided in regard to the application of the AR-TOOL 14.				
Project participant response				Date: 01/07/2018
According to section 8.2 of the AR-Tool 14, ex-ante estimations of carbon stock in tree biomass are not subjected to uncertainty controls, although project participants should use the best available data and models that apply to the project site and the tree species. For the ex-ante estimation of this project, an own volume model for the project site and species was used. Thus, an uncertainty assessment was not required.				
For ex-post estimations, the uncertainty result was less than 10%. This implies a discount of 0% on the carbon estimates. Information about the uncertainty assessment was added to the Project Description (see section 4.3.2.1, sub-title: "Uncertainty assessment") and the calculations were added to the sampling error Excel file, which was renamed as				
Documentation provided by project participant				
Excel file " SamplingError&Uncertainty ".				
DOE assessment				Date: 17/07/2018
The CL is closed. Assessment is reasonable and reliable evidence has been provided.				

CL ID	06	Section no.	1.13	Date: 03/05/2018
Description of CL				
Section 4 of the PDD, item 4.1 considers "volume model" as parameter fixed at validation, however, it details the Tamarit equations.				
On the other hand in the item 4.2, as a parameter to be monitored appears "volume equation" also considering the Tamarit equation.				
Therefore, more clarification shall be provided regarding what it is fixed and what must be monitored and could change.				
Project participant response				Date: 01/07/2018
There was a mistake in the PD. The equation that is adjusted each year is the growth model (with time as the independent variable). The volume model is a fixed parameter and will not be modified during the verification, unless a new study is carried out in the project area. Section 4.2 was modified and the table for parameter "volume" was removed.				
Documentation provided by project participant				
PD Version 03				
DOE assessment				Date: 17/07/2018
The CL is closed. Assessment is reasonable and reliable evidence has been provided.				

