



**Verified Carbon
Standard**

GUANGXI HUANJIANG IFM
(CONVERSION OF LOGGED TO
PROTECTED FOREST) PROJECT
(VCS PROJECT ID:2327)



Document Prepared by Shenzhen CTI International Certification Co., Ltd

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Summary:

A brief description of the verification and the project:

The Guangxi Huanjiang IFM (conversion of logged to protected forest) Project (hereafter "the project") is implemented in Huanjiang Maonan Autonomous County, Hechi City, Guangxi Zhuang Autonomous Region of China by Huanjiang Maonan Autonomous County Huashan Forestry Investment Co., Ltd. The geo-coordinates of the project are 107 °51 ' E-108 °43 ' E and 24 °44 ' N-25 °33 ' N, which includes the Improved Forest Management (IFM) of the forests in the conversion of logged to protected forest and avoids emissions by converting logged forests into protected forests. Before the implementation of the project activity, the trees are logged based on a valid and verifiable government-approved timber management plan for harvesting the project area. The implementation of the project activity converts the trees to protected forest to reduce the GHG emissions. And the applied VCS methodology VM0010 Version 1.3 "Methodology for Improved Forest Management: Conversion from Logged to Protected Forest" is applied to quantify the GHG removals achieved in this project. The calculation of the project emission removals is carried out transparently and conservatively.

The purpose and scope of verification:

Verification is the periodic independent review and ex post determination by the verification body of the monitored reductions in GHG emissions during defined verification period. It is to verify whether the reductions generated by the project are in line with the Voluntary Carbon Standard Verification Protocol and the information provided by the project proponents contains all the necessary information to evidence the project's compliance with all criteria in the VCS Standard (version 4.3). Meanwhile, to verify that the implementation of the project is consistent with the description in the Monitoring Report (MR) and the monitoring system is fully in compliance with that described in the monitoring plan and the additional requirements stated by the VERRA, and to confirm that the data reported are accurate, complete, consistent, transparent and free of material error or omission by assessing the monitoring records and the emissions reduction calculation

The verification scope is defined as an independent and objective review of the validated VCS project description (VCS-PD), the project's baseline study and monitoring plan, VCS monitoring report (VCS-MR) and other relevant documents. The information in these documents is reviewed against VCS Standard v4.3 requirements, UNFCCC rules and associated interpretations.

The monitoring period:

The monitoring period is from 01/07/2016 to 31/12/2020.

The method and criteria used for verification:

Shenzhen CTI International Certification Co.,Ltd (CTI) has performed a verification of emission reductions from the project -" Guangxi Huanjiang IFM (conversion of logged to protected forest) Project " for the monitoring period from 01/07/2016-31/12/2020, with regard to the relevant requirements of VCS Standard v4.3, VCS

methodology VM0010 version 1.3 "Methodology for Improved Forest Management: Conversion from Logged to Protected Forest".

The number of findings raised during verification:

During the verification 3 Corrective Action Requests (CARs) and 3 Clarification Requests (CLs) were raised and successfully closed. No FAR was raised.

Any uncertainties associated with the verification:

There are no restrictions on uncertainty.

Summary of the verification conclusion:

Based on the information and evidences observed and evaluated during document review and on-site assessment, the verification team confirms that the GHG emission reductions for the monitoring period is calculated without material misstatements. It can be also confirmed that the monitoring is implemented as per the monitoring plan in the registered VCS PD, which complies with the VCS methodology VM0010 (version1.3). Hence, CTI is able to certify that the emission reductions from the "Guangxi Huanjiang IFM (conversion of logged to protected forest) Project" during the period amount to 707,901 tCO₂e.

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1 INTRODUCTION

1.1 Objective

Verification is the periodic independent review and ex post determination by the verification body of the monitored reductions in GHG emissions during defined verification period. The purpose of this verification, by checking the objective evidences independently, is as follows:

To verify whether the reductions generated by the project are in line with the Voluntary Carbon Standard Verification Protocol and the information provided by the project participants contains all the necessary information to evidence the project's compliance with all criteria in the VCS Standard v4.3.

To verify that the implementation of the project is consistent with the description in the Monitoring Report (MR) and the monitoring system is fully in compliance with that described in the monitoring plan and the additional requirements stated by VERRA.

To confirm that the data reported are accurate, complete, consistent, transparent and free of material error or omission by assessing the monitoring records and the emissions reduction calculation.

1.2 Scope and Criteria

The verification scope is defined as an independent and objective review of the validated VCS project description (VCS-PD), the project's baseline study and monitoring plan, VCS monitoring report (VCS-MR) and other relevant documents. The information in these documents is reviewed against VCS Standard version 4.3 requirements, UNFCCC rules and associated interpretations.

The verification team has employed a risk-based approach in the verification, focusing on the identification of significant risks and reliability of project monitoring and generation of emission reductions according to the relevant applicable rules for VCUs verification under the VCS.

The verification is not meant to provide any consulting towards the client, and it may provide input for improvement of the project monitoring towards reductions in the GHG emissions via proposing requests for clarifications and/or corrective actions.

1.3 Level of Assurance

The verification team has undertaken a reasonable assurance engagement in accordance with VCS Standard v4.3. It requires a reasonable level of assurance in verification that GHG assertions are free of material errors, omissions and misrepresentations. The verification conclusion is based on the VCS PD, MR and supporting evidences made available to the verifier and information collected through performing interviews and during the on-site inspection.

1.4 Summary Description of the Project

The verification team confirm the following information by on-site assessment and desk review on the supporting documents listed in the Appendix I:

The project activity is implemented in Huanjiang Maonan Autonomous County, Hechi City, Guangxi Zhuang Autonomous Region of China, which includes the improved Forest Management (IFM) of the forests from the conversion of logged to protected forest. It applies methodology VM0010 version 1.3 “Methodology for Improved Forest Management: Conversion from Logged to Protected Forest”.

The area of the project activity is 9,346.72 ha, including 1,306 subcompartments spreading over Huashan forest farm, Chuanshan Town, Dongxing Town, Luoyang Town, Minglun Town, Shuiyuan Town, Si'en Town, Da'an Township, Lonyan Township, Tiancai Township, Xianan Township, Xunle Township, Changmei Township of Huanjiang Maonan Autonomous County. All these forests are state-owned forests or privately-owned or collective-owned, and have the legal right to forest ownership. All the owners authorized the project proponent to access the project to their behalf. The species involved in the project are Broad-leaved tree (e.g. *Castanopsis hystrix*, Oak, *Schima Wallichii*, Acacia, Other soft Broad-leaved tree, etc), Chinese fir and *Pinus massoniana*. The forest of the project was older plantations or natural forest under managing. The age of Broad-leaved tree was 17-87, Chinese fir was 13-59, *Pinus massoniana* was 13-52. Before the implantation of the project, the usual type of management was clearcutting.

By checking the approval of the application for logging suspension from local forest bureau, it confirms that the Project Start Date is 01/07/2016.

Before the implementation of the project activity, the trees are logged based on a valid and verifiable government-approved timber management plan for harvesting the project area. The implementation of the project activity converses the trees to protected forest to reduce the GHG emissions for about 1,669,732 tCO₂e in 20 years, the average annual emission reduction is 83,486 tCO₂e and Verified Carbon Units with buffer deduction is about 1,285,683 tCO₂e in 20 years, and average annual VCUs with buffer deduction is 64,284 tCO₂e.

2 VERIFICATION PROCESS

2.1 Method and Criteria

Verification was conducted using CTI's procedures in line with the requirements specified in the VCS Standard version 4.3. The whole process of the validation consisted of the following steps:

- Contract review
- Appointment of team members and technical reviewers
- A desk review of the VCS PD submitted by the client and additional supporting documents with the use of a customised verification protocol
- Verification Planning
- On-site assessment
- Background investigation and follow-up interviews with personnel of the project developer and its contractors
- Draft verification reporting
- Resolution of findings
- Final verification reporting
- Technical review
- Final approval of the verification

The verification criteria consisted of the following:

- VCS Program Guide 4.2
- VCS Standard, version 4.3
- VCS Program Definitions, version 4.2
- AFOLU Non-Permanence Risk Tool, version 4.0
- VM0010 Version 1.3: Methodology for Improved Forest Management: Conversion from Logged to Protected Forest
- CDM Tool for Calculation of the Number of Sample Plots for Measurements within A/R CDM Project Activities (Version 02.1.0)
- VCS tool VT0001 Tool for the Demonstration and Assessment of Additionality in VCS Agriculture, Forestry and Other Land Use (AFOLU) Project Activities (Version 3.0)

- VCS Tool for “AFOLU Non-Permanence Risk Analysis” (Version 4.0)
- VCS Validation Verification Manual v3.2

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

The sampling plan during the verification period complied with the CDM Tool for Calculation of the Number of Sample Plots for Measurements within A/R CDM Project Activities (Version 02.1.0). The sampling design (number of plots, location) is considered to be in line with the requirements for verification (IAF Guidance on the Application of ISO/IEC Guide 66 -G.5.3.12.: $x=\sqrt{y}$), and it has ensured a representative cross-section of the properties in the areas. The targeted area is calculated below:

Species	A_i (Ha)	Mean tonnes (C/ha)	Plot size (ha)	Carbon Stock	Adjusted n_i (round upwards to at least 3)
Broad-leaved tree	4,440.05	55.81	0.04	247788.36	6
Chinese fir	2,736.96	42.22	0.04	115567.36	5
Pinus massoniana	2,169.71	50.63	0.04	109849.82	4

A ground inspection of the project area was conducted during the fieldwork and members of the verification team visited targeted areas within the project area. According to the sampling plan, the verification team visited the targeted area for each project stratification, total of 15 targeted areas. The targeted area could represent the characteristics of the stratification, which is used as a sampling area for checking the project design and planting approach.

2.2 Document Review

The verification team is supposed to review VCS PD and MR, the project’s baseline study and monitoring plan, carbon calculation spreadsheets and other relevant documents.

Furthermore, the verification team used additional documentation by third parties like host party legislation, technical reports referring to the project design or to the basic conditions and technical data. The references used during this validation are summarized in Appendix 1.

The verification was performed based on the documents check and site inspection, as referred to the section 4 of this report for the verification process details and corresponding documents review.

2.3 Interviews

From 19/09/2022 to 20/09/2022, verification team performed an on-site visit for the project activity. During this period, it verified the actual implementation of the project as described in the MR and the VCS PD.

During the site inspection, interviews with the PPs, the consultant and project stakeholders were carried out by the verification team conducted to confirm selected information and to resolve issues identified in the document review.

The key interviewees and main topics of the interview are followed:

No.	Interviewee	Organization	Date	Interview Topics
1	Tan Hongtao	Huanjiang Maonan Autonomous County Huashan Forestry Investment Co., Ltd (the PP)	19/09/2022 ~20/09/2022	Project background information and implementation;
2	Meng Xian	Huanjiang Maonan Autonomous County Government	19/09/2022 ~20/09/2022	National legislation to forest; Provincial legislation to afforestation activities; Local forestry development; Roles & responsibilities of the government; Local communities' situation; Local biodiversity, climate and environmental situation; Project monitoring and monitoring manual;
3	Ceng Jiangman	Huanjiang Maonan Autonomous County management station Local villager	19/09/2022 ~20/09/2022	Project monitoring and management plan; Roles and responsibility; Monitoring manual; Operation of the QA/QC system; Compliance with National Laws and Regulations; Environmental impact and solution for environmental issues.
4	Ceng Xianguo	Huanjiang Maonan Autonomous County management station Local villager	19/09/2022 ~20/09/2022	
5	Gao Deming	Guangzhou Guangtan Carbon Emission	19/09/2022 ~20/09/2022	Project monitoring plan and implementation; Monitored data, ER calculation
6	Guo Xian		19/09/2022	

		Development & Investment Co., Ltd	~20/09/2022	and monitored report; Chronological description of the project activity with documents of key steps of the implementation; Project Deviations;
7	Zhang ShuZhen	(the consultant)	19/09/2022	
8	He Yi		~20/09/2022	

2.4 Site Inspections

During the period from 19/09/2022 to 20/09/2022, the verification team performed a site visit and interviews with project stakeholders. During the site visit, the verification team visited Dongxing Town, Shuiyuan Town to inspect all the species involved in the project including Broad-leaved tree, Chinese fir and Pinus massoniana.

2.5 Resolution of Findings

The verification team will establish verification findings based on the results of evaluation of the collected verification evidence against verification criteria.

While aiming to resolve any outstanding issues which needed to be clarified about the project design, findings established during the verification can either be seen as a non-fulfillment of the VCU Verification Criteria or where a risk to the fulfillment of project objectives is identified.

Emission reductions with material misstatements shall be discounted based on the verifiers' expose determination of the achieved emission reductions.

Corrective action requests (CAR) are issued, where:

- i) mistakes have been made with a direct influence on project results requiring adjustments of the VERs/VCUs monitoring report;
- ii) applicable methodological specific requirements have not been met.

A clarification action request (CL) may be used where additional information is needed to fully clarify an issue.

A forward action request (FAR) should be issued, where:

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

In the context of FARs, risks have been identified, which may endanger the delivery of high quality emissions reductions in the future, i.e. by deviations from standard procedures. As a consequence, such aspects should receive a special focus during the next consecutive verification. A FAR may originate from lack of data sustaining claimed emission reductions.

During the verification, 3 CARs and 3 CLs were raised and successfully closed.

2.5.1 Forward Action Requests

No Forward Action Request is raised during this monitoring period.

2.6 Eligibility for Validation Activities

The VCS PD of the project activity was validated by TUV NORD on 19/07/2022. The proposed monitoring period 01/07/2016 to 31/12/2020 is the 1st VCS verification, and CTI just undertook verification activity for the project according to the VCS Program Guide under Scope 14 (AFOUL). This section is thus not applicable.

3 VALIDATION FINDINGS

3.1 Participation under Other GHG Programs

The project was validated by TUV NORD on 19/07/2022 for registration of VCS PD (<https://registry.terra.org/app/projectDetail/VCS/2327>). The project does not participate in the other emissions trading program by checking public information on Internet, interviewing with project owner and statement issued by project owner.

Therefore, CTI deemed the project is eligible to participate under the VCS Program as there is no double counting for the emission reduction during any period.

3.2 Methodology Deviations

N/A, no deviation from methodology.

3.3 Project Description Deviations

N/A, no deviation from project description in the registered VCS PD version 08 dated 16/07/2022.

3.4 Grouped Project

N/A, the project is not a grouped project.

4 VERIFICATION FINDINGS

4.1 Project Implementation Status

The verification team confirmed the following by on-site assessment and desk review:

The project was implemented and operated as the validated VCS PD during the monitoring period. Through the on-site assessment and desk review, the verification team have verified that the project includes the area of the project activity is 9,346.72ha , including 1,306 subcompartments spreading over Huashan forest farm, Chuanshan Town, Dongxing Town, Luoyang Town, Minglun Town, Shuiyuan Town, Si'en Town, Da'an Township, Lonyan Township, Tiancai Township, Xianan Township, Xunle Township, Changmei Township of Huanjiang Maonan Autonomous County. All these forests are state-owned forests or privately-owned or collective-owned, and have the legal right to forest ownership. All the owners authorized the project proponent to access the project to their behalf. The species involved in the project are Broad-leaved tree, Chinese fir and *Pinus massoniana*. And the verification team has onsite checked the boundary of the Project and confirmed the project activity including different forest types, as well as the monitoring system, metering equipment and the monitoring procedure have been implemented and managed as described in the VCS PD.

No changes to the project design have been identified during this verification. The implementation and operation of the project activity have been conducted in accordance with the description contained in the VCS PD.

The project has not been registered, or is seeking registration under any other GHG programs.

By checking the approval of the application for logging suspension from local forest bureau, the verification team confirmed the Project Start Date is 01/07/2016, and it represents the date on which the project began generating GHG emission reductions or removals as defined by the VCS requirements.

4.2 Safeguards

4.2.1 No Net Harm

During the visit, the verification team has interviewed the PPs, the consultant and project stakeholders and confirmed the project activity is compliance with National and Local Laws and Regulations and no negative environmental and socio-economic impacts identified.

4.2.2 Local Stakeholder Consultation

Through checking PRA and interviewing with local officers, it is confirmed that PP has complicated PRA in December 2016, April 2018 and May 2020 respectively. In the monitoring period, PP received some suggestions and opinions from stakeholder, mainly including the need for more technical and

operational training to fully inform communities and farmers about carbon sequestration, whether the project development process could be simplified, and when the project will be profitable.

4.3 AFOLU-Specific Safeguards

The verification team has confirmed no negative impact and no risk for local stakeholders during the project implementation via onsite interview and desk review, meanwhile, the project could provide more jobs opportunities for the local stakeholders to manage and protect the forest and all local stakeholders support the project activity.

The project complied with the Chapter II of the Labour Law of the People's Republic of China, workers are not discriminated against in employment on the basis of their ethnic group, race, sex or religious belief and Women enjoy equal rights with men in employment, and employers are prohibited from recruiting minors under the age of 16. The local forestry Bureau supervised that all parties of the project did not violate laws during the implementation of the project.

In addition, the project is based on participatory rural appraisal tools and PRA (Participatory Rural Appraisal) will be done every two years. And the local government resolves any conflicts which may arise between the project proponent and local stakeholder according to the relevant law.

4.4 Accuracy of GHG Emission Reduction and Removal Calculations

According to the validated VCS PD and the monitoring report, the emission reduction ER_y for the project is the baseline emissions BE_y minus the project emissions PE_y and leakage Ly . The leakage need not be considered as per the registered VCS PD and the applied methodology.

The verification team has ensured that:

The data used for the determination of the emission reductions are available and are monitored in accordance with the monitoring plan in the registered VCS PD without deviation;

The appropriate methods and formulae for calculating baseline emissions, project emissions and leakage have been properly followed the methodology and VCS PD;

The parameters required by the monitoring plan and how the verification team has verified the information flow (from data generation, aggregation, to recording, calculation and reporting) and appropriateness of the applied measurement/determination method, the correctness of the values applied for emission removals calculation, the accuracy, and applied QA/QC measures for all relevant monitoring parameters including the values in the monitoring report are described below:

4.4.1 Ex-ante determined Parameters

1. $V_{l,j,i,sp}$, Merchantable volume for tree l of species j in sample plot spin stratum i , sourced from timber harvest plan and calculated from equations linking diameter at breast height, which has been determined in the registered VCS PD.

2. CF_j , Carbon fraction of dry matter for species j

The value is 0.5, which is the default value from VM0010 version 1.3.

3. D_j , Basic wood density of species j in t d.m. m^3

The value for Broad-leaved tree is 0.482, for Chinese fir is 0.307 and for *Pinus massoniana* is 0.380, which are the national specific values from Land Use Change and Forestry GHG Inventory (2013).

4. $f_j(X,Y,...)$, Allometric equation(s) for species j linking measured tree variable(s) to aboveground biomass of living trees

The equations are sourced from the data of the Forest Resources Planning and Design Survey Report made by Guangxi Zhuang Autonomous Region Forestry Survey and Design Institute, which are presented in MR section 5.4.1.

5. BCEFR, Biomass conversion and expansion factor applicable to wood removals in the project area

The value for Broad-leaved tree is 0.730, for Chinese fir is 0.502, for *Pinus massoniana* is 0.559, which are the national species-specific values from Land Use Change and Forestry GHG Inventory (2013).

6. G_{gi} Emission factor for stratum i for gas g

The value of this parameter is sourced from the Volume 4, Chapter 2, of the IPCC 2006 Inventory Guidelines in Table 2.5.

7. OF, SLF, WW

OF = Fraction of wood products that will be emitted to the atmosphere between 5 and 100 years after production;

SLF = Fraction of wood products that will be emitted to the atmosphere within 5 years of production;

WW = Fraction of extracted biomass effectively emitted to the atmosphere during production. The values are sourced from VM0010 version 1.3.

8. RGR_i , Forest re-growth rate post timber harvest for stratum i in m

The values are sourced from IPCC Guidelines for National Greenhouse Gas Inventories (2006).

9. $V_{EX,j,i|BSL}$, Mean volume of extracted timber per unit area for species j in stratum i

Based on legal limits, the timber harvest plan sets the allowable mean extracted volume is equal to the merchantable volume of timber in the forest inventory.

10. $A_{i,p}$, Area covered by stratum i over land parcel p

The values are sourced from the timber plan.

11. $A_{1,i,p}$: The area of stratum i in land parcel p that was harvested 1 year ago

The values are sourced from the timer plan.

12. $A_{2-10,i,p}$: The area of stratum i in land parcel p that was harvested between 2 and 10 year ago

The values are sourced from the timer plan.

13. $A_{11-20,i,p}$: The area of stratum i in land parcel p that was harvested between 11 and 20 year ago

The values are sourced from the timer plan.

14. A_{t^*} : Cumulative area harvested until time t^*

The values are sourced from the timer plan.

15. A_{sp} , Area of sample plot

The values are recorded in the monitoring Manual issued by Shenzhen Huanong gardening Co., Ltd who is qualified.

The value is sourced from A/R Methodological Tool “Calculation of the number of sample plots for measurements within A/R CDM project activities”.

Through desk review, the verification team confirmed a complete set of data for the specified monitoring period is available.

The critical parameter used for the determination of the Emission Removals is the area of forest, diameter at breast height of a tree and other parameters relate to the forest inventory. The data pertaining to the above parameters are maintained in the identified records. All the data are in compliance with that stated in the MR.

CAR 01 and CL 01 are raised and successfully closed.

4.4.2 Monitored parameters

1. Illegal Logging PRA Results

The value is zero since there are clear infrastructure, hiring and policies are in place to prevent illegal logging. And the verification team has checked the Questionnaires and records of Participatory rural appraisal (PRA) of the communities in and surrounding the project area carried out from 2015 to 2020 and confirmed the value applied is consistent with the VCS PD and applied methodology.

2. Result of Limited Illegal Logging Survey

The value is zero since there are clear infrastructure, hiring and policies are in place to prevent illegal logging, and the verification team has checked Limited on-the-ground illegal logging survey.

Besides, the verification team interviewed local households and local officer from Forest Bureau, meanwhile, checked the distribution diagram of ecological public-welfare forest of PP and cooperation agreements among PP and forest owners, it is confirmed that the PP are authorized to manage all the forests by the forest owners, including 22888.45 ha ecological public welfare forest in Chuanshan

Town, 8238.72 ha ecological public welfare forest in Da'an Township, 6517.96 ha ecological public welfare forest in Dongxing Town, 5342.53 ha ecological public welfare forest in Huashan Forest Farm, 5626.61 ha ecological public welfare forest in Jiuwanshan Conservation Zone, 9991.52 ha ecological public welfare forest in Longyan Township, 10560.78 ha ecological public welfare forest in Luoyang Town, 22266.3 ha ecological public welfare forest in Minglun Town, 10287.27 ha ecological public welfare forest in Mulun Conservation Zone, 22366.59 ha ecological public welfare forest in Shuiyuan Town, 9553.64 ha ecological public welfare forest in Si'en Town, 7491.05 ha ecological public welfare forest in Tiancai Township, 20046.98 ha ecological public welfare forest in Xianan Township, 25077.13 ha ecological public welfare forest in Xunle Township, 10158.21 ha ecological public welfare forest in Changmei Township. All of those are ecological public welfare forests and management of those forests are subsidized but cutting is prohibited by the state. Therefore, PP does not control any other forests that could be harvested commercially, and project would not result in the significant national concession and illegal logging.

3. $A_{burn,i,t}$: Area burnt in stratum i at time t

N/A, no forest of the Project burnt during this monitoring period.

4. $A_{dist,i,t}$: Area disturbed in stratum i at time t

N/A, no forest of the Project disturbed during this monitoring period.

5. $A_{DIST_IL,i}$: Area potentially impacted by illegal logging in stratum i

N/A, no forest of the Project will be disturbed during this monitoring period.

6. $C_{DIST_IL,i,t|PRJ}$: biomass carbon of trees cut and removed through illegal logging in stratum i at time t

N/A, no illegal logging during this monitoring period.

7. AP_i : Total area of illegal logging sample plots in stratum i

N/A, no illegal logging during this monitoring period.

8. PMP_i : Merchantable biomass as a proportion of total aboveground tree biomass for stratum i within the project boundaries

The data source from the 13th Five-year Forest Harvest Limit, 2016 China Forestry Statistical Yearbook and the data of the Forest Resources Planning and Design Survey Report.

9. A_i : Area covered by stratum i

According to the Timber Harvest Plan, there are 9,346.72ha, including 1,306 subcompartments of Broad-leaved tree, Chinese fir and Pinus massoniana are accounted in this monitoring period.

10. DBH, Diameter at breast height of a tree in cm

This parameter was measured during the Forest management inventory carried out in 2016 and in 2020, field measurements in sample plots and records are recognized by local government forestry

bureau. During site visit, the verification team has sample checked the diameter of each department and confirmed the records of Forest management inventory carried out in 2016 and in 2020 were reliable.

CL 02 is raised and successfully closed.

4.4.3 Baseline emissions

According to the methodology and the VCS PD, the net change in carbon stock from wood products and logging slash across all parcels within the first year of harvest in the baseline is calculated as:

$$\Delta C_{NET|BSL(1)} = \sum_{i,p} A_{1,i,p} * \sum_{i=1}^M \left(\frac{C_{DWSLASH,i,p|BSL}}{10} \right) + C_{WP0,i,p|BSL} + \left(\frac{C_{WP100,i,p|BSL}}{20} \right)$$

The net change in carbon stock from wood products and logging slash across all parcels the years 2-10 since harvest in the baseline are calculated as:

$$\Delta C_{NET|BSL(2-10)} = \sum_{i,p} A_{2-10,i,p} * \sum_{i=1}^M \left(\frac{C_{DWSLASH,i,p|BSL}}{10} \right) + \left(\frac{C_{WP100,i,p|BSL}}{20} \right)$$

The net change in carbon stock from wood products across all parcels the years 11-20 since harvest in the baseline are calculated as:

$$\Delta C_{NET|BSL(11-20)} = \sum_{i,p} A_{11-20,i,p} * \sum_{i=1}^M (C_{WP100,i,p|BSL}/20)$$

The net change (sequestration) in carbon stock due to reforest across all parcels in all years since harvest in the baseline scenario are calculated according to equation 6 below. Note that there will be no more emissions quantified from decay of logging slash or wood products.

$$\Delta C_{NET|BSL(1+)} = \sum_i A_{t*} * \sum_{i=1}^M (-\Delta C_{RG,i,p|BSL})$$

The calculation of A_{t*} , is cumulative area harvested until time t^* since timber harvest in stratum i in land parcel p in the baseline scenario. In the estimation of baseline emissions, it is relevant to the rotation of the different kinds of trees and it could be calculated by $\text{MAX}(\text{Age}_{2015} + 30 - \text{Yearssince harvest to year } t, 0)$ during the whole crediting period.

Therefore, net change in carbon stock across all parcels harvested over each year of the project crediting period in the baseline scenario since the start of the project activity is calculated as:

$$\Delta C_{NET|BSL,t*} = \sum_{p=1}^P \Delta C_{NET|BSL(1)} + \Delta C_{NET|BSL(2-10)} + \Delta C_{NET|BSL(11-20)} + \Delta C_{NET|BSL(1+)}$$

The net carbon stock change in the baseline scenario since the start of the project activity must be converted to net greenhouse gas emissions and is calculated as:

$$GHG_{NET|BSL,t^*} = \Delta C_{NET|BSL,t^*} * \frac{44}{12}$$

Here t* is 4.5 years for the time elapsed from 01/07/2016 to 31/12/2020.

The verification team has checked the Emission Removals calculation sheet and found the calculation of baseline is correct, and the results are listed as following:

Year	GHG _{NET BSL}
01-Jul-2016-30-Jun-2017	81,411
01-Jul-2017-30-Jun-2018	89,099
01-Jul-2018-30-Jun-2019	110,088
01-Jul-2019-30-Jun-2020	129,639
01-Jul-2020-31-Dec-2020	64,353 ¹
Total	474,591
Average annual GHG _{NET BSL}	105,464

4.4.4 Project emissions

According to the methodology and the VCS PD and MR, the net greenhouse gas emissions in the project scenario will be equal to carbon sequestration through ongoing forest growth minus any emissions resulting from forest disturbance (both illegal logging and natural disturbances).

The annual carbon stock change in aboveground biomass of trees in year t is the difference in mean carbon stock in aboveground biomass between sampling events and, when expressed in tCO₂e, is calculated as:

$$\Delta C_{AB,t|PRJ} = \left(\sum_{i=1}^M \left(A_i * \frac{C_{AB,i,t2|PRJ} - C_{AB,i,t1|PRJ}}{T} \right) \right) * \frac{44}{12}$$

According to the PRA implemented from 2016 to 2020, fire-free statement and pest-free statement, $\Delta C_{DIST-FR,t,PRJ}$, $\Delta C_{DIST-FR,t,PRJ}$ and $\Delta C_{DIST,t,PRJ}$ are all equal to zero.

The net greenhouse gas emissions in the project scenario in year t, is calculated as:

$$\Delta C_{NET,t|PRJ} = (\Delta C_{DIST-FR,t|PRJ} + \Delta C_{DIST,t,PRJ} + \Delta C_{DIST-IL,t|PRJ}) - \Delta C_{AB,t|PRJ}$$

¹ The baseline scenario emission reduction of 01-Jul-2020-30-Jun-2021 is 128,707 tCO₂ in VCS-PD, the period of 01-Jul-2020-31-Dec-2020 is half year, so GHG_{NET,BSL,t} of 01-Jul-2020-31-Dec-2020 is calculated by 128,707*0.5=64,353 tCO₂

The net greenhouse gas emissions across in the project scenario since the start of the project activity is calculated as:

$$GHG_{NET|PRJ} = \sum_{t=1}^{t^*} \Delta C_{NET,t|PRJ}$$

The verification team has checked the Emission Removals calculation sheet and found the calculation is correct, and the results are as following

Year	$\Delta C_{DIST_FR,t PRJ}$	$\Delta C_{DIST,t PRJ}$	$\Delta C_{DIST_IL,t PRJ}$	$\Delta C_{AB,t PRJ}$	$\Delta C_{NET,t PRJ}$
01-Jul-2016-30-Jun-2017	0	0	0	72,939	-72,939
01-Jul-2017-30-Jun-2018	0	0	0	72,939	-72,939
01-Jul-2018-30-Jun-2019	0	0	0	72,939	-72,939
01-Jul-2019-30-Jun-2020	0	0	0	72,939	-72,939
01-Jul-2020-31-Dec-2020	0	0	0	36,469	-36,469
Total	0	0	0	328,225	-328,225
Average		0	0	72,938	-72,938

4.4.5 Leakage

(a) Activity shifting leakage

The project does not involve in the activity shifting leakage in China, the forest timber harvest is strictly controlled by the forestry authority and the central government issued the maximum timber harvest to provinces and larger state-owned forest enterprises every five years. Also, the China Forest Law also clearly stipulates the punishment for the illegal logging, which not only requires 5-10 times compensation of replanting, but also 2-10 times economic penalty.

The verification team interviewed local households and local officer from Forest Bureau, meanwhile, checked the distribution diagram of ecological public-welfare forest of PP and cooperation agreements among PP and forest owners, it is confirmed that the PP are authorized to manage all the forests by the forest owners, including 22888.45 ha ecological public welfare forest in Chuanshan Town, 8238.72 ha ecological public welfare forest in Da'an Township, 6517.96 ha ecological public welfare forest in Dongxing Town, 5342.53 ha ecological public welfare forest in Huashan Forest Farm, 5626.61 ha ecological public welfare forest in Jiuwanshan Conservation Zone, 9991.52 ha ecological public welfare forest in Longyan Township, 10560.78 ha ecological public welfare forest in Luoyang Town, 22266.3 ha ecological public welfare forest in Minglun Town, 10287.27 ha ecological public welfare forest in Mulun Conservation Zone, 22366.59 ha ecological public welfare forest in Shuiyuan Town, 9553.64 ha ecological public welfare forest in Si'en Town, 7491.05 ha ecological public welfare forest in Tiancai

Township, 20046.98 ha ecological public welfare forest in Xianan Township, 25077.13 ha ecological public welfare forest in Xunle Township, 10158.21 ha ecological public welfare forest in Changmei Township. All of those are ecological public welfare forests and management of those forests are subsidized but cutting is prohibited by the state. Therefore, PP does not control any other forests that could be harvested commercially, and project would not result in the significant national concession and illegal logging.

The verification team verified and confirmed the PP have no right to harvest more in other parcels outside the project activity and the project does not involve in the activity shifting leakage.

Therefore, the activity shifting leakage is zero.

(b)Market Leakage

According to the Forest law of the People's Republic of China for the Guangxi Zhuang Autonomous Region, it is confirmed that the harvest volume is not only strictly restricted nationwide, but also province wide. Also, Guangxi Zhuang Autonomous Region is the key ecologically area in China, forest cutting management quota system and no illegal logging is strictly enforced in this region. It is verified the reduction in harvesting of the project in Guangxi Zhuang Autonomous Region will not cause any increase of quota for any other authorized area.

Moreover, the validation report version 05 indicates the leakage factor for market-effects calculations (LF_{ME}) is zero,

Via checking the Data table of Wood output of Provinces and cities in China from 2015 to 2019, the List of annual forest cutting quotas in Guangxi Zhuang Autonomous Region during the 13 th Five Year Plan Period, the National Forestry Law of P.R. China and the Forestry Law of P.R. China, Illegal logging in China, the verification team confirmed that the logging is impossible increased as a result of the decreased supply of the timber caused by the project in this monitoring period and the factor for market-effects calculations (LF_{ME}) is 0, meanwhile, the conclusion has been verified in the Validation Report version 05.

Also, in order to demonstrated the market leakage factor of the proposed project in a more conservative way, MR discuss it again according to the VCS Standard Section 3.14.8, 3.14.9 and the remained option stated in the VM0010 version1.3 Section 8.3.2. According to the assessment of VCS PD, validation report and MR, the verification team confirmed that Guangxi Huangjiang IFM project is a logged to protected forest is suitable for option 3 (IFM activity that substantially reduces harvest levels permanently), and forest type of

Subtropical humid forest as the reference area (harvest most likely to be displaced) which is verified as Reasonable.

In the baseline scenario modeling, MR sets 3 strata based on the tree species which are Broad-leaves trees, Chinese Fir and Pinus Massoniana for the project. Thus, PMP_i is $PMP_{\text{Broad-leaves trees}}$, $PMP_{\text{Chinese Fir}}$ and $PMP_{\text{Pinus Massoniana}}$.

The final calculation results are confirmed as below:

$$PMP_{\text{Broad-leaved trees}} = 124791 \text{ m}^3 / 9,914,981 \text{ m}^3 = 1.26\%$$

$$PMP_{\text{Chinese Fir}} = 62676 \text{ m}^3 / 5891553 \text{ m}^3 = 1.06\%$$

$$PMP_{\text{Pinus Massoniana}} = 62716 \text{ m}^3 / 1774702 \text{ m}^3 = 3.53\%$$

$$PML_{\text{Subtropical humid forest}} = 4460.9 * 104 \text{ m}^3 / 22272.16 * 104 \text{ m}^3 = 20.03\%$$

$PML_{\text{Subtropical humid forest}}$ is 1491.4% greater than $PMP_{\text{Broad-leaved trees}}$

$PML_{\text{Subtropical humid forest}}$ is 1782.7% greater than $PMP_{\text{Chinese Fir}}$

$PML_{\text{Subtropical humid forest}}$ is 466.8% greater than $PMP_{\text{Pinus Massoniana}}$

The verification has checked the updated ER calculation sheet, and it is confirmed that PMP_i data is correctly calculated and the data source s are checked as Timber Harvest Plan and the data of the Forest Resources Planning and Design Survey Report. And based on the above calculation result s, it is verified that the PML_{FT} is > 15% greater than PMP_i , the ratio of merchantable biomass to total biomass is higher within the area to which harvesting is displaced compared to the project area. Thus, whether according to VCS Standard table 3 or VCS Methodology, the market leakage discount factor is finally determined as 20%.

In summary, $LF_{ME} = 0.2$.

Leakage due to market effects is equal to the net emissions from planned timber harvest activities in the baseline scenario multiplied by an appropriate leakage factor:

$$GHG_{LK|LtPF,t*} = LF_{ME} * GHG_{NET|BSL,t*}$$

The verification team has checked the ER calculation sheet and found the calculation of leakage is correct, and the results are listed as following:

Year	LF_{ME}	$GHG_{LK,LtPF}$
01-Jul-2016-30-Jun-2017	0.2	16,282
01-Jul-2017-30-Jun-2018	0.2	17,819
01-Jul-2018-30-Jun-2019	0.2	22,017
01-Jul-2019-30-Jun-2020	0.2	25,927
01-Jul-2020-31-Dec-2020	0.2	12,870
Total	/	94,915
Average annual $GHG_{NET BSL}$	/	21,092

CAR 02 is raised and successfully closed.

4.4.6 GHG Emission Reduction and/or Removals

The Net Project Greenhouse Gas emission reductions in the monitoring crediting period are calculated as:

$$GHG_{CREDITS|LTPF} = GHG_{NET|BSL} - GHG_{NET|PRJ} - GHG_{LK|LTPF}$$

Where:

$GHG_{CREDITS LTPF,t^*}$	project greenhouse gas credits associated with the implementation of improved forest management (IFM) activities in the year t^* since the start of the project activity, in the project scenario, tCO ₂ e
$GHG_{NET BSL,t^*}$	net greenhouse gas emissions in the baseline scenario in the year t^* since the start of the project activity, tCO ₂ e
$GHG_{NET PRJ,t^*}$	net greenhouse gas emissions in the project scenario in the year t^* since the start of the project activity, tCO ₂ e; and
$GHG_{LK LTPF,t^*}$	total greenhouse gas emissions due to leakage arising outside the project boundary as a result of the implementation of improved forest management (IFM) activities in the year t^* since the start of the project activity, in the project scenario, tCO ₂ e

The verification has checked the updated ER calculation sheet, and it is confirmed that Baseline GHG emissions ($GHG_{NET|BSL,t^*}$), Project GHG emissions($GHG_{NET|PRJ,t^*}$), leakage GHG emissions ($GHG_{LK|LTPF,t^*}$) and project GHG credits($GHG_{CREDITS|LTPF,t^*}$) are correctly calculated. The results are listed as following:

Year	$GHG_{NET BSL}$ (tCO ₂ e)	$GHG_{NET PRJ}$ (tCO ₂ e)	$GHG_{LK LTPF}$ (tCO ₂ e)	$GHG_{CREDITS LTPF}$ (tCO ₂ e)
01-Jul-2016-30-Jun-2017	81,411	-72,939	16,282	138,068
01-Jul-2017-30-Jun-2018	89,099	-72,939	17,819	144,219
01-Jul-2018-30-Jun-2019	110,088	-72,939	22,017	161,010
01-Jul-2019-30-Jun-2020	129,639	-72,939	25,927	176,651
01-Jul-2020-31-Dec-2020	64,353	-36,469	12,870	87,952
Total	474,591	-328,225	94,915	707,901

Average annual	105,464	-72,938	21,092	157,311
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According to the VM0010 version 1.3, if the uncertainty propagation $U_{total|LtPF} \leq 0.15$ then no deduction will result for uncertainty; If $U_{total|LtPF} > 0.15$ then the amount of greenhouse gas emission credits associated with IFM activities will be deducted as follows:

$$Credits_{total|LtPF} = GHG_{credits|LtPF} * (1 - U_{total|LtPF})$$

Verification on uncertainty:

Estimated greenhouse gas emissions and emission reductions from IFM activities have uncertainties associated with parameters and coefficients including estimates of area, carbon stocks, regrowth and expansion factors. It is assumed that the uncertainties associated with input data are available, either as default uncertainty values given in most recent IPCC guidelines, or as statistical estimates based on sampling.

Uncertainty at all times is defined at the 95% confidence interval where the estimated variance exceeds +/- 15 percent from the mean. Procedures including stratification and the allocation of sufficient measurement plots will help ensure that low uncertainty results and ultimately full crediting can result.

Uncertainties arising from the measurement and monitoring of carbon pools and greenhouse gases shall always be quantified. Errors in each pool shall be weighted by the size of the pool so that projects may reasonably target a lower precision level in pools that only form a small proportion of the total stock.

For both the baseline and the with-project case the total uncertainty is equal to the square root of the sum of the squares of each component uncertainty and is calculated at the time of reporting through propagating the error in the baseline stocks and the error in the project stocks.

Therefore, total uncertainty for LtPF project is calculated as:

$$U_{Total|LtPF} = \sqrt{U_{PRJ}^2 + U_{BSL}^2}$$

If $U_{total|LtPF} \leq 0.15$ then no deduction will result for uncertainty.

If $U_{total|LtPF} > 0.15$ then the amount of greenhouse gas emission credits associated with IFM activities will be deducted as follows:

$$Credits_{total|LtPF} = GHG_{credits|LtPF} * (1 - U_{total|LtPF})$$

For the baseline scenario:

As ex-ante calculated in the VCS-PD, the UBSL is 1.70% for the baseline scenario.

For the project scenario:

According to IPCC Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories the uncertainty in the baseline scenario is associated with parameters and coefficients including estimates of area, carbon stocks, regrowth and expansion factors, the calculation process follows the two rules below:

Rule A: Where uncertainties are to be combined by addition, the standard deviation of the sum will be the square root of the sum of the squares of the standard deviations of the quantities that are added with the standard deviations all expressed in absolute terms (this rule is exact for uncorrelated variables).

Using this interpretation, a simple equation can be derived for the uncertainty of the sum, that when expressed in percentage terms become:

$$U_{total} = \frac{\sqrt{(U_1 \times E_1)^2 + (U_2 \times E_2)^2 + \dots + (U_n \times E_n)^2}}{E_1 + E_2 + \dots + E_n}$$

Where:

U_{total}	is the percentage uncertainty in the sum of the quantities (half the 95% confidence interval divided by the total (i.e. mean) and expressed as a percentage);
E_i and U_i	are the uncertain quantities and the percentage uncertainties associated with them, respectively

Rule B: Where uncertain quantities are to be combined by multiplication, the same rule applies except that the standard deviations must all be expressed as fractions of the appropriate mean values (this rule is approximate for all random variables).

A simple equation can also be derived for the uncertainty of the product, expressed in percentage terms:

$$U_{total} = \sqrt{U_1^2 + U_2^2 + \dots + U_n^2}$$

Where:

- U_{total} is the percentage uncertainty in the sum of the quantities (half the 95% confidence interval divided by the total (i.e. mean) and expressed as a percentage);
- U_i are the percentage uncertainties associated with each of the quantities.

The uncertainty is calculated per stratum by dividing the 95% confidence interval by the mean value of the uncertainty quantities. The corresponding standard deviation is calculated over the measured plot values of the uncertainty quantities. The 95% confidence interval is calculated based on the standard deviation and the t-value for n-1 degree of freedom of plots per stratum.

As the uncertainty in the baseline scenario is associated with parameters and coefficients including estimates of area, carbon stocks, regrowth and expansion factors, the calculation of the 4 parameters and coefficients are shown below:

1)Uncertainty of Area:

In the baseline scenario, the area of every stratum are quoted from the field survey inventory data and legal right of harvest, so no data are from measurement and monitoring. Therefore, it is deemed as 0 in the period of validation. It will be monitored in the period of verification.

2)Uncertainty of expansion factors:

The Sample size, Sample mean and Standard error of expansion factors are quoted from Forestry Part of China's greenhouse gas emissions list divided as tree species, and the uncertainty of expansion factors are calculated as below:

For Broad-leaved tree:

Uncertainty of BCEF- Broad-leaved tree		3.02%	
Uncertainty of BEF Broad-leaved tree	2.99%	Uncertainty of D- Broad-leaved tree	0.42%
BEF		D	
Sample size	153	Sample size	189
Sample mean (BEF)	1.514	Sample mean (D)	0.443
Standard deviation	0.283	Standard deviation	0.013
Average error	0.023	Average error	0.001
Confidence level	0.95	Confidence level	0.95
Degree of freedom	152	Degree of freedom	188
Two-sided Student's t-value	1.976	Two-sided Student's t-value	1.973
Allowable error	0.045	Allowable error	0.002
Lower confidence limit	1.469	Lower confidence limit	0.441
Upper confidence limit	1.559	Upper confidence limit	0.445
Confidence interval	0.045	Confidence interval	0.002

For Chinese fir:

Uncertainty of BCEF- Chinese fir		2.21%	
Uncertainty of BEF- Chinese fir	2.06%	Uncertainty of D- Chinese fir	0.80%
BEF		D	
Sample size	71	Sample size	54
Sample mean (BEF)	1.323	Sample mean (D)	0.307
Standard deviation	0.115	Standard deviation	0.009
Average error	0.014	Average error	0.001
Confidence level	0.95	Confidence level	0.95
Degree of freedom	70	Degree of freedom	53
Two-sided Student's t-value	1.994	Two-sided Student's t-value	2.006
Allowable error	0.027	Allowable error	0.002
Lower confidence limit	1.296	Lower confidence limit	0.305
Upper confidence limit	1.350	Upper confidence limit	0.309
Confidence interval	0.027	Confidence interval	0.002

For Pinus massoniana:

Uncertainty of BCEF- Pinus massoniana		2.38%	
Uncertainty of BEF- Pinus massoniana	1.82%	Uncertainty of D- Pinus massoniana	1.54%
BEF		D	
Sample size	68	Sample size	43
Sample mean (BEF)	1.305	Sample mean (D)	0.380
Standard deviation	0.098	Standard deviation	0.019
Average error	0.012	Average error	0.003
Confidence level	0.95	Confidence level	0.95
Degree of freedom	67	Degree of freedom	42
Two-sided Student's t-value	1.996	Two-sided Student's t-value	2.018
Allowable error	0.024	Allowable error	0.006
Lower confidence limit	1.281	Lower confidence limit	0.374
Upper confidence limit	1.329	Upper confidence limit	0.386
Confidence interval	0.024	Confidence interval	0.006

- 1) The calculation of uncertainty of carbon stock is based on the uncertainty of volume in every stratum multiply by the uncertainty of expansion factors using formula in the VCS-PD:

For 2016:

Uncertainty of carbon stock-Broad-	4.25%	Uncertainty of carbon stock-	5.32%	Uncertainty of carbon stock-	4.24%
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leaved tree		Chinese fir		Pinus massoniana	
Uncertainty of volume- Broad-leaved tree	2.99%	Uncertainty of volume –Chinese fir	4.84%	Uncertainty of volume –Pinus massoniana	3.51%
carbon stock- Broad-leaved tree	247788.36	carbon stock- Chinese fir	115567.36	carbon stock- Pinus massoniana	109849.82
Area(ha)	4440.05	Area(ha)	2736.96	Area(ha)	2169.71
Sample size	646	Sample size	310	Sample size	350
Sample mean (m ³ /ha)	152.95	Sample mean (m ³ /ha)	115.72	Sample mean (m ³ /ha)	138.76
Standard deviation	59.40	Standard deviation	50.30	Standard deviation	46.50
Average error	2.34	Average error	2.86	Average error	2.49
Confidence level	0.95	Confidence level	0.95	Confidence level	0.95
Degree of freedom	645	Degree of freedom	309	Degree of freedom	349
Two-sided Student's t- value	1.96	Two-sided Student's t- value	1.96	Two-sided Student's t- value	1.96
Allowable error	4.58	Allowable error	5.60	Allowable error	4.87
Lower confidence limit	148.37	Lower confidence limit	110.12	Lower confidence limit	133.89
Upper confidence limit	157.53	Upper confidence limit	121.32	Upper confidence limit	143.63
Confidence interval	4.58	Confidence interval	5.60	Confidence interval	4.87

For 2020:

Uncertainty of carbon stock-Broad-leaved tree	10.07%	Uncertainty of carbon stock-Chinese fir	6.69%	Uncertainty of carbon stock- Pinus massoniana	23.26%
Uncertainty of volume- Broad-leaved tree	9.61%	Uncertainty of volume –Chinese fir	6.31%	Uncertainty of volume –Pinus massoniana	23.14%
carbon stock- Broad-leaved tree	62.27	carbon stock- Chinese fir	28.60	carbon stock- Pinus massoniana	23.72
Area(ha)	1.28	Area(ha)	0.68	Area(ha)	0.48
Sample size	32	Sample size	17	Sample size	12
Sample mean (m ³ /ha)	133.33	Sample mean (m ³ /ha)	167.68	Sample mean (m ³ /ha)	176.67
Standard deviation	36.98	Standard deviation	22.27	Standard deviation	72.25
Average error	6.54	Average error	5.40	Average error	20.86
Confidence level	0.95	Confidence level	0.95	Confidence level	0.95
Degree of freedom	31	Degree of freedom	16	Degree of freedom	11

Two-sided Student's t-value	1.96	Two-sided Student's t-value	1.96	Two-sided Student's t-value	1.96
Allowable error	12.81	Allowable error	10.58	Allowable error	40.88
Lower confidence limit	120.51	Lower confidence limit	157.10	Lower confidence limit	135.79
Upper confidence limit	146.14	Upper confidence limit	178.27	Upper confidence limit	217.55
Confidence interval	12.81	Confidence interval	10.58	Confidence interval	40.88

The baseline emission uncertainty has been listed in the PD is 1.70%, the detailed calculation is listed as follows:

Based on the calculation of the parameters and coefficients above, the calculation of U_{PRJ} is shown below:

Stratum	Parameter	A _{rea} (Ha)	VEX,j,i BSL (m ³ /ha)	BEF	D(tdm/m ³)	BCEFR (tdm/m ³)	CFj(tc/tdm)	CHB,j,i BSL (tC /ha)	CEX,j,i BSL (tC ha ⁻¹)	ΔCDW,i,p BSL
		a	b	c	d	e=c*d	f	g=b*e*f	h=b*d*f	i=g-h
								$U_g = \sqrt{U_b^2 + U_e^2}$	$U_h = \sqrt{U_b^2 + U_d^2}$	$U_i = \frac{\sqrt{(E_g * U_g)^2 + (E_h * U_h)^2}}{(E_g + E_h)}$
Broad-leaved tree	E	4440.05	152.95	1.514	0.482	0.730	0.5	55.81	36.86	18.95
	U	0.00%	2.99%	2.99%	0.42%	3.02%		4.25%	3.02%	2.83%
Chinese fir	E	2736.96	115.72	1.634	0.307	0.502	0.5	29.03	17.76	11.26
	U	0.00%	4.84%	2.06%	0.80%	2.21%		5.32%	4.90%	3.79%
Pinus massoniana	E	2169.71	138.76	1.472	0.380	0.559	0.5	38.81	26.36	12.44
	U	0.00%	3.51%	1.82%	1.54%	2.38%		4.24%	3.83%	2.96%

Stratum	Parameter	WW _k	SLF _k	C _{wp,0} BSL (tc/ha)	C _{WP,i} BSL(tc/ha)	OF _k	ΔC _{WP,100} BSL (tc/ha)	A _{i,p} (ha)	ΔC _{NET} BSL(1)(tC)
		j	k	l=h*(j+k)	m=h-l	n	o=m*n	p	q=(i/10+l+o/20)*p
				U _l =U _h	$U_m = \frac{\sqrt{(E_h * U_h)^2 + (E_l * U_l)^2}}{(E_h + E_l)}$		U _o =U _m	U _p =0	$U_m = \frac{\sqrt{(E_l * U_l)^2 + (E_i * U_i)^2 + (E_o * U_o)^2}}{(E_l + E_i + E_o)}$
Broad-leaved tree	E	24%	0.12	13.27	23.59	0.86	20.29	4440.05	71835.71
	U			3.02%	2.36%		2.36%	0.00%	1.57%
Chinese fir	E	24%	0.12	6.39	11.37	0.86	9.78	2736.96	21923.01
	U			4.90%	3.83%		3.83%	0.00%	2.36%
Pinus massoniana	E	24%	0.12	9.49	16.87	0.86	14.51	2169.71	24866.79
	U			3.83%	3.00%		3.00%	0.00%	1.86%

Stratum	Parameter	$\Delta\text{CNET} \text{BSL}(2-10)(\text{tC})$	$\Delta\text{CNET} \text{BSL}(11-20)(\text{tC})$	regrowth rate (m ³ /ha/yr)	$\Delta\text{CNET} \text{BSL},t^*(\text{tC})$	$\Delta\text{CNET}, i,P \text{BSL}$
		$r=(i/10+o/20)*p$	$s=o/20*p$	t	$v=e*f*p*t$	$w=q+r+s-v$
		$U_r = \frac{\sqrt{(E_i * U_i)^2 + (E_o * U_o)^2}}{(E_i + E_o)}$	$U_s = U_o$	$U_t = 10\%$	$U_v = \sqrt{U_e^2 + U_f^2}$	$U_w = \frac{\sqrt{(E_q * U_q)^2 + (E_r * U_r)^2 + (E_s * U_s)^2 + (E_v * U_v)^2}}{(E_q + E_r + E_s + E_v)}$
Broad-leaved tree	E	116247.77	35931.73	2.06	56536.19	167479.02
	U	1.83%	2.36%	10.00%	10.44%	2.29%
Chinese fir	E	39783.46	10445.76	2.99	34500.32	37651.91
	U	2.70%	3.83%	10.00%	10.24%	3.52%
Pinus massoniana	E	38467.10	12491.63	2.68	27558.44	48267.08
	U	2.11%	3.00%	10.00%	10.28%	2.91%
					U_{BSL}	1.70%

Uncertainty for the project scenario:

Stratum	Parameter	$A_{\text{area}}(\text{Ha})$	$V_{\text{AB},i 2016}(\text{m}^3/\text{ha})$	BEF	$D(\text{tdm}/\text{m}^3)$	$\text{BCE}_{\text{F}_R}(\text{tdm}/\text{m}^3)$	$\text{CF}_j(\text{tc}/\text{tdm})$	$V_{\text{AB},i 2020}(\text{m}^3/\text{ha})$	$\Delta V_{\text{AB},i PRJ}(\text{m}^3/\text{ha})$	$\Delta \text{CAB}_{t PRJ}(\text{tCO}_2)$
		a	b	c	d	e=c*d	f	g	h=g-b	i=h*a*e*f*44/12
										$U_g = \sqrt{U_d^2 + U_f^2}$
Broad-leaved tree	E	4440.05	152.95	1.514	0.482	0.730	0.5	133.33	-19.62	-116557.73
	U	0.00%	2.99%	2.99%	0.42%	3.02%		9.61%	4.75%	5.63%
Chinese fir	E	2736.96	115.72	1.634	0.307	0.502	0.5	167.68	51.96	130786.64
	U	0.00%	4.84%	2.06%	0.80%	2.21%		6.31%	4.23%	4.77%
Pinus massoniana	E	2169.71	138.76	1.472	0.380	0.559	0.5	176.67	37.91	84350.12
	U	0.00%	3.51%	1.82%	1.54%	2.38%		23.14%	13.05%	13.27%
								U_{PRJ}		14.60%

Total uncertainty:

Total uncertainty for LtPF project is calculated according to the follow equation:

$$U_{\text{Total LtPF}} = \sqrt{[(1.70\%)^2 + (14.60\%)^2]} = 14.70\%$$

As $U_{\text{total}} \leq 0.15$, then no deduction will result for uncertainty and $\text{Credits}_{\text{total}|LtPF} = \text{GHG}_{\text{credits}|LtPF}$;

As per the methodology VM0010 version 1.3 and the VCS PD, the amount of VCU's that can be issued at time $t=t_2$ (the date of verification) for monitoring period $T=t_2-t_1$, is calculated as:

$$VCU_{\text{net}|LtPF} = (\text{Credits}_{\text{total},t_2|LtPF} - \text{Credits}_{\text{total},t_1|LtPF}) - Bu_{\text{IFM-VCS}}$$

Where:

$VCU_{\text{net} LtPF}$	number of verified carbon units; dimensionless;
$\text{Credits}_{\text{total},t_1 LtPF}$	net anthropogenic greenhouse gas removals by sinks, as estimated for $t^*=t_1$ in tCO_2^e ;
$\text{Credits}_{\text{total},t_2 LtPF}$	net anthropogenic greenhouse gas removals by sinks, as estimated for $t^*=t_2$ in tCO_2^e ; and
$Bu_{\text{IFM-VCS}}$	total number of credits withheld in VCS buffer account

Based on the provided evidences and the AFOLU Non-Permanence Risk Tool, VCS version 4.3, the verification team verified the overall risk rating in this monitoring period is 23, therefore, the total amount of VCU in this monitoring period are:

$$VCU_{net|LtPF} = (Credits_{total,t2|LtPF} - Credits_{total,t1|LtPF}) - Bu_{IFM-VCS} = 707,901 - 23\% * 707,901 = 162,817tCO_2e;$$

The verification team has ensured that:

The data used for the determination of the emission reductions are available and are monitored in accordance with the registered monitoring plan without conservative assumption;

The relevant documents have been cross checked and found consistent;

The appropriate methods and formulae for calculating baseline emissions, project emissions and leakage have been properly followed the methodology and VCS PD;

CAR 03 and CL 03 are raised and successfully closed.

4.5 Quality of Evidence to Determine GHG Emission Reductions and Removals

The data pertaining to the monitored parameters are maintained in the identified internal records and consistent with the values stated in the Monitoring Report version 2.0. Key data have been cross-checked via external sources, such as records of Filed measurement of Forest management inventory. All necessary documentation as evidence to determine emission reductions is collected in hard-copy or electronic format. The evidences were assessed as of sufficient quantity and appropriate quality.

4.6 Non-Permanence Risk Analysis

The Non-Permanence Risk Report are provided by PP, the risk assessment was conducted according to the VCS Standard adopted the latest version of the Non-Permanence Risk Report Template. Each risk category was calculated based on the VCS guidance and the input provided by the PP. The information has been validated and verified and cross-checked through document and literature review, onsite inspection of the project area and interviews conducted. Details of the assessment are provided as following tables:

Risk Factor	VVB Assessment
Internal Risk	
Project Management	There is a specific Monitoring Manual made by project proponent for a complete set of management regulation in the operation & maintenance including potential risks to the project, which includes a process for monitoring progress and documenting lessons learned or corrections that may be needed, and incorporating them into project decision-making in future monitoring periods, which has been verified in the Monitoring Manual, therefore this mitigation is scored as -2.

Financial Viability	Via reviewing the NPV sheet, it is confirmed that project cash flow is negative in crediting period. Project cash flow breakeven point is greater than 10 years from the current risk assessment. Therefore, this mitigation is scored as 3.
Opportunity Cost	The NPV from the project is negative as verified in the NPV sheet, and via checking the Carbon reduction project Development Cooperation Agreement signed among the forest stations, local farmers, village collective, Huanjiang Maonan Autonomous County Huashan Forestry Investment Co., Ltd. and Guangzhou Guangtan Carbon Emission Development & Investment Co., Ltd, it is confirmed that project is protected by legally binding commitment to continue management practices that protect the credited carbon stocks over the length of the project crediting period. Therefore, this mitigation is scored as 6.
Project Longevity	Through checking Carbon reduction project Development Cooperation Agreement, meanwhile, interviewing with PP and local foresters, it is confirmed that project longevity is 30 years and the crediting period is 20years. Therefore, this mitigation is scored as 15.
Total Internal Risk	Based on above score for each internal risk factor, it is confirmed that the final score of 22 is correct and reasonable.
External Risk	
Land Tenure and Resource Access/Impacts	Project developer Huanjiang Maonan Autonomous County Huashan Forestry Investment Co., Ltd. is a privacy company, who is in charge of the integrated implementation and management of the project. The forests involved in the project are state-owned forests or privately-owned or collective-owned which has been confirmed by site interview with local officer from Forest Bureau and checking the Certificate of Forest Right. And the owners authorized the Guangzhou Guangtan Carbon Emission Development & Investment Co., Ltd to apply this VCS project on their behalf. The verification team checked the Consultant Agreement signed between Guangzhou Guangtan Carbon Emission Development & Investment Co., Ltd. and Huanjiang Maonan Autonomous County Huashan Forestry Investment Co., Ltd, it is confirmed that the credited carbon stocks will be protected over the length of the project crediting period and confirmed that project is protected by legal binding commitment least 20 years over the length of the project crediting period. Therefore, this mitigation is scored as 0.
Community Engagement	Based on the survey of forest management implemented by the project proponent in 2015, the local communities have positive attitude towards the implementation of the project. As assessed in above section, the project generates net positive impacts on the social and economic well-being of the local communities who derive livelihoods from the project area. The score is -5.
Political Risk	According to World Bank Institute's WGI², the six indicators of China are respectively -0.36, 0.44, -0.23, -0.29, -0.28 and -1.56, averaged over the most recent five years, so Governance Score is -0.38. Then the final score is 4.

² <http://info.worldbank.org/governance/wgi/index.aspx#home>

	China has an established Designated National Authority under the CDM and has at least one registered CDM Afforestation/Reforestation project, therefore this mitigation is scored as -2. The total Score is 2.
Total External Risk	Based on above score for each external risk factor, it is confirmed that the score is sum to -3, then the final score of 0 is correct and reasonable.
Natural Risk	
Fire	Significance: Major. Fire risk is considered low due to there is a separation zone at a certain distance in the project area. Via site inspection, it is confirmed that there are grasses in the biological fire zone, fire roads, forest access roads, and via interview with local officers, it is confirmed that the grasses were managed yearly to prevent the fire risk. Likelihood: As assessed above, the risk is low and project proponent has adopted the necessary measures for fire preventing, the technicians for manage and maintain the forest has carried out regular inspections and investigations and make good forecasts. Score (LS) = 0. Mitigation: Local government sets the fireproofing period when using fire is forbidden in the open air and no fires occurred in the project areas as confirmed during the on-site visit. Also, the fire will be strictly controlled by project proponent who experienced in local natural risk control to minimize the potential effect and established fire prevention procedure in Forest Management Manual. Therefore, the mitigation is scored as 0.25.
Pest and Disease Outbreaks	Significance: Insignificant. According to historical records, the pest and disease risk are not common, and the mixed plantation will prevent the trees from pest and disease outbreaks in a certain way based on technical experience. Likelihood: The planted trees may would be damaged by insects and disease, but the risk is considered low because it can be prevented by routine overseeing and the PP have in place a full Forest Management Manual. The biological measures to control pests and diseases will be mainly adopted. PP is based on conservative consideration, and the risk is less than every 10 years. Score (LS) = 0. Mitigation: The chemical pesticides are allowed to be used only if there is a serious pest problem erupted in the project area, while improper pesticide application would be harmful to natural environment, but the risk is considered low because pesticide will be strictly managed by well trained staff to minimize the potential effect. As the biological measures to control pests and diseases will be mainly adopted, the pesticide application will be limited. Therefore, the mitigation is scored as 0.25.
Extreme Weather	Significance: Insignificant. Considering the data based on historical weather records, the frost damage on trees was not common in the project area due to the project is located in the subtropical areas in China. Likelihood: Not common due to the project is located in the subtropical areas in China. Score (LS) = 0. Mitigation: During winter with frost, warming measures will be adopted.

	Frost risk are identified as low. If there are frozen branches found after winter, they will be cut off in spring, which enhances their ability of self-healing and is good for the growth of new leaves and branches. The risk is considered low because natural risk control will be strictly managed by well trained staff to minimize the potential effect. Therefore, the mitigation is scored as 0.25.
Geological Risk	Significance: Minor. The geological risk such as earthquakes around the project area are mostly low intensity, so the damage will be minor. Likelihood: According to historical records from local government, there is no earthquakes or volcanoes occurred in recent 100 years around the project area as confirmed during the on-site interview with local officer. Score (LS) = 0. Mitigation: Local government will be responsible for the recovery of the forest if there is an earthquake occurred as confirmed during the on-site visit. Also, the project proponent is experienced in local natural risk control to minimize the potential effect and established specific instruction in geological risk control in Forest Management Manual. Therefore, the mitigation is scored as 0.25.
Other natural risk	None is observed.
Total Natural Risk	Based on above score for each natural risk factor, it is confirmed that the score is sum to 1, which is correct and reasonable
Total risk rating	22+0+1=23

As per the requirement of VCS Standard, the non-permanence risk has been reassessed at the first verification. According to the requirement of VCS Tool for “AFOLU Non-Permanence Risk Analysis” (Version 4.0), the overall risk rating is 23% and it is confirmed the calculation is correct basing on above analysis. The verification team concludes that this risk rating is purely based on the tool cited above and is compliance with the requirement of VCS Standard.

5 VERIFICATION CONCLUSION

The scope of this verification covers the determination of voluntary greenhouse gas emission reductions generated by the above mentioned project. The verification is based on the VCS PD, and applying the VCS methodology VM0010 version 1.3, on the basis of Voluntary Carbon Standard (VCS) Version 4.3, the MR, and the supporting documents made available to the verifiers by the PPs.

As a result of the verification, the verification team confirms that:

The project activity is implemented as per monitoring plan and compliance with the description in the VCS PD. The monitoring system is in place, functional and reliable.

The GHG emission reductions are calculated without material misstatements in a conservative and appropriate manner in the revised MR.

The verification statement should give the final verdict of the project in terms of the completeness, comparability, accuracy and correctness of the reported GHG emission reductions.

Verification period: From 01/07/2016 to 31/12/2020.

Based on the provided evidences and the AFOLU Non-Permanence Risk Tool, VCS version 4.0, the overall non-permanence risk rating is 23.

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

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)	Buffer pool allocation	VCUs eligible for issuance
01-Jul-2016-30-Jun-2017	81,411	-72,939	16282	138,068	31,756	106,312
01-Jul-2017-30-Jun-2018	89,099	-72,939	17819	144,219	33,170	111,048
01-Jul-2018-30-Jun-2019	110,088	-72,939	22017	161,010	37,032	123,977
01-Jul-2019-30-Jun-2020	129,639	-72,939	25927	176,651	40,630	136,021
01-Jul-2020-31-Dec-2020	64,353	-36,469	12870	87,952	20,229	67,723
<i>Total</i>	474,591	-328,225	94,915	707,901	162,817	545,081

Average annual	105,464	-72,938	21,092	157,311	36,181	121,129
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The verification statement should give the final verdict of the project in terms of the completeness, comparability, accuracy and correctness of the reported GHG emission reductions.

Verification period: From 01/07/2016 to 31/12/2020.

Based on the provided evidences and the AFOLU Non-Permanence Risk Tool, VCS version 4.0, the overall non-permanence risk rating is 23.



Mr. Du Wenjun

Team Leader

30/10/2022



Mr. Wu LIN

Team Reviewer

30/10/2022

APPENDIX A: ABBREVIATIONS

Abbreviations	Full texts
CAR	Corrective Action Request
AFOUL	Agriculture, Forestry and Other Land Use
CL	Clarification request
CO ₂	Carbon Dioxide
CO ₂ e	Carbon Dioxide Equivalent
CTI	Shenzhen CTI International Certification Co., Ltd
EF	Emission Factor
ER	Emission Reduction
FAR	Forward Action Request
GHG	Greenhouse Gas(es)
MR	Monitoring Report
PD	Project Description
PP	Project Proponent
PRA	Participatory Rural Appraisal
VCS	Verified Carbon Standard
VCU	Verified Carbon Unit
UNFCCC	United Nations Framework Convention on Climate Change
VVB	Validation/Verification Body
LtPF	Logged to Protected Forest
QA/QC	Quality Assurance/ Quality Control
SOPs	Standard operating procedures

APPENDIX B: DOCUMENTS REVIEWED OF REFERENCED

NO	Author	Title	References to the document	Provider
1	Guangzhou Guangtan Carbon Emission Development & Investment Co., Ltd	Project description	Project description for" Clean-Hubei Yunyang IFM (conversion of logged to protected forest) Project"(Version 4.0) dated 20/1/2022	PP
2	Guangzhou Guangtan Carbon Emission Development & Investment Co., Ltd	Project description	/ Project description for" Track-Hubei Yunyang IFM (conversion of logged to protected forest) Project"(Version 2.0) dated 06/08/2022	PP
2	VERRA	VCS Program Guide, version 4.2	https://verra.org/project/vcs-program/rules-and-requirements/	VERRA websites
3	VERRA	VCS standard version 4.3	https://verra.org/project/vcs-program/rules-and-requirements/	VERRA websites
4	VERRA	VCS Program Definitions, version 4.2	https://verra.org/project/vcs-program/rules-and-requirements/	VERRA websites
5	VERRA	AFOLU Non-Permanence Risk Tool, version 4.0	https://verra.org/project/vcs-program/rules-and-requirements/	VERRA websites
6	VERRA	VCS Methodology VM0010	VM0010 Version1.3: Methodology for Improved Forest Management: Conversion from Logged to Protected Forest	VERRA websites
7	UNFCCC	CDM Tool	CDM Tool for Calculation of the Number of Sample Plots for Measurements within A/R CDM Project Activities (Version 02.1.0)	CDM websites
8	VERRA	Methodological tool	VT0001 Tool for the Demonstration and Assessment	VERRA websites

NO	Author	Title	References to the document	Provider
			of Additionality in VCS Agriculture, Forestry and Other Land Use (AFOLU) Project Activities, v3.0	
8	VERRA	VCS Tool for “AFOLU Non-Permanence Risk Analysis”, v4.0	https://verra.org/project/vcs-program/rules-and-requirements/	VERRA websites
9	VERRA	VCS Validation Verification Manual, v3.2	https://verra.org/project/vcs-program/rules-and-requirements/	VERRA websites
10	Local Administration for Industry and Commerce	Business License	Business License of Huanjiang Maonan Autonomous County Huashan Forestry Investment Co., Ltd	PP
11	Guangzhou Guangtan Carbon Emission Development & Investment Co., Ltd	Monitoring Report	Guangxi Huanjiang IFM (conversion of logged to protected forest) Project Monitoring Report (version02, dated 13-Jul-2022); Guangxi Huanjiang IFM (conversion of logged to protected forest) Project Monitoring Report (version03, dated 27-Sep-2022);	PP
12	Guangzhou Guangtan Carbon Emission Development & Investment Co., Ltd. and Huanjiang Maonan Autonomous County Huashan Forestry Investment Co., Ltd	Consultant Agreement	Consultant Agreement signed Guangzhou Guangtan Carbon Emission Development & Investment Co., Ltd. and Huanjiang Maonan Autonomous County Huashan Forestry Investment Co., Ltd dated in April 2019	PP
13	National Forest Bureau and Government of Guangxi Zhuang	Certificate of Forest Right	Certificate of Forest Right issued by National Forest Bureau and Government of Guangxi Zhuang Autonomous Region	PP

NO	Author	Title	References to the document	Provider
	Autonomous Region			
14	Local forest bureau	Pest-free statement	The pest-free statement of Huanjiang Maonan Autonomous County IFM project (conversion of logged to protected forest)	Huanjiang Maonan Autonomous County Forest Bureau
15	Forest stations, local farmers, village collective, Huanjiang Maonan Autonomous County Huashan Forestry Investment Co., Ltd. and Guangzhou Guangtan Carbon Emission Development & Investment Co., Ltd.	Development Cooperation Agreement	Carbon reduction project Development Cooperation Agreement signed among the forest stations, local farmers, village collective, Huanjiang Maonan Autonomous County Huashan Forestry Investment Co., Ltd. and Guangzhou Guangtan Carbon Emission Development & Investment Co., Ltd.	PP
16	Huanjiang Maonan Autonomous County Huashan Forestry Investment Co., Ltd	Declaration of non-participation	Declaration of non-participation in any emission trading or other binding limit program or mechanism and no desire to or receiving of another form of GHG-related environmental credit, including renewable energy certificates dated on 23-October-2020	PP
17	State Council of China	Forest Harvest Limit	13th Five-year Forest Harvest Limit issued by State Council	Public Website
18	National Forest Bureau	Forest Logging Operation Regulation	Forest Logging Operation Regulations (LY/T1646-2005)	Public website
19	PP	Forest Management Manual	Forest Management Manual for risk control and forest management	PP
20	Guangxi Zhuang	Forest Resources Planning and Design	Guangxi Zhuang Autonomous Region Forestry Survey and	PP

NO	Author	Title	References to the document	Provider
	Autonomous Region Forestry Survey and Design Institute and Maonan Autonomous County Forestry Bureau	Survey Report	Design Institute	
21	Forest Bureau of Huanjiang Maonan Autonomous County	Forest second class investigation data and tables	Forest second class investigation data and tables issued by Forest Bureau of Huanjiang Maonan Autonomous County	PP
22	Forestry Investigation, Planning and Design Team of Huanjiang Maonan Autonomous County	Forest volume inventory	Forest volume inventory issued by Forestry Investigation, Planning and Design Team of Huanjiang Maonan Autonomous County	PP
23	General Office of the State Council	Guideline of compensation	Guideline of the General Office of the State Council on improving the compensation mechanism for ecological protection funds	PP
24	Google	Google Earth Map	Google Earth Map	Public software
25	Forestry Investigation, Planning and Design Team of Huanjiang Maonan Autonomous County	Timber harvest plan	Timber harvest plan issued by Forestry Investigation, Planning and Design Team of Huanjiang Maonan Autonomous County dated in February 2015	PP
26	IPCC	IPCC	IPCC 2006 Inventory Guidelines	Public website
27	Guangxi Academy of Forestry Sciences and Guangzhou	Map of project area	Map with the boundaries of all the plots for identifying the project location and boundaries of the project in KML file	PP

NO	Author	Title	References to the document	Provider
	Guangtan Carbon Emission Development & Investment Co., Ltd.			
28	Guangxi Province Government	List of annual forest cutting quotas	List of annual forest cutting quotas in Guangxi Zhuang Autonomous Region during the 13th Five-Year Plan Period http://lyj.gxzf.gov.cn/zfxxgkzl/fdzdgknr/gggs/W020200317623579770434.xls	Website
29	Project Owner	Labor Contract	Labor Contract of project staffs and person for forest management	PP
30	National Government	Environmental Impact Assessment Law	Environmental Impact Assessment Law of the People's Republic of China	Public website
31	Forest bureau of Huanjiang Maonan Autonomous County	Legal right to harvest	Legal right to harvest issued by Forest bureau of Huanjiang Maonan Autonomous County dated 12-March-2015	PP
32	PP	local stakeholder consultation record	50 filled questionnaires during the local stakeholder consultation process	PP
33	National Government	Land Use Change and Forestry GHG Inventory	"Land Use Change and Forestry GHG Inventory (2013)" of "Second National Information Notification on China Climate Change"	Public website
34	Guangxi People Government	Measures	Measures for the Implementation of the Forest Law of the People's Republic of China in Guangxi Zhuang Autonomous Region http://www.glrld.gov.cn/flfg/gx/201606/t20160602_577949.htm	Public website
35	PP	Monitoring Manual	Monitoring Manual	PP
36	National Forestry Bureau	National Regulation	National Forest Resource Continuous Investigation Technical Regulation	Public Website

NO	Author	Title	References to the document	Provider
37	Huanjiang Maonan Autonomous County Forestry Bureau	Notice of IFM project	Notice of Guangxi Huanjiang IFM (Conversion of Logged to Protected Forest) Project issued by Huanjiang Maonan Autonomous County Forestry Bureau on 28-December-2015	PP
38	Guangzhou Guangtan Carbon Emission Development & Investment Co., Ltd.	Non-performance risk report	Non-Permanence-Risk-Report version 02, dated 13-Jul-2022	PP
39	CTI	On-site photo taken by verification team	On-site photo taken by verification team including trees, project location etc.	CTI
40	PP	Participatory Rural Appraisal	Participatory Rural Appraisal (PRA) report of Huanjiang Maonan Autonomous County in 2016, 2018	PP
41	PP	Planned timber harvesting schedule	Planned timber harvesting schedule	PP
42	Local forest bureau	Fire-free statement	The fire-free statement of Huanjiang Maonan Autonomous County IFM project (conversion of logged to protected forest)	Huanjiang Maonan Autonomous County Forest Bureau
43	UNFCCC	Methodological tool	Estimation of carbon stocks and change in carbon stocks of trees and shrubs in AR CDM project activities, version4.2	CDM Website
44	Project Owner	Technical Training Record	Technical Training Record, carbon sink training record held by PP and local Forestry Bureau in project area in year 2019 and 2020	PP
45	Guangzhou Guangtan Carbon Emission Development & Investment Co., Ltd.	Net anthropogenic GHG removals by sinks calculation spreadsheets	ER Calculation sheets of "Guangxi Huanjiang IFM Project" (Version.02, dated 30-Jun-2022); ER Calculation sheets of "Guangxi Huanjiang IFM Project" (Version.03, dated 28-Sep-2022)	PP

NO	Author	Title	References to the document	Provider
46	PRC Government	Administrative regulations related to forestry	<Regulations for Implementing the Forest Law>, the <Regulations for Grain for Green>, the <Regulations for the Protection of Wild Plants and Animals>, the <Regulation for Nature Reserve>, the <Regulation for Forest Fire Control>, and the <Regulation for Forest Diseases and Pests Control>	National public website
47	IPCC	IPCC publications	www.ipcc-nggip.iges.or.jp	Website
48	UNFCCC	UNFCCC	https://unfccc.int/	Website
49	VCS	VCS	https://verra.org/	Website
50	IPCC	IPCC	Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories	Website
51	PP	Distribution diagram of ecological public-welfare forests	Distribution diagram of ecological public-welfare forests	PP
52	PP	Agreement	Cooperation Agreements among Huanjiang Maonan Autonomous County Huashan Forestry Investment Co., Ltd and Forest owners	PP

APPENDIX C: COMPETENCE OF TEAM AND TECHNICAL REVIEWS

Mr. Wenjun DU

Satisfies the requirements of competence management system of CTI Certification, and is hereby appointed as:

Qualification						
Status	GHG Auditor	Validator	Verifier	Team Leader	Technical Reviewer	Technical Expert
Date	√	√	√	√	-	√

Scope	Technical Area
SS 1: Energy industries (renewable/non-renewable sources)	TA 1.2: Energy generation from renewable energy sources
SS 13: Waste handling and disposal	TA 13.1: Solid waste and wastewater
	TA 13.2: Manure

This appointment is valid for 3 years from its date of approval below and is bound by internal requirements of management system of the Certification Body of CTI.

Approved by:

Wu Lin
Wu LIN

Technical Competent Manager

Shenzhen, 01/01/2021

Mr. Shun YAN

Satisfies the requirements of competence management system of CTI Certification, and is hereby appointed as:

Qualification						
Status	GHG Auditor	Validator	Verifier	Team Leader	Technical Reviewer	Technical Expert
Date	-	-	-	-	-	√

Scope	Technical Area
SS 14: Afforestation and reforestation	TA 14.1: Afforestation and reforestation

This appointment is valid for 3 years from its date of approval below and is bound by internal requirements of management system of the Certification Body of CTI.

Approved by:

Wu Lin

Wu LIN

Technical Competent Manager

Shenzhen, 01/01/2021

Mr. Hanxing Yi

Satisfies the requirements of competence management system of CTI Certification, and is hereby appointed as:

Qualification						
Status	GHG Auditor	Validator	Verifier	Team Leader	Technical Reviewer	Technical Expert
Date	√	-	-	-	-	-

Scope	Technical Area
SS 1: Energy industries (renewable/non-renewable sources)	TA 1.2: Energy generation from renewable energy sources
SS 13: Waste handling and disposal	TA 13.1: Solid waste and wastewater
	TA 13.2: Manure

This appointment is valid for 3 years from its date of approval below and is bound by internal requirements of management system of the Certification Body of CTI.

Approved by:

Wu Lin

Wu LIN

Technical Competent Manager

Shenzhen, 01/07/2022

Mr. Wu Lin

Satisfies the requirements of competence management system of CTI Certification, and is hereby appointed as:

Qualification						
Status	GHG Auditor	Validator	Verifier	Team Leader	Technical Reviewer	Technical Expert
Date	√	√	√	√	√	√

Scope	Technical Area
SS 1: Energy industries (renewable/non-renewable sources)	TA 1.1: Thermal energy generation
	TA 1.2: Energy generation from renewable energy sources
SS 2: Energy distribution	TA 2.1: Electricity distribution
SS 3: Energy demand	TA 3.1: Energy demand
SS 4: Manufacturing industries	TA 4.1: Cement and lime production
SS 5: Chemical industry	TA 5.1: Chemical industry
	TA 5.2: Caprolactam, nitric and adipic acid
SS 10: Fugitive emissions from fuels (solid, oil and gas)	TA 10.1: Fugitive emissions from oil and gas
SS 11: Fugitive emissions from production and consumption of halocarbons and sulphur hexafluoride	TA 11.1: Emissions of fluorinated gases
	TA 11.2: Refrigerant gas production
SS 12: Solvents use	SS 12: Solvents use
SS 13: Waste handling and disposal	TA 13.1: Solid waste and wastewater
	TA 13.2: Manure

This appointment

is valid for 3 years from its date of approval below and is bound by internal requirements of management system of the Certification Body of CTI.

Approved by: 

Lu Zhou

Technical Competent Manager

Shenzhen, 01/01/2021

Ms. Shunrong LIN

Satisfies the requirements of competence management system of CTI Certification, and is hereby appointed as:

Qualification						
Status	GHG Auditor	Validator	Verifier	Team Leader	Technical Reviewer	Technical Expert
Date	√	√	√	√	√	√

Scope	Technical Area
SS 1: Energy industries (renewable/non-renewable sources)	TA 1.2: Energy generation from renewable energy sources
SS 14: Afforestation and reforestation	TA 14.1: Afforestation and reforestation
SS 15: Agriculture	TA 15.1: Agriculture

This appointment is valid for 3 years from its date of approval below and is bound by internal requirements of management system of the Certification Body of CTI.

Approved by:

Wu Lin

Wu LIN

Technical Competent Manager

Shenzhen, 01/01/2021

APPENDIX D: CLARIFICATION REQUESTS, CORRECTIVE ACTION REQUESTS AND FORWARD ACTION REQUESTS (CAR/CL/FAR)

CAR ID	01	Section no.	4.1	Date: 14/9/2022
Description of CAR				
The parameter RGR _i in MR is not matched with ER calculation sheet.				
Project proponent response				Date: 28/9/2022
The regrowth rate in baseline scenario in the ER calculation sheet is equal to the RGR _i divided by the BCEF _R . The value of the RGR _i is 1.50 in MR, which is sourced from Table 4.9 of IPCC Guidelines for National Greenhouse Gas Inventories (2006). The parameter RGR _i in MR is matched with ER calculation sheet.				
Documentation provided by project proponent				
DOE assessment				Date: 28/9/2022
The revised ER calculation sheet is checked, the parameter RGR _i in MR is matched with ER calculation sheet. The finding is closed.				

CAR ID	02	Section no.	5.3	Date: 8/9/2022
Description of CAR				
Average GHG _{LK,LtPF,t} in the ER calculation sheet in monitoring period is incorrect because it uses the whole project crediting period(20yr) rather than monitoring period(4.5yr), revision is request.				
Project proponent response				Date: 28/9/2022
The mistake has been corrected. Please check the ER calculation sheet.				
Documentation provided by project proponent				
ER Calculation sheets of “Guangxi Huanjiang IFM Project” (Version.03, dated 28-Sep-2022)				
DOE assessment				Date: 28/9/2022

The revised ER calculation sheet is checked, average $GHG_{LK,LIPF,t}$ in the ER calculation sheet in monitoring period is correct. The finding is closed.

CAR ID	03	Section no.	5.4	Date: 11/9/2022
Description of CAR				
The uncertainty of carbon stock and volume about three species (broad-leaved tree, Chinese fir and Pinus massoniana) for 2020 in MR are different with ER calculation sheet, and the data in ER calculation sheet is applied in final calculation.				
Project proponent response				Date: 28/9/2022
The mistake has been corrected. Please check the MR V03.				
Documentation provided by project proponent				
Guangxi Huanjiang IFM (conversion of logged to protected forest) Project Monitoring Report (version03, dated 27-Sep-2022)				
DOE assessment				Date: 28/9/2022
The revised MR is checked and error has been corrected. The finding is closed.				

CL ID	01	Section no.	4.1	Date: 14/9/2022
Description of CL				
The $f_j(X,Y...)$ equation is used in ER calculation sheet but it does not illustrate the source and specific equation in MR. Request for supplementary materials.				
Project proponent response				Date: 28/9/2022
The equations have been added in the MR.				
Documentation provided by project proponent				
Guangxi Huanjiang IFM (conversion of logged to protected forest) Project Monitoring Report (version03, dated 27-Sep-2022)				
DOE assessment				Date: 28/9/2022
The revised MR is checked, and MR dedicates the allometric equation is from Forest Resources Planning and Design Survey Report made by Guangxi Zhuang Autonomous Region Forestry Survey and Design Institute. The finding is closed.				

CL ID	02	Section no.	5.2	Date: 8/9/2022
Description of CL				
The ER calculation sheet presents ongoing Regrowth rate in project scenario, which are from pre-existing local forest data. It needs to provide specific evidences to verify sources of those data.				
Project proponent response				Date: 28/9/2022
The ongoing growth rate in the ER calculation sheet was calculated by the data of the Forest Resources Planning and Design Survey Report made by Guangxi Zhuang Autonomous Region Forestry Survey and Design Institute. And the local forestry bureau has confirmed it by the statement.				
Documentation provided by project proponent				
Forest Resources Planning and Design Survey Report				
DOE assessment				Date: 28/9/2022
The related survey report is checked, it is confirmed ongoing growth rate is presented in survey report. The finding is closed.				

CL ID	03	Section no.	5.4	Date: 9/9/2022
Description of CL				
About uncertainty of BCEF-Broad-leaved tree in the ER calculation sheet, the wood density of species is chosen as soft broad, whereas the BEF of species is chosen as broad-leaves mix. Thus, it needs to explain why the same species were not chosen.				
Project proponent response				Date: 28/9/2022
Due to the parameter about calculation of uncertainty of BEF and D_j is sourced from the People's Republic of China National Greenhouse Gas Inventory. There is no sample mean and standard deviation of D_j of broad-leaves mix in the Inventory. According to the remark of the Inventory, the parameter of broad-leaved mix is taken as the average of all broad-leaved trees. According to conservative principles, the parameter of soft broad was chosen to calculate the uncertainty of D_j .				
Documentation provided by project proponent				
DOE assessment				Date: 28/9/2022
According to "Land Use Change and Forestry GHG Inventory (2013)" of "Second National Information Notification on China Climate Change", it is confirmed there is no sample mean and standard deviation of D_j of broad-leaves mix. Thus, it is appropriate to choose parameter of soft broad to calculate the uncertainty of D_j . The finding is closed.				

