



MAHOGANY PLANTATION IN INDIA



Document Prepared by Carbon Check (India) Private Limited

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Summary:

Description of the project

The VCS project “Mahogany Plantation in India” is a grouped ARR project with a first project instance covering 165.41 hectares. As per the VCS PD, the grouped project envisages 15,000 hectares during the crediting period across five states namely Maharashtra, Telangana, Gujarat, Madhya Pradesh and Karnataka of India. The plantation of single tree species i.e., *Swietenia macrophylla* (Mahogany) is carried out by multiple farmers on their privately owned land.

In the first PAI, 2019 and 2020 plantation has been completed at 315 scattered land parcels aggregating to 165.41 hectares^{/01/10/} under project area. PP has intended to complete the plantation in future PAIs by the year 2024. The project is expected to create an additional source of income for the subsistence farmers through the sale of plant and produce and carbon credits. Mahogany is also beneficial in agroforestry system reducing the risk of crop failure and increasing soil fertility and carbon sequestration.

The project is designed in compliance with the CDM methodology AR ACM0003: Afforestation and reforestation of lands except wetlands v2.0^{/B02/}. The two carbon pools selected for the project are: Above ground biomass (AGB) and Below ground biomass (BGB)^{/01/02/}.

Description of the validation and verification

Mahogani Vishwa Agro Private Limited (“hereafter referred to as PP”) has appointed Carbon Check (India) Private Limited to carry out the Joint Validation and 1st periodic verification of the grouped project and 1st PAI of “Mahogany Plantation in India” with regards to the relevant requirements of VCS Standard version 4.4^{/B01/}.

The joint validation & verification was performed for the following timelines:

Table I: Dates & Timelines of VCS grouped project

Start date	28 th June 2019
Crediting period	28 th June 2019 – 27 th June 2049 (30 years)
First monitoring period	28 th June 2019 – 13 th October 2022
Date of monitoring	06 th October 2022 – 13 th October 2022

Purpose and scope of validation and verification

The purpose of the validation and verification is the independent evaluation of the project’s compliance with the VCS Standard v4.4^{/B01/}, in particular, the grouped project eligibility^{/01/}, project’s baseline^{/11/12/}, monitoring plan^{/01/16/}, project implementation^{/01/16/}, carbon captured by the project^{/02/}, methodology requirements^{/B02/} and compliance with the relevant VCS^{/B01/} and host party criteria. These are validated and verified in order to confirm that the project design, as documented, is sound and reasonable and meets the identified criteria and the project has been implemented in compliance with the monitoring plan stated in the VCS Joint PD & MR^{/01/}. Carbon Check’s objective is to perform a thorough, independent assessment of the validation and verification of the grouped project.

Validation and Verification scope is defined as an independent and objective review of the VCS Joint Project Description & Monitoring Report^{/01/} against the relevant criteria and guidance documents provided by VCS including the following ^{/B01/}:

- VCS Program Guide (v4.3, dated 17/01/2023)
- VCS Standard (v4.4, dated 17/01/2023)
- Program Definitions (v4.3, dated 21/12/2022)
- Registration & Issuance Process (v4.3, dated 17/01/2023)
- AFOLU Non-Permanence Risk Tool (v4.0, dated 19/09/2019)
- VCS Validation and Verification Manual (v3.2, dated 19/10/2016)
- AFOLU Guidance: Example for Calculating the Long-Term Average Carbon Stock for ARR Projects with Harvesting.

Based on the requirements above, the VVB has assessed if the project meets the applicability criteria of the selected baseline and monitoring methodology, “AR-ACM0003: Afforestation and reforestation of lands except wetlands -Version 02.0”^{/B02/}. VVB has also assessed the claims and assumptions made and further achieved in the VCS Joint PD & MR^{/01/} in accordance with the monitoring plan provided in the VCS Joint PD & MR^{/01/}.

Method and criteria used for validation and verification

To conduct the validation and verification audit, Carbon Check (India) Private Limited (CC IPL) conducted an assessment including a desk review of the Joint Project Description & Monitoring Report^{/01/} and supporting documents in compliance with the requirements stated in the VCS Validation and Verification Manual v3.2^{/B01/}. Thereafter, verified the details and information from VCS Joint PD & MR^{/01/} by conducting an on-site inspection from 21st December 2022- 24th December 2022.

Numbers of findings raised during validation and verification APPENDIX 2: FINDINGS LOG

During the joint validation and verification, a total of 38 findings have been raised, which includes 18 Corrective Action Requests (CARs), 19 Clarification Requests (CLs) all of which are satisfactorily closed and 01 Forward Action request (FAR) which will be addressed during the next verification.

Any uncertainties associated with the validation and verification

No uncertainty associated with the project implementation and calculations of GHG removals have been observed by the VV team.

Summary of the validation and verification conclusions

Based on the on-site inspection and the review of the VCS Joint PD & MR^{/01/} and supporting documents, the CC IPL team confirms that the project Joint PD & MR^{/01/} has been developed taking appropriate assumptions and values in compliance with the requirements of VCS Standard v4.4^{/B01/} and the applied methodology^{/B02/}. Also, the VV team, based on the review of VCS Joint PD & MR^{/01/}, confirms that the project has been implemented in line with the VCS requirements^{/B01/}, methodology requirements^{/B02/} and monitoring plan stated in the VCS Joint PD & MR^{/01/}.

Carbon Check (India) Private Limited has been commissioned by the Mahogani Vishwa Agro Private Limited to perform joint validation and verification of VCS Grouped Project and 1st Project Activity Instance “Mahogany Plantation in India”. The project monitoring activities were conducted by the PP from 06th October 2022- 13th October 2022.

Validation conclusion: In accordance with the requirements of VCS Standard v 4.4^{/B01/} and the methodology applied AR-ACM0003 v2.0^{/B02/}, the validation and verification team confirm that all the values and assumption included in the VCS Joint PD & MR^{/01/} including objectives, scope and criteria, level of assurance, baseline and monitoring plan are valid and applicable.

Verification conclusion: The VVB, based on the on-site inspection and the review of documents including VCS Joint PD & MR^{/01/}, confirms that the project implementation and the calculation of carbon^{/03/} captured by the project are in accordance with:

- ✓ Monitoring plan and other assumptions stated in the VCS Joint PD & MR^{/01/}
- ✓ Applied CDM methodology, AR-ACM0003 v 2.0^{/B02/}
- ✓ Host country regulations^{/09/}

Table II: Ex-ante carbon^{/02/} estimated and ex-post carbon^{/02/} (excluding buffer pool) sequestered by the project:

Year	Estimated (ex-ante) carbon sequestration	Achieved (ex-post) carbon sequestration
28 th June 2019 – 13 th October 2022	7,981 tCO ₂ e (on pro-rata basis for the reported monitoring period).	4,280 tCO ₂ e
•		

ABBREVIATIONS

AGB	Above Ground Biomass
AFOLU	Agriculture, Forest and other Land Use
ARR	Afforestation, Reforestation and Revegetation
BEF	Biomass Expansion Factor
BGB	Below Ground Biomass
CAR	Corrective Action Request
CC IPL	Carbon Check (India) Private Limited
CO_{2e}	Carbon Dioxide Equivalent
CL	Clarification Request
DBH	Diameter at breast height
DW	Dead Wood
GIS	Geographical Information System
KML	Keyhole Markup Language
LTA	Long-term Average
LULC	Land Use Land Cover
LULUCF	Land use, Land-use Change, and Forestry
DVR	Draft Verification Report
FA	Final Approval
FAR	Forward Action Request
FSI	Forest Survey of India
FVR	Final verification Report
GHG	Greenhouse gas(es)
IPCC	Intergovernmental Panel on Climate Change
IR	Internal resource
MP	Monitoring Period
MVAPL	Mahogani Vishwa Agro Private Limited
MR	Monitoring Report
PAI	Project Activity Instance
PD	Project Design
PP	Project Proponent

QC/QA	Quality control /Quality assurance
SOC	Soil Organic Carbon
TA	Technical Area
TR	Technical Review
VVB	Validation & Verification Body
VVS	Validation and Verification Standard
VCS	Verified Carbon Standard
VCU	Verified Carbon Unit

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1 INTRODUCTION

1.1 Objective

The purpose of this report is to document the compliance of the VCS grouped project “Mahogany Plantation in India” (hereafter referred to as “project”) with the requirements of the Verified Carbon Standard (VCS)^{/B01/} and the applied CDM methodology^{/B02/}. As per the VCS Joint PD & MR^{/01/}, the project is owned by *Mahogani Vishwa Agro Private Limited* (hereafter referred to as “PP”) which is a 100% subsidiary of *MITCON Nature Based Solutions Limited* and has been co-implemented by *MITCON Consultancy & Engineering Services Limited*.

As per the VCS Joint PD & MR^{/01/}, VVB has ascertained the following on the VCS project:

VCS category	Afforestation, Reforestation and Revegetation (ARR)
Applied methodology	CDM Methodology “AR-ACM0003: Afforestation and reforestation of lands except wetlands -Version 02.0” ^{/B02/}
Sectoral scope	14: Agriculture, Forest and other Land Use (AFOLU)

The validation and verification objective of the project includes:

- ✓ Assessment of compliance with the VCS Program Guide^{/B01/}, VCS Standard version 4.4^{/B01/} and other relevant VCS requirements^{/B01/}.
- ✓ Assessment of compliance with the applied CDM methodology AR-ACM0003 version 2.0^{/B01/}.
- ✓ Assessment of project compliance with the relevant rules including host country legislation^{/09/}.

1.2 Scope and Criteria

Scope of Validation: The scope of validation is to assess the conformance of the VCS Joint PD & MR^{/01/} and other relevant supporting documents against the VCS requirements^{/B01/} and applied methodology^{/B02/} and tools^{/B03/}, including the assessment of:

- ✓ Physical infrastructure, activities, technologies and processes of the VCS project^{/16/}
- ✓ Project’s physical boundaries^{/01/10/}
- ✓ Project ownership^{/07/}
- ✓ GHG sources, sinks and/or reservoirs
- ✓ Grouped project eligibility for the inclusion of PAI^{/01/}

- ✓ Eligibility of 1st PAI in line with grouped project inclusion criteria^{/01/}
- ✓ Growth and yield models^{/17/}
- ✓ Stakeholder involvement^{/15/}
- ✓ Environmental impacts
- ✓ Baseline and additionality justification^{/01/11/12/}
- ✓ Sustainable development contributions^{/01/14/}
- ✓ Monitoring plan^{/01/16/} and
- ✓ Estimated GHG removals and long-term average calculation^{/01/02/}

Scope of verification: The scope of the verification includes:

- ✓ VCS Project implementation
- ✓ Application of methodology and tools^{/B02/B03/}
- ✓ Time period covered/ duration of monitoring period^{/01/02/}
- ✓ Achieved GHG removals and long term average ex post calculation^{/01/02/}
- ✓ Adherence to the monitoring plan and SOPs^{/16/}

The validation and verification criteria follow the guidance documents provided by VCS including the following^{/B01/}: VCS Standard version 4.4, VCS Program Guide version 4.3, AFOLU Non- Permanence Risk Tool version 4.0 and the applied CDM methodology AR-ACM0003 – “Afforestation and reforestation of lands except wetlands” (version 2.0)^{/B02/}.

1.3 Reasonableness of Assumptions and Level of Assurance

For both ex-ante and ex-post carbon calculation, the allometric equation is derived for *Swietenia macrophylla* by Mahmood Hossain et.al (2020) with R2 value of 0.974. VVB has verified the applicability of the equation to check the conservativeness of the removal rates. VVB confirms that the allometric equation, used in the ex-ante and ex-post carbon calculation sheet^{/02/}, provides a direct biomass calculation for AGB. The MAI values for DBH and height has been derived from the research project coordinated by Centre for International Forestry Research (CIFOR) with focus on Indonesian sites at Java and Nusa Tenggara. VVB has verified the sources^{/17//20//B05/} and concludes that the assumptions made are reasonable as the project activity and the reference project area (Central Java) have similar edaphic-climatic conditions^{/B05/}. VVB confirms that the allometric equation, used in the revised carbon calculation sheet, provides a direct biomass calculation.

For the ex-ante estimate, PP has provided justification for the plausibility of carbon removal rate (per ha per year), VVB further confirms that the removal rates is deemed conservative.

As per the literature study, **“Carbon Sequestration by Large Leaf Mahogany (*Swietenia macrophylla* King.) Plantation in Mount Makiling Forest Reserve, Philippines: A Decade After”, by Elenita L.R. et.al (2019)** the sequestration rate has been indicated as 81 Mg ha⁻¹ yr⁻¹ or 81 tCO₂eq ha⁻¹ yr⁻¹.

Furthermore, another study referred by the PP, **“Vegetation structure, aboveground biomass, and carbon storage of wono, a local forest management in Gunungkidul, Yogyakarta, Indonesia, across three geomorphological zones”, by Tohirin et.al (2021)**, indicate sequestration of carbon sequestration of **398 tCO₂eq /ha/year**.

The above studies, provided by the PP, includes plantation of *Swietenia macrophylla* (Mahogany), which is the species of the project.

VVB based on review of ex-ante carbon spread sheet, confirms that the project removal rate is v21.1 tCO₂e (ex-ante estimate). VVB could not able to find any specific research on the carbon removal potential of species *Swietenia macrophylla* (Mahogany) in India. However, based on the assessment above, sectoral expertise and review of removal rate of project, VVB concludes that the allometric equation applied is appropriate and the carbon calculation from the project yields a plausible value and thus acceptable to the VVB.

The assessment for verification is 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.

1.4 Summary Description of the Project

The VCS ARR grouped project aims at plantation of Mahogany trees (*Swietenia macrophylla*) by farmers on their own private lands which facilitates them with revenue from carbon credits at same time providing sustainable plantations and income through sale of plant produce (seeds, timber). The project has demonstrated compliance with the approved CDM Afforestation and Reforestation methodology, AR-ACM0003 (version 2.0)^{B02/}. The future PAIs of the grouped project would be located in Maharashtra, Telangana, Madhya Pradesh, Gujarat and Karnataka States of India with a planned area of 15,000 hectares.

VVB, based on the review of the revised Joint VCS PD & MR^{/01/}, confirms that the first PAI only covers 165.41 hectares and the calculations and assessment have been conducted for the area under first PAI. The Joint VCS PD & MR^{/01/} refers 15,000 ha, only as a plan for the entire grouped project, which has no material impact on the validation and 1st periodic verification of this grouped project and the first PAI at time of initial registration/issuance.

The stratification for the first PAI is based on the planting design and year of planting and is homogenous due to monoculture plantation (Mahogany) and same type of soil conditions. Thus, the biomass distribution over the project area under first PAI is homogenous. The area of the 1st PAI, as per Strata, is as follows:

Project Stratification		
Plantation Year	Strata	Area (Ha)
2019	Strata 1	12.26
2020	Strata 2	153.15
	Total:	165.41

In pre-project scenario, the agricultural lands owned by farmers are used for traditional farming and shall be used for Project Activity with continuation of traditional farming following an agroforestry system. This was verified by VVB during the on-site inspection and interviews^{/III-01-III-28/}.

Based on the review of the contractual agreements^{/06/}, the revised Joint PD & MR^{/01/} and the on-site inspection interviews^{/III-01-III-28/}, VVB confirms that the replantation of Mahogany saplings will be carried out after harvesting. VVB has also assessed the SOP for Mahogany Plantation Management Plan^{/16/}, which includes the procedure of replantation of saplings after harvesting. VVB confirms that the farmers and PP are contractually obligated for a period of 30 years and will carry out verification audits every 5 years for the remaining years of the project by the clause of renewal of contract^{/06/}. Furthermore, after harvesting the tree will be replanted, this is also mentioned in clause 4/b of the contract^{/06/} with terminology "regeneration" referring to replanting or artificial regeneration.

As per the VCS Joint PD & MR^{/01/}, the estimated carbon sequestration for the 1st PAI has been calculated as total 230,982 tCO₂e^{/01/02/} for the 30 years period (7,699 tCO₂e annually) and during the reported first monitoring period^{/01/}, the project involves actual net GHG removals^{/02/} of 4,280 tCO₂e^{/02/} (excluding buffer). The LTA^{/01/02/} works out to be 94,413 tonnes of CO₂eq, checked and confirmed by the VVB for both strata.

The grouped project (including the first PAI) reported in the VCS Joint PD & MR^{/01/}, the following two carbon pools:

- Above ground biomass (AGB)
- Below ground biomass (BGB)

2 VALIDATION AND VERIFICATION PROCESS

2.1 Method and Criteria

The joint validation & verification of the project includes the following assessment activities:

- ✓ Contract review & signing
- ✓ Appointment of team members based on competencies
- ✓ Assessment planning
- ✓ Desk review on VCS Joint PD & MR^{/01/}, carbon sequestration calculation sheets (Ex ante & Ex post)^{/02/} and other documents
- ✓ A review of data and information presented by the PP to verify their completeness
- ✓ A review of the monitoring plan and monitoring methodology paying particular attention to the frequency of measurements, the competency of personnel performing the monitoring and the QA/QC procedures
- ✓ An evaluation of data management and the QA/QC system in the context of their influence on the generation and reporting of GHG removals by sink
- ✓ Interviews with the stakeholders and local stakeholder meeting(s) during the on-site inspection
- ✓ Reporting and recording of assessment
- ✓ Findings and their closure APPENDIX 2: FINDINGS LOG
- ✓ Additional validation/verification activities
- ✓ Submission of final report

A project specific validation and verification plan was developed to guide the auditing process to ensure efficiency and effectiveness. The purpose of the validation and verification plan is to present a risk assessment for determining the nature and extent of validation and verification procedures necessary, thus reducing the risk of auditing error to a reasonable level.

The evidence gathering plan was followed by VVB to lower the risk to an acceptable level. The techniques used by VVB for validation is as follows:

- ✓ Inquiry
- ✓ Analytical testing
- ✓ Confirmation
- ✓ Recalculation
- ✓ Examination
- ✓ Retracing
- ✓ Sampling

- ✓ Cross-checking
- ✓ Reconciliation

The validation and verification of the VCS Joint PD & MR^{/01/} were conducted in compliance against the requirement documents as stated in VCS documents^{/B01-B03/}.

VCS Validation and Verification Time Frame:

A time frame envisaged for this assignment is as follows:

Milestone description	Time
Date of contract signing with the VVB	15 th March 2022
On-site Audit	21 st December 2022 – 24 th December 2022

Sampling Plan

Verification Approach: Acceptance Sampling (ASP)

VVB had adopted a standard method of calculating sample size by Morris Hamburg (Hamburg, 1985) using precision level, confidence level and response distribution for determining the sample size. VVB opted for 10% precision level and 90% confidence level in determining the VVB's sample size. Accordingly, 08 samples were taken from the entire plantation area for the current monitoring period with pro-rata sample size calculated based on sample size taken by the PP (i.e., weightage of sample size for a project area taken by PP) multiplied by the VVB sample size.

Sr. No.	Strata (Based on year of planting)	Sampling Area	Weightage Of Plantation Area to Total Area	PP Sample Size	VVB Sample Size
1	I - 2019	43.75	0.18	15	08
2	II - 2020	198.77	0.82	29	

The stratification for the first Project Activity Instance is based on the year of plantation, however, considering the vast area of project spreading in different states of India including Maharashtra, Karnataka and Telangana, VVB has conducted a risk assessment to account for all states with different climatic conditions and topography. VVB has observed that the sample plot area distribution per state is as follow:

Locations	Area (ha)
Maharashtra	164.21
Karnataka	0.40
Telangana	0.80
TOTAL	165.41

The total plantation area of the project is 165.41 ha, out of which, Maharashtra accounts for 164.21 ha and thus around 99.3 % of the area. In view of this, VVB ascertains that stratification based on year of plantation is appropriate and thus acceptable.

Validation & Verification Team

Sr. No.	Role	Type of Resource	Last Name	First Name	Affiliation (e.g., name of central or other office of VCS Validator and Verifier or Outsourced entity)	Involvement in			
						Desk/document review	On-site inspection	Interviews	Joint Validation & Verification findings
1.	Team Leader	IR	Singh	Vikash Kumar	CC IPL	x	x	x	x
2.	Team member	IR	Kapoor	Isha	CC IPL	x	x	x	x
3.	Trainee Assessor	IR	Saklani	Lalit Mohan	CC IPL	x	x	x	x
4.	Trainee Assessor	IR	Vempally	Prashanth	CC IPL	x	x	x	x
5.	Technical Expert	IR	Chirikandoth	Dr. Anil Panolil	CC IPL	x			x

Technical reviewer and approver of the Joint Validation & verification report

Sr. No.	Role	Type of Resource	Last Name	First Name	Affiliation (e.g., name of central or other office of VCS Validator and Verifier or Outsourced entity)
1.	Technical Reviewer	IR	Anand	Amit	CC IPL
2.	Expert to Technical reviewer	EI	Foster	Bryan	CC IPL

2.2 Document Review

During the document review, CC IPL has applied standard auditing techniques to assess the quality of information provided. The joint validation and verification were performed primarily based on the review of the VCS Joint PD & MR^{/01/} and the supporting documentation.

For validation, this process includes:

- A review of data and information presented to verify completeness and consistency in accordance with VCS Standard (version 4.4)^{/B01/} requirements.
- A review of the Joint project description & monitoring report^{/01/} monitoring methodology^{/B02/}, paying particular attention to the applicability conditions of the methodology, baseline and additionality related requirements.
- A review of the monitoring plan and the project's compliance with relevant VCS criteria^{/B01/}

For verification, this process includes:

- A review of data and information presented by the PP to verify their completeness.
- A review of the Monitoring plan and monitoring methodology, paying particular attention to the frequency of measurements, the competency of personnel performing the monitoring, and the QA/QC procedures, and
- An evaluation of data management and the QA/QC system in the context of their influence on the generation and reporting of GHG removals by sink^{/03/}.

The VCS Joint PD & MR^{/01/} was initially reviewed and CC IPL requested the PP to present the supporting information and documents. Through the assessment process, the supporting documents were evaluated, and CARs and CLs were raised by the assessment team to confirm the actions taken by PP.

Refer to table in APPENDIX 2: FINDINGS LOG outlining the documentation reviewed during the Joint Validation & verification process.

2.3 Interviews

The table III below describes the on-site inspection interview process and further identifies personnel, including their roles, who were interviewed and/or provided information additional to that provided in the VCS Joint PD & MR^{01/} and any supporting documents.

During the on-site inspection, some farmers/landowners were interviewed on the VCS project and status of their plantation. The opening meeting was conducted at Mahogani Vishwa Agro Private Limited, Pune office with MVAPL team and the MITCON team.

The closing meeting was held with the team of MITCON Consultancy and Mahogani Vishwa Agro Pvt Ltd team on 24th December 2022.

Table III: Project representatives and stakeholders interviewed

Sr. No.	Interview			Date	Subject	Team Member
	Last name	First name	Affiliation			
/III-01/	Shelke	Bhagatsing	MD, MVAPL	21 st December 2022 – 24 th December 2022	- PP's roles and responsibilities. - Baseline scenario. - Project implementation. - Future project plans.	Vikash Kumar Singh, Isha Kapoor, Lalit Saklani & Vempally Prashanth
/III-02/	Chalwade	Anand	MD, MITCON	21 st December 2022 & 24 th December 2022	- Organization structure, roles and responsibilities. - Non-Permanence risk Assessment	
/III-03/	Joshi	Harshad	COO, MITCON	21 st December 2022 & 24 th December 2022	- Ownership of land titles - Ownership of carbon credits	

/III-04/	Marghade	Dhawal	Assistant Vice President, MITCON	21 st December 2022 – 24 th December 2022		
/III-05/	Shelke	Sonali	Director, MVAPL	21 st December 2022 – 24 th December 2022		
/III-06/	Lavate	Mahesh	MVAPL	21 st December 2022 – 24 th December 2022		
/III-07/	Jorvekor	Nilesh	Project Consultant, MITCON	21 st December 2022 – 24 th December 2022		
/III-08/	Bheegou	Rohini	MVAPL	21 st December 2022 & 24 th December 2022		
/III-09/	Haral	Ganesh	Director, MVAPL	21 st December 2022 – 24 th December 2022		
/III-10/	Gowde	Vittal	Farmer	21 st December 2022	• Ownership of landtitles • Ownership of carbon credits • Baseline scenario. • Local stakeholders meeting. • Project implementation • Input and grievance	
/III-11/	Shripathi	Bappurao	Nursery owner, Kalash	21 st December 2022		

/III-12/	Panwar	Krishna Dattu	Farmer, Bhelwadi	21 st December 2022	- mechanism - No-Net Harm Assessment - Non-Permanence Risk Assessment	
/III-13/	Athmaram Jadhav	Praveen	Farmer, Avsari	21 st December 2022		
/III-14/	Gaikwad	Yuvraj	Farmer, Avsari	21 st December 2022		
/III-15/	Shinde	Prasad	Farmer, Avsari	21 st December 2022		
/III-16/	Khatke	Narayan Eknath	Farmer, Jalalpur	22 nd December 2022		
/III-17/	Prakash	Sachin	Farmer, Jalalpur	22 nd December 2022		
/III-18/	Bappurao Debre	Ankush	Farmer, Godegav	22 nd December 2022		
/III-19/	-	Eknath	Farmer, Godegav	22 nd December 2022		

/III-20/	Thore	Pandarinath	Farmer, Jalgao	23 rd December 2022		
/III-21/	Gite	Sominath	Farmer	23 rd December 2022		
/III-22/	-	Babasaheb	Agronomist	23 rd December 2022		
/I-II23/	Dawhare	Santhosh	Agronomist	23 rd December 2022		
/III-24/	Morre	Dileep	Agronomist	23 rd December 2022		
/III-25/	Mere	Krishna	Agronomist	23 rd December 2022		
/III-26/	More	Kaiuttam	Farmer	23 rd December 2022		
/III-27/	Gaikwad	Varsha Balu	Farmer, Karodi Aurangabad	23 rd December 2022		

///I-28/	Somnath	Raut	Farmer, Limgaon	23 rd December 2022		
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2.4 Site Visits

The joint validation and verification on-site inspection was conducted from 21st December 2022 to 24th December 2022. A ground truthing of the project area was conducted during the on-site inspection and members of the CC IPL Team visited sample plots selected randomly by the VVB. VVB, has conducted acceptance sampling across the 8 PSPs within the project boundary of 1st PAI. VVB confirms that no material discrepancy has been found. However, a finding was raised regarding the QA/QC procedures which has been satisfactorily addressed by PP and VVB has closed the finding.

The stratification for the first Project Activity Instance is based on the year of plantation, however, considering the vast area of project spreading in different states of India including Maharashtra, Karnataka and Telangana, VVB has conducted a risk assessment to account for all states and conducted its own sampling of the random samples in the PSP's of state of Maharashtra. The total plantation area of the first project activity instance is 165.41 ha, out of which Maharashtra accounts (more than 99 % of the total area) predominantly for land parcels under plantation. In view of this, VVB's sampling only in the state of PSP's of Maharashtra is appropriate.

Table IV: Sample sites visited by VVB^{/05/}

Sr. No	Sample plot ID number	Farmer name
1	C-3	Ankush Debare
2	C-4	Narayan Eknath Khatke
3	C-5	Prasad Shinde
4	C-7	Yuvraj Gaikwad
5	C-8	Krishna Panwar
6	AAK 275	Varsha Gaikwad
7	APL 325	Somnath Raut
8	APK 285	Pandharinath Thore



VVB during the site visit along with sample plots also visited the nursery that is primarily supplying the seedlings of Mahogany in the project area.

Sampling/Verification Plan:

In order to ensure a complete, transparent and timely execution of the joint validation and verification task, the team leader had planned the complete sequence of events necessary to arrive at a substantiated final validation and verification opinion. Various tools had been established in order to ensure an effective assessment planning.

Step 1- Identification of Materiality threshold

Applicable threshold level	Threshold	Category
☒	1 %	Large projects: Emission reductions or removals for registered large scale project activities achieving a total removal more than 300,000 tonnes of CO ₂ e per year

□	5 %	Projects: Emission reductions or removals for registered small-scale project activities achieving total removal of less than or equal to 300,000 tonnes of CO₂e per year
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The validation and verification team concluded that the materiality threshold applicable to the project activity based on actual GHG removals achieved is 1 % of 3,766 tCO₂e^{/01/02/} which is equal to 37 tCO₂e.

Step 2- Identification of risks, their level and assessment

For Validation

Sr. No	Risk that could lead to material errors, omissions or misstatements	Assessment of the potential risk		Assessment of the records/information/ interview with personnel to check controls/ mitigation measures
		Risk level	Justification	
1.	Accuracy of assessment of eligibility of land for each geographic area specified in the PD	High	<i>Geographic information, Forest/Non- Forest analysis etc.</i> <i>This includes evidence for clearance of native ecosystems within the 10-year period prior to the project start date</i>	<i>The risk will be mitigated by cross checking it with the land-use pattern from GIS data for the last 10 years.</i>
2.	Accuracy of assessment to check if project implementation will drain or convert native ecosystem	Low	<i>List of tree species included in the plantation models, native/exotic nature of species, plantation plan etc.</i>	<i>The risk will be mitigated by reviewing the nature of species selected by the PP, effect of project implementation on water bodies and plantation plan for sustainable agroforestry system.</i>

3.	Accuracy of Leakage Assessments and activity-shifting	Low	Common practice analysis, land-use pattern of project area etc.	The risk will be mitigated by interviewing and gathering information from neighbors and farmers cross checking it with the historical records and plantation plan
4.	Accuracy of assessment of permanence carbon stock buffer credits	High	Non-Permanence Risk tool has been properly used	The risk will be mitigated by reviewing cross-checking each and every risk Affecting the permanence nature of carbon stock as per the non- permanence risk tool with evidence provided by the PP
5.	Accuracy of assessment of ownership and legal right of the grouped project including the proof of right of carbon credits	Medium	Assessment of evidence in adherence to section 3.6 & 3.5.16 of the VCS Standard, version 4.4	The risk will be mitigated by reviewing cross-checking right of carbon credits and title as well as carbon waiver from all project proponents.

For Verification:

Sr. No	Risk that could lead to material errors, omissions or misstatements	Assessment of the potential risk		Assessment of the records/information/ interview with personnel to check controls/ mitigation measures
		Risk level	Justification	

1.	Human Error: Recording and reporting of the information in the Carbon sequestration spreadsheet and long- term average calculation sheet	Medium	<i>All the Carbon sequestration spreadsheet data plantation sites, LTA sheet, tree species, mean stem volume, survival rate etc.,</i> <i>This includes all the parameters to be monitored ex-post as per the project design document and carbon fixation and carbon performance excel spreadsheets.</i>	<i>The risk will be mitigated by reviewing the training of the personnel involved in the data capture, calculation and by following the monitoring responsibilities. The training records will be reviewed which will also be confirmed during the on-site visit interviews.</i>
2.	Information System: Use of spreadsheets without adequate controls related to data changes/updates ,version Tracking, traceability, security	Medium	<i>The data is recorded in the spreadsheets based on the raw data collected during the field visits. The access to the Carbon sequestration spreadsheet carbon fixation and carbon performance excel spreadsheets.</i>	<i>The identified risk will be mitigated by reviewing the management of access to the records. It will be confirmed through interviews whether the raw data is collected by the field personnel and then transmitted and stored electronically to the PP's office. The data</i>
3.	Accuracy of the measuring equipment	Low	<i>Check the calibration records for the measurement equipment used for calculating the parameters relevant to carbon fixation.</i>	<i>The risk due to accuracy of the measuring equipment will be ensured by planning to check calibration certificates of the measuring equipment used.</i>
4.	Sample	Medium	<i>Sample size is suitable or not? Confidence or precision level applied, no. of plots identified, error applied etc.,</i>	<i>Cross-check the procedure to identify the sample size against the sampling guideline and standard and confirm the sample size is calculated correctly.</i>

2.5 Resolution of Findings

The objective of the validation and verification is to resolve any outstanding issues (issues that require further elaboration, research or expansion) which have to be clarified/corrected prior to final VVB's conclusions on the project's baseline^{/01/11/12/}, monitoring plan^{/01/} from the VCS Joint PD & MR^{/01/} and subsequently the project implementation, monitoring practices and achieved GHG removals^{/02/} from the Joint PD & MR^{/01/}. Material discrepancies identified during the validation and verification are addressed either as CARs, CLs or FARs Appendix-2 Findings log.

Corrective Action Requests (CAR) are issued, where:

- ✓ mistakes have been made with a direct influence on project results requiring adjustments of the VCU in monitoring report.
- ✓ applicable methodological specific requirements have not been met.

A Clarification Request (CL) are used where additional information is needed to fully clarify an issue or where the information is not transparent enough to establish whether a requirement is met.

A Forward Action Request (FAR) has been issued, where:

- ✓ the actual project monitoring and reporting practices requires attention and /or adjustment for the consecutive verification period, or
- ✓ an adjustment of the MP is recommended.

In the context of FARs, risks have been identified, which may endanger the delivery of high-quality GHG removals in the future, i.e., by deviations from standard procedures as defined by the MP. Therefore, such aspects should receive a special focus during the consecutive verification. A FAR may originate from lack of data sustaining claimed GHG removals.

The VVB on every issue raised during the validation process has used the table format given below:

CAR/CL/FAR ID		Section no.		Date: DD/MM/YYYY
Description of CAR/CL/FAR				
Project participant response				Date: DD/MM/YYYY
Documentation provided by project participant				
VVB assessment				Date: DD/MM/YYYY

A total of 19 Clarification requests (CLs) and 18 Corrective action requests (CARs) were raised during the joint validation & verification which are now satisfactorily closed.

2.5.1 Forward Action Requests

One FAR has been raised during this joint validation & verification which will be addressed during next verification.

3 VALIDATION FINDINGS

3.1 Project Details

Project type and category

The VCS project falls under the category Afforestation, Reforestation and Revegetation (ARR) and is a grouped project. It has been developed under the VCS sectoral scope 14: Agriculture, Forestry and other land use (AFOLU)^{/B01/} with the use of CDM methodology AR ACM0003 v2.0^{/B02/}.

Technologies and measures implemented

The grouped VCS project includes the plantation of Mahogany trees (*Swietenia macrophylla*) by farmers on their own private land that were previously predominantly used for agriculture. VVB, based on the on-site inspection, confirms that farmers have planted Mahogany trees along with other agriculture/ horticultural crops such as lemon, custard apple and chia plant for the 1st PAI on the same piece of land following the Agri silviculture system. VVB also confirms that farmers are still using the land for agriculture and there is no displacement of the farming. VVB also confirms that there were no pre-project fruit trees present in the areas under the first PAI.

Furthermore, it has been explained to the VVB during the on-site inspection that the farmers have received saplings from the PP, which are transported from Kolkata, India. These saplings are transplanted in the field by digging 1.5 feet by 1.5 feet (length and width)^{/16/} holes with spacing ranging from 3m to 3m between plants which may varies in some land plots due to unduly land or pre-existing vegetation. VVB has reviewed the feasibility of plantation design (3m x 3m) with the evidence from the Government of India, Ministry of Agriculture, Cooperation & Farmers Welfare Department of Agriculture, Cooperation & Farmers Welfare (Natural Resource Management Division– SMAF, under the circular number F. No. 10-2/2020-NRM-SMAF^{/21/} and peer-reviewed literature Handa *et al.*, 2019^{/21/} and confirms the design (3m x 3m) is feasible for agroforestry planting design.

Based on the review of the contractual agreements^{/06/}, the revised Joint PD & MR^{/01/} and the on-site inspection interviews, VVB confirms that the replantation of Mahogany saplings will be carried out after harvesting. VVB has also assessed the SOP for Mahogany Plantation

Management Plan/^{16/} which includes the procedure of replantation of saplings after harvesting. VVB confirms that the farmers and PP are contractually obligated for a period of 30 years and will carry out verification audits every 5 years for the remaining years of the project by the clause of renewal of contract. Furthermore, after harvesting the tree will be replanted, this is also mentioned in clause 4/b of the contract/^{06/} with terminology "regeneration" referring to replanting or artificial regeneration. PP has clarified on the terminology in the NPRR/^{03/} and VCS Joint PD & MR/^{01/}

Furthermore, the seeds of the mature trees will also be 100 % bought by the company or PP within a time period or else farmer is free to sale them in the market under certain conditions.

PP has devised intercropping plan in association with Indian Council for Agriculture Research (ICAR)¹, Baramati, Maharashtra, under Memorandum of Understanding (MOU)^{24/}, in which year-wise plan is established. This plan elaborates the crops to be undertaken as the *Swietenia macrophylla* plantation ages till 15 years considering various factors such as soil properties, climatic conditions, methods of cultivation and tree canopy. Intercropping plan/^{24/} has been submitted by PP and VVB confirms that the intercropping plan is devised appropriately demonstrating three different models of intercropping.

Eligibility of the project

Based on the review of VCS Joint PD & MR/^{01/}, supporting evidence/^{11/} and on-site inspection, VVB has assessed the eligibility requirements for VCS Standard/^{B01/} (VCS general criteria and ARR criteria) which is as follows:

Table V: VCS Eligibility criteria and VVB assessment

VCS Eligibility Criteria		VVB Assessment
1.	Project Activity do not convert native ecosystems or degrade hydrological functions to generate GHG credits	VVB, through the on-site inspection and interviews/ ^{III-01-III-28/} and review of last 10 years satellite images/ ^{10/} , confirms that the project activity introduces Mahogany trees in lands where already existing traditional agriculture practices are continued and there was no conversion of native ecosystem due to project activity. Furthermore, VVB confirms that the project activity does not degrade hydrological functions to generate GHG credits.
2.	If clearing or conversion of land by the project activity was done, it took place at least 10 years prior to the proposed project start date.	VVB, based on review of the satellite images through Google Earth images for each land parcel/ ^{10/} , confirms that there was no clearing or conversion of land due to the project activity. The land was already used for traditional farming and continuing to do so following the Agri-silviculture system.

¹ <https://niasm.icar.gov.in/>

3.	If the AFOLU project area was drained or converted, such draining, or conversion took place prior to 1 January 2008	Based on the on-site inspection interviews ^{/III-01-III-28/} and desk review ^{/01/11/} , VVB has ascertained that the project area has not been drained or converted due to implementation of the project.
4.	Project Activity is requesting for registration within five years of the project start date	As per the VCS Joint PD & MR ^{/01/} , the start date of the project activity is 28th June 2019 ^{/08/} and, hence, is not a small-scale project. VVB confirms that the project complies by this VCS requirement as the project can be registered till 27th June 2024.

Table VI: ARR Eligibility criteria and VVB Assessment

ARR Eligibility Criteria		VVB Assessment
1.	Eligible ARR activities are those that increase carbon sequestration and/or reduce GHG emissions by establishing, increasing or restoring vegetative cover (forest or non-forest) through the planting, sowing or human-assisted natural regeneration of woody vegetation Justification: The Project involves plantation of Mahogany in multiple scattered small land parcels within the Project Area, thereby increasing the vegetation cover (forest), which leads to carbon sequestration through above and below ground biomass. The above description of the Project complies with rules set under Appendix 1 of VCS Standard Version 4.4 which categorizes the Project Activity under the Afforestation, Reforestation and Revegetation (ARR) category.	VVB, through the on-site inspection, confirms that the project complies with the VCS requirement^{/B01/} as the project includes plantation of Mahogany saplings (<i>Swietenia macrophylla</i>) across the 315 scattered parcels^{/10/}, in the first PAI. The grouped project is aiming at plantation up to 15000 hectares across 5 states of India.

2.	Eligible ARR projects may include timber harvesting in their management plan Justification: The Mahogany trees planted may be harvested after the plant age of 15 years or more. Harvesting and Replantation is a part of the Contractual Agreement between the farmer and PP. The PP management plan delineates strata and year wise harvesting and replantation.	As per the VCS Joint PD & MR^{/01/} and on-site inspection and interviews^{/III-01-III-28/}, the project includes timber harvesting in their management plan. Based on the contractual agreement provided^{/06/}, VVB confirms that the farmers and PP are contractually obligated for period of 30 years and will carry out verification audits every 5 years for remaining years of the project by the clause of renewal of contract. Furthermore, after harvesting the tree will be replanted, this is also mentioned in the clause 4/b of the contract with terminology "regeneration". SOPs^{/16/} regarding the harvesting and replantation have also been reviewed by VVB and is deems to be appropriate.
3.	The project area shall not be cleared of native ecosystems within the 10-year period prior to the project start date Justification: To ensure that there were no native ecosystems within the 10 years' period prior to the plantation, the following evidences/documents form part of eligibility to include land parcels of each farmer. Last 10 years' satellite images form the part of each Farmer Eligibility for inclusion in Project Activity (List of Few Farmers are enclosed in Appendix "6") Land Title/Rights Document for each land parcels which categorize the land use type (sample of Land Title is enclosed in Appendix "7")	VVB, based on the review of satellite images through Google Earth images for each land parcel^{/10/}, confirms that there was no clearing or conversion of land prior within the 10 years period prior to the project start date. The land was already used for traditional farming and continuing to do so following the Agri silviculture system.

Project design, including eligibility criteria for grouped projects

As per program definitions v4.3^{/B01/},

“A project to which additional instances of the project activity, which meet pre-established eligibility criteria, may be added subsequent to project validation”

VVB confirms that the VCS project is developed as a grouped project with multiple project instances and a single project activity.

The eligibility criteria for grouped project is done in accordance with the VCS standard v4.4^{/B01/} which is as follows:

Table VII: Assessment on eligibility criteria for grouped projects

Sr No.	Description	VVB Assessment
1.	A delineation of the geographic area(s) within which all project activity instances shall occur. Justification: As mentioned in section 1.4, the delineation of the geographical areas has been carried out to include 65 districts (defined by Government of India, as on 28 June 2019, Project Start date and shall include split/bifurcation, regrouping, renaming as may be carried out by Government of India from time to time) across five states. This forms eligibility criteria for farmer to be included in the grouped Project Activity.	VVB, after reviewing the KML file ^{/10/} , confirms that the districts from 5 states have been delineated within which all the future PAIs will occur.
2.	One or more determinations of the baseline for the project activity in accordance with the requirements of the methodology applied to the project Justification: The land parcel(s) to be included under the Project Activity: • must not cleared of any native forests prior 10 years from the Project Start Date, • must not be a wetland, • must be a crop land • must have less than 10% soil organic disturbance. The above is ensured for each farmer before inclusion in the grouped Project Activity through SOPs and Contractual Agreement.	Based on the review of the contractual agreement ^{/06/16/} and SOPs and on-site inspection and interviews ^{/III-01-III-28/} , VVB confirms that only the land parcels fulfilling the requirements as mentioned will be selected under the project activity.
3.	One or more demonstrations of additionality for the project activity in accordance with the requirements of the methodology applied to the project.	VVB, as per the on-site inspection and interviews ^{/III-01-III-28/} and review of section 3.5 of the VCS PD, confirms that

	Justification: The land parcel(s) must demonstrate the additionality explained in section 3.5 herein.	the additionality has been defined in compliance with the applied tool and the land parcels selected demonstrate the additionality, as assessed in section 3.4 of this report.
4.	One or more sets of eligibility criteria for the inclusion of new project activity instances at subsequent verification events Justification: In addition to eligibility criteria set in section 1.4, land parcel(s) to be included under the Project Activity: must be a crop land or fallow land or agri-allied activities. must be in 65 districts (defined by Government of India, as on 28 June 2019, Project Start date and shall include split/bifurcation, regrouping, renaming as may be carried out by Government of India from time to time) across the State of Maharashtra, Karnataka, Telangana, Gujarat and Madhya Pradesh, in India must practice in Agri silvicultural system, part of Agroforestry. must be privately owned lands with clear possession and access to the land and does not form part of Government declared protected areas. The above is ensured for each farmer before inclusion in the grouped Project Activity through SOPs and Contractual Agreement.	VVB confirms that more than one set of eligibility criteria has been mentioned in the contractual agreement^{/06/} and SOPs^{/16/} for inclusion on new PAIs.
5.	A description of the central GHG information system and controls associated with the project and its monitoring. Justification: PP has an operation division wherein the GHG information system, controls and monitoring is governed associated with the project and its monitoring. Whole time Director (Operations), Measurement, Reporting and Verification (MRV) Team, AFLOU expert and Agronomist shall be responsible for the above as detailed in section 6.3 and section 1.11 herein	Based on the review of the section 1.11 and section 6.3 of the VCS PD & MR^{/01/} and on-site inspection and interviews^{/III-01-III-28/}, VVB confirms that the description regarding the operation team and monitoring team has been appropriately demonstrated.

Table VIII: Assessment on eligibility criteria for new Project activity Instances:

Sr No.	Description	VVB Assessment
1.	Meet the applicability conditions set out in the methodology applied to the project. Justification: Each land parcel to be included in the new Project Activity Instance shall meet all the applicability conditions set out in CDM AR-ACM0003 methodology. The same is ensured through SOP and Contractual Agreement	VVB, based on the on-site inspection and interviews^{/III-01-III-28/} and review of the SOP^{/16/} and contractual agreements^{/06/}, confirms the justification of PP as valid and satisfactory.
2.	Use the technologies or measures specified in the project description. Justification: Each land parcel to be included in the new Project Activity Instance must practice farming in Agri silvicultural system, a part of agroforestry.	Based on the review of the VCS PD & MR^{/01/} and on-site inspection and interviews^{/III-01-III-28/}, VVB confirms that the existing land parcels are practicing Joint Agri silvicultural system.
3.	Apply the technologies or measures in the same manner as specified in the project description. Justification: Each land parcel to be included in the new Project Activity Instance must practise farming in Agrisilvicultural system, detailed in section 1.11 and 1.4 herein.	Based on the review of the VCS PD & MR^{/01/} and on-site inspection and interviews^{/III-01-III-28/}, VVB confirms that the existing land parcels are practicing Joint Agri silvicultural system.
4.	Are subject to the baseline scenario determined in the project description for the specified project activity and geographic area Justification: Each land parcel must to be included in the new Project Activity Instance comply with the baseline scenario determined in the project description for the specified Project Activity and geographic area (kml file is shared with VVB separately), explained in section 1.11 and 1.12 herein	VVB, based on the review of section 3.4 of the VCS PD & MR^{/01/}, confirms that the existing land parcels are under the baseline scenario identified^{/11/}. The eligibility criteria for land parcels as per the SOP^{/16/} and contractual agreements^{/06/} for new PAIs are also valid.
5.	Have characteristics with respect to additionality that are consistent with the initial instances for the specified project activity and geographic area. Justification:	VVB, based on the review of section 3.5 and section 1.13 of the VCS PD & MR^{/01/}, confirms that the existing project activity has been appropriately demonstrated as additional in compliance with the tool used.

	Each land parcel must to be included in the new Project Activity Instance, must include the characteristics with respect to additionality demonstrated under section 3.5 and section 1.13, for the initial instances of the Project Activity and geographic area (kml file is shared with VVB separately)	The future PAIs will be demonstrated as the same for the initial project activity.
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Furthermore, the eligibility criteria for inclusion of new PAIs have been also demonstrated in the VCS Joint PD & MR^{/01/} which deems to be applicable and valid for new PAIs and will be checked during the next verification when the new PAIs are included.

Project Proponent and other entities involved in the project

As per the VCS Joint PD & MR^{/01/} project proponent and other entities^{/07/} are listed below:

Name	Title/Organization/Community	Role
Bhagatsing Manohar Shelke	Managing Director Mahogani Vishwa Agro Private Limited	Project Proponent
Dhawal Marghade	Assistant Vice President, MITCON Consultancy &Engineering Services Limited	Other entity (Co-implementor)

Ownership

As per the review of the VCS PD & MR^{/01/}, project activity management rights are owned by PP, through contractual agreement with each multiple scattered small landowners^{/06/}. VVB, during the desk review^{/01/06/07/} and on-site inspection, has reviewed and cross-verified all the agreements^{/06/}, against the state government website^{/B05/}.

PP has provided with the website links^{/B05/} for the remaining four states in section 6.2 of the VCS Joint PD & MR^{/01/}.

On the basis of review of the agreement^{/06/}, VVB confirms that the farmers have vested rights to carbon credits with PP through contractual agreement and PP is a legal owner of carbon credits. As per the agreement, PP shall distribute the carbon credit sale to the farmers as per the international market rate at that point of time and farmer has to pay 10 % to the company from the total income obtained from the carbon credit benefits.

Based on desk review of VCS Joint PD & MR^{/01/}, contractual agreement^{/06/} and on-site inspection interviews^{/III-01-III-28/}, VVB confirms the ownership of the project is valid and in compliance with the VCS requirements^{/B01/}.

Project start date

As per section 3.8 of VCS Standard v4.4/^{B02/}

“The project start date of an AFOLU project is the date on which activities that led to the generation of GHG removals are implemented (e.g., preparing land for seeding, planting, changing agricultural or forestry practices, rewetting, restoring hydrological functions, or implementing management or protection plans).”

As per the VCS Joint PD & MR/^{01/}, the project start date is 28th June 2019. VVB, through the evidence/^{08/} provided for start date, confirms the date mentioned is valid as the first plantation was carried out on 28th June 2019 at Nagpur, Maharashtra. This was further confirmed by reviewing the plantation confirmation letter/^{08/}.

Project crediting period

As per section 3.9.3 of VCS Standard v 4.4/^{B02/}:

“For all other AFOLU projects other than such ALM projects described above, the project crediting period shall be a minimum of 20 years up to a maximum of 100 years, which may be renewed at most four times with a total project crediting period not to exceed 100 years.”

VVB confirms that the crediting period of the project is 30 years starting from 28th June 2019 to 27th June 2049 which is appropriate and valid/^{08/}. Based on the contractual agreement provided/^{08/}, VVB confirms that the farmers and PP are contractually obligated for period of 30 years and will carry out verification audits every 5 years for remaining years of the project by the clause of renewal of contract.

Project scale and estimated GHG emission reductions or removals

As per section 3.10.1 of VCS Standard v 4.4/^{B01/}

“Project size categorizations are as follows:

- 1) Projects: Less than or equal to 300,000 tonnes of CO₂e per year.*
- 2) Large projects: Greater than 300,000 tonnes of CO₂e per year.”*

The estimated annual GHG removals as per the VCS Joint PD & MR/^{01/} is 7,699 tCO₂e/year/^{01/02/} calculated for the area under first PAI i.e. 165.41 ha. However, the proposed project area is 15,000 ha which will include more PAIs in the future. Thus, based on that the project scale is deemed as large scale.

Project location

As per the VCS PD/^{01/}, the grouped project boundary covers multiple scattered land parcels across 5 states namely Maharashtra, Gujarat, Madhya Pradesh, Karnataka and Telangana/^{10/}.

VVB, during the on-site inspection, confirms that the first PAI includes 165.41 hectares of land parcels in 21 different districts predominantly in Maharashtra, followed by Telangana

and Karnataka. VVB confirms that PP has submitted the KML files^{/10/} for the first PAI which demonstrates the geodetic polygons for all the multiple parcels. This includes all the 315 scattered parcels incorporating the Name of the Farmers, State, District, Tehsil, village, Plantation in Ha, Plantation Date, Latitude & Longitude under the first PAI. VVB confirms that the KML files^{/10/} are in compliance with the section 3.11.2 of the VCS Standard v4.4.

Table IX: Area distribution among states in first PAI

Locations	Area (ha)
Maharashtra	164.21
Karnataka	0.40
Telangana	0.80
TOTAL	165.41

The total plantation area of the project is 165.41 ha out of which Maharashtra accounts for 164.21 ha and thus around 99.3 % of the area.

Based on the review of maps in VCS Joint PD & MR^{/01/} along with KML files^{/10/} and further through on-site inspection, VVB confirms the project location provided is valid and appropriate.

Conditions prior to project initiation

The project area comprises of multiple states with each differing in Topography, temperature, Climate, Ecosystem. As per the VCS Joint PD & MR^{/01/} and the baseline survey report^{/11/} the project area before the project implementation was subsistence driven farming dependent on the single stream of income from the traditional crops like cultivation of rice, paddy, maize, wheat, cotton, soyabean, sugarcane and vegetables.

During the on-site inspection, VVB has ascertained from interviews with farmers^{/III-01-III-28/} and other stakeholders^{/15/} that prior to project implementation, traditional subsistence farming was the main occupation.

Project compliance with applicable laws, statutes and other regulatory frameworks

Based on the review of the VCS Joint PD & MR^{/01/}, host country knowledge and through own research, VVB confirms that project complies with the following national and state policies:

National Agroforestry policy, 2014

“To encourage tree plantation on farm land along with crops/ cropping system to help the farmers get additional income and make their farming systems more climate resilient and adaptive”

Maharashtra state forest policy, 2008

“Increasing substantially the tree cover on all available public, community and private lands through social forestry and agro forestry with the involvement of people and especially those who are landless, from weaker sections and women”

Madhya Pradesh State Forest Policy, 2005

“Expanding forest tree-covered area to make it one-third of the geographical area. Ensuring stability of the environment and ecological balance by developing government forests and private areas under forest cover through sustainable management of forests. To earmark 10 per cent of the forest area under intensive management for production of timber in order to reduce the gap between its demand and supply”

Karnataka Krishi Aranye Protsaha Yojane 2011-2012

“To increase the forest cover of the state, Karnataka Forest Department launched a scheme called as 'Krishi Aranya Protsaha Yojane' (KAPY) from 2011-12 by involving farmers and general public”

Telanganaku Haritha Haram

“Telangana Haritha Haram a flagship programme of the Telangana Government envisages to increase the present 24% tree cover in the State to 33% of the total geographical area of the State”

Based on the host country expertise, VVB also confirms that the project is in compliance with Indian Forest Act 1927. Along with this, Non-Monetary Regulation Incentive towards felling of the trees in an agroforestry system, such as relaxation of restriction on harvest and transit of agroforestry products/timber growing in private lands by Maharashtra State, relaxation of restriction on felling and transit of forest products by Karnataka State are also being provided to promote ToF (Tree Outside Forest Cover) supporting livelihood of poor and vulnerable groups. VVB has also reviewed the evidence^{/09/} demonstrating that the proposed VCS project shall not lead to violation of any applicable law even if the law is not enforced.

Participation under other GHG programs

Projects registered (or seeking registration) under other GHG Program(s)

Based on the review of the VCS Joint PD & MR^{/01/} and a declaration^{/07/} provided by the PP, VVB confirms that the project is neither registered nor seeking registration under any other GHG program and is seeking registration under VCS mechanism, only. This was further confirmed by the VVB checking on other registries (CDM/GS/GCC/Plan Vivo)^{/B04/}.

Rejection by other programs

Based on the review of the VCS Joint PD & MR^{/01/}, VVB confirms that the project has not been rejected by any other GHG program. A declaration^{/07/} in this regard has been provided by the PP.

Other forms of credit and supply chain (Scope 3) emissions**Emissions Trading Programs and other Binding Limits**

VVB based on the review of the VCS Joint PD & MR^{/01/} and a declaration^{/07/} provided by the PP, confirms that the host country is a developing nation and the Net GHG emission reductions or removals generated by the Project will not be used for compliance with an emissions trading program or to meet binding limits on GHG emissions in any Emission Trading program or other binding limits.

Other forms of environmental credit sought or received and eligible to be sought or received

VVB confirms that the project has not sought or received another form of GHG related environmental credit. A declaration^{/07/} in this regard has been provided by the PP.

Issuance of public statement(s) to help prevent Scope 3 emissions double claiming

Based on the review of the VCS Joint PD & MR^{/01/}, VVB confirms that PP has identified the seedlings supplier as a potential supply chain partner under Scope 3. A declaration has been obtained^{/07/} and reviewed for not claiming any Environmental Attributes. A contractual agreement^{/06/} is also in place between farmer and the PP to ensure that the produce consumers do not claim any environmental attributes for the purchase of the produce from the project activity.

Additional information relevant to the project**Leakage management for AFOLU projects**

Based on the review of joint PD & MR^{/01/}, PP has estimated the leakage emission for the First Project Activity Instance of 165.41 hectares considering the annular ring width from the tree basal area. This practice of cultivation ensures smoother intercultural operations. As such area of agriculture displaced by the Project Activity is limited to the basal area of planted tree in addition to annular ring with width of 100cm around the basal area of tree. Furthermore, VVB has reviewed the level of accuracy of proposed approach for leakage estimations of project activity against the peer-reviewed literature *Hossain et.al., Performance of lettuce under six years old lohakat tree, J. Agrofor. Environ. 8 (2): 7-10, 2014 ISSN 1995-6983*^{/21/} and confirms the estimations deemed to be valid and satisfactory.

The effective basal area and intercrop area and estimated area for displaced agricultural activities demonstrated below:



Year	DBH (cm)	Annular Ring Width (cm)	Effective DBH(cm)	Stratum 1 Displaced Area (ha)	Stratum 2 Displaced Area (ha)
1	2.80	200	203	4.29	53.63
2	5.40	200	205	4.40	55.01
3	7.80	200	208	4.51	56.30
4	10.00	200	210	4.60	57.50
5	12.00	200	212	4.69	58.60
6	13.80	200	214	4.77	59.60
7	15.60	200	216	4.85	60.61
8	17.40	200	217	4.93	61.62
9	19.20	200	219	5.02	62.65
10	21.00	200	221	5.10	63.68
11	22.80	200	223	5.18	64.72
12	24.60	200	225	5.27	65.77

13	26.40	200	226	5.35	66.83
14	28.20	200	228	5.44	67.90
15	30.00	200	230	5.52	68.98

VVB confirms that PP has taken conservative approach with reference to CDM tool 15 and has accounted the leakage emission for displaced agriculture activities under the area of 1st PAI. Furthermore, VVB confirms that PP has provided with the intercropping plan^{/24/} with different models and their financial revenues in association with ICAR. Also, PP has submitted the MoU^{/24/} between PP and ICAR, Baramati, Maharashtra which is a legally binding document and has been verified by the VVB.

VVB, during the on-site inspection, has confirmed that the intercropping is being carried out and there is sufficient land to carry out the agricultural activities with the density of 1,111 tree/hectare. Furthermore, the feasibility of proposed plantation (1,111 trees/ha with 3 by 3m spacing) has been reviewed against the peer reviewed literature “Successful Agroforestry Models for Different Agro-Ecological Regions in India”^{/21/} jointly published by “Central Agroforestry Research Institute (CAFRI) and South Asia Regional Programme of World Agroforestry (ICRAF)” for the Silvi-horticultural system.

Thus, VVB confirms that the area to be displaced has been calculated satisfactorily and is conservative and the leakage emission has now been incorporated in the ex-ante & ex-post carbon calculation sheet^{/02/}.

Commercially sensitive information

VVB after reviewing the VCS Joint PD & MR^{/01/}, confirms that no commercially sensitive information has been excluded from the public version of the project description.

Sustainable development contributions

Based on the review of the VCS Joint PD & MR^{/01/} and evidence provided^{/14/}, the following SDG goals proposed by UNDP will be achieved by the project through the project lifetime:

SDG 1: No poverty

VVB confirms that the project activities under first PAI are designed to generate employment which will improve the income and upliftment of people living below the international poverty line. VVB, through the on-site inspection interviews^{/III01-III28/} confirms that the first PAI has generated 15 seasonal employments at nursery, 28 seasonal employments at hardening centre and more than 500 daily wage labour based on manual workload with daily earning of US\$ 1.50 per day averaged for entire year.

SDG 2: Zero hunger

VVB confirms that the project activity under first PAI includes farmers with small land holding and whose current source of income is based on subsistence farming. The project activity

will help the farmers generating additional income through sale of carbon credits and plant produce. VVB based on the on-site inspection/interviews^{/III01-III28/} confirms that first PAI has admitted total 315 farmers (1,300 individuals as farmer family members).

SDG 3: Good health and well being

VVB based on the review of the VCS Joint PD & MR^{/01/} confirms that the project activity under first PAI positively contributes to the good health and well-being. VVB based on the on-site inspection/interviews^{/III01-III28/} 1st PAI includes plantation of 1,83,000 trees which results in improving soil and air quality parameters by sequestering more than 4,280 tons of CO_{2e} contributing to creating clean environment.

SDG 5: Gender equality

VVB through on site interviews confirms that the first PAI include 56 women small land holders having full ownership of income generated through regular farming, farming produce and carbon credits. This will help in empowering of the women and progress towards gender quality.

SDG 8: Decent work and economic growth

VVB through on site interviews confirms that the first PAI has imparted training to 10 individuals on ISO 9001:2015, SDG awareness training to 20 individuals, Climate Change Awareness programs to more than 500 individuals and relevant stakeholders, Training on Mahogany silviculture practice to 315 farmers and PPs representatives. Under the clause 8.4.2, the first PAI also aims in decreasing import of approximately 4 million cubic feet of timber by the end of year 2035.

SDG 12: Responsible Production and Consumption

VVB through the on-site inspection confirms that the project activity under first PAI includes procurements of recycled Low-Density Polyethylene (LDPE) for preparation of the polybags containing seedlings. Post plantation of seedlings, polybags are further collected from land parcels and given to the recyclers/processors. For 1st PAI, more than 180,000 LDPE polybags have been collected and will be continued for future PAIs.

SDG 13: Climate action

As the project includes plantation of Mahogany trees, they will help in sequestration of carbon dioxide a major GHG from the atmosphere. VVB based on on-site inspection/interviews^{/III01-III28/} confirms that the project activity has removed 4,280 tonnes of CO_{2e}(excluding buffer). Therefore, the project activity will help in climate change mitigation.

SDG 15: Life on Land

VVB during on-site inspection observes the project activity includes plantation of Mahogany trees, which promotes increase in TOF area and will provide habitat for different types of animals and will also support in growth of other plants in the understory. Thus, contributing to the SDG fulfilment.

Table X: Sustainable development contributions

Row number	SDG Target	SDG Indicator	Net Impact on SDG Indicator	Current Project Contributions	Contributions Over Project Lifetime	VVB Assessment
1)	1.1	1.1.1 Proportion of population below the international poverty line	Implemented activities to decrease	The first project activity instance has generated 15 seasonal employments at Nursery, 28 seasonal employments at Hardening Center and more than 500 daily wage labor based on manual work load with daily earning of US\$ 1.50 per day averaged for entire year.	Overall cumulative employment generated during project life time through Nursery, Hardening Center and Plantation Activities is expected to create 40,000 seasonal employment with an opportunity to earn about US\$ 1.50 per day averaged for entire year	VVB through the on-site inspection & interviews/III-01/-III-28/ confirms that the first PAI has generated seasonal employment for carrying out plantation activities. Thus, helping in generation of employment.

2)	2.3	2.3.2 Average income of small-scale food producers, by sex and indigenous status	Implemented activities to increase	Under the First Project Activity Instance, total 315 farmers (1,300 individuals as farmer family members) have been admitted in the project activity who will able to generate additional income from carbon credits and Produce.	The entire Project Activity Instances is expected to included 25,000 (100,000 individuals as farmer family members) famers who can generate additional source of income from carbon credits and Produce.	The first PAI has generated income sources which will contribute to reducing hunger and providing ample income opportunities through sale of carbon credits, timber and plant produce.
3)	3.9	3.9.1 Mortality rate attributed to household and ambient air pollution	Implemented activities to decrease	First Project Activity Instance includes plantation of more than 1,83,000 trees resulting in improved soil and air quality parameters by sequestering more than 4,280 tons of CO ₂ contributing to creating clean environment.	The total Project Activity is expected to plant more than 16,000,000 trees which shall sequester more than 4,00,000 tons of CO _{2eq} annually over the project life time, contributing to clean environment.	As the first PAI involves plantation of Mahogany trees approx. 1,111 per hectare which will eventually help in reducing air pollution and sequestration of greenhouse gases. It will promote good health and well being.

4)	5.a	5.a.1 (a) Proportion of total agricultural population with ownership or secure rights over agricultural land, by sex; and b) share of women among owners or rights-bearers of agricultural land, by type of tenure	Implemented activities to increase	The first Project Activity Instance includes 56 women small land holders having full right of ownership of income generated through regular farming, Farm Produce and carbon credits. Further 120 women are expected to be employed as seasonal daily wage labor for seed collection, picking of dead litters, weeding.	The entire Project Activity Area expected to include more than 5,000 women small land holders having full right of ownership of income generated through regular farming, Produce and carbon credits. Further 10,000 women are expected to be employed as seasonal daily wage labor for Seed collection, picking of dead litters, weeding over the Project life cycle.	VVB through the onsite inspection & interviews/III-01/-III-28/, confirms that the land owners also include women who have full ownership of income generated through regular farming, carbon credit and farm produce.
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6)	8.3	8.3.1 Proportion of informal employment in total employment, by sector and sex	Implemented activities to increase	The first Project Activity Instance has imparted training to 10 individuals on ISO 9001:2015, SDG awareness training to 20 individuals, Climate Change Awareness programs to more than 500 individuals and relevant stakeholders, Training on Mahogany silviculture practice to 315 farmers and PPs representatives	For the entire Project Activity Instance, it is expected to train 30 individuals on ISO 9001:2015, SDG awareness training to 100 individuals, Climate Change Awareness programs to more than 30,000 individuals and relevant stakeholders, Training on Mahogany silviculture practice to 25,000 farmers and PPs representatives	VVB has confirmed through the onsite inspection & interviews that the individuals were trained, and awareness programs were also conducted during the first project activity instance.
	8.4	8.4.2 Domestic material consumption, domestic material consumption per capita, and domestic material consumption per GDP	Implemented activities to decrease	The first Project Activity Instance shall result in decrease in import of approximately 4 million cubic feet of timber by the end of year 2035.	The entire Project Activity Instance shall result in decrease in import of approximately 300 million cubic feet of timber by the end of year 2041, resulting in improving the Domestic timber consumption per GDP.	VVB confirms that the plantation activity will result in generation of timber that will eventually decrease the import and increase the domestic material consumption.

7)	12.5	12.5.1 National recycling rate, tons of material recycled	Implemented activities to decrease	The first Project Activity Instance has used 2,00,000 Polybags made from recycled LDPE and further PP has collected and handed over 1,80,000 LDPE polybags equivalent to 1 tons of plastic to the recyclers/processors	The entire Project Activity Instance is expected to use 1,80,00,000 Polybags made from recycled LDPE and the same shall be collected by PP and handing over to the recyclers/processors, equivalent to 75 tons of Plastic, over Project life cycle.	This was confirmed during the on-site inspection/interviews ^{III-01/-III-28/} with the project proponent that the polybags used are recycled LDPE and after plantation the polybags will be handed to the recyclers/processors.
8)	13.0	Tonnes of greenhouse gas emissions avoided or removed	Implemented activities to increase	By planting 165.41 hectares of lands, Project Activity has removed 4,280 tonnes of carbon dioxide from the atmosphere during the monitoring period.	The entire Project Activity will sequester 4,00,000 tons of CO _{2eq} annually from the atmosphere over the Project life-time	As the project activity includes plantation of trees, VVB confirms that the project activity helps in carbon sequestration and helps in mitigating the climate change.

Overall VVB confirms that the SDG's provided in the Joint PD & MR^{/01/} are accurate, complete and provides an understanding of the nature of the project. The project has been implemented as described in the project description. The project is likely to achieve the estimated GHG emission removals^{/01/02/} but the actual results may vary due to the differences in the date of plantation of different land parcels and certainly due to different edaphic and climatic factors impacting on the growth of the trees.

3.2 Participation under Other GHG Programs

Based on the review of VCS PD & MR^{/01/} the project has not been registered under any other GHG programs and is not seeking registration under any other GHG programs. VVB confirms this by checking the declaration^{/07/} from the PP and checking the public website of other emission trading program^{/B04/}. (VCS/GS /Plan Vivo).

3.3 Safeguards

3.3.1 No Net Harm

Based on the review of the VCS Joint PD & MR^{/01/} following potential negative environmental and socio-economic impacts have been identified, **Table XI**:

Potential negative impacts	Mitigation measures
Use of LDPE polybags	i. Use of polybags made from recycled LDPE granules ii. Proper disposal of used polybags after plantation by collecting and transporting to recycler/processor
Transportation of seedlings and produce	i. Avoiding one-way/single journey use of heavy vehicles by strictly procuring heavy vehicle which otherwise would have returned empty thereby converting one-way journey to two-way journey ii. Optimizing supply order quantity and route plan management for reduced requirement of transport vehicles
Use of fertilizers/herbicides	i. Stipulate quantities and frequency for use of fertilizers and herbicides

	ii. Use of AI based precision farming tools to reduce overall consumption of fertilizers/herbicides iii. Maximise bio-based fertilizers/herbicides such as, vermicompost, neem (Azadirachta indica) cake, Dashparni ark or variations thereof, Jeevamrut
Field work	Use of protective gears during use of herbicides/fertilizer application
Land procurement	Procurement of land is done by way of lease, instead of acquisition and farmer family manages operation of hardening centre thereby keeping ownership of land with farmers simultaneously generating income. The same method shall be adopted for procurement of land for storage facility of Produce
Transportation of seedlings and Produce	i. Procurement SOP to stipulate mandatory requirement for Vehicle Fitness Certificate, issued by Government of India and PUC (Pollution Under Control certificate issued by Government of India) ii. Human Resource (HR) SOP, stipulating compulsory use of protective gear while riding light vehicle

VVB based on the review of SOPs^{/16/} and on-site inspection/interviews^{/III-01-III-28/} confirms that the steps taken for mitigation are reasonable. Furthermore, VVB confirms that using agroforestry system i.e., Agri silviculture system has positive impacts on both the community and environment.

3.3.2 Local Stakeholder Consultation

As per the VCS Joint PD & MR^{/01/}, the Local Stakeholder Consultation meetings were held by the PP with stakeholders and all members in phased wise from 2018 to 2021^{/15/} in all the district project areas. PP has adopted a distinctive process for engaging with local stakeholders. The meetings were conducted at following places as per the invitation letter provided:

- 1) Pune- 7th January 2019
- 2) Ahemadnagar- 19th January 2019
- 3) Bijapur (Vijayapur)- 15th March 2019
- 4) Osmanabad- 11th October 2019
- 5) Jalgaon- 13th January 2020
- 6) Satara- 7th August 2020
- 7) Aurangabad- 10th August 2020 and 14th October 2020
- 8) Sangali- 4th October 2020
- 9) Solapur- 15th November 2020
- 10) Yavatmal- 18th December 2020
- 11) Nashik- 4th January 2021
- 12) Parbhani- 24th January 2021
- 13) Nanded- 25th January 2021

The meetings were attended by Multiple stakeholders from different concerned fields:

- Benefitted farmers
- Local communities and community heads
- Representatives of regional government and non-governmental organization
- Local NGO's

As per the VCS Joint PD & MR^{/01/}, all the meetings were coordinated by Mahogany Vishwa Agro Private Limited. During stakeholder consultation following topics were discussed:

- ✓ Introduction of the project
- ✓ Project details including eligibility and applicability criteria and Permanence
- ✓ About VCS and CDM mechanism
- ✓ Benefits from the project
- ✓ Grievance mechanism for stakeholders
- ✓ Carbon stocks assessment methods
- ✓ Yearly/Biennial monitoring process for sustainable development

Some of the inputs received from local stakeholder meeting members were:

- ✓ Will a real efficient monitoring process be implemented? (they've heard of or known other projects led by other entities that did not include follow up in the long run)

- ✓ Will the farmers receive trainings about agroforestry and forestry practices?
- ✓ How will the farmers fight against the pests?
- ✓ How will the carbon credits be claimed and how much revenue the farmers would receive?
- ✓ By when would the farmers receive the money from carbon credits?
- ✓ What will be the requirements from individual farmers to claim carbon credits?
- ✓ Report on how due account was taken of any comments received

PP has taken into account the inputs received and has properly addressed them during the meeting. PP has developed SOPs^{/16/} regarding the inputs for training and has entered in contractual agreement^{/06/} with farmers with due course of time mentioning the right over carbon credits and revenue generated through sale of it.

PP has appropriately communicated about the project design, its implementation, monitoring outcomes, risks, costs, benefits, local regulations and process of validation through following means:

- ✓ Impact of Climate Change and mitigation through sequestration of GHG emission thereby creating sustainable income source through agroforestry practices.
- ✓ Presentation detailing the entire process of VCS project validation, verification, issuance and the importance of site visit conducted by Validation/Verification Body and requested for cooperation during the VVB site visits.
- ✓ Brochure/factsheet containing the above aspects in local language such as Marathi in Maharashtra in addition to English
- ✓ Infomercials, containing above aspects of the project with risk and cost benefit analysis associated with Carbon Credit and Produce market condition
- ✓ Agriculture Trade Forums and Exhibitions
- ✓ Meeting with Farmers through Block Development Officer (Local Government Officer)
- ✓ Campaign for Farmers Groups on Social Media Platforms
- ✓ Advertisements on Websites and Print Media.
- ✓ Visit to sample project land parcels for creating awareness about the Project Activities for local government offices and farmers, as a follow up to stakeholder meeting.
- ✓ Explained through one to one meetings about the prevailing laws and regulations pertaining of felling of tree and local/national labor laws.

During the on-site interviews with famers and other stakeholders, the following questions were asked by the VVB:

1. Are you aware of the project?
2. Are you aware of the carbon credits and revenue?

3. Has the project improved your living or income?
4. Have you been invited to give your comments on the project?
5. Were your comments addressed by the PP?
6. Were you imparted any training for capacity building and/or monitoring procedures?
7. Was your plot/land parcel included in the project?

VVB has observed that the farmers were aware of the project and its registration in VERRA. They were given capacity trainings by the PP and confirmed the locations of sample plots included in the project. VVB confirms (based on assessment above, review of documents and on-site inspection interview's/observation) the following:

- ✓ PP has Summarized stakeholder input received during the local stakeholder consultation meeting.
- ✓ Furthermore, since there was no negative comment from stakeholder, it is not required for the project proponent to take due account of all and any input,
- ✓ PP has appropriately communicated to the local stakeholders in regard to the project information and about the project design and implementation, risks, costs and benefits.
- ✓ VVB has ascertained that the project complies with national laws, statutes and other regulatory frameworks.

VVB has also observed the letter^{/15/} given to the sarpanch during the local stakeholder consultation. VVB, based on the documentation review during on-site inspection^{/III-01-III-28/}, confirms that Local Stakeholder Consultations have been conducted in local languages and. Furthermore, during the LSCs, the feedback form was also given to farmer and is also reviewed by VVB during the on-site section and deems it suitable and appropriate.

Overall, VVB concludes that the LSC^{/15/} done by PP is in line with the standard requirements and is appropriate.

3.3.3 Environmental Impact

As per the VCS Joint PD & MR^{/01/} the grouped project comes under VCS AFOLU (Agriculture, Forestry and Other land Use) ARR category, thus this project activity does not have any negative environmental impact.

VVB based on its sectoral and host country expertise confirms that the project type does not require an environmental clearance in the host country and considers the justification in the Joint VCS PD & MR^{/01/}, as appropriate and valid.

3.3.4 Public Comments

The project was open for public comment from 20th May 2021 to 19th June 2021. VVB has confirmed from the VCS website that there was no public comment. However, few comments were received outside the comment period which are satisfactorily addressed by PP and assessed (refer the assessment later in this section for all comments) by the VVB as below:

Comment 1:

- i. Mr Bhagatsingh Shelke is the director & channel partner of Cropcity Agrovet Pvt Ltd, Kolhapur.
- ii. Mr Shelke has started a new company named as 'Mahogany Vishwa Agro Pvt Ltd' and through this company, he concealed all old agreements of Farmers. Mr Shelke has breached the terms & conditions of Cropcity Agrovet Pvt Ltd & deceptively made all new agreements of Mahogany Contract Farming under company 'Mahogany Vishwa' by keeping both Farmers & Cropcity Agrovet unknowing. The Cropcity Agrovet pvt ltd has claimed the case against Mr Bhagatsingh Shelke under IPC section 420, 406 with strong evidence.

PP Response:

- i. August 01, 2020, Mr. Bhagatsing Shelke appointed as Additional Director (pending approval by shareholders) in Cropcity Agrovet Pvt Ltd (CAPL). October 22, 2020, vide Board Resolution, CAPL revoked appointment of Mr. Bhagatsing Shelke as Additional Director, in furtherance of resignation by Mr. Bhagatsing Shelke on October 21, 2020. Relevant documents from Ministry of Corporate Affairs, Government of India, have been submitted to the VVB.
- ii. The complaint dated 31 May 2021, filed by Mr. Kundal Patil, Director, CAPL with Judicial Magistrate F.C. Kale (Kherivade), with claims as detailed above has been DISMISSED vide Honorable Magistrate order as under:
Hon. V.V. Khulape, Judicial Magistrate, F.C. Kale (Kherivade)
Order - MHK020000175-2021 in Cr. M.A.No. 32-2021 (Exh.1)
The complaint is dismissed under section 203 of the code of criminal procedure. Proceeding is closed.

The above order copy is submitted to the VVB.

All the Contractual documents entered into by Mahogany Vishwa Agro Pvt Ltd (MVAPL) have representation and warranty from farmers that they have not entered into any arrangement with any third party in relation to the Mahogany Plants, Produce and/or Carbon credits. Further MVAPL has obtained Affidavit (In India, Affidavit is a written statement sworn before a person having authority to administer an oath) from each farmer confirming there is no other agreement signed concerning their plot/plants with any person/institution/company. A few Affidavits have been submitted to the VVB.

There is no breach of any agreement by PP or its Directors. The claims made above are false and baseless.

Comment 2:

The Cropcity Agrovet pvt ltd has claimed the case against Mr Bhagtsingh Shelke AND MVAPL under IPC section 420, 406 with strong evidence. MR. KUNDAN PATIL 9325794597; patilkundan.com@gmail.com Attached all document and evidence

PP Response:

The complaint dated 31 May 2021, filed by Mr. Kundal Patil, Director, CAPL with Judicial Magistrate F.C. Kale (Kherivade), with claims as detailed above has been DISMISSED vide Honorable Magistrate order as under:

Hon. V.V. Khulape, Judicial Magistrate, F.C. Kale (Kherivade)

Order - MHK020000175-2021 in Cr. M.A.No. 32-2021 (Exh.1)

1. The complaint is dismissed under section 203 of the code of criminal procedure.
2. Proceeding is closed.

The above order copy is submitted to the VVB.

There is no breach of any agreement by PP or its Directors. The claims made above are false and baseless.

It may be noted that on July 27, 2021, as a response to application filed by Mr. Kundan Patil, MVAPL sent Notice to CAPL for invocation of Arbitration Process in respect of dues owed by CAPL to MVAPL under the Channel Partner Agreement.

On September 09, 2021, MVAPL filed Arbitration Petition at Bombay High Court, ARPST/17072/2021, for appointment of Arbitrator and venue at Pune, Maharashtra
Screenshot of the Honorable Bombay Court Website is submitted to the VVB.

Comment 3:

Mr Bhagatsingh Shelke has breached terms & conditions of Cropcity Agrovet & deceptively made all new agreements of Mahogany Contract Farming under 'Mahogany Vishwa' & concealed all old agreements by keeping everyone unknowing. We have claimed case against Mr Shelke under section 420, 406 with strong evidences which we can submit. Please share email ID.

PP Response:

The above mentioned case refer to, the complaint dated 31 May 2021, filed by Mr. Kundal Patil, Director, CAPL with Judicial Magistrate F.C. Kale (Kherivade), with claims as detailed above has been DISMISSED vide Honorable Magistrate order as under:

Hon. V.V. Khulape, Judicial Magistrate, F.C. Kale (Kherivade)

Order - MHK020000175-2021 in Cr. M.A.No. 32-2021 (Exh.1)

1. The complaint is dismissed under section 203 of the code of criminal procedure.
2. Proceeding is closed.

The above order copy is submitted to the VVB.

All the Contractual documents entered into by MVAPL have representation and warranty from farmers that they have not entered into any arrangement with any third party in relation to the Mahogany Plants, Produce and/or Carbon credits. Further MVAPL has obtained Affidavit (In India, Affidavit is a written statement sworn before a person having authority to administer an

oath) from each farmer confirming there is no other agreement signed concerning their plot/plants with any person/institution/company. A few Affidavits have been submitted to the VVB.

There is no breach of any agreement by PP or its Directors. The claims made above are false and baseless.

Comment 4:

I am Mr Kundan Patil, Managing Director of Cropcity Agrovat Pvt Ltd, Kolhapur, Maharashtra State, Country India. Email Id : patilkundan.com@gmail.com Contact No. 9325794597 Mr Bhagatsingh Shelke is director & channel partner of Cropcity, has started new company named 'Mahogany Vishwa Agro Pvt Ltd'

PP Response:

The comment with respect to the Director is addressed above. In respect of channel partner agreement, it may be noted that MVAPL has terminated the Channel Partner Agreement with CAPL vide email dated October 21, 2020 and the same was revoked by CAPL vide Board Resolution dated October 22, 2020.

Further, it may be noted that:

- a) Mahogani Vishwa Agro Private Limited was incorporated on January 25, 2019, which confirms that MVAPL was not New Company, as claimed in the above comment. MVAPL had launched the project and completed 71 plantations before execution of Channel Partner Agreement with CAPL. The supporting documents is shared with VVB.
- b) Channel Partner arrangement had no restrictive clauses or exclusivity in respective of Mahogany Plantation. The supporting documents is shared with VVB.

Comment 5:

Hi,. Jdhe. Rjfb.

PP Response:

The above comment is irrelevant.

Comment 6:

Water scarcity is a biggest risk in this project and farmers are poor (page22). How this risk is mitigated? Project is planning to provide water to all farmers i.e., 15000 ha. Pete, Climate change enthusiastic Independent researcher

PP response:

Swietenia macrophylla, also known as the big-leaf mahogany, it is a large deciduous tree species. The species is considered to be drought-tolerant or also tolerating dry conditions in

open forest (Mejía *et al.* 2008²) and can survive in a range of soil types, but it prefers well-drained soils with a high organic matter content.

According to a study published in the “Center for International Forestry Research” (Krishnawati *et al.* 2011³), *Swietenia macrophylla* is able to tolerate relatively low soil water potentials, and can survive in areas with low rainfall and prolonged dry seasons. The study also found that the species has a deep root system that allows it to access water deep in the soil and to survive in conditions of water stress. Seldon *et al.* (2021)⁴ conducted analysis of “Water requirements for growth and survival of *Swietenia macrophylla* juvenile tree in relation to water production capacity of dew condensers”. They found that all *Swietenia macrophylla* juvenile trees survived at RET (Relative Evapotranspiration) values of 0.5 and higher, but only 60 percent survived at RET = 0.25 and all died at RET = 0.125. This means that the minimum RET value required for survival of *Swietenia macrophylla* occurred somewhere between 0.25 and 0.5 (approximately in the range between 0.07 and 0.14 L/tree/day). *Swietenia macrophylla* required between 0.07 and 0.14 L/tree/day for complete survival. This shows *Swietenia macrophylla* is a drought tolerance species, which must be taken into account in formulating reforestation/afforestation strategies

Below table shows the comparison of water intake potential of regular/tradition crops and *Swietenia macrophylla*:

S.No.	Name of Crops	Total Growing Period (Minimum days) ⁵	Crop Water need (mm/Total Growing period) ⁶	Crop Water Requirement (Liter per day per hectare)	Water intake for 15 years (kilo Liter)
1	Rice	90	450	50,000	67,500
2	Cotton	180	700	38,889	1,05,000
3	Sugarcane	270	1500	55,556	2,25,000
4	Soybean	135	450	33,333	67,500
5	Wheat	120	450	37,500	67,500

² Mejía, E., Buitrón, X., Peña-Claros, M., & Grogan, J. (2008, November). Big-leaf mahogany (*Swietenia macrophylla*) in Peru, Bolivia and Brazil.

³ Krishnawati, H., Kallio, M. H., & Kanninen, M. (2011). *Swietenia macrophylla* King: ecology, silviculture and productivity. CIFOR.

⁴ Seldon, J., Snyder, V. A., Harmsen, E., & Van Bloem, S. J. (2021). Water requirements for growth and survival of *Swietenia macrophylla* and *Tabebuia heterophylla* juvenile trees in relation to water production capacity of dew condensers 1, 2.

⁵ Section 2.2.2, Table 4, <https://www.fao.org/3/s2022e/s2022e02.htm>

⁶ Section 2.4, Table 5, <https://www.fao.org/3/s2022e/s2022e02.htm>

Water Requirement by <i>Swietenia macrophylla</i>⁷					
Year	Litres Tree⁻¹.Day⁻¹	Litres ha⁻¹. Day⁻¹	Litres Month⁻¹. ha⁻¹	Litres Yr⁻¹.ha⁻¹	Kilo Litres ha⁻¹
1	0.14	156	4,666	37,330	37
2	0.28	311	9,332	74,659	75
3	0.42	467	13,999	1,11,989	112
4	0.56	622	18,665	1,49,318	149
5	0.7	778	23,331	1,86,648	187
6	0.84	933	27,997	2,23,978	224
7	0.98	1,089	32,663	2,61,307	261
8	1.12	1,244	37,330	2,98,637	299
9	1.26	1,400	41,996	3,35,966	336
10	1.4	1,555	46,662	3,73,296	373
11	1.54	1,711	51,328	4,10,626	411
12	1.68	1,866	55,994	4,47,955	448
13	1.82	2,022	60,661	4,85,285	485
14	1.96	2,178	65,327	5,22,614	523
15	2.1	2,333	69,993	5,59,944	560
Total	16.8	18664.8	559944	44,79,552	4,480

Crops	Water requirement in multiplication of requirement by <i>Swietenia macrophylla</i>
Rice	15
Cotton	23
Sugarcane	50
Soya	15

⁷ Seldon, J., Snyder, V. A., Harmsen, E., & Van Bloem, S. J. (2021). Water requirements for growth and survival of *Swietenia macrophylla* and *Tabebuia heterophylla* juvenile trees in relation to water production capacity of dew condensers 1, 2.

Wheat	15
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From the above tables it shows that *Swietenia macrophylla* requires less water compared to the regular or traditional crops sown by the farmers in their land parcels per hectare.

VVB assessment:

VVB confirms that PP has referred to values provided by FAO from Section 2.2.2⁸, table 4 and section 2.4, table 5 for the determination of seasonal crop water needs. For the Water requirements by Mahogany, PP has used the value from the peer reviewed literature, Seldon, J., Snyder, V.A., Harmsen, E. and Van Bloem, S.J. 2021. Water requirements for growth and survival of *Swietenia macrophylla* and *Tabebuia heterophylla* juvenile trees in relation to water production capacity of dew condensers. *The Journal of Agriculture of the University of Puerto Rico*. 105, 2 (Oct. 2021), 143–162⁹ and has also been cited in the document.

Comment 7:

The role of Remote sensing is not clear. PD lacks which satellite data is used, what's analysis were carried out. The technical details of the data are missing. Pete, Climate change enthusiastic Independent researcher

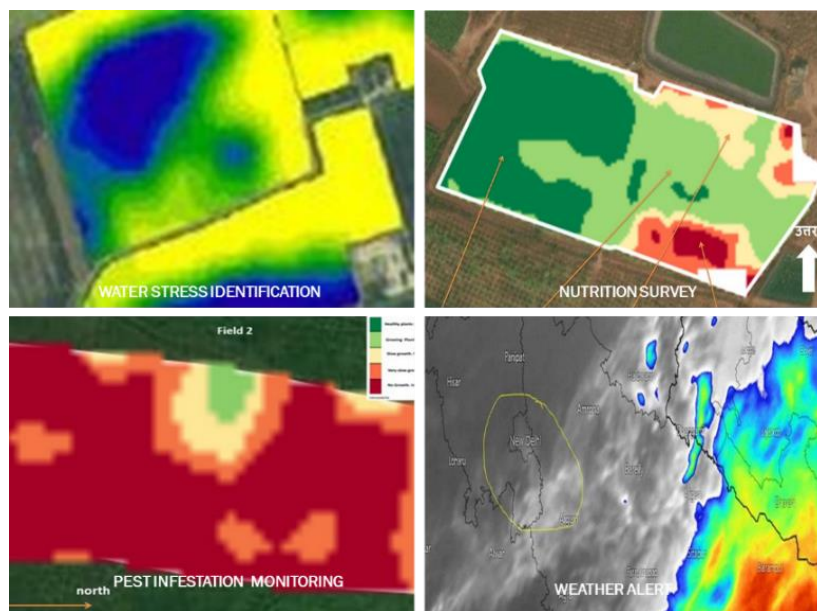
PP Response:

PP is exploring Satellite based AI Precision Farming and Monitoring of the Mahogany Trees, Land Use and intends to implement it in the near future. The PP has conducted AI based Precision Farming using satellite monitoring for few sample land parcels. This tool has delivered 25-30% lower water, NPK and pesticide consumption for other projects. The areas identified for digitised monitoring are:

- ✓ Water Stress Area Identification up to 2 meters below ground
- ✓ Nutrition Survey
- ✓ NPK Distribution Analysis
- ✓ Canopy Study
- ✓ Predictive Pest infestation alert
- ✓ Predictive Fire Alert

⁸ CHAPTER 2: CROP WATER NEEDS (fao.org)

⁹ <https://doi.org/10.46429/jaupr.v105i2.20073>



Comment 8:

PD says farmers joined this program due to scarcity of water and could not grow crops. These areas are experiencing scanty precipitation (Page 22). To grow trees farmers need water?. To prevent fire farmers are trained/tought to maintain moisture by project requires lot of water. This is contradictory. Pete, Climate change enthusiastic Independent researcher

PP Response:

The word “scarcity of water” referred to the fluctuation in the water availability and the same has been corrected in the Joint PD and MR.

As mentioned in above that Plantation in Project Activity requires less water compared to traditional crops.

PPs representatives provides Farmer training and awareness towards fire hazard. PP has addressed the fire risk by developing Standard Operating Procedures (SOPs) for the prevention of fire outbreaks, in which all stakeholders are involved. These SOPs serve as a guiding principles to be followed in reducing/mitigating the fire risks for farmers. Few of the following guidelines are as under:

- ✓ Sustainable disposal of dead litters, leaves, and other crop residues either by Composting or through proper burial in the ground
- ✓ Flammable material such as fuel (for operation of various farm equipment), herbicides, grain dust, jute/plastic bags for storing grain and any other farm produce, animal fodder, hay and straw are kept in isolated place away from the land parcels.
- ✓ Maintaining biomass free land patch from adjacent land parcels.
- ✓ Water pumps should have moisture/dust proof ON/OFF switches and covers for motors.

- ✓ No use of any electrical tool when the weather is windy or near the dry grass region
- ✓ Avoidance of plantation in the area below electrical line.

Comment 9:

Geodetic polygons that delineate the geographic area of each AFOLU project activity, provided in a KML file. Pete, Climate change enthusiastic Independent researcher

PP Response:

- 1) Geodetic Polygons of 1st Project Activity Instance is attached as separate KML file and is shared with the VVB.
- 2) The screenshot of KML file containing all the land parcels included in 1st Project Activity Instance is shown in Section 1.12 of Joint PD MR.

Comment 10:

Geodetic polygons that delineate the geographic area of each AFOLU project activity, provided in a KML file. Pete, Climate change enthusiastic Independent researcher

PP Response:

Geodetic Polygons of 1st Project Activity Instance is attached as separate KML file and is shared with the VVB.

The screenshot of KML file containing all the land parcels included in 1st Project Activity Instance is shown in Section 1.12 of Joint PD MR.

Comment 11:

In this project i have Observed the locations which you added in this project with serial numbers 4,5,6,10,11,12,13,15,47,48,54,55,61,62,75,78,79,99,153,301,445,467 are same used in this Project id 2346 as it is same this searial numbers 80,14,50,67,84,78,32,145,133,132,135,140,141,111,137,136,142,59,131,144,73 respectively.

PP Response:

We have carried out further investigation and have retained farmers wherein unambiguous and clear evidences are available. As a result, we have revised the farmer list and submitted to the DOE.

The Famer list of VCS 2479, contains 20 farmers aggregating to 12.48 hectares of land parcels. These areas do feature in VCS 2346, however these areas have been included in VCS 2346 without consent of the farmers. These farmers had entered into exclusive agreements with VCS 2479 and had purchased the seedlings through PP of VCS 2479 and had followed all the Plantation SOPs and guidelines provided by the PP of VCS 2479. The same has been confirmed by PP of VCS 2346 vide email dated March 09, 2023 specifically

requesting VERRA to exclude these farmers from VCS 2346. The copy of the same as shared by farmer with us was submitted to VVB.

VVB assessment:

VVB confirms that PP has provided with the mail evidence to VERRA from a farmer confirming the PP of project 2346 requesting to remove 22 farmers from their project. The PP of project 2479 (i.e. subject project under validation/verification) has a legally binding agreement with the farmers excluded from the project 2346 and the farmers has also purchased the seedlings from the PP of project 2479 which has been verified by VVB through reviewing the agreements and during the on-site inspection. In the opinion of VVB, these legally binding contract ensures that PP has legal and uncontested right over the title (of land of farmers participated in the 1st PAI) and thus this comment has no relevance and no further investigation is required.

Comment 12:

I found in this project you have copied most of data from project id 2346 Ramesh Patil AFPP welfare Assosiation INDIA rameshpatilbabu@gmail.com

PP Response:

Since the Project Activity, Geographic data, Plantation Species, is similar, the factual data may be similar. Hence some information in PDD may look similar.

However, no information has been copied from VCS 2346.

VVB assessment: In the opinion of VVB, this stakeholder's comment is irrelevant after completion of the validation/verification process, as the document had already undergone a thorough/rigorous review by the VVB, Carbon Check.

VVB assessment for comment 01 to 12: VVB, during the on-site inspection, verified the legal documents^[22] and affidavits regarding the dismissal of complaint mentioned in the comments above. VVB confirms that the case has been dismissed, and the proceedings have been closed. There is no resultant change in the project design as most of the comments were legally related and not related to project activity. For others (such as comment 5 to 12), PP has provided appropriate justification and the is deemed appropriate and no further action is required.

VVB based on review of the supporting evidence and the responses of PP, confirms that justification to each of the comment are as valid and appropriate.

3.3.5 AFOLU-Specific Safeguards

In accordance with the VCS template instructions, VVB has assessed safeguards by following the steps as mentioned in **table XI**:

The local stakeholder identification process and the description of results.	Based on the review of section 2.5 of the VCS Joint PD & MR ^[01] , the following stakeholders have been mapped by the PP:
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	• Village community • Farm labour • Farmers and family • Suppliers • Produce consumers • State level forest department • Local Government Executives • Carbon registry & auditors • PP employees • Neighbouring farms PP has followed the process for identification of stakeholders^{/15/} and their importance for the project activity which deems to be valid to the VVB. Based on the on-site inspection & interviews^{/III-01-III-28/} and review of the VCS PD & MR^{/01/} and other supportive document^{/15/} provided by the PP, VVB has ascertained that the stakeholders mapped for the projects are relevant and that no party/individual concerned/affected by the project has been overlooked.
Risks to local stakeholders due to project implementation and how the project will mitigate such risks.	As per the VCS Joint PD & MR^{/01/}, some of the risks associated to local stakeholder resources are provided below: Organic manure, fertilizers, Pesticides VVB confirms that the PP will use protective gears during use of herbicides/fertilizer application and will create a linkage with bio-fertilizer manufacturers to reduce the cost. Vehicle for transportation PP has placed SOP^{/16/} for not utilizing unfit declared vehicles and HR SOP for monitoring of PP's employee commute to office and return. VVB confirms the risks identified by PP are eligible and proper mitigation measures have been provided by the PP.
Risks to local stakeholder resources due to project implementation and how the project will mitigate such risks, including plans to ensure the project will not impact local	As a part of project implementation, the farmers are provided with Mahogany saplings by MVAP. The only risk associated to local stakeholder resources is project activity land parcel which is also mitigated by ensuring a contractual agreement^{/06/} between farmers and

stakeholders' property rights without the free, prior and informed consent.	PP to allow permission of project activity on their land. The contractual agreement also defines the terms and conditions related to ownership and revenue generated through the sale of carbon credits. VVB based on review of contractual agreement^{/06/} and onsite interviews^{/III-01-III-28/} confirms that project does not impact local stakeholders' property rights without the free, prior and informed consent.
Processes to ensure ongoing communication and consultation, including a grievance redress procedure to resolve any conflicts that may arise between the project proponent and local stakeholders.	As per the VCS Joint PD& MR^{/01/}, the grievance redress procedure has been set up by the PP in compliance with VCS standard v4.4^{/B01/}. During the on-site inspection VVB has reviewed the grievance logbook^{/15/} and mechanism which is in line with the VCSA requirements. As per the grievance mechanism reviewed by the VVB, farmers can raise the grievances through the logbook given to the farmer and an agronomist is available on site to receive any feedback. Multiple avenues for stakeholders to submit grievances, which includes submissions in person, by Grievance Register available with each participatory farmer as checked by PP team on regular basis, phone, text message, social media platforms, mail, e-mail or via a website.
Identify, discuss and justify a conclusion regarding whether the project has been designed and, as appropriate, is implementing, plans and processes to ensure the project will not create any negative impacts on local stakeholders or mitigates such impacts where necessary.	Based on supportive evidence^{/01/15/16/} and further doing on-site visit & interviews^{/III-01-III-28/} VVB concludes that the project has been appropriately designed and implemented supporting the farmers through generation of revenue and helping in mitigation of climate change. Hence, VVB confirms the project does not create any negative impacts on local stakeholders and has necessary mitigation plan for any necessary risk that may arise in future.
For AFOLU projects that have claimed to have no impacts on local stakeholders, provide an assessment of the evidence provided and identify, discuss and	As per the VCS Joint PD & MR^{/01/}, PP has appropriately demonstrated that the stakeholders are not negatively affected by the project. This was further confirmed by the VVB during the interview^{/III-01-III-28/}, with the stakeholders during the on-site inspection. Instead, they are benefitting

justify a conclusion as to whether the project has no impacts on local stakeholders.

from the carbon revenue apart from other livelihood options. VVB has identified and discussed the potential impacts above in the table.

3.4 Application of Methodology

3.4.1 Title and Reference

The methodology applied is the CDM A/R Large-scale Consolidated Methodology AR-ACM0003: Afforestation and reforestation of lands except wetlands v 02.0^{B02/} under the sectoral scope 14 of Agriculture, Forestry and other Land Uses (AFOLU).

Besides the methodological document, the following tools were applied^{B03/}:

- ✓ Combined tool to identify the baseline scenario and demonstrate additionality in A/R CDM project activities (Version 01.0).
- ✓ Estimation of carbon stocks and change in carbon stocks in dead wood and litter in A/RCDM 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).
- ✓ Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/RCDM project activities (Version. 04.2).
- ✓ Estimation of the increase in GHG emissions attributable to displacement of pre-project agricultural activities in A/R CDM project activity (Version 2.0).
- ✓ Tool for estimation of change in soil organic carbon stocks due to the implementation of A/R CDM project activities (Version 01.1.0).

Based on the review of the VCS Joint PD & MR^{01/} and other supporting evidence, VVB confirms the used methodology and tools is applicable to this project. VVB has also reviewed the supporting evidence for methodology applicability criteria^{19/}.

3.4.2 Applicability

For methodology AR-ACM003 v2.0, VVB has assessed the applicability conditions which are as follows:

Table XII: Applicability of methodology and VVB assessment

AR-ACM0003	VVB Assessment
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Condition: The land subject to the project activity does not fall in the wetland category. Justification: The land parcels included in the Project Activity and First Project Activity Instance are farm lands privately owned by multiple farmers who are undertaking traditional crop farming and does not fall under the wetland area defined by the Government bodies, particularly (i) Wetlands Portal of India¹⁰, accorded by the Ministry of Environment, Forest and Climate change, Government of India; and (ii) ENVIS Centre on Wildlife & Protected Areas¹¹, sponsored by Ministry of Environment, Forests & Climate Change, Government of India. The same is additionally evidence by land title/right document which details about the land use type. PP under its due diligence approach for the areas under rice cultivation has specifically considered only those areas where rice is cultivated under aerobic rice cultivation system. The aerobic rice cultivation system is the method of cultivation, where the rice crop is established by direct seeding (dry or water-soaked seed) in non-puddle field and un-flooded field condition. Rice cultivation through puddle or flooding techniques are excluded during on-boarding of farmers as per SOP. The aerobic rice cultivation being carried out in non-puddle/un-flooded field is	Based on review of VCS Joint PD & MR^{/01/}, supporting links^{/B05/} and further during the on- site inspection, VVB has observed that no wetland has been included in the project area. Furthermore, VVB has verified this through Wetlands Portal of India, MoEF CC^{/B05/}. Under the 1st PAI, there are no areas included having rice cultivation pre or post project activity. This was confirmed during the on-site inspection and interviews. For the future PAIs, PP has incorporated in the SOP that the farmers practicing Rice cultivation through puddle or flooding techniques will be excluded. As per the Ramsar wetland definition: <i>“Wetlands are areas where water is the primary factor controlling the environment and the associated plant and animal life. They occur where the water table is at or near the surface of the land, or where the land is covered by water.”</i> The areas under rice cultivation with direct seeding practice in non-puddle and un flooded field condition will be considered only for on-boarding and does not meet the definition of wetland as there is no presence of water table at or near the surface of the land due to aerobic practice of rice cultivation. This has been incorporated in the SOPs also which has been verified by VVB. Furthermore, remote sensing analysis has also been conducted to verify that the project areas under 1st PAI does not include any natural or artificial (rice-flooded field) wetlands.
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¹⁰ <https://indianwetlands.in/wetlands-overview/interactive-wetland-map-of-india>

¹¹ http://www.wiienviis.nic.in/Database/ramsar_wetland_sites_8224.aspx

not considered as wetland as defined under Ramsar Convention on Wetlands¹².

It may be noted that the first Project Activity Instance of 165.41 ha does not include any land parcel having rice cultivation pre or post Project Activity.

Condition:

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:

(a) Land containing organic soils

(b) Land which, in the baseline, is subjected to land use and management practices and receives inputs listed in appendices 2 and 3 to this

Justification

The Project Activity and First Project Activity Instance involves cropland which falls under the clause (b)(ii) of the applicability criteria of AR-ACM0003 methodology.

The Project Activity and First Project Activity Instance involves the digging of pits for the plantation of Mahogany seedlings in which the soil disturbance is not more than 10% of area, below calculations establishes the fact:

Table 2: Calculation of Soil Disturbance

Sample Project Area	1 hectare
Pit Size	1.5 ft. x 1.5 ft. (Length x Width) or 2.25 Sq.ft.
Number of	Maximum 1,111

VVB based on the review of the VCS Joint PD & MR^{/01/} and through on-site inspection/interviews^{/III-01-III-28/} confirms that the soil disturbance is not more than 10 %. The pit size for plantation is kept as 1.5 ft x 1.5 ft (Length x Width) with maximum 1,111 plants per hectare. The pits dug per hectare is only 0.02 hectare or 2500 sq ft which results to only 2.30 % soil disturbance per hectare.

VVB has reviewed the IPCC soil maps used in the project activity and confirms that the area does not include organic soils and land use management practices are as described in appendices 2 and 3. VVB has reviewed the evidence^{/18/} for the soil type and confirms the same.

¹² <https://www.ramsar.org/sites/default/files/documents/library/info2007-01-e.pdf>

Plantation	seedlings	
Total Area of Pits	1,111 x 2.25 Sq. ft. or 2,500 Sq. ft. or 0.02 hectare	
Percentage of Soil Disturbance	2.30%	
Post harvesting of the Mahogany, the replantation activity would entail similar soil disturbance of 2.30% as it envisages the natural decomposition of harvested stumps without any Soil Disturbance.		
Condition The project activity applying this methodology shall also comply with the applicability conditions of the tools contained within the methodology and applied by the project activity. Justification The project activity applied to this methodology is also complied with tools as mentioned in section 3.1.		VVB after reviewing the VCS Joint PD & MR^{/01/} confirms that the tool applicability conditions are in compliance with the project activity.

The tools applied in the project activity are mentioned in the following table:

Table XIII: Tools applicability conditions and VVB assessment

Tool	Applicability conditions	VVB Assessment
Combined tool to identify the baseline scenario and demonstrate additionality in A/R CDM project activities	Forestation of the land within the proposed project boundary performed with or without being registered as the A/R CDM project activity shall not lead to violation of any applicable law even if the law is not enforced. Justification: Refer section 1.14 herein, which enumerates that the Project Activity is in compliance with all local laws and regulations and does not lead to violation of any applicable law, even if the law is not enforced. In fact the Project Activity	VVB based on the review of section 1.14 VCS PD & MR^{/01/} confirms that the project activity does not violate any applicable law even if the law is not enforced. This is also assessed in section 3.1 of this report. Furthermore, VVB has also reviewed the evidence^{/09/} for the same.

	being agroforestry is promoted by various national and state policy as detailed in section 1.14 herein above	
	This tool is not applicable to small-scale afforestation and reforestation project activities Justification: The First Project Activity Instance being part of the Project Activity is a large-scale Project as the Project Activity leads to sequestration of more than 16,000 tons of CO₂ per year as per the CDM Methodology Booklet	VVB confirms that the first PAI only covers 165.41 ha with annual estimation of 7,699 tCO ₂ e/year. As per the Joint VCS PD & MR ^{/01/} , the project would include more project activity instances in future. Thus the project is not a small-scale project.
Estimation of Non CO ₂ GHG emissions resulting from burning of biomass attributable to an A/R CDM project activity (v04.0.0)	The tool is applicable to all occurrence of fire within the project boundary Justification: As mentioned in section 5.2 herein, the farmers involved in the Project Activity is not using burning of biomass or fire for site or land preparation.	VVB through the on-site inspection/interviews ^{/III-01-III-28/} confirms that fire was not used for site preparation and there was no burning of biomass.
	Non-CO₂ GHG emissions resulting from any occurrence of fire within the project boundary shall be accounted for each incidence of fire which affects an area greater than the minimum threshold area reported by the host Party for the purpose of defining forest, provided that the accumulated area affected by such fires in a given year is ≥5% of the project area. Justification: As mentioned in section 5.2 herein, the Project Activity is not: i. using fire for site preparation ii. using fire to clear the land of harvest residue prior to replanting of the land iii. subjected to fire risk, as detailed in Non-Permanence Risk Report	VVB through the on-site inspection/interviews ^{/III-01-III-28/} confirms that fire was not used for site preparation and the fire risk management and mitigation has been appropriately demonstrated in Non-Permanence risk report ^{/03/} .

Estimation of carbon stocks and change in carbon stocks in dead wood and litter in A/R CDM project activities (Version 03.1)	No internal applicability conditions Justification: The PP has not considered the change in carbon stocks in dead wood and litter. Hence, not applicable.	It is not applicable as the dead wood is not selected for accounting.
Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities (Version 04.2)	No internal applicability conditions Justification: PP has used the tool for estimation of carbon stocks for the trees.	VVB based on the review of the VCS Joint PD & MR ^{/01/} along with carbon calculation spreadsheets ^{/02/} confirms that the tool has been used for estimation of carbon stocks of trees.
Estimation of the increase in GHG emissions attributable to displacement of pre-project agricultural activities in A/R CDM project activity (Version 02.0)	This tool is not applicable if the displacement of agricultural activities is expected to cause, directly or indirectly, any drainage of wetlands or peat lands Justification: The Project Activity does not lead to any displacement of agricultural activities, hence not applicable.	VVB through the on-site inspection and the evidence ^{/13/} confirms that the project activity does not lead to any displacement of agricultural activities. The project activity is following an agroforestry system i.e., Agri- silviculture system which allows to continue growing the crops along with trees.
Tool for estimation of change in soil organic carbon stocks due to the implementation of A/R CDM project activities (Version 01.1.0)	This tool is applicable when the areas of land, the baseline scenario, and the project activity meet the following conditions: (a) The areas of land to which this tool is applied: (i) Do not fall into wetland1 category; or (ii) Do not contain organic soils as defined in 'Annex A: Glossary' of the IPCC GPG LULUCF 2003; (iii) Are not subject to any of the land management practices and application	VVB confirms that PP has not accounted for SOC as a carbon pool. Hence it is not applicable.

	of inputs as listed in the Tables 1 and 2; (b) The A/R CDM project activity meets the following conditions: (i) Litter remains on site and is not removed in the A/R CDM project activity; and (ii) Soil disturbance attributable to the A/R CDM project activity, if any, is: • In accordance with appropriate soil conservation practices, e.g. follows the land contours; • Limited to soil disturbance for site preparation before planting and such disturbance is not repeated in less than twenty years. Justification: PP has not considered the change in carbon stock due to soil organic carbon in the Project Activity. Hence not applicable.	
Condition The project activity applying this methodology shall also comply with the applicability conditions of the tools contained within the methodology and applied by the project activity. Justification The project activity applied to this methodology is also complied with tools as mentioned in	--	VVB based on the review of VCS Joint PD & MR^{01/} confirms that the applicability conditions are in compliance with the project activity.

section 3.1.

Overall, VVB confirms that the methodology and the tools selected by project proponent are appropriately used and justified in the VCS Joint PD & MR^{/01/} and the methodology^{/B02/} and tools^{/B03/} used are all in compliance with the applicability conditions^{/19/}.

3.4.3 Project Boundary

VVB through the review of VCS Joint PD & MR^{/01/}, KML files^{/10/} and on-site inspection confirms that the grouped project activity is scattered across five states of India. In the first PAI, 165.41 hectares of land was included involving 315 farmers across 21 districts in Maharashtra, Karnataka and Telangana states in India^{/01/10/}.

The source and sinks of gases included in the baseline and project scenario are as follows:

Source		Gas	Included	Justification/ Explanation
Baseline	Above Ground Biomass	CO ₂	Yes	CO ₂ emissions from removal of preexisting vegetation are conservatively excluded
		CH ₄	No	Pre-existing vegetation is not slashed nor burned
		N ₂ O	No	Biomass in project scenario is not slashed nor burned
		Other	-	-
	Below Ground Biomass	CO ₂	Yes	CO ₂ emissions from removal of preexisting vegetation are conservatively considered
		CH ₄	No	Pre-existing vegetation is not slashed nor burned
		N ₂ O	No	Pre-existing vegetation is not slashed nor burned
		Other	-	
Source		Gas	Included	Justification/ Explanation
Project	Above Ground Biomass	CO ₂	Yes	This is the major carbon pool of the project activity and first PAI
		CH ₄	No	Biomass in project scenario is not slashed nor burned
		N ₂ O	No	Biomass in project scenario is not slashed nor burned
		Other	-	-
	Below Ground	CO ₂	Yes	This is the major carbon pool of the project activity and first PAI

	Biomass	CH ₄	No	Biomass in project scenario is not slashed nor burned
		N ₂ O	No	Biomass in project scenario is not slashed nor burned
		Other	-	-
	Soil Organic Carbon	CO ₂	No	Conservatively excluded for the project activity

VVB confirms that the project boundary and selected sources, sinks and reservoirs and their justification of inclusion and exclusion is valid and in compliance with the applied methodology^{/B02/}.

3.4.4 Baseline Scenario

Based on the review of VCS Joint PD & MR^{/01/}, VVB confirms that the project baseline scenario has been identified as per the CDM “Combined tool to identify the baselinescenario and demonstrate additionality in A/R CDM project activities” (Version 01)^{/B03/}. Please refer to section 3.4.5 for the detailed assessment of identification of the most plausible baseline and demonstration of additionality.

PP has developed SOP^{/11/16/} for eligibility requirements for land parcels to be part of the grouped activity which is as follows:

- ✓ No native forest for the past 10 years prior to the plantation date
- ✓ No wetland
- ✓ Land should be used either for cropping or should be barren, fallow

The baseline scenario^{/11/12/} was identified as agricultural lands following traditional cropping such as cultivation of rice, wheat, paddy, maize, cotton, sugarcane, soyabean, cotton and vegetables, sometimes along with some fruit trees. However, the area under the first project activity instance includes no fruit trees prior to project implementation.

VVB, based on the on-site inspection/interviews^{/III-01-III-28/}, confirms this baseline scenario as justified. All the relevant national or state policies are listed in the project. VVB based on the review of VCS Joint PD & MR^{/01/} and the evidence^{/11/12/} provided confirms that the baseline scenario have been correctly identified and would have occurred in the absence of the project.

3.4.5 Additionality

The identification of the most plausible baseline and demonstration of additionality has been demonstrated using the “Combined tool to identify the baseline scenario and demonstrate additionality in A/R CDM project activities (Version 1.0)”^{B03/}.

STEP 0: Preliminary screening based on the starting date of the A/R project activity

Based on the review of the proof of start date^{08/}, VVB confirms that the first plantation activity was considered from 28th June 2018, which is the start date for this grouped project and the first PAI. It clearly demonstrates that the project activity was after 31st December 1999. The incentives from the planned sale of VCU was considered by the farmer as evident from the contract^{06/} between the PP and participating farmers of 1st PAI. VVB through the on-site inspection interviews, confirms that PP has done one to one consultation with farmers explaining the economic benefits arising from the project activity.

STEP 1: Identification of alternative scenarios to the proposed A/R CDM project activity

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

PP has identified the following alternative scenarios:

- Continuation of the pre-project land use
- Afforestation of the land with palm oil plantation without being registered as the A/R CDM project activity
- Afforestation of the land with commercial tree plantations in agroforestry system without being registered as the A/R CDM project activity

VVB through the on-site inspection, confirms that the identified alternative baseline scenarios are applicable and valid to this project activity. PP has also considered the feedback taken from farmers for identification of alternative baseline scenarios.

Sub-step 1b- Consistency of credible alternative land use scenarios with enforced mandatory applicable laws and regulations

VVB, based on review of the applicable laws and regulations mentioned in the VCS Joint PD & MR^{01/}, confirms that the alternative land use scenarios identified are all in compliance with the laws and regulations, evidence regarding the same has also been provided by PP^{09/}.

As there are more than one alternative land use scenarios, the project can proceed to next step i.e. barrier analysis.

STEP 2: Barrier analysis

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

Based on the review of the VCS Joint PD & MR^{/01/}, following barriers were identified that would prevent the implementation of at least one alternative land use scenarios:

- Barriers due to social condition
- Technological barriers
- Barriers relating to markets, transport and storage
- Investment barrier

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

Table XIV: Identified alternative land use scenarios, barriers limiting the scenario and VVB assessment

Alternative Land Use Scenario	Barriers Limiting the Scenario	VVB Assessment
A— Continuation of the pre-project land use	-	VVB based on-site inspection interviews, ^{/III-01-III-28/} confirms that this is the only scenario that is not prevented by any of the barrier.
B— Afforestation of the land with Palm Oil Plantation without being registered as the A/R CDM project activity	○ Barriers due to Social Condition ✓ Demographic pressure on the land ✓ Lack of skilled and/or properly trained labor force ✓ Lack of organization of local communities ✓ Access to technical advice/knowledge ✓ Urbanization ○ Technology Barriers ✓ Death of quality planting material	VVB confirms that palm oil plantation requires lot of technical skills for plantation. The market is not available for the processed products of palm trees. It requires a significant amount of investment for plantation. The identified barriers are relevant to the alternative scenario.

	✓ Lack of Processing Industry ✓ Weak market access for agroforestry produce ○ Barriers relating to markets, transport and storage ○ Investment barrier ✓ Access to credit is difficult and level of indebtedness ✓ High upfront investment	
C— Afforestation of the land with commercial tree plantations in agroforestry system without being registered as the A/R CDM project activity	○ Barriers due to Social Condition ✓ Demographic pressure on the land ✓ Lack of skilled and/or properly trained labor force ✓ Lack of organization of local communities ✓ Access to technical advice/knowledge ✓ Urbanization ○ Technology Barriers ✓ Dearth of quality planting material ✓ Lack of Processing Industry ✓ Weak market access for agroforestry produce ○ Barriers relating to markets, transport and storage 3) Investment barrier	The commercial tree plantation requires a large land holding to produce profit from plantations. As the farmers in the project activity are small landholders, this barrier is prohibitive. The market availability for the agroforestry products are also a real and prohibitive barrier, along with the investment required for commercial scale plantations in agroforestry system. The identified barriers are relevant to the alternative scenario. The evidence to support the two investment barriers has been cited in the Joint PD & MR^{/01/} from “Situation Assessment of Agriculture Households and Land and Holdings of Households in Rural India, 2019”, Ministry of Statistics & Programme

	✓ Access to credit is difficult and level of indebtedness. ✓ High upfront investment	Implementation ^{13 14} which has been verified by VVB.
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VVB, based on the host country expertise and thorough research confirms that there are no specific government agencies providing subsidies for agroforestry. The subsidies provided by the state government are limited to crops (Kisan Credit Card and Crop Loan Schemes) which only covers the short term credit requirements and the same is not available for agroforestry plantation. The National agroforestry policy requires involvement of various central ministries, state ministries, central and state department and other institutions. Restrictive legal provisions for harvesting & transportation of trees planted on farmlands and use of non-timber produce, near non-existent extension mechanisms, lack of institutional support mechanisms, lack of quality planting materials, inadequate research on agroforestry models suitable across various ecological regions of the country, inadequate marketing infrastructure and price discovery mechanisms, lack of post-harvest processing technologies, etc. are some of the factors due to which the government subsidies does not reach to the farmers due to which the investment barrier is a major factor and does not get alleviated under the National Agroforestry Policy (2014).

Based on assessment above, VVB confirms that the remaining two alternative land use scenarios *i.e.*, Afforestation of the land with Palm Oil Plantation without being registered as the A/R CDM project activity & Afforestation of the land with commercial tree plantations in agroforestry system without being registered as the A/R CDM project activity are eliminated due to identified barriers and continuation of pre-project land use is the only scenario that is not prevented by any barrier.

Sub-step 2c- Determination of baseline scenario

Based on the assessment of sub step 2b, it is concluded that project without being registered as an A/R VCS project activity is not included in the list of scenarios that are not prevented by any barrier. VVB has also assessed the determined scenario as baseline scenario during the on-site inspection and interviews^{/III01-III028/}. The evidence^{/11/12/} regarding the baseline scenario and additionality has also been provided by the PP which demonstrates the barriers to plantation activities in different agro-ecological zones of Southern India, access to finance for smallholder farmers and socio-economic contribution of forests. VVB has also reviewed the baseline survey report^{/11/} provided by PP. The farmers involved in cultivation of the regular field crops as mentioned in the baseline assessment report will be favoured by planting Mahogany trees. Hence, it is concluded that the baseline scenario is continuation of pre-project land use.

¹³ Page No. 170 of 4264, https://mospi.gov.in/sites/default/files/publication_reports/Report_587m_0.pdf

¹⁴ Page No. 164 of 4264, https://mospi.gov.in/sites/default/files/publication_reports/Report_587m_0.pdf

VVB confirms that the identified barriers are real and prohibitive and can prevent the implementation of the grouped project. This was further confirmed through the on-site inspection and interviews.

STEP 3: Investment analysis

Not opted by the PP.

STEP 4: Common practice analysis

Based on the review of VCS Joint PD & MR^{/01/} there is one similar small project covering about 129 hectares across Maharashtra and Karnataka states in India with VCS ID 2346^{/B05/}. However, PP has demonstrated that this project activity is a large-scale project covering across 15000 hectares^{/10/} over the 5 states of India i.e., Maharashtra, Madhya Pradesh, Karnataka, Gujarat and Telangana during the whole crediting period while this first PAI includes the 165.41 hectares across Maharashtra, Karnataka and Telangana. Hence, the proposed A/R VCS project is not the baseline scenario and is additional.

VVB confirms that the additionality has been defined in compliance with the tool applied^{/B03/} and VVB has cross checked the evidence produced by PP to demonstrate the baseline scenario. The justification of additionality provided is valid and satisfactory to VVB.

3.4.6 Quantification of GHG Emission Reductions and Removals

Procedures for quantifying the GHG removals generated by the project during the project crediting period were conducted in accordance with the methodology “AR-ACM0003: Afforestation and reforestation of lands except wetlands”, Version 02.0^{/B02/}. VVB has performed review of all input data, parameters, formulas, calculations, conversions, statistics and resulting uncertainties and output data to ensure consistency with the VCS documentation, methodology tools, and the VCS Joint PD & MR^{/01/}.

The net anthropogenic GHG removals by sinks under the baseline scenario has been calculated as follows:

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

Where:

$C_{BSL,t}$ = Baseline net GHG removals by sinks in year t; t CO₂e

$C_{TREE_BSL,t}$ = Change in carbon stock in baseline tree biomass within the project boundary in year t, as estimated in the tool “Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities”; t CO₂e

$C_{SHRUB_BSL,t}$ = Change in carbon stock in baseline shrub biomass within the project boundary, in year t, as estimated in the tool “Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities”; t CO₂e

$C_{LI_BSL,t}$ = Change in carbon stock in baseline litter biomass within the project boundary, 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 CO₂e

The baseline emission is accounted as zero.

VVB confirms that the baseline estimated as zero is in compliance with the conditions mentioned in the paragraph 11 of the AR tool 14 v04.2 which are mentioned as following:

- a) VVB confirms that the land under the first project instance was previously cropland and there were no pre-project trees which can be harvested or cleared. In case, there are fruit trees used for intercropping, they have not been harvested or removed. This has been also confirmed during the on-site inspection and through the imagery evidence provided by PP.
- b) Due to no pre-project trees, there is no mortality because of competition from trees planted in the project. Thus, this requirement is also met.
- c) PP has only accounted the planted Mahogany trees and has not inventoried the fruit trees planted as intercrop.

The above-mentioned criteria have also been verified by VVB through the remote sensing analysis for the pre-project scenario confirming that there were no pre-project trees under the area in the first project activity instance. Thus, VVB confirms that all the conditions of the paragraph 11 are met, and the baseline can be accounted as zero.

As per VCS Joint PD & MR^{01/} pools corresponding to soil organic carbon, litter and deadwood charcoal will not be considered for the purpose of this project. These carbon pools will be assumed as zero in the baseline.

$\Delta C_{DW_BSL,t} = 0$, and $\Delta C_{LI_BSL,t} = 0$;

Project emissions

The actual net GHG removals by sinks is calculated as follows:

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

Where:

$\Delta C_{ACTUAL,t}$ = Annual actual net GHG removals by sinks at time t; t CO₂-e yr⁻¹

$\Delta C_{P,t}$ = Change in carbon stocks in project, occurring in the selected carbon pools, at time t; t CO₂e yr⁻¹

$GHG_{E,t}$ = Increase of non-CO₂ GHG emissions within the project boundary as a result of the implementation of the A/R project activity, in year t; t CO₂e

As per the tool non-CO₂ GHG emissions resulting from burning of biomass attributable to an A/R CDM project activity (v04.0) the GHG emission for non CO₂ gases is kept as zero as there was no use of fire for site preparation or biomass burning.

Change in the carbon stocks in project, occurring in the selected carbon pools in year t shall be calculated as follows:

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

Where:

$\Delta C_{TREE_PROJ,t}$ = 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 CO_{2-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 CO_{2-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 CO_{2-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 CO_{2-e}

$\Delta SOC_{AL,t}$ = Change in carbon stock in SOC in project, in year t, in areas of land meeting the applicability conditions of the tool “Tool for estimation of change in soil organic carbon stocks due to the implementation of A/R CDM project activities”, as estimated in the same tool; t CO_{2-e}

As during the on-site inspection no shrubs were found for baseline measurements. Hence VVB confirms that the change in shrub biomass, deadwood and litter biomass can be considered as zero.

For the ex-ante carbon stock estimation of *Swietenia macrophylla*, following equation was used:

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

Where;

C_{Tree} = Carbon stock in trees in the tree biomass estimation strata; t CO_{2e}

CF_{Tree} = Carbon fraction of tree biomass; t C (t d.m.)⁻¹. A default value of 0.50 is used.

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

For estimation of Tree biomass, the following equation is used:

$$B_{Tree} = [Above\ ground\ biomass\ (AGB) + Below\ ground\ biomass\ (BGB)] \times Area$$

$$B_{Tree} = \exp(-2.302 + 0.894 \ln(D^2H)) \times (1 + Root\ to\ Shoot\ Ratio, R_i) \times Area, A_i$$

Where;

R_j = Root to Shoot ratio for tree species j ; default value of 0.27 as per IPCC table 3A.1.8 for tropical dry forest (See page 215 of the report);

Area = Plantation Area; A_i

D = Diameter at Breast Height in metre, measured at 1.3 meter above ground level

H = Height in meter

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

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

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

exp = Exponential

The following allometric equation used in calculation of Above ground biomass (AGB):

$$\ln (TAGB) = - 2.302 + 0.894 \ln (D^2H)$$

$$TAGB = \exp(-2.302+0.894 \ln(D^2H))$$

TAGB= Total Above Ground Biomass

D =Diameter at Breast Height (in cm)

H =Height (in meters)

The plot biomass measurement will be determined as follows:

Where:

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

$B_{TREE,p,i}$ = Tree biomass in sample plot p of stratum i ; t.d.m.

$A_{PLOT,i}$ = Size of sample plot in stratum i ; ha

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

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

The MAI values for DBH and height has been derived from the research project coordinated by Centre for International Forestry Research (CIFOR) with focus on Indonesian sites at Java and Nusa Tenggara. VVB has verified the sources^{/17/20/B05/} and concludes that the assumptions made are reasonable as the project activity and the reference project area(Central Java) have similar edaphic-climatic conditions^{/B05/}

For both ex-ante and ex-post carbon calculation, the following the allometric equation⁵⁶ has been used to obtain Above Ground Biomass (AGB), which is derived for *Swietenia macrophylla* by Mahmood Hossain et.al (2020) with R2 value of 0.974.

$$AGB = \exp (-2.302+0.894 \ln(D^2H))$$

VVB has verified the applicability of the equation to check the conservativeness of the removal rates. VVB confirms that the allometric equation, used in the revised carbon calculation sheet, provides a direct biomass calculation.

VVB confirms that the requirements for ex-ante estimation as per Paragraph 1 (6.c) of tool “Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities” Version 04.2 and ex-post estimation as per para 5(c) of tool “Demonstrating appropriateness of volume equations for estimation of aboveground tree biomass in A/R CDM project activities” Version 01.0.1 has been satisfactorily demonstrated through the literature^{/17/} provided by PP. The plausibility has been demonstrated through reviewing the various literature^{/B05/} and PP has taken a conservative approach for the estimation of AGB.

Leakage

Leakage emissions shall be estimated as follows:

$$LK_t = LK_{AGRIC,t}$$

Where:

LK_t =GHG emissions due to leakage, in year t; tCO₂-e

$LK_{AGRIC,t}$ = Leakage due to the displacement of agricultural activities in year t, as estimated in the tool “Estimation of the increase in GHG emissions attributable to displacement of pre-project agricultural activities in A/R CDM project activity”; tCO₂-e

$$LK_{AGRIC,t} = (44/12) \times (\Delta C_{BIOMASS,t} + \Delta SOC_{LUC,t})$$

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

PP has considered the displaced agriculture activity in displaced land which is having no forest or trees. Such assumption is on account of specific prohibition of forest land for any other non-forest purposes under the Act passed by Indian Parliament namely The Forest (Conservation) Act, 1980, dated December 27, 1980. The official gazette notification (Part II- section 1, Pausa 6) has been reviewed by VVB.

The value of b_{TREE} has been set equal to the applicable value of mean above ground biomass in forest region or country. The value of 73 t.d.m/ha has been applied from the

Table 3A.1.4 of the chapter 3 : LUCF Sector Good Practice Guidance (IPCC GPG LULUCF (iges.or.jp) VVB confirms the value applied is accurate and conservative method for estimating the area of land receiving the displaced agriculture.

As per Para 3 (a) (iii) of “Tool for estimation of change in soil organic carbon stocks due to the implementation of A/R CDM project activities “, Version 1.1.0, estimation of change in soil organic carbon is not applicable. Hence, $\Delta SOC = 0$.

Therefore, $\Delta C_{BIOMASS,t} = b_{SHRUB} \times (1+R_s) \times C_f \times A_{DISP,t}$

As per tool 14, Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities, $b_{SHRUB,i} = BDR_{SF} \times b_{FOREST} \times CC_{SHRUB,i}$

BDR_{SF} = Ratio of shrub biomass per hectare in land having a shrub crown cover of 1.0 (i.e. 100 per cent) and the default above-ground biomass content per hectare in forest in the region/country where the A/R CDM project activity is located, default value of 0.10 is considered

b_{FOREST} = Default above-ground biomass content in forest in the region/country where the A/R CDM project activity is located; t d.m. ha⁻¹, default value of 73 is considered for Forest in India as per table 3A.1.4 of IPCC GPG-LULUCF 2003

$CC_{SHRUB,i}$ = Crown cover of shrubs in shrub biomass estimation stratum i at the time of estimation, expressed as a fraction, default value of 0.5 (Para 64 table 2 CDM Tool 14) is considered

R_s = Root-shoot ratio for shrubs, default value of 0.40 is considered

C_f = 0.5, Carbon Fraction

$A_{DISP,t}$ = Area of land from which agricultural activity is being displaced in year t; ha

VVB confirms that PP has provided with the intercropping plan with different models^{/24/} and their financial revenues in association with ICAR.

Furthermore, VVB, during the on-site inspection, has confirmed that the intercropping is being carried out and there is sufficient land to carry out the agricultural activities with the density of 1,111 tree/hectare.

PP has estimated the leakage emission for the First Project Activity Instance of 165.41 hectares considering the annular ring width from the tree basal area. This practice of cultivation ensures smoother intercultural operations. As such area of agriculture displaced by the Project Activity is limited to the basal area of planted tree in addition to annular ring with width of 100cm(1m) around the basal area of tree each side. Furthermore, VVB has reviewed the level of accuracy of proposed approach for leakage estimations of project activity against the peer-reviewed literature *Hossain et.al., Performance of lettuce under six years old lohakat tree, J. Agrofor. Environ. 8 (2): 7-10, 2014 ISSN 1995-6983*^{/21/} and confirms the estimations deemed to be valid and satisfactory.

The area covered per year has been calculated through the mean basal year per hectare and is valid. Also, PP has submitted the MoU^{/24/} between PP and ICAR, Baramati, Maharashtra which is a legally binding document and has been verified by the VVB.

Thus, VVB confirms that the calculated value of leakage emission for the 1st monitoring period for displaced agricultural activity is 575tCO₂e.

Net GHG Emission Reductions and Removals

The following equation was used from the applied methodology AR-ACM0003 v2.0 for calculation of estimated Net GHG emission removals for 165.41 of land parcels in first PAI:

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

$$\Delta C_{AR-CDM,t} = \text{Net anthropogenic GHG removals by sinks, in year } t; t \text{ CO}_{2-e}$$

$$\Delta C_{ACTUAL,t} = \text{Actual net GHG removals by sinks, in year } t; t \text{ CO}_{2-e}$$

$$\Delta C_{BSL,t} = \text{Baseline net GHG removals by sinks, in year } t; t \text{ CO}_{2-e}$$

$$LK_t = \text{GHG emissions due to leakage, in year } t; t \text{ CO}_{2-e}$$

The long-term average GHG benefit (LTA) is calculated for each strata in first PAI using the procedure provided in section 3.2.2 VCS Standard V4.4. Following equation is used to calculate LTA:

$$LA = \frac{\sum_{t=0}^n PE_t - BE_t}{n}$$

Where;

LA = The long-term average GHG benefit

PE_t = The total to-date GHG emission reductions and removals generated in the project scenario (tCO₂e). Project scenario emission reductions and removals shall also consider project emissions of CO₂, N₂O, CH₄ and leakage.

BE_t = The total to-date GHG emission reductions and removals projected for the baseline scenario (t CO_{2-e})

t= year

n = Total number of years in the established time period; 30 years

The Long-term average value for entire project area calculated for each stratum for 30 years capped to 94,413 tCO₂e.

VVB confirms that the LTA has been calculated based on the harvesting cycle of each stratum as the stratification has been done on the basis of year of plantation. The harvesting cycle is kept 15 years, according to which the last harvest (second cycle) for the 2020 plantation falls in the year 2049 which has been appropriately demonstrated in the ex-ante carbon calculation sheet^{02/}. In the 1st PAI, 2019 - 2020 plantations are included covering 165.41 ha area. VVB confirms that the LTA has been calculated for the project length of 31 years based on the last harvest cycle for the 2020 year plantations. PP in the ex-ante carbon calculation sheet has included the final harvest. The long term GHG benefit has been

determined for 31 years as the last harvest cycle for the 2020 year plantations fall in the year 2049. The harvesting cycle is of 15 years and is for the two different years of plantation, i.e., 2019 & 2020. The LTA cap reaches at the year 2028 (10 years from the start date) for the first project activity instance. VVB confirms that the LTA has been calculated in compliance with the section 3.2.25(1a) of the VCS standard v4.4 and the VCS Guidance Harvesting Examples document.

VVB during on-site inspection confirmed that the formation of PP i.e. Mahogani has a strategic vision to promote carbon agroforestry projects. The foundation and strategic vision of the company together with signed contract with farmers (and distribution of revenue through entire length of the project) as evident during on-site inspection, ensures permanence even after the LTA is reached and carbon revenues stop.

Based on the LTA calculated in the ex-ante carbon calculation sheet^{/02/}, VVB confirms that the combined value of stratum of LTA will be reached during 10th year from the project start date, the same has been specified in the VCS Joint PD & MR^{/01/}.

As per paragraph 12 of AR-ACM0003, 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.* VVB, based on the site inspection and document review confirms that the project includes plantation of only single tree species i.e., *Swietenia macrophylla*. The stratification is based on the planting design and year of planting and is homogenous due to monoculture plantation and same type of soil conditions. Thus, the stratification as per the section 5.3 of the AR-ACM0003 is not applicable. For the block plantation with intercropping and without intercropping in the first project instance, VVB confirms that there is no change in the biomass as the density is kept same. For the boundary plantation, which is not part of the first project instance but may be included in the future instances, PP has satisfactorily demonstrated the variation against project plantation density.

Table XV: Uncertainty calculation^{/02/} for the ex-post carbon calculation

Year	Area of the stratum, Ai (Ha)	b TREE _{p,i} (t.d.m/ha)	Standard deviation	Uncertainty %	Applied discount factor (t.d.m/ha)	Total project removals (tCO ₂ e)
2019	12.26	15.29	0	0	0	343.00
2020	153.15	14.94	2.40	12.16%	0.60	4512.00
		16.02				
		15.52				
		20.20				

	Total					4,855
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VVB confirms that the applied methodology^{/B02/} and the referenced tools^{/B03/} have been applied correctly to calculate baseline emissions and net GHG removals of the project during the crediting period.

3.4.7 Methodology Deviations

Based on the review of the VCS Joint PD & MR^{/01/} and carbon calculation sheet^{/02/} VVB confirms that there are no deviations to the applied methodology AR-ACM0003.

3.4.8 Monitoring Plan

Based on the review of the VCS Joint PD & MR^{/01/} the data & parameters available during the validation are as mentioned below:

Table XVI: Data/Parameters available during validation

Data/Parameters available during validation	Value Applied	VVB Assessment ^{/20/B05/}
Carbon fraction; C_F	0.5	VVB after cross checking the mentioned source "IPCC Good Practice Guidance for LULUCF, 2003 Equation 3.2.3" confirms the value applied is valid.
Root to shoot ratio; R_j	0.27	VVB after cross checking the mentioned source "IPCC Good Practice Guidance for LULUCF, 2003 Table 3A.1.8" confirms the default value applied is valid for tropical dry forest.
CO _{2-e}	44/12	VVB confirms the IPCC default value used is valid and appropriate.
Permanent sample plot (PSP)	5	VVB during the on-site inspection has visited all the PSPs and confirm the location and other parameters.
Area of stratum in hectares(ha), A_i	First PAI area= 165.41 ha;	VVB based on the on-site interviews and review of KML files ^{/10/} , contractual agreements ^{/06/} confirms that the first PAI includes 165.41 hectares of three states with maximum area from Maharashtra following by Karnataka and Telangana.

The stratification for the first Project Activity Instance is based on the year of plantation, however, considering the vast area of project spreading in different states of India including

Maharashtra, Karnataka and Telangana, VVB has conducted a risk assessment to account for all states with different climatic conditions and topography. VVB has observed that the sample plot area distribution per state is as

Locations	Area (ha)
Maharashtra	164.21
Karnataka	0.40
Telangana	0.80
TOTAL	165.41

The total plantation area of the project is 165.41 ha out of which Maharashtra accounts for 164.21 ha and thus around 99.3 % of the area. In view of this, VVB ascertains that stratification based on year of plantation is appropriate and thus acceptable.

VVB based on the review of monitoring plan in VCS Joint PD & MR^{/01/}, the monitoring team^{/16/} consists of competent professionals for collection of data, monitoring and verifying the data. The QA/QC procedures mentioned sound reasonable and valid.

Overall, the monitoring is done in adherence to the monitoring plan and in compliance with the requirements of the applied methodology^{/B02/} and referenced tools^{/B03/}.

3.5 Non-Permanence Risk Analysis

VVB has reviewed the non-permanence risk report^{/03/} in compliance with the VCS standard v4.4^{/B01/} and AFOLU Non permanence risk tool v4.0^{/B01/}. The risks identified along with the risk score and VVB assessment are as mentioned in the table below:

Table XVII: Non permanence risk identified and VVB assessment

	Risk	VVB Assessment and Justification
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INTERNAL RISK	Project Management	Based on the review of the VCS Joint PD & MR^{/01/} and VCS Non-Permanence Risk Report^{/03/}, VVB confirms that only single tree species is planted as a part of the VCS project implementation which is <i>Swietenia macrophylla</i> (Mahogany) which is a non-native tree. However, PP has provided sufficient literature^{/20/B05/} to demonstrate that the species have been proven to be adapted to the agro-ecological zone(s) in which the project is located. Mitigation: Management team includes individuals with significant experience in AFOLU project design and implementation, carbon accounting and reporting under the VCS program and other approved GHG programs. MITCON has undertaken capacity building to design this AFOLU project, Carbon Sequestration assessment from trees, report and participate in validation and verification under respective CDM/VCS methodology and standard requirements through internal and external expertise. Hence risk rating for this factor is -2. Adaptive management plan in place. MVAPL has undertaken exercise for ISO 9001:2015 which involves certification followed by internal and external audits. The Quality Management System (QMS) implemented by MVAPL has adaptive feedback loop which stipulates quarterly/half-yearly/annual review of Quality Objectives, Risk Analysis, Operating Manual, SWOT analysis and changes are effected in QMS/SOPs to reflect observations made or found during such reviews. However, MVAPL currently has in-built management plan which has active feedback loop, self-correction mechanism and continuous improvement enablers. Hence risk rating for this factor is -2. VVB based on the review of on-site inspection/interviews^{/III-01-III-28/} and SOPs^{/16/} confirms that project management risk score -4 is acceptable.
	Financial Viability	VVB has cross-checked the project cash flow including all the assumptions for the cash inflow and outflow and can confirm the break- even point is between 4 and up to less than 7 years. VVB, based on the review of the NPRR^{/03/} and contractual agreement^{/06/} confirms that the project has secured 40% to less than 80% of funding needed to cover the total cash out required before the project reaches breakeven from the current risk assessment. VVB confirms that the project has available as callable financial resources more than or equal to 50% of total cash out before project reaches breakeven. It is ensured that the upfront investment of Rs 132,201 for purchase of seedlings, transport, fertilizers, fungicides, site preparation and irrigation facility is taken before the plantation activity in each land parcel. It was also further confirmed through the

		contractual agreement^{/06/} between farmer and PP. Based on the financial risk identified above, VVB confirms that the overall financial risk score is 0.
	Opportunity Cost	VVB based on review of VCS Non-Permanence risk report^{/03/} provided by PP and on-site inspection, confirms that the baseline activities are subsistence-driven and that net positive community impacts have been demonstrated. This is checked and confirmed by the VVB. PP is also in a contractual agreement^{/06/} with the farmer where it is clearly mentioned that PP agrees to provide assistance and services related to planting and maintenance through multiple harvesting cycles till the end of crediting period. Based on the assessment of the net impacts of the project on the social and economic well-being of the communities who derive livelihoods from the project area and the contractual agreement between farmer and PP, VVB confirms that the socio-economic impacts of the project on communities is positive, hence the risk score -2 is acceptable
	Project Longevity	As per the VCS Non-Permanence Risk Report^{/03/} the length of the VCS project longevity is 30 years. During the on-site inspection, VVB has reviewed that the project longevity is based on the legal agreement^{/23/} with farmers/landowners. The agreement provided is legally binding and enforceable under the Indian Contract Act 1872, The Specific Relief Act, 1963, The Code of Civil Procedure, 1908, The Indian Evidence Act, 1872. PP has also submitted the legal opinion of the Honourable retired district court judge for the agreements^{/23/}. As per section 2.2.4, 6) Where AFOLU project longevity is less than 30 years, the project fails the risk assessment and it is not eligible for crediting. VVB during on-site inspection confirmed that the formation of PP i.e. Mahogani has a strategic vision to promote carbon agroforestry projects. The foundation and strategic vision of the company together with signed contract with farmers (and distribution of revenue through entire length of the project) as evident during on site inspection, ensures permanence even after the LTA is reached and carbon revenues stop. One (01) FAR has been raised in this context. VVB, based on the evidence provided^{/06/}, confirms that the project will include re-plantation after harvesting^{/16/}. VVB confirms that the risk score 15 is acceptable and in compliance with NPR Tool^{/03/}.

	Total Internal Risk (PM + FV + OC + PL)	In conclusion, VVB confirms that the total internal risk for the VCS project is 9, which is deemed appropriate and valid
EXTERNAL RISK	Land Tenure and Resource Access/Impacts	As per the VCS Non-Permanence Report^{03/}, the project includes land that belongs to the farmers. Thus, the ownership and resource rights are held by same entities. A contractual agreement^{06/} in regard to land title and right over the carbon credits has been provided to the VVB. VVB confirms that the risk score 0 is acceptable.
	Community Engagement	VVB confirms that the project proponent has ensured an effective community engagement during the project implementation and operation. This conclusion is based on the following: ✓ on review of the LSC documents^{15/}, ✓ interviews during the on-site inspection, and ✓ by reviewing the on-going grievance addressal system VVB confirms that the socio-economic impacts of the project on communities is positive, hence the risk score -5 is acceptable.
	Political Risk	As per the VCS Non-Permanence Risk Report, the average score over the last five years (2017-21)^{08/} is -0.12. This was further confirmed from the World Bank Institute Worldwide Governance Indicators score for India (2017-21) available at: http://info.worldbank.org/governance/wgi/index.asp VVB confirms that risk score 0 is acceptable.
	Total External Risk (LT + CE + PC)	In conclusion, VVB confirms that the total external risk for the VCS project gives 0, which is deemed appropriate and valid
NATURAL RISK	Fire (F)	As per the VCS Non-Permanence Risk Report^{03/} the project is comprised of multiple unconnected scattered small land parcels with an average size of 0.50ha. The Agri silviculture system followed also reduces the fire risk and propagation thereof. The justification provided by PP is deemed appropriate to the VVB and thus acceptable. PP has also provided SOPs^{16/} for the prevention of fire outbreaks in which all stakeholders are involved. VVB confirms that the SOPs will help in reducing/mitigating the risk of fire. Moreover, the risk of fire is greatly mitigated by the project design. Hence total risk score for the risk of fire i.e., 0 is acceptable.
	Pest and Disease	As per the VCS Non-Permanence Risk Report ^{03/} , the planted tree species <i>Swietenia macrophylla</i> is resistant to pests and diseases.

	Outbreaks (PD)	However, it is still under the risk of attack from shoot borers^{/20/}. PP has followed a selective process to avoid the plantation of disease and pest affected seedlings. Furthermore, the project activity is scattered around multiple land parcels which in itself is a mitigation against the risk of spread of disease or pest attack. Therefore, the likelihood is low and only at the early stages of plantation. Based on review of the evidence provided, VVB confirms that PP has provided the “agronomist raw field visit form”, which includes the owner of land parcel, coordinates, area, number of trees planted along with the observed symptoms of Gumosis, stem borer, shoot borer, leaf eating caterpillar, leaf spot and other for each farmer participating in the first project instance. The information has been further transposed to the documents “Pest and Disease Quantification” Furthermore, a detailed analysis mentioning the critical incidences and non-critical incidences along with the action taken against any pest or disease symptom^{/03/16/}. VVB confirms the risk score 1 is acceptable.
	Extreme Weather (W)	Based on the review of the Non-Permanence Risk report^{/03/}, 320.75 ha of area out of total 15,000 ha comes under cyclone prone districts. For the first PAI^{/10/}, around 5.6 ha comes under cyclone prone district. Although Mahogany has shown resistance against the flooding, across five states, Gujarat have certain areas which are liable to floods and cover not more than 2-3% of the area under total project activity. VVB has confirmed this through the ICAR-CRIDA database^{/B05/}. The drought prone districts that are included in the project activity come under drought proneness between 5 and 10%. Further, mitigation measures, as stated in the VCS Non-Permanence Risk Report^{/04/}, has been deemed appropriate by the VVB. VVB confirms the risk score 1 is acceptable.
	Geological Risk (G)	As per the VCS Non-Permanence Risk Report^{/03/} the geological risk around the scattered land parcels come under Zone II(Low risk zone) and Zone III(Moderately risk zone). Hence, the likelihood of damages due to earthquake event is low. VVB has cross checked the data against the data from National Institute of Disaster Management, Government of India^{/B05/}. Further, mitigation measures, as stated in the VCS Non-Permanence Risk Report^{/03/} has been deemed appropriate by the VVB. VVB confirms the risk score 0.5 is acceptable.
	Total Natural Risk (F + PD + W + G + ON)	In conclusion, VVB confirms that the total natural risk for the VCS project gives 0, which is deemed appropriate and valid

Overall Non-Permanence Risk Rating and Buffer Determination

	Risk Category	Rating
a)	Internal risk	9.00
b)	External risk	0.00
c)	Natural Risk	2.50
Overall risk rating (a + b + c)		12

In total, the project faces minor risks and if certain risks are there, mitigation measures are in place. This is validation and verification of the project. In the opinion of VVB, the overall project plantation and management is sound and reasonable. Thus, the VVB concludes that the applied risk score of 12% is adequate for the project activity.

4 VERIFICATION FINDINGS

4.1 Accuracy of GHG Emission Reduction and Removal Calculations

Based on the review of the VCS Joint PD & MR^{/01/}, the data and parameters used for calculation of GHG emission reductions and removals for this verification period are as follows:

Table XVIII: Data/Parameters fixed during Joint Validation & verification:

Data/Parameters fixed	Value Applied	VVB Assessment
DBH	Refer to ex-post emission reduction sheet ^{/02/}	VVB confirms the value applied is valid after reviewing the raw data sheets ^{/05/} . VVB during the on-site inspection also verifies the DBH measurement through measuring diameter at DBH and cross checking it against the raw data sheets.
Tree height	Refer to ex-post emission reduction sheet ^{/02/}	VVB confirms the value applied is valid after reviewing the raw data sheets ^{/05/} . VVB during the on-site inspection also verifies the tree

		height measurement and cross checking it against the raw data sheets ^{/05/} .												
A _i	Project Stratification for first Project Activity instance is based on the year of plantation. Strata wise total area for the first Project Activity instance using GIS is given in below table: <table><tr><th>Strata #</th><th>Year of Plantation</th><th>Area (ha)</th></tr><tr><td>Strata 1</td><td>2019</td><td>12.26</td></tr><tr><td>Strata 2</td><td>2020</td><td>153.15</td></tr></table>	Strata #	Year of Plantation	Area (ha)	Strata 1	2019	12.26	Strata 2	2020	153.15	VVB confirms the value applied as valid after reviewing the raw data sheet ^{/05/} and KML files ^{/10/} for first PAI.			
Strata #	Year of Plantation	Area (ha)												
Strata 1	2019	12.26												
Strata 2	2020	153.15												
Size of each PSPs in the stratum i (A _{Plot i})	Total area of PSPs is shown in the table below: <table><tr><th>Strata #</th><th>Stratum year</th><th>Number of PSPs</th><th>Size of each PSPs (ha)</th></tr><tr><td>Strata 1</td><td>2019</td><td>1</td><td>0.04</td></tr><tr><td>Strata 2</td><td>2020</td><td>4</td><td>0.04</td></tr></table>	Strata #	Stratum year	Number of PSPs	Size of each PSPs (ha)	Strata 1	2019	1	0.04	Strata 2	2020	4	0.04	VVB confirms the value applied as valid through the on-site inspection and excel sheet for sampling plots ^{/05/} .
Strata #	Stratum year	Number of PSPs	Size of each PSPs (ha)											
Strata 1	2019	1	0.04											
Strata 2	2020	4	0.04											
Land title records	NA	VVB confirms that PP has provided with the supporting links ^{/B05/} to verify the land title for all the 5 districts.												
Contractual agreement	NA	VVB confirms that PP has provided with the agreement ^{/06/} copies signed between farmer and PP.												
Survival rate	Ex-post emission reduction sheet	VVB confirms the value applied as valid after reviewing the calculation sheets.												
T(Time period elapsed between two successive estimations	NA	NA												

of carbon stock)		
AGB (Above ground biomass)	Refer to ex-post emission reduction sheet	VVB based on the review of the carbon calculation sheet^{/02/} confirms that the AGB has been calculated through direct allometric biomass equation. <u>PP measures Diameter at Breast height (D) at 1.3-meter height from ground and Tree Height (H). The measured values are applied to the allometric equation⁵⁶ given below to obtain Above Ground Biomass (AGB):</u> $AGB = \exp (-2.302+0.894 \ln(D^2H))$ The allometric equation is derived for <i>Swietenia macrophylla</i> by Mahmood Hossain et.al (2020) with R2 value of 0.974. VVB has verified the applicability of the equation to check the conservativeness of the removal rates. VVB confirms that the allometric equation, used in the revised carbon calculation sheet, provides a direct biomass calculation and thus yield to a conservative result as compare to indirect volumetric equation and thus acceptable to the VVB.
BGB (Below ground biomass)	Refer to ex-post emission reduction sheet	VVB based on the review of the carbon calculation sheet ^{/02/} confirms that the BGB has been calculated using the root to shoot ratio. VVB confirms the values in excel sheet are traceable and

conservative.

After reviewing VCS Joint PD & MR^{/01/} and supporting spreadsheets VVB has ascertained that all calculations of carbon sequestration are in compliance with the requirements stated in VCS Standard v4.4^{/B01/} and methodology applied AR-ACM0003 V 2.0^{/B02/}.

4.2 Quality of Evidence to Determine GHG Emission Reductions and Removals

VVB during the course of joint validation & verification has checked the information flow from data generation and aggregation, to recording, calculation and final transposition into the monitoring report. This assessment reveals that there are various raw data sources (both external and internal) for the preparation of monitoring report, namely default values from methodology^{/B02/}, tools^{/B03/}, IPCC^{/20/B05/}, literatures^{/20/B04/}, field data from the permanent sampling plots^{/05/}, KML/Shape files (for 1st PAI)^{/10/}. This raw data is then recorded and transferred in the carbon calculation spreadsheet^{/02/} and then finally to the monitoring report^{/01/}. The quality of supporting documents that are provided by the PP as evidence is adequate. Field data sheets^{/05/} have been provided by the PP, which tallies with the data provided in the carbon calculation spreadsheet^{/02/}. The detailed assessment of the documents used during the assessment process has been provided below:

Table XIX: Evidence and their pertinence with respect to the VCS project

S.No.	Documents	Pertinence
i.	Carbon calculation spreadsheet ^{/02/}	To demonstrate the carbon sequestration calculation as per the applied methodology and tool
ii.	Forest/Non-Forest analysis Report ^{/11/}	To demonstrate project eligibility in line with requirements stated in section 3.2 of VCS standard v4.4 and to verify the baseline assessment.
iii.	Project operation ^{/16/}	To demonstrate compliance with VCS ARR requirement section A 1.1 of the VCS standard v4.4.
iv.	Proof of title and right of carbon credits ^{/06/07/}	To demonstrate compliance in line with Section 1.6 of VCS Joint PD & MR template instructions

v.	Proof of project start date ^{/08/}	To demonstrate the start date of plantation and crediting period
vi.	Shapefiles/KML files ^{/10/}	To demonstrate project boundary, area and ownership of project area
vii.	Standard operating procedures/Monitoring manual ^{/16/}	Written procedures for plantation, monitoring and field data collection for personnel involved
ix.	Permanent Sample plot monitoring Field data ^{/05/}	Field data sheet with height, DBH and other data pertaining to each sample plot selected by the PP

Competent employees are recruited for the management and operation of the project. The quality of supporting evidence submitted to VVB for verification is adequate and found to be verifiable. Field data sheets^{/05/}, KML files^{/10/} and other supporting documents related to monitoring SOPs^{/16/} were checked by the assessment team to confirm the authenticity of the documents and to check the correctness of the calculations. The detailed information flow with the roles and responsibilities of the individuals and the monitoring system have been discussed and found to be appropriate.

Based on the above, the VVB confirms the sufficiency and appropriateness of the quality of evidence provided by the PP to determine the GHG removals and further deems them to be acceptable.

5 VALIDATION AND VERIFICATION OPINION

CCIPL has performed the joint validation & verification of the proposed VCS grouped project “**Mahogany Plantation in India**”. The GHG statement provided is the responsibility of the project participant.

This assessment has been conducted on the basis of the VCS Standard v4.4/^{B01/} requirements, the updated project documentation, the carbon sequestration calculation spreadsheets/^{02/}, PSP’s raw data sheet/^{05/} provided by the PP and on-site inspection, observation by the VVB. The monitoring plans described in the proposed project documentation is assessed along with verification activities. VVB gives an unmodified opinion as there are enough evidence to support the claims in the project activities.

The joint validation/verification has been conducted in a reasonable level of assurance as there is enough evidence provided by project proponent.

The validation and verification activities conducted by CCIPL included:

- Assessment of the grouped project (including 1st PAI) compliance with VCS rules/requirements and the applied baseline and monitoring methodology to confirm all the requirements of validation (including eligibility of AFOLU projects and grouped project, applicability of the applied baseline and monitoring methodology, baseline scenario, additionality, permanence risk, data and parameters at validation, monitoring plan including parameters, ex-ante estimated GHG removal including methodological equation for the ex-ante ex-post carbon removal calculation, global and local stakeholders consultation and addressal of comments, environmental analysis, SDG benefits from the project) .
- collection of information, documents and data supporting the reported GHG removals.
- assessment of biomass inventory and GHG calculation spreadsheets
- assessment of monitoring practices on the field.
- assessment of information management system.
- assessment of whether the project has been implemented in accordance with the VCS Joint PD & MR/^{01/}; and
- assessment of whether the provisions made in the monitoring plan were consistently and appropriately applied.

The VVB has raised 19 clarification (CLs) and 18 corrective action requests (CARs), all of which have been successfully closed. 01 FAR has been raised during this joint validation & verification which will be addressed during the next verification.

The estimated ex-ante calculation for the 30 years is 230,982 tCO₂e with average annual ERs of 7,699 tCO₂e/year^{/01/02/}. The long-term average for entire project area calculated for both stratus for 30 years is 94,413 tCO₂e^{/01/02/}. Following table represents the estimated GHG removals:

Table XX: Ex-ante/ Estimated GHG emission reductions or removals^{/01/02/}

Year	Estimated GHG emission reductions or removals (tCO ₂ e)
28 th June 2019 – 31 st December 2019	-15
2020	328
2021	2,872
2022	6,142
2023	9,402
2024	12,101
2025	12,628
2026	15,230
2027	17,925
2028	20,688
2029	23,495
2030	26,341
2031	29,388
2032	32,501
2033	35,666
2034	14,300
2035	-2,68,022

2036	2,872
2037	6,142
2038	9,402
2039	12,101
2040	12,628
2041	15,230
2042	17,925
2043	20,688
2044	23,495
2045	26,341
2046	29,388
2047	32,501
2048	35,666
1 st January 2049 – 27 th June 2049	-4,367
Total estimated ERs	230,982
Total number of crediting years	30
Average annual ERs	7,699

The non-permanence risk rating is kept as 12 which means 12% of the total eligible VCUs i.e., 12% of 4,280 which comes to 514 which will be kept aside as buffer pool credits. The net change and VCUs eligible for issuance for the First PAI after removing the buffer pool credits is 3,766. The VCUs eligible for issuance are calculated on the basis of deduction from long term average. As the Net GHG removals ($C_{tree} < LTA$) credits will be issued.

Table XXI: Break-up of GHG removals as verified during the course of verification^{/01/02/}

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)	Buffer pool allocation	VCUs eligible for Issuance (Round down values)
28 th June 2019 – 31 st December 2019	0	53	6.6	47	6	41
1 st January 2020 – 31 st December 2020	0	1,730	204.4	1,525	183	1,342
1 st January 2021 – 31 st December 2021	0	1,725	203.9	1,521	183	1,338
01 st January 2022 – 13 th October 2022	0	1,347	159.2	1,188	143	1,045
Total	0	4,855	575	4,280	514	3,766

Following **table XXII** provides the difference between ex-ante and ex-post values along with the justification:

Year	Ex-ante emissions reductions/ removals	Achieved emissions reductions/ removals	Percent difference	Justification for the difference
28 th June 2018- 13 th October 2022	7,981	4,280	-46%	Based on review of joint VCS PD/MR ^{/02/} , in order to estimate the percent difference, the achieved carbon removals have been subtracted from the ex-carbon removals and then divided by the ex-ante carbon removals. The negative sign implies that the achieved carbon removals are 46%

				less to what has been projected in the ex-ante carbon removals. $(4,280 - 7,981) / 7,981 * 100 = -46\%$ Furthermore, the reason for the difference has been provided by the PP as due to difference in plantation date of the land parcel involved in the project area, the actual removal achieved is low compared to the estimated GHG removal. The estimated GHG removal is based on the assumption that the total plantation is completed on the start date of first plantation date for Stratum 1 and start date of calendar year for stratum 2, whereas the achieved emission reduction is based on the actual plantation date. Various ecological factors such as soil type, climate and availability of water may have influenced the growth pattern of the species within the geographical region due to which the Ex-post achieved GHG removal are on the lower side as compared with the projected Ex-ante estimations. VVB, based on the justification provided in the VCS MR^{/02/}, confirms that the percent difference has been calculated in line with the VCSA requirements.
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VVB based on assessment above confirms that GHG removals from the project are real, additional and permanent (including provision of appropriate buffer to account any reversal).

APPENDIX 1: LIST OF DOCUMENTS

Sr. No.	Documents	Reference
/01/	VCS Joint PD & MR	Version 2.0, 13 th November 2022 Version 3.0, 2 nd January 2023 Version 4.0, 28 th March 2023 Version 5.0, 18 th May 2023 Version 6.0, 08 th September 2023 Version 7.0, 13 th October 2023 Version 8.0, 27 th October 2023
/02/	GHG calculation sheets: - Mahogany_ER_Listing - Ex-ante ER sheet - Ex-post ER Sheet	Version 2.0 Version 3.0 Version 4.0 Version 5.0
/03/	Non permanence risk report - VCS Non Permanence Risk report - VCS Risk report calculation sheet	Version 1.0, 26 th October 2022 Version 2.0, 29 th March 2023 Version 3.0, 8 th September 2023 Version 4.0, 13 th October 2023 Version 5.0, 27 th October 2023
/04/	Time period Proof of Project Length_Agreement.pdf	-
/05/	Raw data - Monitoring field data - Sampling plan (PSPs)	-

	8 Sample PSPs data	
/06/	Contractual agreement between PP and farmer PSP Contractual Agreements	-
/07/	Proof of Ownership, Management & Operations, Double Counting - Folder D.1_Contractual Agreement with D.3_Land Title - Project Implementation Schedule.pdf - Labours contract of workers - Double counting declaration.pdf - Incorporation Certificate.pdf	Double counting declaration- 16 th December 2022
/08/	Proof of start date - Payment receipt note - Plantation confirmation letter - Sadashiv Mahure agreement	Payment receipt note- 25 th May 2019 Plantation confirmation letter- 28 th June 2019
/09/	Regulations & Approval Evidence demonstrating that the proposed VCS AFOLU project shall not lead to violation of any applicable law even if the law is not enforced.pdf	-
/10/	Maps and Shapefiles - Mahogani Vishwa Agro Pvt Ltd KML file 2019&2020 Plantation Plot Locations KML file - PSP Plot Locations KML file - KML file 2019 and 2020 Land Parcels 2479_Final Farmer list_1st PAI Final 2	-
-	Forest & Non-Forest Analysis Report	

	Forest NonForest Analysis_Baseline Survey Report.pdf	
/12/	Baseline & Additionality - Evidence to demonstrate plausible baseline scenarios.pdf - Evidence pertaining to barriers as presented in the VCS PD for additionality demonstration of the project.pdf A2F+for+Smallholder+FarmersFinal+English+Publication.pdf - Barriers_to_plantation_activities_in_different_agr.pdf - Chapter7(Socio-economic contribution of forests :Production and Consumption of Forest Resources in India)	-
/13/	Leakage Evidence to demonstrate no leakage emissions from the project	-
/14/	SDG Evidence to demonstrate SDGs contributions from the project	-
/15/	Stakeholder Meeting - MVAPL_Stakeholder Document.pdf - MVAPL_Presentation_LSC.pdf - Grievance Logbook.pdf - LSC Photos	21 st September 2021
/16/	Project Operation - Specific onsite organization chart for the project activity.pdf - Standard Operating Procedure.pdf - Training manual.pdf - QAQC Procedures.pdf - Competencies Profile of the Field Officer.pdf - Training for field mesearment_ramesh.pdf - SOP farmer on boarding	-

	- SOP Mahogany Plantation Management Plan - SOP MRV	
/17/	Source of allometric equation Development and Evaluation of Species-Specific Biomass Models for Most Common Timber and Fuelwood Species of Bangladesh.pdf	-
/18/	Soil type Evidence of the soil type	
/19/	Pest and disease quantification	-
/20/	Seedlings receipt 2020-21 2021-22 2022-23	-
/21/	Others Literature evidence: - Mahogany Shoot borer.pdf - Phytopharmacological effect of <i>Swietenia macrophylla</i>.pdf - Collection and cultivation of <i>Swietenia macrophylla</i>.pdf - Carbon Sequestration by Large Leaf Mahogany (<i>Swietenia macrophylla</i> King.) plantation in Mount Makiling forest reserve, Philippines: A Decade after. Pdf F. No. 10-2/2020-NRM-SMAF, The Government of India, Ministry of Agriculture, Cooperation & Farmers Welfare Department of Agriculture, Cooperation & Farmers Welfare (Natural Resource Management Division– SMAF - Successful Agroforestry Models for Different Agro-Ecological Regions in India - Hossain <i>et.al.</i>, <i>Performance of lettuce under six years old lohakat tree</i>, J. Agrofor. Environ. 8 (2): 7-10, 2014 ISSN 1995-6983 - Winter leafy vegetables cultivation in association with six years old <i>Swietenia macrophylla</i> tree	-
/22/	Legal documents checked to assess addressal of Public comments including chronology of events for the closure of legal proceeding	-
/23/	Legal opinion on Mahogany agreements	-
/24/	- Agreement between MITCON and ICAR - Intercrop Plan 2	Confidential

/25/	Mail copy of farmers to be excluded	-
/B01/	- VCS Program Guide (v4.3, dated 17/01/2023) - VCS Standard (v4.4, dated 17/01/2023) - Program Definitions (v4.3, dated 21/12/2022) - Registration & Issuance Process (v4.3, dated 17/01/2023) - AFOLU Non-Permanence Risk Tool (v4.0, dated 19/09/2019) - VCS Validation and Verification Manual (v3.2, dated 19/10/2016) - AFOLU Guidance: Example for Calculating the Long-Term Average Carbon Stock for ARR Projects with Harvesting.	Others
/B02/	AR-ACM0003 "Afforestation and reforestation of lands except wetlands" https://cdm.unfccc.int/methodologies/DB/C9QS5G3CS8FW04MYXDF0QDPXWM4OE	V2.0 (04 th October2013)
/B03/	(a) Estimation of carbon stocks and change in carbon stocks in dead wood and litter in A/R CDM project activities (Version 03.1). (b) Estimation of non-CO2 GHG emissions resulting from burning of biomass attributable to an A/R CDM project activity (Version 04.0.0). (c) Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities. (Version. 04.2). (d) Estimation of the increase in GHG emissions attributable to displacement of pre-project agricultural activities in A/R CDMproject activity Version 02.0. (e) Tool for estimation of change in soil organic carbon stocks due to the implementation of A/R CDM project activitiesVersion 01.1.0. (f) Combined tool to identify the baseline scenario and demonstrate additionality in A/R CDM project activities"(Version 01).	Others

/B04/	a) Other GHG programs: CDM: https://cdm.unfccc.int/Projects/index.html VCS: https://registry.terra.org/app/search/VCS/All%20Projects GSF: https://registry.goldstandard.org/projects?q=&page=1 Plan Vivo: https://www.planvivo.org/pages/category/projects?Take=28	Others
/B05/	• https://registry.terra.org/app/projectDetail/VCS/2479 • www.mitconindia.com • https://www.sciencedirect.com/science/article/abs/pii/S1433831904700669 : The ecology, silviculture and biogeography of mahogany (Swietenia macrophylla): a critical review of the evidence • IISER Study - https://doi.org/10.5194/acp-2019-489 • https://indianwetlands.in/wetlands/overview/interactive-wetland-map-of-india • http://www.wiienvi.nic.in/Database/ramsar_wetland_sites_8224.aspx • Managing Mahogany Plantations in the Tropics, published by CSIR-FORIG, Kumasi, Ghana • https://www.sciencedirect.com/science/article/abs/pii/S0378112700005314 The effectiveness of pruning in mitigating <i>Hypsipyla grandella</i> attack on young mahogany (<i>Swietenia macrophylla</i> King) trees • https://indiawris.gov.in/wris/#/soilMoisture • https://slbcgujarat.in/state-profile/agriculture/#:-:text=The%20soils%20of%20Gujarat%20can,desert%20soils%20and%20forest%20soils • http://cgwb.gov.in/Regions/SR/Reports/GWYB%20Telangana%202020-2021.pdf • <i>Quantification and monitoring of long term forest cover changes and carbon stocks in South Asia: National Carbon Project, ISRO</i> • https://agricoop.nic.in/sites/default/files/National%20Agroforestry%20Policy%202014.pdf • https://pib.gov.in/PressReleasePage.aspx?PRID=1705520 • http://www.fdcn.nic.in/PDF/Maharashtra_State_Forest_Policy-2008.pdf • https://mpforest.gov.in/ecotourism/pdf/forestpolicy.pdf	Others

- [https://aranya.gov.in/aranyacms/\(S\(op10gjszg3cmuro4juj33xh4\)\)/English/IndividualScheme.aspx?HkxuiBwcRAIH/nwkzKruPQ ==](https://aranya.gov.in/aranyacms/(S(op10gjszg3cmuro4juj33xh4))/English/IndividualScheme.aspx?HkxuiBwcRAIH/nwkzKruPQ ==)
- <http://harithaharam.telangana.gov.in/>
- https://files.wri.org/d8/s3fs-public/2022-03/roadmap-scaling-trees-outside-forests-india.pdf?VersionId=6dR4iQJT.TF_70rCP7EQ00jhz_nFyxAVc
- <https://sdg.humanrights.dk/en/goals-and-targets>
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- <https://claroenergy.in/5-most-water-intensive-crops/>
- <https://www.indiabudget.gov.in/economicsurvey/doc/echapter.pdf>
- <https://m.rbi.org.in/Scripts/AnnualPublications.aspx?head=Handbook%20of%20Statistics%20on%20Indian%20States>
- https://ncert.nic.in/pdf/publication/otherpublications/Unity_cultural.pdf
- <https://rbi.org.in/Scripts/PublicationsView.aspx?id=21120>
- <https://www.rbi.org.in/Scripts/PublicationsView.aspx?id=21443>
- <https://www.im4change.org/docs/Situation%20Assessment%20of%20Agricultural%20Households%20and%20Land%20and%20Livestock%20Holdings%20of%20Households%20in%20Rural%20India%202019.pdf>
- <https://fsi.nic.in/forest-report-2021>
- <https://fsi.nic.in/forest-report-2015>
- <https://registry.terra.org/app/projectDetail/VCS/2346>
- https://www.ipcc-nggip.iges.or.jp/public/gpglulucf/gpglulucf_files/GPG_LULUCF_FULL.pdf
- Table 3A.1.8 Tropical Dry Forest (Mean=0.27): https://www.ipcc-nggip.iges.or.jp/public/gpglulucf/gpglulucf_files/GPG_LULUCF_FULL.pdf
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- <https://www.worlddata.info/climate-comparison.php?r1=bangladesh&r2=india>
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- <https://bhulekh.mahabhumi.gov.in/>
- <http://www.landrecords.mp.gov.in/>
- <https://landrecords.karnataka.gov.in/>
- <https://anyror.gujarat.gov.in/>
- <https://ccla.telangana.gov.in/integratedLandRegistry.do>
- Section 2.2.2, Table 4, <https://www.fao.org/3/s2022e/s2022e02.htm>
- Section 2.4, Table 5, <https://www.fao.org/3/s2022e/s2022e02.htm>
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- Page No. 170 of 4264, https://mospi.gov.in/sites/default/files/publication_reports/Report_587m_0.pdf
- Page No. 164 of 4264, https://mospi.gov.in/sites/default/files/publication_reports/Report_587m_0.pdf
- The Forest (Conservation) Act, 1980, dated December 27, 1980, The official gazette notification (Part II- section 1, Pausa 6)

APPENDIX 2: FINDINGS LOG

Table 1. Remaining FAR from validation and/or previous verifications

FAR ID	xx	Section no.	Date: DD/MM/YYYY
Description of FAR			
Not Applicable			
Project participant response			Date: DD/MM/YYYY
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Documentation provided by project participant			
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VVB assessment			Date: DD/MM/YYYY
Not Applicable.			

Table 2. CL from this Joint Validation & Verification

CL	01	Section no.	1.3, VCS JOINT PD & MR	Date: 02/12/2021
Description of CL				
As per section 1.3 of the VCS Joint PD & MR, "ARR program has not cleared any native forest with in the 10 years of project start date and trees has been planted on the agriculture land to increase forest cover of area."				
PP shall demonstrate and provide evidence for the same.				
Project participant response				Date: 04/03/2023
- As per PP SOP, one of the eligibility criteria for admission of Land Parcels is "land parcel shall not have any native ecosystems within the 10 years' period prior to the plantation date" - PP has demonstrated and provided the evidence in the Appendix 6 of the Joint PD MR, with past 10 years' satellite images of few farmers. Hence, revised Joint PD MR.				
Documentation provided by project participant				
- Contract Agreement comprising specific representation from the farmers in respect of compliance with eligibility criteria for the Project Activity - Joint PD MR Version 3.0 - Satellite Images Document				
VVB assessment				Date: 16/03/2023
PP has provided with the requested justification along with the satellite images of parcels of land. VVB based on review of the appendix 6 of the revised joint PD& MR, confirms that the satellite images demonstrate that the land parcel under the project have not been cleared within the 10 years of project start date.				
Furthermore, the SOP as provided i.e., "SOP farmer on boarding" also demonstrates that only those farmers are included in the project who have a land parcel that has no native forest in the past 10 years.				
CL has been closed				

CL	02	Section no.	1.8, VCS Joint PD & MR	Date: 19/12/2022
Description of CL				
As per section 3.7 of the VCS Standard, version 4.3,				

“The project start date of a non-AFOLU project is the date on which the project began generating GHG emission reductions or removals. The project start date of an AFOLU project is the date on which activities that led to the generation of GHG emission reductions or removals are implemented (e.g., preparing land for seeding, planting, changing agricultural or forestry practices, rewetting, restoring hydrological functions, or implementing management or protection plans).”

Review of VCS Joint PD & MR reveals the following:

“The project start date is the agreement date between MVAPL and landowner (farmer). The first contract between the two parties was signed on 12 March 2019.”

Clarification is requested on the compliance of start date with requirement of standard as signing of agreement cannot be considered as an activity which led to the generation of GHG emission reductions or removals are implemented.

Project participant response	Date: 04/03/2023
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The Project Start Date for the Project Activity is considered as June 28, 2019, since this the first plantation carried out on June 28, 2019 at Nagpur, Maharashtra and hence considered as Project Start Date. The same has been revised in the Joint PD MR. Hence, revised Joint PD MR.

Documentation provided by project participant
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1.Joint PD MR Version 3.0

2.Plantation Confirmation Letter from Farmer, confirming the plantation date in Contractual Agreement

VVB assessment	Date: 16/03/2023
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PP has still not provided with the evidence of project start date.

CL is still open

Project participant response	Date: 29/03/2023
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PP is enclosing the following documents, evidencing the plantation date:

1.Plantation Confirmation Letter, wherein Farmers confirms the date of plantation of Mahogany seedlings in presence of PP representative

2.Payment Receipt confirming the purchase of seedlings by farmer. Generally the supply of seedlings from the date of receipt of partial/complete amount is between 30-45 days.

Documentation provided by project participant
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1.Plantation Confirmation Letter

2.Payment Receipt

VVB assessment	Date: 31/03/2023
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PP has provided with the proof of plantation date. VVB based on review of the confirmation letter and signed agreement of the farmer, confirms the plantation date as 28th June 2019 as it is the date on which the first plantation has been carried out. In the opinion of VVB, this is the date on which activities that led to the generation of GHG emission removals are implemented and thus complies to VCSA requirement and acceptable. The receipt of the purchase of seedlings is also provided prior to the start date.

CL has been closed

CL	03	Section no.	1.11, VCS JOINT PD & MR	Date: 19/12/2022
Description of CL				
As per section 1.11 of the VCS Joint PD & MR, PP shall clarify and provide evidence against the statement,				
<i>“Regarding natural areas, environmentally sensitive and conservation areas are identified during the planning phase of operations and designated as conservation zones which are protected to encourage natural regeneration.”</i>				

Project participant response	Date: 04/03/2023
The statement has been revised and section 1.11 of VCS Joint PD & MR has detailed the description of Project Activity which categorically excludes environmentally sensitive or conservation areas from the Project Activity. The contractual agreement with the farmer includes representation/warranties by farmers to the same effect. It is to be noted that the Project Activity is being implemented on privately owned agricultural lands owned by small farmers. Further, Land title documents evidence the land parcel do not fall under environmentally sensitive or conservation areas.	
Documentation provided by project participant	
1. Clause no.2, Contractual Agreement between Farmer and PP 2. Land Title Records 3. Joint PD MR Version 3.0	
VVB assessment	Date: 16/03/2023
PP has provided with the requested clarification along with the revised joint PD & MR. VVB after reviewing the document confirms that PP has excluded the environmentally sensitive and conservation areas. This was also confirmed during the on-site inspection that the project activity is being carried out on private lands. Furthermore, VVB has also reviewed the land title records and cross checked it through state Government website (Bhulekh.mahabhumli.gov.in). However, PP has still not provided with the contractual agreement.	
CL is still open	
Project participant response	Date: 29/03/2023
PP is providing the Contractual Agreement between PP and Farmer	
Documentation provided by project participant	
Contractual Agreement	
VVB assessment	Date: 31/03/2023
VVB has reviewed the sample contractual agreement between PP and farmer and confirms that the land title records are appropriately demonstrated in it along with location, area in hectares and number of plants to be planted. The sample title check was also performed during the on-site inspection by the VVB. VVB confirms the response of PP as valid and appropriate.	
CL has been closed	

CL	04	Section no.	1.11, VCS JOINT PD & MR	Date: 19/12/2022
Description of CL				
As per section 1.11 of the VCS Joint PD & MR,				
<i>"It aims to maintain a diversity of planting stock, to ensure that the genetic base of the plantation is wide and varied."</i>				
PP shall clarify how project will achieve genetic diversity by planting only one species of Mahogany.				
Project participant response				Date: 04/03/2023
The statement has been removed from section 1.11 of Joint PD & MR. The Project Activity shall be planting only <i>Swietenia macrophylla</i> on 15,000 hectares of land parcels in agrisilviscultural system covering 0.026% of the Net Sown Area.				
Documentation provided by project participant				
Joint PD MR Version 3.0				
VVB assessment				Date: 16/03/2023
VVB based on review of the revised joint PD & MR, confirms that PP has removed the statement regarding the diversity of planting stock.				
CL has been closed				

CL	05	Section no.	1.13, VCS JOINT PD & MR	Date: 19/12/2022
Description of CL				
As per section 1.13 of the VCS Joint PD & MR,				
“The plantation will replace the pre-project agriculture activities with forest plantation on a degraded landd.”				
PP shall demonstrate that the land in pre-project scenario for the 1 st PAI is degraded. While doing so, please clarify whether the project would be a replacement of agriculture activities or an agroforestry project.				
Project participant response				Date: 04/03/2023
There is no degraded land involved in the Project Activity. The statement has been removed from Joint PD &MR. The Project Activity is an agroforestry project and it should be noted that there is no displacement of pre-project activity of traditional farming. Agriculture activities (even subsistence farming) will continue under the project scenario. There is insignificant displacement of agricultural activities during the Project Activity.				
Documentation provided by project participant				
Joint PD MR Version 3.0				
VVB assessment				Date: 16/03/2023
PP has provided with the requested clarification. VVB through the on-site inspection and interviews confirms that the land involved in project activity is not degraded and there is no displacement of pre project activity of traditional farming. PP has also revised the section 1.13 of the Joint PD & MR as per the clarification provided. VVB confirms the response of PP as valid and appropriate.				
CL has been closed				

CL	06	Section no.	3.2, VCS JOINT PD & MR	Date: 19/12/2022
Description of CL				
Applicability of each of the applicability criteria of the applied methodology is anecdotal and shall be supported further by documentary evidence in compliance with section 3 of the VCS Standard, version 4.3.				
Furthermore, the applied methodology also requires applicability demonstration of the applied tools and the same is missing in the VCS Joint PD & MR.				
Project participant response				Date: 04/03/2023
The applicability conditions of the applied methodology have been described with relevant supporting documentary evidence in the section 1.3, 1.4, 1.14 of the Joint PD & MR. A sample of Land title record document is enclosed in the Joint PD & MR as Appendix “7” which further demonstrate the land parcels involved in the Project Activity is cropland. The applicability criteria is further satisfied with farmers representations/warranties as a part of contractual agreement entered between farmer and PP.				
Documentation provided by project participant				
1.Contractual Agreement 2.Joint PD MR Version 3.0				
VVB assessment				Date: 16/03/2023
PP has provided with the requested justification. VVB based on review of the revised VCS Joint PD & MR, confirms that the evidences regarding land title are provided in the Appendix 7 which confirms the land is privately owned by farmer. However, PP has still not provided with the contractual agreement between PP and farmers.				

The tool applicability conditions are still not mentioned. PP is requested to provide the justification for applicability of the tools used under section 3.2 of the VCS Joint PD & MR.	
CL is still open	
Project participant response	Date: 29/03/2023
PP has included the justification of each tool applicable under AR-ACM003 methodology under section 3.2 of the VCS Joint PD & MR	
Documentation provided by project participant	
Joint PD MR Version 4.0	
VVB assessment	Date: 31/03/2023
VVB based on review of the section 3.2 of the revised VCS Joint PD & MR, confirms that the tools applicability and their justification has been provided in the document. VVB confirms the response of PP as valid and appropriate.	
CL has been closed	

CL	07	Section no.	3.4, VCS JOINT PD & MR	Date: 19/12/2022
Description of CL				
As per the joint PD & MR, the project is in 5 states of India with different climatic conditions, soil types and land use, PP shall demonstrate appropriateness of same baseline scenario for the whole region of the grouped project.				
Project participant response				Date: 04/03/2023
The Project Activity is spread over 65 districts across the five states in India. The PP has selected districts with similar edaphic-climatic conditions and homogeneity of farming practices. The baseline scenario under the Project Activity is the use of privately owned land parcels for agriculture activities for all the five states of India. Further pre-project activities across the Project Activity are similar in nature as demonstrated in section 3.4 of Joint PD & MR. Socio-Economic homogeneity of the farmers involved in the Project Activity is detailed in section 3.5 of Joint PD & MR.				
Also, <i>Swietenia macrophylla</i> has wide ecological range found on various types of soil which is further found in each five states of the land evidenced in section 1.1 & 1.13 of Joint PD & MR. Further, section 1.13 of the Joint PD & MR details the climate conditions, hydrology, topography, and soil types involved in the Project Activity demonstrates the appropriateness of same baseline scenario.				
Documentation provided by project participant				
Joint PD MR Version 3.0				
VVB assessment				Date: 16/03/2023
Based on the review of the section 3.4 of the revised joint PD & MR, VVB confirms that the farming practices consist of traditional crops in all the 5 states. Furthermore, VVB has also reviewed the section 1.13 of the revised document and confirms the similarity in edaphic factors of all the 5 states. VVB further through host country knowledge confirms that the baseline scenario demonstrated is valid and satisfactory. VVB examined the land titles for the parcel included in the first PAI and confirms that the lands are privately owned and used for agriculture activities in pre-project scenario.				
CL has been closed				

CL	08	Section no.	4.2, VCS JOINT PD & MR	Date: 19/12/2022
Description of CL				

As per section 4.2 of the VCS Joint PD & MR,

"the baseline scenario of the Mahogany project is discontinuation on the pre-project land uses, that is agriculture activity and further continuation of the land uses will be Mahogany plantations, for a minimum period of 30 years.

On plantation farms, this means discontinuation of cropping management practices and reduce the process of degradation and loss of forest cover due to meteorological phenomena as follows, discontinuation of shifting agriculture; and on pastures, cattle grazing and reduce resulting degradation.

"

PP shall clarify if there is a displacement of agricultural activities due to project implementation.

Project participant response

Date: 04/03/2023

The statement has been removed and now section 5.2 of Joint PD & MR is updated. The baseline scenario is the continuation of pre project land use, which is traditional farming activities. There is insignificant displacement of agricultural activities during the Project Activity.

Documentation provided by project participant

Joint PD MR Version 3.0

VVB assessment

Date: 16/03/2023

PP has provided the requested justification. Based on the review of the revised joint PD & MR, VVB confirms the statement has been removed. Furthermore, during on-site inspection interviews, it was confirmed that there is no significant displacement of pre project agricultural activities and farmers still continue to grow crops along with Mahogany trees following an agroforestry pattern.

CL has been closed

CL	09	Section no.	VCS JOINT PD & MR	Date: 23/12/2022
Description of CL				
Section 3.2.10 of the VCS Standard, v4.3, states that				
<i>"Projects with tree harvesting shall demonstrate that the permanence of their carbon stock is maintained and shall put in place management systems to ensure the carbon against which VCUs are issued is not lost during a final cut with no subsequent replanting or regeneration."</i>				
The project proponent is therefore requested to provide long-term financial or land management plans to demonstrate that harvesting of the mahogany trees will not be financially attractive for landowners after the project lifetime and that "any carbon against which VCUs are issued is not lost in a final cut with no subsequent replanting or regeneration.				
Project proponent is further requested to provide a robust plan to disincentivize timber harvesting once the income from VCU sales concludes was not provided. Furthermore, a management system to ensure subsequent replanting or regeneration of any harvested carbon stock after the project lifetime is to provided to the VVB for review.				
Furthermore, during the on-site inspection, VVB was apprised that after harvesting, new trees will re-grow through coppicing. However, this information is missing from the VCS PD MR. PP shall provide details of replanting/ regrowth of tree species in the VCS PD MR as well as SOPs.				
Project participant response				Date: 04/03/2023
1. Under section 1 (Project Management) of Non-Permanence Risk Report, PP has demonstrated the benefits of other Mahogany produce apart from the timber. Also, during the stakeholder meetings, PP emphasizes on economic benefits to be generated from seeds, leaves of Mahogany which further ensures that the VCUs issued is not lost post project lifetime. PP is				

facilitating development of ecosystem to exploit non-timber income opportunities from Mahogany plantation. 2. PP is facilitating to develop symbiotic high value intercrops alternatives apt for various stages of plantation growth which will result in continuation of plantation. 3. Contractual Agreements between farmer and PP has provision to disincentives harvesting in lieu of adequate income from non-timber produce during 100 years of the plantation and thereafter. 4. Project Management plan provided harvesting and replantation plan under section 1.11 of Joint PD & MR is provided. 5. SOP of Plantation Management includes replantation plan.	
Documentation provided by project participant	
1. Joint PD MR Version 3.0 2. Non Permanence Risk Report 3. Contractual Agreement between farmer and PP 4. SOP of Plantation Management	
VVB assessment	Date: 16/03/2023
1. PP has provided the requested clarification and confirms that PP has emphasized on benefits apart from timber from Mahogany tree. PP has provided with the NPRR and after reviewing the section 1 of the NPRR, VVB confirms that PP has focused on other benefits arise from tree except timber which can also generate income. The same is also stated in joint VCS PD& MR. The contractual agreement is still to be provided by PP. 2. During the onsite inspection, it was observed by the VVB that many alternative cash crops were grown along with the Mahogany tree that generate an additional income to farmers. 3. PP has still not provided the contractual agreement provided by PP. 4. PP has provided harvesting and replanting plan under section 1.11 of the VCS Joint PD & MR. VVB after reviewing the section 1.11 of the document and the SOP for management plans confirms that PP has appropriately demonstrated the harvesting cycle and replantation plan for the project crediting period.	
CL is still open	
Project participant response	Date: 29/03/2023
PP is providing the Contractual Agreement between PP and Farmer	
Documentation provided by project participant	
Contractual Agreement between PP and Farmer	
VVB assessment	Date: 31/03/2023
VVB has reviewed the contractual agreement between PP and farmer. The provision to disincentivize the harvesting up-to 100 years by compensating the farmer through opportunities from plant produce and carbon credits has been demonstrated. Hence, VVB confirms the response of PP as valid and appropriate.	
CL has been closed	

CL	10	Section no.	1.9, VCS Joint PD & MR	Date: 19/12/2022
Description of CL				
As per section 1.9 of the VCS PD,				
<u>"The crediting period is expected to be 30 years, however since the current contract agreement is for 30 years thus the emission reductions have been demonstrated only for 30 years. Beyond this period the</u>				

contract may be renewed and accordingly the VCS PD shall revise in consultation with the VCS and the DOE.”	
VVB’s on-site inspection document review of agreement between PP & farmers reveals the contract period as 12 years, which is contradictory with the above statement. Furthermore, since, the contractual agreement is for 12 years, project proponent is requested to demonstrate the permanence of the project beyond that period.	
Project participant response	Date: 04/03/2023
The Contractual Agreement have been amended in line with section 1.9 of the Joint PD & MR. Thorough discussions have taken place between PP and farmer before amendment of the Contractual Agreement. The amended Contractual Agreement shall be valid for duration of 30 years, extendable to up-to 100 years based on crediting period of VCS 2479 project and renewal thereof.	
Contractual Agreement between farmer and PP ensures the permanence beyond project lifetime with provisions of disincentivizing harvesting in lieu of adequate income from non-timber produce during the project lifetime and thereafter.	
Documentation provided by project participant	
Amended Contractual Agreement is submitted.	
VVB assessment	Date: 16/03/2023
PP is requested to provide the amended contractual agreement.	
CL is still open	
Project participant response	Date: 29/03/2023
PP is providing the Amended Contractual Agreement between PP and Farmer	
Documentation provided by project participant	
Amended Contractual Agreement between PP and Farmer	
VVB assessment	Date: 31/03/2023
VVB has reviewed the amended contractual agreement and confirms that the agreement is valid for 30 years for VCS 2479 project and the renewal of crediting period will also mutually extend the validity of agreement for up-to 100 years. Also, the permanence is ensured by replanting after harvesting or by delaying harvesting and providing opportunities through plant produce sale and carbon credits.	
CL has been closed	

CL	11	Section no.	5, VCS Joint PD & MR	Date: 19/12/2022
Description of CL				
As per the joint PD& MR, the project has applied a field measurement approach of sample plots to determine the biomass sequestration of tree under the project. As per tool 14, version 04.2, paragraph 64, the filed measurement procedure is;				
<i>“Standard operating procedures (SOPs) prescribed under national forest inventory are applied. In the absence of these, SOPs from published handbooks, or from the IPCC GPG LULUCF 2003, are applied”</i>				
Review of VCS PD/MR, reveals that 20 m x 20 m sized square plots were laid down (0.04 hectares). However, no information on any such SOPs of national forest inventory has been provided in the VCS PD/MR to confirm the appropriateness of the plots.				
Project participant response				Date: DD/MM/YYYY
The Forest Survey of India, an organization under the Ministry of Environment & Forests, Government of India has provided the methodology for carbon stock accounting for forest covers, whereas the Project Activity includes the plantation in Agrisilvicultural system and land parcels involved in the Project Activity are scattered small areas of approximately 0.5-2 hectares.				

Hence, PP has referred to CDM manual for “Measurements for Estimation of Carbon Stocks” and other multiple relevant citations/publications, wherein 20 × 20 m plot method has been widely used for monitoring carbon stock which generally performs reliably in comparisons with other techniques. Accordingly, PP has developed SOP for the establishment and measurement of the sample plots in accordance with CDM manual for “Measurements for Estimation of Carbon Stocks”. It is a permanently marked PSP, within which trees are tagged, diameters and height are recorded and all trees are counted.

Documentation provided by project participant

SOP for Measurement Reporting and Verification (MRV)

VVB assessment

Date: 16/03/2023

VVB has reviewed the CDM Manual used for referencing i.e., “Measurements for Estimation of Carbon Stocks” and confirms the usage of 20 by 20 m plot or 400 square metre plots for laying out sample plots. VVB has also reviewed the section 6.2 of the revised joint PD & MR and confirms the same. PP has also provided with the SOP i.e., “SOP MRV” for marking of PSPs. VVB after reviewing the supporting evidence confirms the response of PP as valid and satisfactory.

CL has been closed

CL	12	Section no.	1.1, VCS Joint PD & MR	Date: 19/12/2022
Description of CL				
As per section 1.1 of VCS Joint PD & MR, “Currently the project has completed plantation at 245.58 hectares covering all the 5 proposed states of India.”				
However, the document provided by PP “ER Sheet 2019-2022” states the area is 248.06 ha.				
PP shall clarify this inconsistency.				
Project participant response				Date: 04/03/2023
The plantation area has been corrected and is in line with the ER sheet. Hence revised Joint PD & MR.				
Documentation provided by project participant				
1.ER Sheet Version 2.0 2.Joint PD MR Version 3.0				
VVB assessment				Date: 16/03/2023
PP has provided with the revised value of 165.41 hectares of planted area for the first PAI. VVB based on review of the revised joint PD & MR and ER sheet confirms, that the values are now consistent in both the documents.				
CL has been closed				

CL	13	Section no.	Non- Permanence risk report	Date: 23/12/2022
Description of CL				
As per Non-Permanence Risk Report, PP is requested to clarify the following:				
<u>Internal Risks</u>				
Internal Risks (Project management):				
➤ PP shall clearly select the risk/ mitigation based on the competency of Management team. Furthermore, SOP in regards to project management is requested to provide to the VVB for review.				

Internal Risks (Financial Viability):

- PP shall provide evidence for mitigation selected as well as cash flow breakeven calculated as per section 2.2.2 of the VCS AFOLU Non-Permanence Risk Tool, version 4.0.

Internal Risks (Opportunity Cost)

- PP has selected the mitigation as
"Project is protected by legally binding commitment (see Section 2.2.4) to continue management practices that protect the credited carbon stocks over the length of the project crediting period."

The grouped project crediting period is 30 years, however, the contract with the farmers is 12 years. PP shall clarify on this inconsistency.

Internal Risks (Project Longevity):

- PP shall transparently demonstrate how project longevity risk has been calculated.

Total Internal Risks

- Total internal risk calculation is missing

External Risks

External Risks (Land Tenure and Resource Access/Impacts):

- PP shall select from the type of ownership as well as mitigation, as applicable.

External Risks (Political Risk):

- PP shall provide source data for governance risk score of the host country.

Natural Risk

Natural Risk (Fire):

- It has been mentioned that fire may be a risk in any forest ecosystems, however, the likelihood of the forest fire in the project activity instance is negligible. PP shall provide evidence in form of fire maps in the grouped project area. Furthermore, PP shall provide fire management plan as a mitigation measure for future project instances.

Natural Risks (Pest and Disease Outbreak):

- PP shall provide appropriate mitigation measure referring to scientific literature.

Natural Risks (Extreme Weather):

- It has been mentioned that flood in Maharashtra and cyclone in Gujarat can occur because these two states are vulnerable and cyclonic storms and floods are major extreme events in Gujarat state of India.

However, it has been further mentioned that carbon stocks of trees will remain unaffected under flood and cyclone. These events occur only for brief period of time.

PP shall clarify how this conclusion was drawn.

Overall Risk Rating

- The overall risk rating calculation is incorrect.

Calculation of Total VCUs

- The calculation for calculation of total VCUs is missing.

Furthermore, PP shall check for consistency in VCS Non-Permanence Risk Report with respect to Non-Permanence Risk Report excel sheet.

The SOPs in regards to different aspect of the project such as farmers onboarding, contractual agreements/process, silvicultural practices, plantation plan, harvesting, re-plantation, MRV, training & capacity building, climatic risk, fire, infestation etc. are not provided to the VVB for review.

Project participant response

Date: 04/03/2023

Internal Risks (Project management):

- PP shall clearly select the risk/ mitigation based on the competency of Management team. Furthermore, SOP in regards to project management is requested to provide to the VVB for review.

PP has detailed the Project Management competencies that are required to design and implement the Project Activity through various projects and assignments of similar size and nature successfully implemented by the Co-implementer/Promoter of PP viz. MITCON Consultancy & Engineering Services Limited. For AFOLU specific inputs the PP relies on its in-house employees with expertise in Forestry, Environment, Social sectors and external agencies such as Mahatma Phule Krishi Vidyapeeth Rahuri, Maharashtra, College of Engineering Pune (COEP) and Indian Council for Agricultural Research (ICAR)- National Institute of Abiotic Stress Management (NIASM), Maharashtra.

Internal Risks (Financial Viability):

- PP shall provide evidence for mitigation selected as well as cash flow breakeven calculated as per section 2.2.2 of the VCS AFOLU Non-Permanence Risk Tool, version 4.0.

PP has provided detailed cash flow including breakeven for each farmer/land parcel in section 1.2 Financial Viability under Non Permanence Risk Report.

Internal Risks (Opportunity Cost)

- PP has selected the mitigation as
"Project is protected by legally binding commitment (see Section 2.2.4) to continue management practices that protect the credited carbon stocks over the length of the project crediting period."

The grouped project crediting period is 30 years, however, the contract with the farmers is 12 years. PP shall clarify on this inconsistency.

The amended Contractual Agreement shall be valid for duration of 30 years, extendable to upto 100 years based on crediting period of VCS 2479 project and renewal thereof.

Contractual Agreement between farmer and PP ensures the permanence beyond project lifetime with provisions of disincentivizing harvesting in lieu of adequate income from non-timber produce during the project lifetime and thereafter.

Internal Risks (Project Longevity):

- PP shall transparently demonstrate how project longevity risk has been calculated.

PP has entered into legally binding Contractual Agreement with the Farmer valid for duration of 30 years, extendable to upto 100 years based on crediting period of VCS 2479 project and renewal thereof.

PP shall be facilitating to develop ecosystem to exploit non-timber income opportunities from Mahogany plantation as well as developing intercrops alternatives apt for various stages of plantation growth which will result in continuation of plantation. PP shall continue to work towards delivering non-timber income streams to farmer so as to compensate the harvesting opportunity cost.

Total Internal Risks

- Total internal risk calculation is missing

Total internal risk calculation is updated in the VCS Risk Report Calculation tool spreadsheet.

External Risks

External Risks (Land Tenure and Resource Access/Impacts):

- PP shall select from the type of ownership as well as mitigation, as applicable.

PP has selected the type of ownership and mitigation. The same has been updated VCS risk report calculation tool.

External Risks (Political Risk):

- PP shall provide source data for governance risk score of the host country.

The Governance Risk Score of India is calculated across six indicators (Voice and Accountability, Political Stability and Absence of Violence/Terrorism, Government Effectiveness, Regulatory Quality, Rule of Law and Control of Corruption) of the World Bank Institutes Worldwide Governance Indicators (WGIs). The same has been calculated in the Non-Permanence Risk Report.

Natural Risk

Natural Risk (Fire):

- It has been mentioned that fire may be a risk in any forest ecosystems, however, the likelihood of the forest fire in the project activity instance is negligible. PP shall provide evidence in form of fire maps in the grouped project area. Furthermore, PP shall provide fire management plan as a mitigation measure for future project instances.

The Project Activity is not a forest ecosystem. The Project Activity Instance involves multiple unconnected scattered plots with average size of 0.50 hectares each in agrisilviculture system, which significantly reduces the fire risk and propagation thereof. PP has developed SOP of Plantation Management which includes the Fire Risk Management.

Natural Risks (Pest and Disease Outbreak):

- PP shall provide appropriate mitigation measure referring to scientific literature.

PP has provided the mitigation measure for Pest and Disease Outbreak with citation to scientific literature in section 1.11 of Joint PD & MR.

Natural Risks (Extreme Weather):

- It has been mentioned that flood in Maharashtra and cyclone in Gujarat can occur because these two states are vulnerable and cyclonic storms and floods are major extreme events in Gujarat state of India.

However, it has been further mentioned that carbon stocks of trees will remain unaffected under flood and cyclone. These events occur only for brief period of time.

PP shall clarify how this conclusion was drawn.

The Project Activity includes 65 districts across five states in India. The PP has selected these districts based on risk analysis with respect to cyclone, flood, drought, seismic proneness. The district prone to any of the extreme events are excluded from the Project. The detailed analysis and conclusion thereof has been covered under section Extreme Weather of Non Permanence Risk Report.

Overall Risk Rating

- The overall risk rating calculation is incorrect.

PP has included the Overall risk rating calculation in the VCS Risk Report Calculation tool spreadsheet.

Calculation of Total VCU

- The calculation for calculation of total VCUs is missing.

The calculation of total VCUs is provided in Ex-ante ER calculation spreadsheet and number of credits to be deposited in AFLOU pooled buffer account is calculated and reported in Non-Permanence Risk Report. Since the sheet is locked, preventing us to edit cell G130 for Total Risk Assessment to arrive at calculated value in VCS Risk Report Calculation Tool.

The SOPs has been provided.

Documentation provided by project participant

1. Joint PD MR Version 3.0
2. Non-Permanence Risk Report
3. SOP for Farmer On boarding
4. SOP for Plantation Management (Includes Silviculture practise, Plantation plan, Harvesting Re-plantation plan, Fire Risk Management, Pest and Disease Management)
5. SOP for MRV

VVB assessment
Date: 16/03/2023
Internal risks (Project Management)

SOPs have been provided by the PP to VVB regarding the SOPs. However, PP has still not provided with the appropriate risk score for project management. PP is requested to follow the guidelines provided by AFOLU Non permanence risk tool v4.0 document and provide an appropriate score to it.

Internal risks (Financial viability)

PP is requested to provide the evidence for the mitigation measured chosen and farmers cash flow breakeven point. PP has to demonstrate the PP has available as callable financial resources at least 50 % of total cash out before project reaches breakeven.

Internal risks (Opportunity cost)

PP has still not provided with the amended contractual agreement.

Internal risks (Project longevity)

PP has still not provided with the amended contractual agreement.

Total internal risk

PP needs to revise the score as per the revision in risk rating of individual internal risk.

External risk (Land tenure and resources access/impacts)

PP has revised the score for land tenure and mitigation which are in accordance with the instructions of AFOLU non permanence risk tool v4.0. VVB confirms the risk score provided is valid.

External risk (Political risk)

PP has revised the NPRR and provided with the source table of the risk score for the host country. VVB after verifying the data against the source Worldwide governance indicators confirms the value mentioned is valid.

Natural risk (Fire)

PP has provided with the fire risk management plan in the SOP Mahogany plantation management plan. VVB after reviewing the SOP confirms that the SOP is valid and satisfactory. During the on-site inspection it was confirmed that the project area is not a forest ecosystem but were scattered land parcels and can be mitigated through guidelines provided in the SOP.

Natural risk (Pest and disease outbreak)

VVB after reviewing the section 1.11 of the revised VCS Joint PD & MR confirms that PP has provided with appropriate scientific literature "Managing Mahogany Plantations in the Tropics, published by CSIR-FORIG, Kumasi, Ghana" regarding the pest mitigation measure.

Natural risk (Extreme weather)

PP has provided with the requested clarification. VVB confirms that the project activity is being conducted on scattered parcels across 5 states. The detail analysis has been provided in the NPRR which deems to be valid and satisfactory to the VVB.

Overall risk rating

The overall risk rating table is missing from NPRR. PP is requested to include it as per the template instructions.

Calculation of total VCUs

The section of calculation of total VCUs is missing. PP is requested to follow the template instructions of NPRR and revise it according to it.

The SOP have been provided regarding the MRV, farmers on boarding and management plan. VVB after reviewing the SOPs confirms them as valid and applicable to the project activity.

CL is still open

Project participant response Date: 29/03/2023

1. **Project Management (Internal Risk)**- PP has updated the risk score under Project Management
2. **Internal risks (Financial viability)**-PP has explained the total peak cash flow out of Rs. 222,394 before the project reaches breakeven.
Of the above peak cash flow requirement, farmers need to bring an upfront investment of Rs. 132,201, for plantation activities, which include purchase of seedlings, transport, fertilizers, fungicides, site preparation (digging of pits, weeding) and irrigation facility. Thus it is ensured that more than 50% peak cash flow requirement is already invested prior to inclusion of farmer in the Project Activity instances.
3. **Internal risks (Opportunity cost)**-PP is providing the amended contractual agreement.
4. **Internal risks (Project longevity)**-PP is providing the amended contractual agreement.
5. **Total internal risk**- PP has revised the score as per the risk rating of individual internal risk.
6. **Overall risk rating**- The overall risk rating table is included in the NPRR.

Documentation provided by project participant

1. VCS Risk Report Calculation tool
2. Non-Permanence Risk Report Version 2.0

VVB assessment Date: 31/03/2023

Internal risk (Project management)

PP has provided with the revised NPRR. VVB after reviewing the document confirms that the risk score has been updated in compliance with the AFOLU Non-Permanence risk tool v4.0. VVB confirms the response as valid and appropriate.

Internal risk (Financial viability)

PP has provided with the requested clarification. The upfront investment of each farmer will ensure the availability of callable financial resources. Hence, VVB confirms the response of PP as valid and satisfactory.

Internal risk (Opportunity cost)

PP has provided with the amended contractual agreement and VVB after reviewing the agreement confirms that the duration of agreement is 30 years which can be renewed upto 100 years on extending of crediting period. VVB confirms the response of PP as valid and appropriate.

Internal risk (Project longevity)

PP has provided with the amended contractual agreement and VVB after reviewing the agreement confirms that the duration of agreement is 30 years which can be renewed upto 100 years on extending of crediting period. VVB confirms the response of PP as valid and appropriate.

Total internal risk

PP has revised the NPRR and the total internal risk score table has been provided with appropriate risk score as per the instructions of AFOLU Non permanence risk tool v4.0. VVB confirms the PP response as valid and appropriate.

Overall risk rating

PP has revised the NPRR and the overall risk rating table has been provided with appropriate risk score as per the instructions of AFOLU Non permanence risk tool v4.0. VVB confirms the PP response as valid and appropriate.

CL has been closed

CL	14	Section no.	1.1, VCS Joint PD & MR	Date: 19/12/2022
Description of CL				
As per the VCS Joint PD & MR, VVB has noted that there are two strata for the sampling survey. This stratification is based on year of plantation. Clarification is requested as how this stratification by PP IS in compliance with paragraph 9 & 10 of the CDM A/R Methodological tool " <i>Calculation of the number of sample plots for measurements within A/R CDM project activities</i> ", version 02.1.0				
Project participant response				Date: 04/03/2023
As per the section 4 (c) of the applied tool "Calculation of the number of sample plots for measurements within A/R CDM project activities version 2.1.0" the model is applicable when the project area is stratified into one or more strata. According to paragraph 9, "the project area is stratified on the basis of the variability of the biomass stock being estimated, and approximate area of each stratum is determined. If the biomass stock being estimated is sum of biomass stocks in two or more pools, then stratification is carried out on the basis of the variability of the biomass stock of the dominant pool (i.e. the pool containing the largest amount of biomass stock)". The year of planting is one of the main factors influencing the variation of carbon stock changes under the project scenario. Therefore, the project stratification has been carried out on the basis of the year of plantation.				
Documentation provided by project participant				
Sampling Plan (PSPs)				
VVB assessment				Date: 16/03/2023
PP has provided with the requested clarification. VVB confirms that the stratification is carried out on the basis of variability of the biomass stock of the dominant pool i.e., the year of planting. VVB further confirms that the year of planting is one of the most major factors influencing the variability in biomass stock and stratification done on the basis of year of planting is valid.				
CL has been closed				

CL	15	Section no.	3.4,3.6, VCS Joint PD & MR	Date: 19/12/2022
Description of CL				
The following statements in the VCS PD/MR is unclear to the VVB, <i>"Despite the fact that Agroforestry program was implemented for two years more, the set goals to achieve the stipulated percentage of greenery are still faraway."</i> <i>"Baseline scenario is the land use scenario that allows for the highest baseline GHG removals by sinks."</i>				
Project participant response				Date: 04/03/2023
The statement has been removed and Joint PD & MR is updated.				
Documentation provided by project participant				
Joint PD MR Version 3.0				
VVB assessment				Date: 16/03/2023

PP has provided the revised joint PD & MR, VVB after reviewing the document confirms that the statement has now been removed.

CL has been closed

CL	16	Section no.	--	Date: 24/12/2022
Description of CL				
As per section 2.3 of the VCS AFOLU Non-Permanence Risk Tool, version 4.0,				
"Any additional withholding required for disputes over land/resource ownership or access/use rights shall be added to the risk score."				
PP shall provide evidence to demonstrate the requirement above. <u>While doing so, please clarify the ongoing dispute (of Mahogani Vishwa Agro Pvt Ltd.) which is pending jurisdictional proceedings.</u>				
Project participant response				Date: 04/03/2023
There is no additional withholding on account of land ownership. The land parcel involved in the Project Activity is privately held by farmers and each farmer has resource access/use right to the land parcel. Further, PP has made absolute and private ownership of land as eligibility criteria for the Project Activity and any other forms of right to the land time/used based are excluded from Project Activity.				
PP has provided the response on the dispute in section 2.4 of Joint PD & MR. It is to be noted that the complaint has been dismissed by Honourable Judicial Magistrate. Hence, revised Joint PD & MR. The said dispute is a commercial dispute and not connected with the Project Activity and land parcel therein.				
Documentation provided by project participant				
Joint PD MR Version 3.0				
VVB assessment				Date: 16/03/2023
PP has provided with the requested justification. VVB during the on -site inspection verifies the land parcels are owned by private individuals and only those subscribed to the project proponent and the subject project has been assigned in the first PAI.				
VVB has further confirmed the land titles through the state government portal "Bhulekh.mahabhumi.gov.in" for the sample plots chosen by VVB and some other random parcels of land. VVB based on review of the supporting evidences confirms the land is owned by private individuals.				
The dispute had been dismissed by the honourable judicial magistrate under order- MHK020000175-2021 in Cr. M.A.No. 32-2021 (Exh.1). The complaint is dismissed under section 203 of the code of criminal procedure. This was also verified by VVB during the on-site interview with the project proponent. Hence, there is no dispute over the project activity and VVB has confirmed the same.				
CL has been closed				

CL	17	Section no.	TR - VCS PD v 4.2 sect 1.10 Project Scale	Date: 7 May 2023
Description of CL				
PP scale ambition unsupported by evidence to date.				
PP has only planted 165 ha out of proposed 15,000 ha in the first 4 years of the 30 year project period. PP must provide evidence to support this ambitious projection (particularly in consideration of non-permanence CAR below requiring longer contract terms).				
Project participant response				Date: 04/03/2023

The First Project Activity Instance covers plantation between Project Start Date of June 28, 2019 and December 31, 2020, i.e. 18 months.

After streamlining of processes, infrastructure and team, PP had ramped up plantation capacity from 18 ha/month to 200 ha/month during plantation season of 6 months per annum.

And as on April 30, 2023, PP has already completed plantation and has pre-bookings for more than 2,500 ha. The same shall be included in the Second Project Activity Instance.

PP has put in place requisite infrastructure to complete the balance plantation.

Documentation provided by project participant

Seedlings receipts of more than 3.6 million evidencing plantation of over 3,200 ha is provided to VVB.

VVB assessment

Date: May 19, 2023

VVB, based on the review of the revised Joint PD & MR, confirms that the first PAI only covers 165.41 hectares (and not 15,000 ha) and the calculations and assessment have been conducted for the area under first PAI. PP has now revised the area only for the first PAI for all its demonstration as well as ER estimation. This is deemed appropriate. The revised Joint PD & MR refers 15,000 ha, only as a plan for the entire grouped project; which has no material impact on the validation and 1st periodic verification of this grouped project and the first PAI at time of initial registration/issuance.

The area distribution for the 1st PAI, as per Strata, is as follows:

Project Stratification		
Plantation Year	Strata	Area (Ha)
2019	Strata 1	12.26
2020	Strata 2	153.15
	Total:	165.41

Thus, VVB confirms that the evidence provided supports the PP response for the area under first PAI i.e., 165.41 hectares.

CL has been closed.

CL	18	Section no.	TR - VCS PD v 4.2 sect 6.2 Data and parameters monitored	Date: 7 May 2023
Description of CL				
PP misses important field inventory equipment.				
PP must justify avoiding diameter tapes, despite diameter tapes being less costly than clinometers or GPS receivers. PP must also list tool for measuring distances for height (such as 50-100 meter fiberglass reel tape). Finally, PP must justify time-expensive field height measurement (in consideration of CAR regarding volume calculation below).				
Project participant response				Date: 18 May 2023

PP has used diameter tapes for measurement of DBH. PP has included the use of 50-100 meter fibreglass reel tape for measurement of distance used for height measurements in the PDMR section 6.2. PP has use field height measurement, as the height values are required in volume equation. The PP has selected the Volume equation mentioned in the PDMR, ex-ante and ex-post calculation for the following factors: a. Volume equations having DBH and Height variable are reported to improve the performance of models. As such measurement of Height is imperative. b. The source, Krishnawati H, et al.2011 cited in PDMR contains only single variable equation, i.e. Diameter based equation. Further, the said equations are constrained by DBH and height requirements which is in the range of 14.3 to 36.9 cm and height 8.5 to 25.8 m. c. Further, the absolute form factor (0.46 ± 0.09) and artificial form factor (0.68 ± 0.11) are well researched and established for <i>Swietenia macrophylla</i> with R^2 values more than 0.9 (study covering 120 trees with diameter range 6-38cm). This diameter range covers the requirement over entire lifecycle of the Project Activity. d. Also, the volume equation selected is more easy and understandable to all the relevant stakeholders.	
Documentation provided by Project Participant	
Indonesian Journal of Forestry Research - Form Factor Research Article	
VVB assessment	Date: May 19, 2023
VVB confirms that PP has used diameter tapes for measurement of DBH and has revised the Joint PD & MR accordingly. Furthermore, the height is measured through clinometer, which was also verified during the on-site inspection. Based on the response provided by PP and by reviewing the revised Joint PD & MR along with carbon calculation sheets, VVB confirms that the allometric equation has been used for both (ex-ante and ex-post) calculation using direct AGB calculation, which includes both variables i.e., DBH & height. CL has been closed.	

CL	19	Section no.	TR - Non-permanence v 4.0 sect 3-b	Date: 7 May 2023
Description of CL				
PP fails to quantify damage from common mahogany plantation pests.				
PP indicates that management practices will control mahogany shoot borer (<i>Hypsipyla grandella</i>) and mahogany webworm (<i>Macalla thyrsalis</i>). PP must provide quantitative evidence from inventories showing extent of damage from shoot borers and webworms.				
Project participant response				Date: 18 May 2023
The appointed agronomists by PP regularly visits to the land parcel which enables regular monitoring of health of Mahogany Trees. The quantitative analysis is submitted herewith. Following were the observations: 1. Critical Incidences – NIL				

2. Non-Critical Incidences – 2% (Requisite actions as recommended by Agronomist were implemented and the trees were cured) PP has been effective in controlling the effect of shoot borers and webworms through silvicultural, chemical and biological control.	
Documentation provided by Project Participant	
Pest and Disease Quantification	
VVB assessment	Date: May 19, 2023
Based on review of the evidence provided, VVB confirms that PP has provided the “agronomist raw field visit form”, which includes the owner of land parcel, coordinates, area, number of trees planted along with the observed symptoms of Gumosis, stem borer, shoot borer, leaf eating caterpillar, leaf spot and other for each farmer participating in the first project instance. The information has been further transposed to the documents “Pest and Disease Quantification” Furthermore, a detailed analysis mentioning the critical incidences and non-critical incidences along with the action taken against any pest or disease symptom. VVB after reviewing the supporting evidence documents confirms the response of PP as appropriate and satisfactory and thus acceptable to the VVB. CL has been closed.	

Table 3. CAR from this joint validation & verification

CAR	01	Section no.	1.1, VCS Joint PD & MR	Date: 19/12/2022
Description of CAR				
As per section 1.4 of the VCS Joint PD & MR, - the project has been defined as grouped. However, the same is not explicit in the summary description of the document. - It has been stated that, <i>“Currently MVAPL associates with farmers those who are willing to cultivate Mahogany trees on their land in hundreds of hectares in the state of Maharashtra, Telangana, Madhya Pradesh, Gujrat and Karnataka states of India and defined as a project boundary.”</i> The above statement provides information on the common name of the tree species planted, however, specific name of the species is/ are not mentioned anywhere in the document (here genus shall be <i>Swietenia</i>, as only genuine mahogany species are commercially grown). PP shall list out species along with genus and common name, included as part of grouped project and as an eligibility requirement for the inclusion of new project instances. - The operational and management structure of the grouped project is either not transparent or missing information. For e.g., during the on-site inspection, VVB was informed that Mahogani Vishwa Agro Pvt Ltd is 100% owned subsidiary of MITCON Nature Based Solutions Limited. This information is missing in the VCS Joint PD & MR. The legal registration document of these entities are requested to be provided to the VVB.				
Project participant response				Date: 04/03/2023
- The section 1.4 of Joint PD & MR is revised and description of the Project Activity defines that the Project Activity is a Grouped Project Activity. - The species to be planted in the Project Activity is <i>Swietenia macrophylla</i> and the same has been updated in the Joint PD & MR. - Legal holding structure is described in section 1.1 and Appendix 7 of the Joint PD & MR. - The legal registration documents are included in appendix 5.				

Documentation provided by project participant	
Joint PD MR Version 3.0	
VVB assessment	Date: 16/03/2023
1. VVB confirms that the section 1.4 describes the project activity as a grouped project activity. However, VVB after reviewing the revised joint PD & MR states that PP has still not provided with the eligibility criteria of grouped projects as per the section 3.6.22 of VCS standard v4.4. PP is requested to revise the document as per the mentioned section and also include the eligibility criteria of inclusion of new project activity as mentioned in section 3.6.16 & 3.6.17 of the VCS standard v4.4. 2. PP has provided with the revised document, VVB after reviewing the revised Joint PD & MR confirms that PP has now clarified the tree specie used in the project activity i.e., <i>Swietenia macrophylla</i> and has updated the document accordingly. 3. PP has provided with the requested corrections in the revised document and has now mentioned the missing information in section 1.1 of the revised joint PD & MR. Furthermore, VVB has also assessed the legal registration document of Mahogany Vishwa Agro Private Limited and MITCON nature based solutions limited during the on-site inspection and is now also mentioned in APPENDIX 5 of the revised Joint PD & MR. The legal holding structure is also mentioned in APPENDIX 7 of the document. VVB after reviewing the supporting evidences and revised joint PD & MR confirms that the corrections made are valid and satisfactory.	
CAR is still open	
Project participant response	Date: 29/03/2023
PP has revised the section 1.4 of the Joint PD & MR in line with requirements set out in section 3.6.22 of VCS Standard v4.4 for grouped projects. Further, PP has revised the section 1.4 with eligibility criteria of inclusion of new Project Activity instances in line with requirements set out in section 3.6.16 & 3.6.17 of VCS Standard v4.4.	
Documentation provided by project participant	
Joint PD MR Version 4.0	
VVB assessment	Date: 31/03/2023
VVB based on review of the section 1.4 of the revised VCS Joint PD & MR confirms, that the grouped project eligibility, eligibility criteria for new PAI and eligibility criteria for inclusion of new PAI has been appropriately demonstrate in the document. Hence, VVB confirms the response of PP as valid and satisfactory.	
CAR has been closed	

CAR	02	Section no.	1.4, VCS Joint PD & MR	Date: 19/12/2022
Description of CAR				
As per the VCS PD, the project is a grouped project activity. However, the requirements of grouped project in various sections of the VCS PD are not in compliance with VCS template and VCS Standard V4.3. (for e.g. eligibility criteria as per section 3.5.15 of the VCS standard, version 04.3 etc).				
Project participant response				Date: 04/03/2023
Joint PD & MR has been revised in line with latest VCS template and VCS Standard 4.4				
Documentation provided by project participant				
Joint PD & MR Version 3.0				
VVB assessment				Date: 16/03/2023

PP has provided with the latest template of Joint PD & MR i.e., v4.2. However, PP has still not provided with the requested corrections as per the VCS standard requirements. PP is requested to correct it in compliance with the instructions provided in the VCS standard v4.4.

CAR is still open

Project participant response	Date: 29/03/2023
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PP has revised the Joint PD & MR in line with requirements set out in VCS Standard v4.4 for grouped projects

Documentation provided by project participant

Joint PD & MR Version 4.0

VVB assessment	Date: 31/03/2023
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VVB after reviewing the section 1.4 of the revised VCS Joint PD & MR confirms that the grouped project eligibility, eligibility criteria for new PAI and eligibility criteria for inclusion of new PAI has been appropriately demonstrate in the document and is in compliance with the instructions of VCS standard v4.4. Hence, VVB confirms the response of PP as valid and satisfactory.

CAR has been closed

CAR	03	Section no.	1.13 (editorial), VCS Joint PD & MR	Date: 19/12/2022
Description of CAR				
- As per section 1.13 of the VCS Joint PD & MR, the name of the species is not written in italics nor has been underlined. As per Binomial Nomenclature, all the scientific names of organisms (flora or fauna) are underlined or italicized if typed. - As per section 1.10 & 6.5 of the VCS Joint PD & MR, PP shall indicate start and end date in VCS standard format DD-Month-Year for ex-ante and ex-post carbon removals.				
Project participant response				Date: 04/03/2023
- The scientific name of species is written in italics in section 1.13 as well as in all the other sections of the Joint PD & MR. - All sections have been updated in accordance with VCS Standard format DD-Month-Year				
Documentation provided by project participant				
Joint PD & MR Version 3.0				
VVB assessment				Date: 16/03/2023
- PP has provided with the requested corrections in the document. VVB after reviewing the revised VCS joint PD & MR confirms that all the species scientific name under relevant sections are in italics. - PP has updated the ex post table under section 7.5 in the DD-Month-Year format, however the ex-ante table under section 1.10 is still not revised. PP is requested to update the table in the same mentioned format also.				
CAR is still open				
Project participant response				Date: 29/03/2023
PP has updated the section 1.10 of the Joint PD & MR				
Documentation provided by project participant				
Joint PD & MR Version 4.0				
VVB assessment				Date: 31/03/2023
Based on the review of the section 1.10 of the revised VCS Joint PD & MR, VVB confirms that the starting year has been mentioned in the DD-Month-Year format. Hence, VVB confirms the response of PP as valid and satisfactory.				

CAR has been closed

CAR	04	Section no.	1.11, VCS JOINT PD & MR	Date: 19/12/2022
Description of CAR				
As per section 1.11 of the VCS Joint PD & MR, PP shall appropriately define grouped project boundary as well as location of 1 st PAI with maps and geodetic coordinates in compliance with VCS template instructions.				
Project participant response				Date: 04/03/2023
Now section 1.12 of the Joint PD & MR has been updated with maps and screenshot of the kml file with geodetic location has been updated. A separate kml file containing the shape file and geodetic coordinates are submitted.				
Documentation provided by project participant				
1. Kml file 2. Joint PD MR Version 3.0				
VVB assessment				Date: 16/03/2023
PP has provided with the requested corrections in the revised VCS Joint PD & MR. VVB after reviewing the document confirms that the maps and screenshot are now updated in the section 1.12 of the document. PP has also provided with the KML files with geodetic coordinates and other details mentioning state, district, tehsil, village, plantation area, agreement date of each land parcel included within the first project instance.				
CAR has been closed				

CAR	05	Section no.	1.17, VCS Joint PD & MR	Date: 19/12/2022
Description of CAR				
PP shall complete section 1.17 of the VCS Joint PD & MR in compliance with section 3.16.1 of VCS Standard, version 4.3 and VCS template instructions.				
Project participant response				Date: 04/03/2023
PP has completed and updated the section 1.17 of the Joint PD & MR in compliance with latest VCS Standard.				
Documentation provided by project participant				
Joint PD MR Version 3.0				
VVB assessment				Date: 17/03/2023
VVB after reviewing the revised VCS Joint PD & MR confirms that PP has provided with the requested corrections under the relevant section and are in compliance with the section 3.17.1 of VCS Standard v4.4. However, in section 5.4 PP shall revise the standard version to the latest version accordingly.				
CAR is still open				
Project participant response				Date: 29/03/2023
PP has revised section 5.4 with latest version.				
Documentation provided by project participant				
Joint PD MR Version 4.0				
VVB assessment				Date: 31/03/2023
PP has done the requested correction and updated the latest version of the standard in the relevant section. VVB after reviewing the revised VCS Joint PD & MR confirms the same.				
CAR has been closed				

CAR	06	Section no.	2.2 & 2.5, VCS Joint PD & MR	Date: 19/12/2022
Description of CAR				
PP shall completely fill section 2.2 & 2.5 of the VCS Joint PD & MR in compliance with VCS template instructions and section 3.17 of the VCS Standard version 4.3.				
Project participant response				Date: DD/MM/YYYY
PP has completed and updated the section 2.2 & 2.5 of the Joint PD & MR in compliance with latest VCS Standard				
Documentation provided by project participant				
Joint PD MR Version 3.0				
VVB assessment				Date: 16/03/2023
PP has provided with the requested corrections. VVB after reviewing the revised VCS Joint PD & MR confirms that the section 2.2 & 2.5 are now filled appropriately and are in compliance with the VCS template instructions and VCS standard v4.4.				
CAR has been closed				

CAR	07	Section no.	3.3, VCS JOINT PD & MR	Date: 19/12/2022
Description of CAR				
As per section 3.3 of the VCS Joint PD & MR, GHG emission sources are missing.				
PP shall indicate sources and gases in compliance with the VCS template instructions.				
Project participant response				Date: DD/MM/YYYY
Section 3.3 is updated. Hence revised Joint PD& MR.				
Documentation provided by project participant				
Joint PD MR Version 3.0				
VVB assessment				Date: 16/03/2023
VVB after reviewing the revised VCS Joint PD & MR confirms that the section 3.3 has been updated and is in compliance with the VCS template instructions.				
However, there is inconsistency of monitoring dates in section 7.5 of Joint PD & MR. For the year 2022, the monitoring date is written as 01 January 2022 – 18 October 2022. However, in the other sections of the document and ex post ER sheet the date is 01 January 2022 – 13 October 2022, PP is requested to correct this inconsistency.				
CAR is still open				
Project participant response				Date: 29/03/2023
PP has corrected the monitoring date in Joint PD & MR				
Documentation provided by project participant				
VCS Joint PD MR Version 4.0				
VVB assessment				Date: 31/03/2023
PP has done the requested corrections. VVB based on review of the section 7.5 of joint VCS PD/MR, confirms that the inconsistency has been checked and the dates are now consistent.				
CAR has been closed				

CAR	08	Section no.	5.3, VCS JOINT PD & MR	Date: 19/12/2022
Description of CAR				
As per paragraph 21 of the applied methodology:				
“The monitoring plan shall provide for collection of all relevant data necessary for:				

- (a) Verification that the applicability conditions listed under paragraphs 3 and 4 have been met;
(b) Verification of changes in carbon stocks in the pools selected;
(c) Verification of project emissions and leakage emissions.”

Project proponent has not provided monitoring of applicability conditions as a part of monitoring. Furthermore, the data/parameters monitored is not as per the provision of section 12 of, AR-tool 14, version 04.2 for the selected carbon pool.

Furthermore, paragraph 63 of the applied tool (AR-tool 14, version 04.2), states

“The values, sources and requirements for data and parameters which are not subject to monitoring are provided in the text of the tool along with the equations in which these are used”.

VVB based on review of joint VCS PD/MR noted that there are several data/parameters noted that PP has applied number of data/parameters such wood density, BEF, root-shoot ratio and carbon fraction for the ex-post carbon calculation, however their source including the parameters are missing in section 5.1 of the joint PD/MR.

Project participant response	Date: 04/03/2023
As per latest template, section 5.1 is now section 6.1 (Data and Parameters Available at Validation) and section 6.2 (Data and Parameters Monitored) has been updated. Hence revised Joint PD & MR	
Documentation provided by project participant	
Joint PD MR Version 3.0	
VVB assessment	Date: 16/03/2023
PP has provided with the requested corrections in the document. VVB after reviewing the revised VCS Joint PD & MR confirms that the sources including the parameter are now mentioned in section 6.1 & 6.2 of the document and are valid and applicable. However, PP is requested to add AGB and BGB also.	
CAR is still open	
Project participant response	Date: 29/03/2023
PP has added the AGB and BGB in section 6.2	
Documentation provided by project participant	
Joint PD MR Version 4.0	
VVB assessment	Date: 31/03/2023
VVB after reviewing the revised VCS Joint PD & MR confirms that PP has added the AGB and BGB parameters in the section 6.2.	
CAR has been closed	

CAR	09	Section no.	6.1, VCS JOINT PD & MR	Date: 19/12/2022
Description of CAR				
As per section 3.4.1 of the VCS Standard, version 4.3, <i>“The project proponent shall use the VCS Project Description Template, an approved combined project description template available on the Verra website or an approved GHG program project description template where the project is registered under an approved GHG program, as appropriate. The project proponent shall adhere to all instructional text within the template.”</i>				
VVB has noted that the template has altered at few instances, for e.g., the tables in section 6.1.				

Project participant response	Date: 04/03/2023
PP has updated the Joint PD & MR as per latest VCS Joint PD & MR Version 4.2.	
Documentation provided by project participant	
Joint PD MR Version 3.0	
VVB assessment	Date: 16/03/2023
PP has revised the tables as per the latest template instructions v4.2. VVB after reviewing the revised VCS Joint PD & MR against the VCS Joint PD & MR v4.2 confirms that the corrections done are valid and satisfactory.	
CAR has been closed	

CAR	10	Section no.	Sampling	Date: 23/12/2022
Description of CAR				
VVB during the acceptance sampling, visited the permanent sampling plots and conducted measurement of the GBH and height by its own. The result of this measurements reveals a comparable stem volume and the same is acceptable to the VVB. During the VVB's field inspection, VVB has found an immaterial discrepancy in 3 samples.				
Furthermore, in two of the samples the number of tree count were reported less by the PP, which is deemed conservative by the VVB. However, this raises concern on QA/QC of the MRV system.				
<i>During the on-site inspection, VVB has observed that:</i>				
(a) <i>Marking of trees are not provided which causes difficulty in traceability</i> (b) <i>Monitoring procedures for anomalous situations, such as standing crops, are missing</i> (c) <i>Training records of MRV personnel needs to be provided</i>				
The root cause for such observation needs to be identified and corrective action shall be taken by the PP for future improvement of the QA/QC of the field measurement including cross-check of the data.				
Project participant response				Date: 04/03/2023
The root cause analysis was conducted and required changes is carried out in QA/QC procedure for MRV personnel for measurement of the carbon stock in the Project Activity. The same has been updated in the Monitoring Plan under section 6.3 of Joint PD & MR and cross checking has been included in updated QA/QC procedure.				
Documentation provided by project participant				
Joint PD MR Version 3.0				
VVB assessment				Date: 16/03/2023
PP has provided with the SOP MRV. VVB after reviewing the document and the revised joint PD & MR confirms that the required changes were identified and corrected in the relevant documents. MRV personnels are provided with necessary training regarding the measurement of DBH and height of trees and how they can affect the estimation of changes in biomass stock once in every six months. However, the SOP mentions the measurement of DBH at height of 1.3m. PP is requested to maintain the consistency as 1.37 is mentioned as height at which DBH was taken.				
CAR is still open				
Project participant response				Date: 29/03/2023
PP has revised the SOP to maintain the consistency both in SOP and Joint PD & MR.				
Documentation provided by project participant				
Joint PD MR Version 4.0				
SOP for MRV				
VVB assessment				Date: 31/03/2023

PP has provided with the requested corrections in the SOP and the revised Joint VCS PD & MR. VVB after reviewing the documents confirms that the DBH taken at 1.3m is now consistent.

CAR has been closed

CAR	11	Section no.	3.4, VCS Joint PD & MR	Date: 23/12/2022
Description of CAR				
In Section 3.4 of VCS PD, PP shall demonstrate compliance with paragraph 11 of Methodology AR-ACM0003 Version 2.0, <i>“Project participants (PPs) shall identify the baseline demonstrate that the project activity is additional by selecting one of the following options:</i> <i>(a) Applying the “Combined tool to identify the baseline scenario and demonstrate additionality in A/R CDM project activities”;</i> <i>(b) Applying an approved standardized baseline appropriate to their project.”.</i> PP is requested to adhere to above requirements while doing so please also refer to the following observations in section 3.4 and 3.6 of the joint PD/MR as the pre-project land use is one of the plausible alternatives to the proposed project: “Marginal cultivation, fallow and barren lands have been considered as pre-project scenarios.”				
Project participant response				Date: 04/03/2023
PP has demonstrated additionality in section 3 of the Joint PD & MR applying “Combined tool to identify the baseline scenario and demonstrate additionality in A/R CDM project activities”.				
Documentation provided by project participant				
Joint PD MR Version 3.0				
VVB assessment				Date: 16/03/2023
PP has applied the AR Tool 02 to identify baseline scenario and demonstrate the additionality. VVB after reviewing the revised Joint PD & MR confirms that the tool has been applied in compliance with the tool instructions. The pre-project land use has been demonstrated in the baseline scenario and additionality section appropriately. VVB confirms the requested corrections done are valid and satisfactory.				
CAR has been closed				

CAR	12	Section no.	3.5, VCS PD	Date: 24/12/2022
Description of CAR				
As per section 3.13.1 of the VCS Standard, version 4.3, Additionality shall be demonstrated and assessed in accordance with the requirements set out in the methodology applied to the project. The applied methodology refers to <i>“Combined tool.....”</i>. <i>In section 3.5 of the VCS PD, PP has provided the description on the additionality of the project, however it appears to anecdotal and not in line with the requirements.</i> The present description of different barriers are not convincing to the assessment team as observed during the on-site inspection and interviews with the project farmers. Furthermore, the common practice analysis is required to be further substantiated as no evidence has been provided for the demonstration in the PD.				
Project participant response				Date: 04/03/2023

PP has updated the section 3.5 of the Joint PD & MR with demonstration of barriers and common practice analysis.	
Documentation provided by project participant	
Joint PD MR Version 3.0	
VVB assessment	Date: 16/03/2023
PP has revised the barriers under section 3.5 of the VCS Joint PD & MR. VVB after assessing the revised barriers confirms that the barriers are applicable to the project activity and are in line with the methodology requirements. Furthermore, PP has demonstrated the common practice analysis through the scale of the project activity in comparison with already existing VCS project (VCS ID 2346) in the region. VVB through own research confirms the common practice analysis has now been appropriately demonstrated.	
CAR has been closed	

CAR	13	Section no.	Carbon Calculation Spreadsheet	Date: 19/12/2022
Description of CAR				
As per section 3.14 of the VCS standard, version 4.3,				
<i>"GHG emission reductions and removals achieved by projects are the basis for the volume of VCUs that can be issued. GHG emissions reductions and removals shall be quantified in accordance with the applied methodology(s)."</i>				
VVB has reviewed the ex-ante GHG emissions removal spread sheet and found it is not inline with the requirements above. The specific findings are as below:				
1. As per the VCS PD, the project has considered above ground biomass and below ground biomass as carbon pool for the proposed grouped project. The applied methodology i.e. AR-ACM0003, version 02, requires the calculation of these pools as per methodological tool "Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities". This tool provides methodological equations/options to calculate the selected carbon pool, however this is not provided in the ex-ante GHG emissions removals spread sheet provided to the VVB. 2. The assumptions (such as number of trees per ha) in the spread sheet is anecdotal. 3. The carbon sequestration does not account for factors like, planting density, survival rate, harvesting cycle, thinning & pruning operations and their timing) for the trees and trees in the baseline, which is not conservative. Furthermore, a value of 15 tCO₂/ha/year of carbon sequestration has been applied directly to account the biomass increment per year. This approach appears to be incorrect. 4. The crediting period of the project per section 1.9 of VCS Joint PD & MR is 30 years. However, the growth model has been calculated for 20 years only, which appears to be incorrect. 5. As per the VCS PD, the grouped project involves harvesting. As per section 3.2.22 of the VCS standard, version 4.3				
<i>"Where ARR or IFM projects include harvesting, the loss of carbon due to harvesting shall be included in the quantification of project emissions. The maximum number of GHG credits available to projects shall not exceed the long-term average GHG benefit. The GHG benefit of a</i>				

project is the difference between the project scenario and the baseline scenario of carbon stocks stored in the selected carbon pools and adjusted for any project emissions of N₂O, CH₄ and fossil-derived CO₂, and leakage emissions."

VVB has noted that no such LA has been calculated for the project, either ex-ante or ex-post, as per the procedure (of VCS standard, version 4.3).

6. The calculation of ex-post carbon calculation is not traceable. For e.g., the cell "o-3 & 4" in the work sheet has linked to a sheet which is not in the excel spread sheet.
7. Vintage wise carbon sequestration has not provided in the ex-post carbon calculation spread sheet as well as VCS Joint PD & MR.
8. The ex-ante and ex-post carbon calculation spread sheet does not account for any buffer to address permeance. Review of VCS Joint PD & MR however reveals of 10 % of buffer however the same can not be verified from the "VCS-Risk-Report-Calculation-Sheet-v4.0 as it has some formula error. Furthermore, please also refer to the specific finding raised on non-permeance risk report.
9. As per the VCS Joint PD & MR, the volume of the commercial component of trees were estimated based on the volume equation specific to Bangladesh (Taken from Khan et al. 2018). $V = 0.103 D^{1.902} H^{0.459}$. Project proponent is requested to provide the evidence for such while doing so please justify the appropriateness of the equation for the region and the species planted under the project.

Furthermore, as per the literature review, https://www.researchgate.net/figure/General-soil-types-of-Bangladesh-21-22_tbl1_330956332, the major soil in Bangladesh is sandy loam, however, the major soil type in the project region are Red soils, Black cotton soil and Lateritic soil.

PP shall demonstrate how the topographic, climatic and edaphic factors are similar throughout the project region of grouped project as compared to Bangladesh.

10. The source of the values used for wood density, BEF, root-shoot ratio and carbon fraction for the ex-post carbon calculation spread has not been provided. Also, BGB is considered as 27% of AGB, the assumption is not supported by any data source in either the VCS Joint PD & MR and carbon calculation spread sheet.
11. The data units in both ex-ante and ex-post calculation spread sheet are missing.

Project participant response

Date: 04/03/2023

- 1.Ex-ante spreadsheet sheet has been revised in line with AR-ACM0003, version 02, tool “Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities”
- 2.Tree assumption per hectare has been defined in the Contractual Agreement, SOPs, Ex-ante and Ex-post ER sheets.
- 3.Carbon Sequestration has been calculated with all the factors taken into account such as plantation density, survival rate, harvesting cycle is provided in Ex-ante ER sheet.
- 4.Crediting period is considered as 30 years’ renewable for four times up to maximum 100 years in line with VCS Standard 4.4 and the same has been considered for growth model.
- 5.Long Term Average is calculated as per the VCS standard 4.4, under Ex-ante spreadsheet.
- 6.The traceability has been included in the ex-post calculation sheet
- 7.Vintage wise calculation is incorporated in the ex-post calculation
- 8.Buffer is included in the ex-ante and ex-post calculation spreadsheet
- 9.The Volume equation has been revised and updated with justification to similarities in topographic, climatic and edaphic factors.
- 10.The sources for assumption for wood density, root-shoot ratio, carbon fraction for ex-post has been provided in the section 5.2 of Joint PD & MR
- 11.Data units has been included in the ex-ante and ex-post calculation spreadsheet.

Documentation provided by project participant

- 1.Ex-ante_ER Sheet_Version 2.0
- 2.Ex-post_ER Sheet_Version 2.0
- 3.Joint PD MR Version 3.0

VVB assessment

Date: 16/03/2023

1. PP has provided with the revised ex ante ER sheet. VVB after reviewing the revised ER sheet for ex ante confirms that the volumetric equation used for calculation is now provided which is valid and applicable. VVB confirms the response of PP as valid and satisfactory. However, PP is requested to specifically provide the source document or link or any other supporting evidence for the volume equation used.
2. PP has provided with the evidences to support the assumptions made. VVB after reviewing the ER sheets and SOP confirms the value of number of trees per hectare as valid. PP has also described the planting density in the VCS Joint PD & MR which deems to be applicable. However, PP is also requested to submit the contractual agreement also.
3. PP has provided with the revised Ex ante ER sheet. VVB after reviewing the sheet confirms that the PP has included the factors like Plant to plant spacing, Trees planted per hectare, Mortality %, Average survival rate %, Estimated number of trees survived per hectare, etc. Furthermore, VVB has also reviewed the SOP harvesting plan and replantation. VVB after reviewing the supporting documents confirms the response of PP as valid and applicable.
4. VVB after reviewing the revised ER sheet confirms that the growth model has now been appropriately calculated in regards to the crediting period and is valid and applicable.
5. PP has provided with the revised ex ante calculation sheet including the calculation for Long term average. VVB after reviewing the sheet and calculation done, confirms that the LTA has been calculated according to the AFOLU guidance tool.
6. PP has provided with the revised ex post calculation sheet. VVB after reviewing the sheet confirms that the values are now traceable and can be reproduced through formulas used. VVB confirms the response of PP as valid and satisfactory.
7. PP has revised the VCS Joint PD & MR and ex post calculation sheet. VVB after reviewing the documents confirms that the vintage wise calculation has now been incorporated which is valid and applicable.
8. PP is requested to revise the risk score as per the specific findings’ response mentioned above.
9. PP has revised the volumetric equation used. PP has used a general volume equation accepted globally for calculation of volume. VVB after reviewing the equation confirms the use is valid and acceptable.
10. PP has mentioned the sources of factors in section 6.1 of the revised VCS Joint PD & MR. VVB has cross checked the source and the value used and confirms the same as valid and applicable. However,

PP is requested to add the AGB & BGB as a parameter under relevant section of the Joint PD & MR and provide the sources of different parameters in the carbon calculation sheet also. 11. PP has included the data units in the ER sheets. VVB after reviewing the ER sheet confirms the same as valid and satisfactory.	
CAR is still open	
Project participant response	Date: 29/03/2023
1.The source document is provided separately by PP 2.PP is providing the contractual agreement 3.PP has revise the risk score 4.AGB and BGB is added in section 6.2 of Joint PD & MR	
Documentation provided by project participant	
1.Volume equation and Form Factor document 2.Contractual Agreement between PP and Farmer 3.VCS Risk calculation tool 4.Non-Permanence Risk Report Version 2.0 5.Joint PD MR Version 4.0	
VVB assessment	Date: 31/03/2023
1. PP has provided with the evidence for the volume equations used for calculation. VVB confirms the response of PP as valid. 2. PP has provided with the contractual agreement. VVB after reviewing the agreement confirms that the number of trees per plot are mentioned in the document. 8. PP has done the required corrections in the NPRR. VVB after reviewing the document confirms the same. 10. VVB after reviewing the section 6.2 of the revised Joint PD & MR confirms that the AGB & BGB parameters are now included along with the sources.	
CAR has been closed	

CAR	14	Section no.	Carbon Calculation	Date: 19/12/2022
Description of CAR				
<i>As per paragraph 24 of the applied methodology:</i> "For this methodology, the precision requirements are those listed in the tool "Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities"." Furthermore, the tool 14, provides detailed process of such uncertainty analysis. However, no such analysis is provided in either the joint PD/MR or in carbon calculation spread sheet.				
Project participant response				Date: 04/03/2023
PP has carried out uncertainty analysis and applied uncertainty discount as per the tool "Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities" in Ex-post ER sheet.				
Documentation provided by project participant				
Ex-post ER Sheet Version 2.0				
VVB assessment				Date: 16/03/2023
PP has provided with the uncertainty calculation in the ER sheet i.e., Ex post ER sheet v2.0. VVB after reviewing the ER sheet and verifying the formulas used as per AR tool 14 confirms that the uncertainty analysis done is valid and in accordance with the tool instructions.				
CAR has been closed				

CAR	15	Section no.	1.1, VCS Joint PD & MR	Date: 23/12/2022
Description of CAR				
Ownership of the project is not transparently established in the VCS Joint PD & MR.				
As per section 1.1 of the VCS Joint PD & MR,				
<i>"The participant (farmer) plant trees on their private land, holding proprietorship of the trees and their harvests as well. Mahogani Vishwa Agro Private Limited (MVAPL) is the project proponent which is coordinating the efforts among the various stakeholder".</i>				
On the contrary, as per section 1.7,				
<i>"The project proponent has full and uncontested legal rights over the trees on land; hold the right to implement the project activities and has the ownership of carbon credits accrued from the project".</i>				
PP shall transparently define ownership in compliance with section 3.6 of VCS standard 4.3.				
Project participant response				Date: 04/03/2023
The statement in section 1.7 has been revised and updated in Joint PD & MR				
Documentation provided by project participant				
Joint PD MR Version 3.0				
VVB assessment				Date: 16/03/2023
PP has revised the VCS Joint PD & MR. VVB after reviewing the section 1.1 & 1.7 confirms that the carbon credits by farmers have subscribed to the project by PP through contractual agreement. However, the contract has yet to be provided by the PP.				
CAR is still open				
Project participant response				Date: 29/03/2023
PP is providing the Contractual Agreement				
Documentation provided by project participant				
Contractual Agreement between PP and Farmer				
VVB assessment				Date:
PP has provided with the contractual agreement. VVB after reviewing the contract confirms that the rights of carbon credits are vested to the company by farmers without any obligation/liability/restriction for a period of minimum 30 years from the plantation date or upto the extended period of 100 years on renewal of the crediting period.				
CAR has been closed				

CAR	16	Section no.	TR- Ex post calculation spreadsheets	Date: 7 May 2023
Description of CAR				
PP mis-calculates biomass w/ atypical BEF of 3.4				
PP uses a commercial volume calculation with a BEF of 3.4 which results with inflation by more than double of aboveground and therefore derived belowground biomass compared to direct biomass equations. PP must use established biomass equations instead of converting volume to biomass.				
Project participant response				Date: 18 May 2023
PP has replaced the commercial volume equation with Allometric Equation derived for <i>Swietenia macrophylla</i> , planted in country Bangladesh, by Mahmood Hossain <i>et.al</i> (2020) having R ² value of 0.974.				

Bangladesh is a neighbouring country of India and shares boundary with five Indian States covering 4,096 km with similar conditions, which suffices the requirements of *for ex-ante estimation as per Para 1 (6.c) of tool* “Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities” Version 04.2 and ex-post estimation as per para 5(c) of tool “Demonstrating appropriateness of volume equations for estimation of aboveground tree biomass in A/R CDM project activities” Version 01.0.1. The ex-ante and ex-post ER calculation has been revised accordingly.

VVB assessment

The allometric equation is derived for *Swietenia macrophylla* by Mahmood Hossain et.al (2020) with R2 value of 0.974 . VVB has verified the applicability of the equation to check the conservativeness of the removal rates. VVB confirms that the allometric equation, used in the revised carbon calculation sheet, provides a direct biomass calculation and thus addresses the concern raised in the finding. PP has provided justification for the plausibility of carbon removal rate (per ha per year), VVB further confirms that the removal rates is deemed conservative thus VVB confirms the response of PP as valid and satisfactory.

As per the literature study, “**Carbon Sequestration by Large Leaf Mahogany (*Swietenia macrophylla* King.) Plantation in Mount Makiling Forest Reserve, Philippines: A Decade After**”, by Elenita L.R. et.al (2019) the sequestration rate has been indicated as 81 Mg ha⁻¹ yr⁻¹ or 81 tCO₂eq ha⁻¹ yr⁻¹.

Furthermore, another study referred by the PP, “**Vegetation structure, aboveground biomass, and carbon storage of wono, a local forest management in Gunungkidul, Yogyakarta, Indonesia, across three geomorphological zones**”, by Tohirin et.al (2021), indicate sequestration of carbon sequestration of **398 tCO₂eq /ha/year**.

The above studies, provided by the PP, includes plantation of ***Swietenia macrophylla*** (Mahogany), which is the species of the project.

VVB based on review of ex-ante carbon spread sheet confirmed that the project removal rate is 21.1 tCO₂e (ex-ante estimate). Based on the assessment above and review of removal rate of project, VVB concludes that the allometric equation applied is appropriate and the carbon calculation from the project yields a plausible value and thus acceptable to the VVB.

CAR has been closed

CAR	17	Section no.	TR-Ex ante calculation spreadsheets	Date: 7 May 2023
Description of CAR				
PP mis-calculates LTA				
PP must calculate LTA over the defined 30+ year project length not a hypothetical 100 years. Furthermore, PP may only claim VCUs up to the cap of the LTA which is reached in years 10-15 of the project. PP remains legally obligated to maintain project with verification audits every 5 years for remaining 15-20 years despite zero offset revenue.				
Project participant response				Date: 04/03/2023
- LTA estimation is calculated as per the harvesting cycle of each stratum because the stratification has been on the basis of year of plantation. Therefore, each stratum will have different harvesting cycle. After the estimation of LTA of each stratum covering the First Project Activity Instance of 165.41 ha. - PP has calculated the LTA and the cap of VCUs shall reach during the 11th year from the Project Start Date.				

- PP and farmer are contractually obligated for period of 30 years and shall carryout the verification audits every 5 years for remaining years of the Project.

Documentation provided by project participant
VVB assessment
Date: 25/05/2023

- VVB confirms that the LTA has now been calculated based on the harvesting cycle of each stratum as the stratification has been done on the basis of year of plantation. In the 1st PAI, 2019 - 2020 plantations are included covering 165.41 ha area. For the year 2019, the LTA calculated is **7,747tCO₂e** and for the year 2020, the LTA calculated is **96,787.69tCO₂e**. VVB confirms that the LTA has been calculated for the project length of 30 years which is same as the crediting period.
- Based on the LTA calculated in the ex-ante carbon calculation sheet, VVB confirms that the combined value of stratum of LTA will be reached during 11th year from the project start date, the same has been specified in the VCS Joint PD & MR.
- Based on the contractual agreement provided, VVB confirms that the farmers and PP are contractually obligated for period of 30 years and will carry out verification audits every 5 years for remaining years of the project by the clause of renewal of contract. Furthermore, after harvesting the tree will be replanted, this is also mentioned in the clause 4/b of the contract with terminology "regeneration".

CAR has been closed

CAR	18	Section no.	TR - Non-permanence v 4.0 sect Internal Risk-Project Longevity	Date: 7 May 2023
Description of CAR				
PP provides 15 rather than 30 year project length in landowner contracts.				
PP must modify contracts to legally obligate landowners to maintain their trees for at least 30 years before cutting. Furthermore, PP must extend project length for 2+ years after the cutting opportunity to account for the loss of carbon offset in LTA projections.				
Project participant response				Date: 18 May 2023
Kindly refer contractual agreement clause 9, for Duration which is reproduced below for your ready reference.				
<i>This Agreement shall be valid for 30 (thirty) years or end of crediting period of VCS 2479 project, whichever is earlier.</i>				
<i>The PP shall apply the renewal of crediting period up to 100 years and for such renewal process, Parties shall mutually extend the validity of the Agreement for up to 100 years.</i>				
Under the contractual agreements the Farmer shall carry out the regeneration (artificial regeneration) in accordance with PPs guidelines.				
The PP has specified and communicated replantation of <i>Swietenia macrophylla</i> after harvesting as per the replantation structure mentioned in the PDMR, which obligates the farmer to keep the plant in their land parcels for minimum 30 years.				
LTA has been calculated for each stratum for 30 years accounting the loss of carbon stock so as to cover the entire duration of last harvesting cycle.				

Documentation provided by Project Participant	
1. Contractual Agreement 2. Revised PDMR Version 5.0 3. Ex-ante ER Sheet Version 3.0	
VVB assessment	Date: May 19, 2023
Based on the review of the contractual agreement, the revised Joint PD & MR and the on-site inspection interviews, VVB confirms that the replantation of Mahogany saplings will be carried out after harvesting. VVB has also assessed the SOP for Mahogany Plantation Management Plan which includes the procedure of replantation of saplings after harvesting. VVB confirms that the farmers and PP are contractually obligated for period of 30 years and will carry out verification audits every 5 years for remaining years of the project by the clause of renewal of contract. Furthermore, after harvesting the tree will be replanted, this is also mentioned in the clause 4/b of the contract with terminology "regeneration". PP has clarified on the terminology in the NPRR and VCS Joint PD & MR. LTA has been calculated for each stratum for 30 years covering the last harvesting cycle with rotation of 15 years. VVB based on the review of the revised Ex ante carbon calculation sheet, contractual agreements and revised Joint PD & MR confirms the response of PP as valid and satisfactory. CAR has been closed	

Table 4. FAR from this joint validation & verification

FAR	01	Section no.	VERRA PRR comment 4	Date: 08/09/2023
Description of FAR				
In response to PRR comment 4, where it is unclear how the project intends to cover the opportunity cost of the land after the LTA is reached and carbon revenues stop, PP responded that: <u>"to ensure continuation of plantation by the farmer beyond LTA, PP shall disburse the revenue from VCUs sale to the farmers over a period of 30 years' subject to various audits including but not limited to MRV during the entire crediting period."</u> VVB during next periodic verification shall assess the mechanism above to ensure that it is effectively in place (since no VER revenue so far) to ensure permanence and the concern raised by VERRA.				
Project participant response				Date: DD/MM/YYYY
Documentation provided by project participant				
VVB assessment				Date: DD/MM/YYYY

APPENDIX 3: CERTIFICATE OF COMPETENCY



Carbon Check (India) Private Limited

Certificate of Competency

Mr. Vikash Kumar Singh

has been qualified as per CCIPL's internal qualification procedures in accordance with the requirements of CDM AS (V7.0), ISO/IEC 14065:2020, ISO/IEC 17029:2019 and other applicable GHG programs:

for the following functions and requirements:

☒ Validator	☒ Verifier	☒ Team Leader	☒ Technical Expert
☒ Technical Reviewer	☐ Health Expert	☐ Gender Expert	☐ Plastic Waste Expert
☒ SDG+	☒ Social no-harm(S+)	☒ Environment no-harm(E+)	☒ CCB Expert
☒ Financial Expert	☒ Local Expert for India, South Africa, and Spanish speaking countries		

in the following Technical Areas:

☒ TA 1.1	☒ TA 1.2	☐ TA 2.1	☒ TA 3.1	☒ TA 4.1
☒ TA 4. n	☐ TA 5.1	☐ TA 5.2	☒ TA 7.1	☐ TA 8.1
☐ TA 9.1	☐ TA 9.2	☐ TA 10.1	☒ TA 13.1	☒ TA 13.2
☒ TA 14.1	☒ TA 15.1			

Issue Date

1st January 2023

Expiry Date

31st December 2023



Mr. Amit Anand
CEO

CCIPL_FM 7.9 Certificate of Competency_V2.1_012023



Carbon Check (India) Private Limited

Certificate of Competency

Ms. Isha Kapoor

has been qualified as per CCIPL's internal qualification procedures in accordance with the requirements of CDM AS (V7.0), ISO/IEC 14065:2020, ISO/IEC 17029:2019 and other applicable GHG programs:

for the following functions and requirements:

- | | | | |
|---|--|--|--|
| ☒ Validator | ☒ Verifier | ☒ Team Leader | ☒ Technical Expert |
| ☐ Technical Reviewer | ☐ Health Expert | ☐ Gender Expert | ☐ Plastic Waste Expert |
| ☐ SDG+ | ☐ Social no-harm(S+) | ☐ Environment no-harm(E+) | ☐ CCB Expert |
| ☐ Financial Expert | ☒ Local Expert for India | | |

in the following Technical Areas:

- | | | | | |
|---|----------------------------------|----------------------------------|----------------------------------|----------------------------------|
| ☐ TA 1.1 | ☐ TA 1.2 | ☐ TA 2.1 | ☐ TA 3.1 | ☐ TA 4.1 |
| ☐ TA 4. n | ☐ TA 5.1 | ☐ TA 5.2 | ☐ TA 7.1 | ☐ TA 8.1 |
| ☐ TA 9.1 | ☐ TA 9.2 | ☐ TA 10.1 | ☐ TA 13.1 | ☐ TA 13.2 |
| ☒ TA 14.1 | ☐ TA 15.1 | | | |

Issue Date

1st January 2023

Expiry Date

31st December 2023



Mr. Vikash Kumar Singh
Compliance Officer



Mr. Amit Anand
CEO



Carbon Check (India) Private Limited

Certificate of Competency

Mr. Anil Chirikandoth

has been qualified as per CCIPL's internal qualification procedures in accordance with the requirements of CDM AS (V7.0), ISO/IEC 14065:2020, ISO/IEC 17029:2019 and other applicable GHG programs:

for the following functions and requirements:

- | | | | |
|---|---|--|--|
| ☐ Validator | ☐ Verifier | ☐ Team Leader | ☒ Technical Expert |
| ☐ Technical Reviewer | ☐ Health Expert | ☐ Gender Expert | ☐ Plastic Waste Expert |
| ☐ SDG+ | ☐ Social no-harm(S+) | ☐ Environment no-harm(E+) | ☒ CCB Expert |
| ☐ Financial Expert | ☐ Local Expert for | | |

in the following Technical Areas:

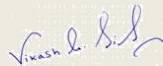
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|---|----------------------------------|----------------------------------|----------------------------------|----------------------------------|
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| ☐ TA 4. n | ☐ TA 5.1 | ☐ TA 5.2 | ☐ TA 7.1 | ☐ TA 8.1 |
| ☐ TA 9.1 | ☐ TA 9.2 | ☐ TA 10.1 | ☐ TA 13.1 | ☐ TA 13.2 |
| ☒ TA 14.1 | ☐ TA 15.1 | | | |

Issue Date

1st January 2023

Expiry Date

31st December 2023



Mr. Vikash Kumar Singh
Compliance Officer



Mr. Amit Anand
CEO



Carbon Check (India) Private Limited

Certificate of Competency

Mr. Bryan Conrad Foster

has been qualified as per CCIPL's internal qualification procedures in accordance with the requirements of CDM AS (V7.0), ISO/IEC 14065:2020, ISO/IEC 17029:2019 and other applicable GHG programs:

for the following functions and requirements:

- | | | | |
|---|--|--|--|
| ☐ Validator | ☐ Verifier | ☐ Team Leader | ☒ Technical Expert |
| ☐ Technical Reviewer | ☐ Health Expert | ☐ Gender Expert | ☐ Plastic Waste Expert |
| ☐ SDG+ | ☐ Social no-harm(S+) | ☐ Environment no-harm(E+) | ☐ CCB Expert |
| ☐ Financial Expert | ☒ Local Expert for United States | | |

in the following Technical Areas:

- | | | | | |
|---|----------------------------------|----------------------------------|----------------------------------|----------------------------------|
| ☐ TA 1.1 | ☐ TA 1.2 | ☐ TA 2.1 | ☐ TA 3.1 | ☐ TA 4.1 |
| ☐ TA 4. n | ☐ TA 5.1 | ☐ TA 5.2 | ☐ TA 7.1 | ☐ TA 8.1 |
| ☐ TA 9.1 | ☐ TA 9.2 | ☐ TA 10.1 | ☐ TA 13.1 | ☐ TA 13.2 |
| ☒ TA 14.1 | ☐ TA 15.1 | | | |

Issue Date

1st February 2023

Expiry Date

31st January 2023



Mr. Vikash Kumar Singh
Compliance Officer



Mr. Amit Anand
CEO



Carbon Check (India) Private Limited

Certificate of Competency

Mr. Amit Anand

has been qualified as per CCIPL's internal qualification procedures in accordance with the requirements of CDM AS (V7.0), ISO/IEC 14065:2020, ISO/IEC 17029:2019 and other applicable GHG programs:

for the following functions and requirements:

- | | | | |
|--|--|---|--|
| ☒ Validator | ☒ Verifier | ☒ Team Leader | ☒ Technical Expert |
| ☒ Technical Reviewer | ☐ Health Expert | ☐ Gender Expert | ☐ Plastic Waste Expert |
| ☒ SDG+ | ☒ Social no-harm(S+) | ☒ Environment no-harm(E+) | ☒ CCB Expert |
| ☒ Financial Expert | ☐ Local Expert for India and South Africa | | |

in the following Technical Areas:

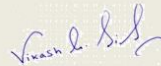
- | | | | | |
|---|---|----------------------------------|---|---|
| ☒ TA 1.1 | ☒ TA 1.2 | ☐ TA 2.1 | ☒ TA 3.1 | ☐ TA 4.1 |
| ☐ TA 4. n | ☐ TA 5.1 | ☐ TA 5.2 | ☒ TA 7.1 | ☒ TA 8.1 |
| ☐ TA 9.1 | ☐ TA 9.2 | ☐ TA 10.1 | ☒ TA 13.1 | ☒ TA 13.2 |
| ☒ TA 14.1 | ☒ TA 15.1 | | | |

Issue Date

1st January 2023

Expiry Date

31st December 2023



Mr. Vikash Kumar Singh
Compliance Officer