



VERIFICATION REPORT OF GUANGXI JINXIU IFM (CONVERSION OF LOGGED TO PROTECTED FOREST) PROJECT



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Summary:

China Environmental United Certification Center Co., Ltd (hereafter refers to ‘CEC’) has conducted the verification of GUANGXI JINXIU IFM (conversion of logged to protected forest) Project, owned by Jinxiu Yao Autonomous County Zhengtong Asset Management Co., Ltd. and Guangzhou Guotan Assets Management Co., Ltd (hereafter referred to as “the PP”), which is located in Jinxiu Yao Autonomous County, Laibin City, Guangxi Zhuang Autonomous Region, P.R.C.,and applying the VCS methodology VM0010 version 1.3, on the basis of VCS Standard version 4.3, as well as criteria given to provide for consistent project operations, monitoring and reporting.

The verification scope is defined as an independent and objective review and ex-post determination of the monitored GHG emission reductions, and consisted of the following three phases:

- desk review of the project design, the baseline and monitoring plan;
- follow-up interviews with project stakeholders;
- resolution of outstanding issues and the issuance of the final verification report and opinion.

The overall verification, from Contract Review to Verification Report & Opinion, was conducted using CEC internal procedures.

The first output of the verification process is 0 Corrective Actions Request (CAR) and 1 Clarification (CL). Project Participant took corrections and revised the project design document. The CAR and CL was successfully closed.

In summary, CEC confirms that the project is implemented as planned and described in the validated VCS project description. The forestry management conversion includes 6,572.13 ha commercial forest from logged to protected. The monitoring system is in place and reduces the GHG emissions as anthropogenic GHG removals by sinks. The GHG emission removals by sinks verified totalize 496,532tCO₂e for the monitoring period.

Our opinion relates to the projects' GHG emissions and resulting GHG emission reductions reported and related to the valid project baseline, monitoring plan and its associated documents.

Our opinion relates to the projects' actual net GHG removals by sinks and resulting net anthropogenic GHG removals by sinks is reported and related to the valid and registered project baseline, monitoring plan and its associated documents.

Reporting period	01/03/2016-31/08/2020
Baseline net GHG removals by sinks	547,958 tCO ₂ e
Actual net GHG removals by sinks	-198,216 tCO ₂ e
GHG emissions due to leakage	109,591 tCO ₂ e
Total number of credits withheld in VCS buffer account	636,582 tCO ₂ e
Net anthropogenic GHG removals by sinks	496,532tCO ₂ e

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1 INTRODUCTION

1.1 Objective

Guangzhou Guotan Assets Management Co., Ltd. has commissioned China Environmental United Certification Center Co., Ltd (CEC) to verify the emission removals of GUANGXI JINXIU IFM (conversion of logged to protected forest) Project (hereafter referred to as “the Project”) owned by Jinxiu Yao Autonomous County Zhengtong Asset Management Co., Ltd. and Guangzhou Guotan Assets Management Co., Ltd (hereafter referred to as “the PP”), which is located in Jinxiu Yao Autonomous County, Laibin City, Guangxi Zhuang Autonomous Region, P.R.C. for the period from 01/03/2016-31/08/2020. Jinxiu Yao Autonomous County Zhengtong Asset Management Co., Ltd. commissioned Guangzhou Guotan Assets Management Co., Ltd. to apply the emission reductions from their IFM project activity using VCS standard.

CEC as the validation/verification body (VVB) of the Project has been accredited as a DOE by UNFCCC and also meets the competence requirements as set out in ISO 14065:2007.

The objective of verification is to verify the reported emission removals generated by the Project for the period from 01/03/2016-31/08/2020 and to confirm that actual monitoring systems and procedures are in compliance with that described in the monitoring plan and the additional requirements stated by the VCS Association (VCSA).

1.2 Scope and Criteria

The verification scope is defined as an independent and objective review of the 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 requirements, UNFCCC rules and associated interpretations.

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

The verification is carried out on the basis of the following requirements, applicable for this project activity:

- VCS Program Guide, version 4.2, dated 22/06/2022
- VCS Standard version 4.3, dated 22/06/2022

- Registration & Issuance Process, version 4.0, dated 19/09/2019
- VCS Validation and Verification Manual, version 3.2, dated 19/10/2016
- VM0010 "Methodology for Improved Forest Management: Conversion of Logged to Protected Forest" version 1.3, dated 28/04/2016
- Other rules and requirements.

1.3 Level of Assurance

CEC has undertaken a reasonable assurance engagement in accordance with VCS requirements. 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, VCS-MR, 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 Project is located in Jinxiu Yao Autonomous County, Laibin City, Guangxi Zhuang Autonomous Region, P.R.C.. The annual estimated emission removals are 141,462 tCO_{2e}.

The Project involves 6,572.13 ha logged to Protected Forest (LtPF) project which belongs to the improvement forestry management (IMF). It applies methodology VM0010 version 1.3 "Methodology for Improved Forest Management: Conversion of Logged to Protected Forest". The protected species are Chinese Fir, *Pinus massoniana* and Broad-Leaved tree.

The Project Start Date is 01/03/2016, which is indicated in the notice of Guangxi Jinxiu IFM (Conversion of Logged to Protected Forest) Project issued by Jinxiu Yao Autonomous County Forestry Bureau on 20/01/2016.

2 VERIFICATION PROCESS

2.1 Method and Criteria

The overall verification, from Contract Review to Verification Report & Opinion, was conducted using CEC internal procedures.

CEC verified the project against the VCS requirements:

- VCS Program Guide, version 4.2, dated 22/06/2022

- VCS Standard version 4.3, dated 22/06/2022
- Agriculture, Forestry and Other Land Use (AFOLU) Requirements Version 3.6
- Registration & Issuance Process, version 4.0, dated 19/09/2019
- VCS Validation and Verification Manual, version 3.2, dated 19/10/2016
- VM0010 "Methodology for Improved Forest Management: Conversion of Logged to Protected Forest" version 1.3, dated 28/04/2016
- Other rules and requirements.

In addition, CEC has developed Procedure for Verification/Certification Management to standardize the audit process. According to the Procedure, the requirements of validation include the selection of validation team, validation task arrangement, monitoring report publication, document review, on-site inspection, technical review, final decision and approval etc..

Based on CDM Guideline for Sampling and Surveys for CDM Project Activities and Programme of Activities (Ver 9.0), simple random sample was applied by CEC. At least 10% of the subcompartments in Timber Harvest Plan and ER Calculation Spreadsheet had been randomly sampled to check against the Forest second class investigation data by Laibin City Forestry Survey and Design Institute. At least 10% of the sample plots were randomly selected for on-site inspection.

2.2 Document Review

The assessment of the project documentation provided by the project participant is based upon both quantitative and qualitative information on emission reductions. Quantitative information comprises the reported numbers in the VCS monitoring report (MR) version 05 and emission reduction calculation spreadsheet. Qualitative information comprises information on internal management controls, calculation procedures, procedures for transfer of data, frequency of emissions reports, and review and internal audit of calculations.

In addition to the monitoring documentation provided by the project proponents, the VVB reviews:

- (a) The VCS-PD and the monitoring plan;
- (b) The validation report
- (c) The applied monitoring methodology;
- (d) Other information and references relevant to the project activity's resulting emission reductions (e.g. IPCC reports, 3rd party measurement reports or national regulations).

2.3 Interviews

On 21/10/2020 - 21/10/2020, the verification team performed a site visit and interviews with project stakeholders to confirm selected information and to resolve issues identified in the document review. Representatives of Jinxiu Yao Autonomous County Forestry Bureau, Jinxiu Yao Autonomous County Zhengtong Asset Management Co., Ltd. and Guangzhou Guotan Assets Management Co., Ltd. were interviewed (see References). The main topics of the interviews are listed as below.

<i>Interview topics</i>	<i>Organization</i>	<i>Name</i>
- Project background information. - Project technology, operation and maintenance. - Project approval and right of use - Project implementation status. - Project management and monitoring plan. - Stakeholder consultation process	Jinxiu Yao Autonomous County Forestry Bureau	HUANG Jingui LUO Jufeng
	Jinxiu Yao Autonomous County Zhengtong Asset Management Co., Ltd	WANG Yujie LIN Xiaohong ZHAO Xiangli
	Local villagers	TAN Mingming LIAO Xuefeng
	Guangzhou Guotan Asset Management Co., Ltd	LIU Xingyi GAO Deming FU Zhihao

2.4 Site Inspections

On 20/10/2020-21/10/2020 the verification team performed the site inspection with the project proponent of the project activity. During this site inspection interviews with the representatives of the project owner, the consultant and project stakeholders were carried out to confirm selected information and to resolve issues identified in the document review.

2.5 Resolution of Findings

The objective of this phase of the verification is to resolve issues related to the monitoring, implementation and operations of the registered project activity that could impair the capacity of the project activity to achieve emission removals or influence the monitoring and reporting of emission removals prior to CEC's positive conclusion on the GHG emission removals calculation.

Findings established during the verification can either be seen as a non-fulfilment of criteria ensuring the proper implementation of a project or where a risk to deliver high quality emission reductions is identified.

A Corrective Action Request (CAR) is raised, if one of the following situations occurs:

- (a) Non-compliance with the monitoring plan or methodology are found in monitoring and reporting and has not been sufficiently documented by the project participants, or if the evidence provided to prove conformity is insufficient;
- (b) Modifications to the implementation, operation and monitoring of the registered project activity has not been sufficiently documented by the project participants;
- (c) Mistakes have been made in applying assumptions, data or calculations of emission reductions that will impact the quantity of emission reductions;
- (d) Issues identified in a FAR during validation to be verified during verification or previous verification(s) have not been resolved by the project participants.

A Clarification Request (CL) is raised, if information is insufficient or not clear enough to determine whether the applicable VCS requirements have been met.

A Forward Action Request (FAR) is raised, for actions if the monitoring and reporting require attention and/or adjustment for the next verification period.

To guarantee the transparency of the verification process, the concerns raised are documented in more detail in Appendix A.

0 CAR and 1 CL have been raised during the verification, presented in Appendix A. Taking into account this output, the Project participant took corrections and revised its Monitoring Report (VR). All CARs and CLs are successfully closed.

No FAR and no other findings raised during the validation.

2.5.1 Forward Action Requests

No Forward Action Request is raised during this monitoring period.

2.6 Eligibility for Validation Activities

Not applicable, CEC as the validation/verification body (VVB) of the Project has been accredited as a DOE by UNFCCC and also meets the competence requirements as set out in ISO 14065:2007.

3 VALIDATION FINDINGS

3.1 Participation under Other GHG Programs

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

3.2 Methodology Deviations

Not applicable, no deviation from methodology.

3.3 Project Description Deviations

Not applicable, no deviation from project description in the VCS PD version 07 dated 24/05/2022.

3.4 Grouped Project

Not applicable, the project is not a grouped project.

4 VERIFICATION FINDINGS

4.1 Project Implementation Status

CEC has performed a site visit and found that the Project has been implemented since 01/03/2016. The verification team checked VCS development consultation and service agreement signed among Jinxiu Yao Autonomous County Zhengtong Asset Management Co., Ltd., Guangzhou Guotan Assets Management Co., Ltd. and forest owners. The project is implemented by Jinxiu Yao Autonomous County Zhengtong Asset Management Co., Ltd.. The forest ownership and legal right of the project belongs to local villagers, village collectives and state-owned forest farms. Jinxiu Yao Autonomous County Zhengtong Asset Management Co., Ltd. and the forest owners commissioned Guangzhou Guotan Assets Management Co., Ltd. to apply the emission reductions from their IFM project activity using VCS standard. The project start date is 01/03/2016, which is indicated in the notice of Guangxi Jinxiu IFM (Conversion of Logged to Protected Forest) Project issued by Jinxiu Yao Autonomous County Forestry Bureau on 20/01/2016. It is indicated that from 01/03/2016 the commercial timber harvest was strictly forbidden in the project area. On the basis of this site visit and the reviewed project description it can be confirmed that, the improved forestry management, such as conversion of logged to

protection forest (Protected species are: Chinese Fir, *Pinus massoniana* and Broad-Leaved tree) are implemented.

The forestry management conversion includes 6,572.13 ha logged to Protected Forest (LtPF), in 249 subcompartments spreading over Jinxiu Forest Farm, Jinxiu Town, Toupai Town, Dazhang Township, Liuxiang Township, Luoxiang Township, Sanjiang Township, Sanjiao Township, Changdong Township, Zhongliang Township of Jinxiu Yao Autonomous County. The 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 and monitoring plan.

CEC has onsite checked the boundary of the Project and confirmed they are consistent with those stated in the VCS PD. Through checking Guangxi Jinxiu VCS Project Monitoring Report issued by Guangzhou Guotan Assets Management Co., Ltd. on 02/02/2023, and the on-site visit and interviewing local people, CEC confirmed that the project will promote local sustainable developments. Major contributions of the project are as follows:

- 1) The implementation of the project will control soil and water erosion and land degradation in the project areas;
- 2) The implementation of the project will enhance biodiversity conservation by increasing forest cover and nature habitat connectivity;
- 3) The implementation of the project will absorb and fix carbon dioxide every year by conversion of logged to protected forest, and reduce GHG emission.
- 4) The implementation of the project will generate income for the local farmers by regular forest management. Local people's standard of living has been developed.

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.

4.2 Safeguards

4.2.1 No Net Harm

There is no potential negative environmental or socio-economic impact due to the project.

4.2.2 Local Stakeholder Consultation

CEC checked the PRA report and the minutes of the meeting on Oct 2015, Nov 2017, Oct 2019 and confirmed that PP has conduct a PRA every 2 years. The first PRA of the project was implemented from 15-Oct-2015 to 31-Oct-2015. The results showed that: The project activity could well reflect the livelihood development needs of local stakeholders, and would contribute not only to climate change mitigation, but also to community economic development and environmental protection.

The second PRA of the project was implemented from 3-Nov-2017 to 10-Nov-2017. There were

some suggestions from the stakeholders such as: more technical and operational training is needed to give communities and farmers a comprehensive understanding of carbon sinks, whether the project development process could be simplified, etc. Furthermore, CEC checked the meeting attendance record of the relevant technical training, and confirmed that PP has cooperated with the local garden management unit to conduct relevant technical training for the local forestry workers in October, 2017, and provided the contact phone number. For other problems encountered in the forest patrol process, the local forestry workers could communicate directly by telephone or face to face with the local garden management unit.

The third PRA of the project was implemented from 8-Oct-2019 to 23-Oct-2019. The education level of local community residents is not high. Few of them have graduated from university. When the project will be approved and when the project will be profitable is the most important inquiries for the stakeholders. During the PRA meeting, PP and Guangzhou Guotan Asset Management Co., LTD., the technical consultant, explained the project application process in more detail to the stakeholders.

4.3 AFOLU-Specific Safeguards

1. Local stakeholder identification process and a description of results.

The local stakeholders mainly include the local households live near by the project and the local government. Before start construction, project owner had distributed questionnaires for local stakeholder to investigate the suggestion of them on the construction of the project, including the impact on society, economy and life. 50 investigation questionnaires have been returned, of which, 42% are women, 63% are graduated from high school or inferior school, 100% are elder than twenty years old.

2. Risks to local stakeholders due to project implementation and how the project will mitigate such risks

There is no risk to local stakeholders due to the project implementation.

3. Risks to local stakeholder resources due to project implementation and how the project will mitigate such risks, including the plans to ensure the project will not impact local stakeholder's property rights without the free, prior and informed consent.

Prior to the implementation of the project, the project proponent and local forestry Bureau held a mobilization meeting about the project activities. The local forestry bureau informed the representatives of each stakeholder to participate the meeting through the forestry stations of each township. The project proponent presented: what the project activity was, the benefit of the local stakeholders, the risks, costs and benefits the project might bring to local stakeholders, the relevant laws and regulations, the rights of workers, the process of VCS Program validation and

verification and the validation/verification body's site visit, etc in the meeting. When the project implement, the local stakeholders could not get timber harvest. But according the agreements signed by the PP and the local stakeholders, the PP would apply the project to VCS project. Then the local stakeholders could live for selling VCU's instead of selling timber harvest. Meanwhile, local forestry bureau would provide more jobs opportunities for the local stakeholders to manage and protect the forest, so as to ensure that the income of stakeholders was increased. So the project will not impact local stakeholder's property rights without the free, prior and informed consent. All the local stakeholders were excited and indicated that they would support the project activity. According to the agreements between PP and the stakeholders, as the supervising party, the local Forestry Bureau must ensure the authenticity of the relevant information submitted by PP and the stakeholders, ensure the effective implementation of the project, and ensure that the proceeds from the project are distributed to PP and the stakeholders.

4.4 Accuracy of GHG Emission Reduction and Removal Calculations

Monitoring has been carried out in accordance with the monitoring plan contained in the VCS PD.

Monitoring parameters

The parameters required by the monitoring plan and how CEC 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:

1) Illegal Logging PRA Results;

The value is zero. Local forest authority has taken comprehensive forest protection measures to prevent the illegal logging, fire and other disease & insect pest. The measures include strengthening routine patrol, publicity and education. CEC has checked the documents provided by the Jinxiu Yao Autonomous Forestry Bureau and confirmed there is no illegal logging happened during the period from 01/03/2016-31/08/2020. Hence, the value applied is consistent with the methodology.

2) Result of Limited Illegal Logging Survey;

The value is zero. Local forest authority has taken comprehensive forest protection measures to prevent the illegal logging, fire and other disease & insect pest. The measures include strengthening routine patrol, publicity and education.

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. CEC has checked the documents provided by the Jinxiu Yao Autonomous Forestry Bureau and confirmed there is no fire happened during the period from 01/03/2016-31/08/2020. Hence, the value applied is consistent with the methodology.

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. CEC has checked the documents provided by the Jinxiu Yao Autonomous Forestry Bureau and confirmed there is no forest disturbance happened during the period from 01/03/2016-31/08/2020. Hence, the value applied is consistent with the methodology.

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. By on-site interview checking the documents provided by the Jinxiu Yao Autonomous Forestry Bureau, CEC confirmed that 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 was recorded during this monitoring period.

7) A_{PI} : Total area of illegal logging sample plots in stratum i

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

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

N/A, no merchantable volume of timber in the forest during this monitoring period.

9) A_i : Area covered by stratum i

The value is from the forest second class investigation issued by Laibin City Forestry Survey and Design Institute (Certificate No.: YI 20-002), and is ex-ante in the validation. During this monitoring period, according to the Guangxi Jinxiu VCS Project Monitoring Report issued by Shenzhen Huannong Garden Co., Ltd. (Certificate No.: LDG Bing 2020-072, valid from 19/05/2020 to 19/05/2023), area covered by stratum i is as follows, there is no change compared to the value ex-ante in the validation

I.D	Stratum	Species	Area (ha)
1	Strata-1	Broad-Leaved tree	4,143.40
2	Strata-2	Chinese Fir	1,843.43

3	Strata-3	Pinus massoniana	585.30
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10) DBH: Diameter at breast height of tree

The value is from the Sample plot monitoring records and Guangxi Jinxiu VCS Project Monitoring Report issued by Shenzhen Huannong Garden Co., Ltd. (Certificate No.: LDG Bing 2020-072, valid from 19/05/2020 to 19/05/2023). According to the PD and monitoring plan, the sample plots number is listed in the following:

STRATA NO	Stratum Name	Number of Plots	
		Plot Quantity	Rounded Plot Quantity
Total Sample Size			
Strata 1	Broad-Leaved tree	15.3	16
Strata 2	Chinese Fir	4.3	5
Strata 3	Pinus massoniana	1.4	3
TOTAL NUMBER OF PLOTS			24

According to monitoring the DBH in the sample plot, the volume of every sample plot is calculated by Guangzhou Guotan Assets Management Co., Ltd. as follows:

Serial No.	Species	department	Volume of sample plot (m ³) A	Volume of per unit (m ³ /ha) B=A*15
1	Broad-leaved tree	Dazhang	2.87	71.80
2	Broad-leaved tree	Dazhang	8.17	204.23
3	Broad-leaved tree	Dazhang	3.01	75.35
4	Broad-leaved tree	Jinxiu Forest Farm	4.90	122.59
5	Broad-leaved tree	Jinxiu Forest Farm	6.77	169.19
6	Broad-leaved tree	Jinxiu	7.29	182.16
7	Broad-leaved tree	Jinxiu	3.26	81.38
8	Broad-leaved tree	Luoxiang	2.63	65.66
14	Broad-leaved tree	Sanjiang	3.01	75.20
15	Broad-leaved tree	Sanjiang	6.73	168.23
16	Broad-leaved tree	Sanjiang	4.50	112.47
17	Broad-leaved tree	Sanjiang	3.56	88.89

18	Broad-leaved tree	Sanjiang	3.25	81.23
21	Broad-leaved tree	Toupai	3.41	85.27
22	Broad-leaved tree	Toupai	3.99	99.67
23	Broad-leaved tree	Toupai	5.99	149.83
Sum-up	Broad-leaved tree	/	73.33	114.57
9	Chinese fir	Luoxiang	6.47	161.81
10	Chinese fir	Luoxiang	7.35	183.64
11	Chinese fir	Luoxiang	5.06	126.55
12	Chinese fir	Luoxiang	3.52	88.11
13	Chinese fir	Luoxiang	4.61	115.15
Sum-up	Chinese fir	/	27.01	135.05
19	Pinus massoniana	Sanjiang	3.82	95.51
20	Pinus massoniana	Sanjiang	2.43	60.85
24	Pinus massoniana	Toupai	2.36	59.09
Sum-up	Pinus massoniana	/	8.62	71.82

CEC checked the Sample plot monitoring records, Guangxi Jinxiu VCS Project Monitoring Report issued by Shenzhen Huannong Garden Co., Ltd., and the calculation sheet, and confirmed the DBH and the calculation process is correct and appropriate. The following data analysis also shows that the precision level of the sample carbon stock is 94.06%, larger than 90%, there is no need to deduct the emissions.

Average carbon stock(tC/Ha):	37.44
Square deviation	1.1619
Standard deviation	1.0779
Two-sided Student's t-value	2.0639
absolute error	2.24
relative error	5.94%
sampling precision	94.06%

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 Monitoring Report version 05.

Data and Parameters Available at Validation

The data and parameters available in the validation are listed below:

1) $V_{l,j,i,sp}$, Merchantable volume for tree l of species j in sample plot spin stratum i

This value is from the local second forest inventory issued by the qualified investigation institute. CEC checked the inventory and certification of the investigation institute and confirmed the appropriateness.

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

This value applied is $0.5 \text{ tC} \cdot \text{tDM}^{-1}$, which is from the default value of the methodology.

3) D_j , Basic wood density of species j in t d.m. m^{-3}

Three methods have been recommended by the methodology, for the project activity, method a) National species-specific or group of species-specific values, with the highest preference is adopted. The value from the GHG inventory of land use change and Forestry from the “the second national information notice on China’s climate change” is applied to the project activity. CEC checked the Chapter "Land Use Change and Forestry GHG Inventory (2013)" and confirmed the application value of 0.307, 0.380 and 0.482 with Chinese Fir, *Pinus massoniana* and Broad-Leaved tree is correct.

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

As for the project tree species, there are no allometric equation applied in the project area, the average annual growth is adopted for the estimated calculation of carbon stock change.

During the monitoring period, the average annual growth will be monitored by the total growth divided by the length of the monitoring period.

5) Fraction of wood products that will be emitted to the atmosphere between 3 and 100 years after production (OF)

Fraction of wood products that will be emitted to the atmosphere within 3 years of production (SLF)

Fraction of extracted biomass effectively emitted to the atmosphere during production (WW)

These values applied is listed as followed, which is from the default value of the methodology.

WW: 24%; SLF: 0.12; OF: 0.82

CEC checked the methodology and confirmed the appropriateness.

6) $BCEFR$, Biomass conversion and expansion factor applicable to wood removals in the project area

Three methods have been recommended by the methodology, for the project activity, method b) National species-specific or group of species-specific values, is adopted. The value from the GHG inventory of land use change and Forestry from the "the second national information notice on China's climate change" is applied to the project activity. CEC checked the Chapter "Land Use Change and Forestry GHG Inventory (2013)" and confirmed the application value of 0.502, 0.559 and 0.730 with Chinese Fir, *Pinus massoniana* and Broad-Leaved tree is correct.

7) G_{gi} , Emission factor for stratum i for gas g

As no fire occurs during the monitoring period. This parameter is not applicable to the project activity.

8) RGR_i , Forest regrowth rate post timber harvest for stratum i

Three methods have been recommended by the methodology, for the project activity. Method b is applied. The average annual regrowth is confirmed by the local forest authority based on their expertise.

And the RGR_i can therefore be calculated by the biomass expansion factor, density and carbon fraction of the separate species.

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

The timber harvest plan sets the allowable mean extracted volume from the merchantable volume of timber in the forest second class investigation ($V_{j,i|BSL}$), based on legal limits. CEC checked the timber harvest and management plan and confirmed the appropriateness.

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

This value is calculated from the forest second class investigation issued by the qualified investigation institute and timber harvest plan issued by Jinxiu Yao Autonomous Forestry Bureau. CEC checked the investigation data and confirmed the appropriateness.

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

This value is calculated from the forest second class investigation issued by the qualified investigation institute and timber harvest plan issued by Jinxiu Yao Autonomous Forestry Bureau. CEC checked the investigation data and confirmed the appropriateness.

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

This value is calculated from the forest second class investigation issued by the qualified investigation institute and timber harvest plan issued by Jinxiu Yao Autonomous Forestry Bureau. CEC checked the investigation data and confirmed the appropriateness.

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

This value is calculated from the forest second class investigation issued by the qualified investigation institute and timber harvest plan issued by Jinxiu Yao Autonomous Forestry Bureau. CEC checked the investigation data and confirmed the appropriateness.

14) A_{t^*} , Cumulative area harvested until time t^*

This value is calculated from the forest second class investigation issued by the qualified investigation institute and timber harvest plan issued by Jinxiu Yao Autonomous Forestry Bureau. CEC checked the investigation data and confirmed the appropriateness.

A complete set of data for the specified monitoring period is available.

Calculation process and results

(1) 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:

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

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

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

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

$$\Delta C_{NET,BSL(11-20)} = \sum_{i=1}^M \sum_{p=1}^p A_{11-20,i,p} * (\Delta C_{WP100,i,p,BSL}/20) \quad (3)$$

The net change (sequestration) in carbon stock due to forest regrowth across all parcels in all years since harvest in the baseline scenario are calculated as:

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

(4)

Therefore, the 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:

$$\Delta C_{NET,BSL,t^*} = \Delta C_{NET,BSL(1)} + \Delta C_{NET,BSL(2-10)} + \Delta C_{NET,BSL(11-20)} + \Delta C_{NET,BSL(1+)} \quad (5)$$

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

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

(6)

The baseline emission process has been demonstrated in the PD and validated in the Validation Report, the baseline emission during this crediting period is listed in the following:

Period	GHG _{NET,BSL,t} (tCO ₂ e)
01/03/2016-28/02/2017	133,202
01/03/2017-28/02/2018	117,018
01/03/2018-28/02/2019	124,604
01/03/2019-28/02/2020	115,126
01/03/2020-31/08/2020	58,008
Total	547,958
Average annual GHG_{NET BSL}	121,768 ¹

CEC has checked the Emission Removals calculation sheet and found the calculation is correct.

(2) Project Emissions

¹ The average annual GHG_{NET|BSL} is calculated by 547,958/4.5=121,768tCO₂/yr

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

$$\Delta C_{AB,t,PRJ} = \left(\sum_{i=1}^M \left(A_i * \frac{C_{AB,i,t2,PRJ} - C_{AB,i,t1,PRJ}}{T} \right) \right) * \frac{44}{12} \quad (7)$$

For the calculation result of annual carbon stock change in aboveground biomass of trees, since the total carbon stock change is calculated based on the monitoring data from 01/03/2016-31/08/2020, and the annual carbon stock change cannot be separately monitored, the average growth method is adapted to calculate the annual carbon stock change. The verification team checked the “forest resource operation and management” published by Chinese Forest Press in 2001, and confirmed that the average growth method is acceptable and reasonable based on the expertise and experience.

Based on the IPCC 2006 Inventory Guidelines, estimation of greenhouse gas emissions from biomass burning must be calculated as:

$$\Delta C_{DIST-FR,t,PRJ} = \sum_{i=1}^M A_{burn,i,t} * B_{i,t,PRJ} * COMF_i * G_{g,i} * 10^{-3} * GWP_{CH4} \quad (8)$$

As there is no fire occurred during the monitoring period, $\Delta C_{DIST-FR,t,PRJ}$ is equal to 0.

It is conservatively assumed that the natural disturbance is a stand-replacing disturbance, and that the biomass change as a result of the natural disturbance ($\Delta C_{DIST,t,PRJ}$) is emitted in the year of disturbance.

$$\Delta C_{DIST,t,PRJ} = \sum_{i=1}^M (A_{dist,i,t} * \sum_{j=1}^J \{C_{AB,j,i,BSL}\}) * \frac{44}{12} \quad (9)$$

As indicates by the relevant statement issued by the local authority, no natural disasters occurred during the monitoring period, $\Delta C_{DIST,t,PRJ}$ is equal to zero.

CEC has checked the Emission Removals calculation sheet and found the calculation is correct. The project emission during this crediting period is listed in the following:

Period	$\Delta C_{DIST-FR,t,PRJ}$ (tCO ₂ e)	$\Delta C_{DIST,t,PRJ}$ (tCO ₂ e)	$\Delta C_{DIST-IL,I,t,PRJ}$ (tCO ₂ e)	² $\Delta C_{AB,t,PRJ}$ (tCO ₂ e)	$\Delta C_{NET,t,PRJ}$ (tCO ₂ e)
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² In fact, the total carbon stock change in project scenario from 01/03/2016 to 31/08/2020 is calculated based on the monitored growth during 2016 to 2020. In order to calculate the annual carbon stock change, the total carbon stock change is averaged by these 59 months. This method is also commonly accepted in forestry. As stated in P169-171 of the professional college textbook “forest resource operation and management” published by Chinese Forest Press in 2001, the forest growth is divided into average growth and current annual increment, the latter is usually difficult

01/03/2016-28/02/2017	0	0	0	44,048	-44,048
01/03/2017-28/02/2018	0	0	0	44,048	-44,048
01/03/2018-28/02/2019	0	0	0	44,048	-44,048
01/03/2019-28/02/2020	0	0	0	44,048	-44,048
01/03/2020-31/08/2020	0	0	0	22,024	-22,024
Total	0	0	0	198,216	-198,216
Average annual value	0	0	0	44,048	-44,048

(3) Leakage

Activity shifting leakage

According to VM0010 version 1.3, there may be no leakage due to activity shifting. This was demonstrated through:

According to Forest law of the People's Republic of China³ Article 6 and Regulations of the People's Republic of China on forestry law⁴ Article 28, forest cutting management quota system is implemented in China. The central government issued the maximum timber harvest to provinces and larger state-owned forest enterprises every five years. And the provincial forestry authority issued the timber harvest approval and restrictions to its subordinate based on its limit.

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.

Therefore, for the project activity, even if the project proponent has more than one commercial forest parcels, the timber harvest limit is planned in advance by the forestry authority, they have no right to harvest more in other parcels outside the project activity.

to measure and have a high error, therefore, the former is commonly used to determine the forest growth. The results of carbon stock change are the same if calculated by these two methods, but the current annual increment is unavailable for the project, so the total carbon stock change is averaged to obtain the annual carbon stock change.

3 http://www.law-lib.com/law/law_view.asp?id=95233

4 http://www.law-lib.com/law/law_view.asp?id=7

The project's forests are owned by a number of different owners, including state, private and collective owners. CEC checked the VCS development consultation and service agreement signed among Jinxiu Yao Autonomous County Zhengtong Asset Management Co., Ltd, Guangzhou Guotan Assets Management Co., Ltd and forest owners, and confirmed that PP is authorized by the forest owners who are relevant to the project to execute the corresponding VCS declaration and CER income distribution rights. CEC interviewed the local government and checked the statement of no other forest land operation issued by PP, the certificate of no other forest land management issued by Jinxiu Yao Autonomous County Forestry Bureau, confirmed that in addition to applying for the authorization of the forest land involved in the Guangxi Jinxiu IFM (Logging to Forest Protection) Project, the PP has not managed or been authorized to manage other non-project forest land.

Therefore, there is no leakage due to activity shifting.

Market leakage

According to the Validation Report, the leakage factor for market-effects calculations (LF_{ME}) is 20%.

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:

$$GHG_{LK, LtPF, t^*} = LF_{ME} * GHG_{NET, BSL, t^*} \quad (10)$$

Where:

$GHG_{LK, LtPF}$ is total market leakage as a result of IFM LtPF activities, tCO₂e;

LF_{ME} is the dimensionless leakage factor for market-effects calculations;

$GHG_{NET|BSL, t^*}$ net greenhouse gas emissions in the baseline scenario in the year t^* since the start of the project activity, tCO₂e.

According to the methodology, the leakage factor is defined as considering where in the country logging will be increased as a result of the decreased supply of the timber caused by the project. If the areas liable to be logged have a higher ratio of merchantable biomass to total biomass higher than the project area it is likely that the proportional leakage is higher and vice versa:

Therefore,

$$LF_{ME} = 0$$

If it can be demonstrated that no market-effects leakage will occur within national boundaries, that is if no new concessions are being assigned AND annual extracted volumes cannot be

increased within existing national concessions AND illegal logging is absent (or de minimis) in the host country.

For the project,

- According to Forest law of the People's Republic of China Article 6/26/38 and Regulations of the People's Republic of China on forestry law Article 28/30/39, forest cutting management quota system has been implemented in China. The National Government issued the maximum timber harvest volume (quota) for provinces and the province government issued the quota to the projects in the geographic area.
- According to the 13th Five-year Forest Harvest Limit issued by State Council (Guohan [2016] No.32) , the total harvest volume limit of Guangxi Zhuang Autonomous Region from 2016 to 2020 is $4,460.9 \times 10^4 \text{ m}^3$ each year, and the planned harvest volume of the project is $26.6 \times 10^4 \text{ m}^3$, accounting 0.60% of the national harvest volume, which will not result in the significant national concession and illegal logging. The reduction in timber supply caused by the project activities is insignificant compared with the market of the whole Guangxi Zhuang Autonomous Region. Therefore, the project activities will not lead to changes in the balance of supply and market demand. The stability of timber prices can also prove this view. According to GUANGXI STATISTICAL YEARBOOK 2020, the timber price index from 2016 to 2018 was 101.6%, 101.5% and 102.3% (of preceding year) respectively, indicating the price is stable with slightly decreasing.
- China's annual extracted volumes are allocated by the country to provinces and then to counties and cities. It is a top-down governmental regulation. Whether the county, city or company harvests or not will not affect the decision-making of the upper level. That is, no new concessions will be assigned. If a concession owner decides to give up the rights of logging, he can't trade or transfer the logging right to any other. So even if the market demand for timber increases, Under the existing legal framework, annual extracted volumes cannot be increased. And China's penalty on illegal logging is very strong. Regulations of the People's Republic of China on forestry law Article 38 and Article 39 clearly stipulates the punishment for the illegal logging. According to the volume and quantity of illegal logging, punishment includes not only 5-10 times compensation of replanting, but also 2-10 times economic penalty.
- In general, without new logging concessions, the harvest can't be done. And due to the strictly enforced law, illegal logging is absent with frequent patrol and high economic penalty. So the leakage emission will not be shifted to anywhere in the host country. Thus CEC conformed the market leakage is zero based on Section 8.3.2 of the Methodology for Improved Forest Management: Conversion from Logged to Protected Forest (VM0010, V1.3).

However, in order to demonstrated the market leakage factor of the proposed project in a more conservative way, PP still discuss it again according to the VCS Standard (V4.2) Section 3.14.8, 3.14.9 and the remained option stated in the VM0010(V1.3) Section 8.3.2. According VCS Standard V4.2 (3.14.8), Market leakage assessments shall occur per the requirements set out

in the applied methodology(s) at validation and verification. According VCS Standard V4.2 (3.14.9), Notwithstanding the requirement set out in Section 3.14.8, IFM projects may apply the appropriate market leakage discount factor identified in Table 3 to the net change in carbon stock associated with the activity that reduces timber harvest to determine market leakage”.

- Guangxi Jinxiu IFM project is a logged to protected forest IFM activity. The project activities permanently protect the forests in the project area, and harvesting activity is permanently stopped. As mentioned earlier, even if the market demand for timber increases, under the existing legal framework, annual extracted volumes cannot be increased. So project activities are more in line with option 3 (IFM activity that substantially reduces harvest levels permanently). And market leakage discount factor conditional upon where timber harvest is likely to be shifted follow the VCS Standard table 3 and VCS Methodology. Therefore, each project must calculate within each stratum the ratio of merchantable biomass to total biomass (PMP_i). This shall then be compared to the ratio of merchantable biomass to total biomass for each forest type (PML_{FT}).
- In the calculation, PP select Guangxi Zhuang Autonomous Region which located in the subtropical area with subtropical monsoon climate and dominated by forest type of Subtropical humid forest as the reference area (harvest most likely to be displaced) since China has a vast and varied territory across tropical, subtropical, temperate, cold temperate, cold and its climate, elevation and wood supply and demand are huge different. We have set 3 stratum based on the tree species which are Broad-leaved Tree, Chinese Fir and Pinus Massoniana for the project. Thus, PML_{FT} is $PML_{\text{Subtropical humid forest}}$.
- In the baseline scenario modeling, PP have set 3 stratum based on the tree species which are Chinese Fir, Masson pine and Broad-Leaved tree for the project. Thus, PMP_i is $PMP_{\text{Chinese Fir}}$, $PMP_{\text{Pinus Massoniana}}$ and $PMP_{\text{Broad-Leaved tree}}$.
- Hence, the calculation is below, in the base year:

$$PMP_{\text{Broad-leaved trees}} = 267172\text{m}^3 / 2313537\text{ m}^3 = 11.55\%$$

$$PMP_{\text{Chinese Fir}} = 28183\text{m}^3 / 2603826\text{ m}^3 = 1.08\%$$

$$PMP_{\text{Pinus Massoniana}} = 3017.24\text{m}^3 / 237266\text{ m}^3 = 0.52\%$$

$$PML_{\text{Subtropical humid forest}} = 4460.9 * 10^4\text{ m}^3 / 22272.16 * 10^4\text{ m}^3 = 20.03\%$$

$$PML_{\text{Subtropical humid forest}} \text{ is } 73.4\% \text{ greater than } PMP_{\text{Broad-leaved trees}}$$

$$PML_{\text{Subtropical humid forest}} \text{ is } 1754.6\% \text{ greater than } PMP_{\text{Chinese Fir}}$$

$$PML_{\text{Subtropical humid forest}} \text{ is } 3751.9\% \text{ greater than } PMP_{\text{Pinus Massoniana}}$$

PMP_i data comes from ER calculation table. And PML data comes from the 13th Five-year Forest Harvest Limit issued by State Council (Guohan [2016] No.32) and 2016 China forestry statistical yearbook. CEC checked ER calculation table, the 13th Five-year Forest Harvest Limit issued by

State Council and 2016 China forestry statistical yearbook, and confirmed that the calculation and parameters is correct.

From above calculation, it is indicated 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. Therefore, whether according to VCS Standard table 3 or VCS Methodology, the market leakage discount factor is 20%.

According to VM0010 version 1.3 Equation (40) ,

$$GHGLK, LtPF, t^* = LFME * GHG_{NET, BSL, t^*} = 547,958 * 0.2 = 109,591 tCO_2$$

(4) Net GHG Emission Reductions and Removals

According to VM0010 version 1.3, the Net Project Greenhouse Gas Emission removals in the monitoring crediting period are calculated as:

$$GHG_{CREDITS, LTPF, t^*} = GHG_{NET, BSL, t^*} - GHG_{NET, PRJ, t^*} - GHG_{LK, LtPF, t^*} \quad (10)$$

Where:

$GHG_{CREDITS|LTPF}$ project greenhouse gas credits associated with the implementation of improved forest management (IFM) activities in the project scenario, tCO_{2e}

$GHG_{NET|BSL}$ net greenhouse gas emissions in the baseline scenario in the year t* since the start of the project activity, tCO_{2e}

$GHG_{NET|PRJ}$ net greenhouse gas emissions in the project scenario in the year t* since the start of the project activity, tCO_{2e}

$GHG_{LK|LTPF}$ 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_{2e}

CEC has checked the Emission Removals calculation sheet and found the calculation is correct. The net emission reduction during this crediting period is listed in the following:

Period	Baseline emissions or removals (tCO _{2e})	Project emissions or removals (tCO _{2e})	Leakage emissions (tCO _{2e})	Net GHG emission reductions or removals (tCO _{2e})
01/03/2016-28/02/2017	133,202	-44,048	26,640	150,610

01/03/2017-28/02/2018	117,018	-44,048	23,404	137,662
01/03/2018-28/02/2019	124,604	-44,048	24,921	143,731
01/03/2019-28/02/2020	115,126	-44,048	23,025	136,149
01/03/2020-31/08/2020	58,008	-22,024	11,602	68,430
Total	547,958	-198,216	109,591	636,582
Average annual value	121,768	-44,048	24,353	141,462

(5) Adjusted for uncertainty

According to the methodology, 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 becomes:

$$U_{total} = \frac{\sqrt{(U_1 * E_1)^2 + (U_2 * E_2)^2 + \dots + (U_n * E_n)^2}}{E_1 + E_2 + \dots + E_n} \quad (18)$$

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:

$$U_{total} = \sqrt{U_1^2 + U_2^2 + \dots + U_n^2} \quad (19)$$

Where:

U_{total} is the percentage uncertainty in the product of the quantities (half the 95% confidence interval divided by the total and expressed as a percentage);

U_i are the percentage uncertainties associated with each of the quantities.

The uncertainty are 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 second class forestry investigation and forest right certificate, 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 details is listed in the following table.

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	0.18%
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	3.61%	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

3) Uncertainty of carbon stock:

The calculation of uncertainty of carbon stock is based on the uncertainty of volume in every stratum multiply by the uncertainty of expansion factors.

For 2016:

Uncertainty of carbon stock- Broad-leaved tree	4.48%	Uncertainty of carbon stock- Chinese fir	5.46%	Uncertainty of carbon stock- Pinus massoniana	8.07%
Uncertainty of volume- Broad-leaved tree	3.32%	Uncertainty of volume – Chinese fir	4.99%	Uncertainty of volume – Pinus massoniana	7.71%
carbon stock- Broad-leaved tree	343158.33	carbon stock- Chinese fir	106580.60	carbon stock- Pinus massoniana	36209.18
Area(ha)	4143.40	Area(ha)	1843.43	Area(ha)	585.30
Sample size	165	Sample size	61	Sample size	23
Sample mean (m ³ /ha)	226.98	Sample mean (m ³ /ha)	158.46	Sample mean (m ³ /ha)	169.55
Standard deviation	49.39	Standard deviation	31.52	Standard deviation	32.00
Average error	3.84	Average error	4.04	Average error	6.67
Confidence level	0.95	Confidence level	0.95	Confidence level	0.95
Degree of freedom	164	Degree of freedom	60	Degree of freedom	22
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	7.54	Allowable error	7.91	Allowable error	13.08
Lower confidence limit	219.45	Lower confidence limit	150.55	Lower confidence limit	156.47
Upper confidence limit	234.52	Upper confidence limit	166.37	Upper confidence limit	182.63
Confidence interval	7.54	Confidence interval	7.91	Confidence interval	13.08

For 2020:

Uncertainty of carbon stock- Broad-leaved tree	19.08%	Uncertainty of carbon stock- Chinese fir	22.12%	Uncertainty of carbon stock- Pinus massoniana	26.53%
Uncertainty of volume- Broad-leaved tree	18.84%	Uncertainty of volume – Chinese fir	22.01%	Uncertainty of volume – Pinus massoniana	26.42%
carbon stock- Broad-	26.75	carbon stock-	6.77	carbon stock-	2.41

leaved tree		Chinese fir		Pinus massoniana	
Area(ha)	0.64	Area(ha)	0.20	Area(ha)	0.12
Sample size	16	Sample size	5	Sample size	3
Sample mean (m ³ /ha)	114.57	Sample mean (m ³ /ha)	135.05	Sample mean (m ³ /ha)	71.82
Standard deviation	44.05	Standard deviation	33.91	Standard deviation	16.77
Average error	11.01	Average error	15.16	Average error	9.68
Confidence level	0.95	Confidence level	0.95	Confidence level	0.95
Degree of freedom	15	Degree of freedom	4	Degree of freedom	2
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	21.58	Allowable error	29.72	Allowable error	18.97
Lower confidence limit	92.99	Lower confidence limit	105.33	Lower confidence limit	52.84
Upper confidence limit	136.16	Upper confidence limit	164.77	Upper confidence limit	90.79
Confidence interval	21.58	Confidence interval	29.72	Confidence interval	18.97

4) Uncertainty of regrowth

The uncertainty of regrowth is only associated with the parameter RGR_i , as for the value quoted from the expertise of the local forest authority, the uncertainty of 10% is adopted from the National Forest Resource Continuous Investigation Technical Regulation issued by the State Forestry Bureau . And this uncertainty is adopted for the project for conservative.

Baseline Emission Uncertainty calculation

Based on the calculation of the 4 parameters and coefficients above, the U_{total} is 14.68%, the detailed calculation is listed as follows:

The baseline emission uncertainty has been listed in the PD of the project as 2.06%, the details for the project emission uncertainty is updated as:

Baseline Emission Uncertainty

Stratum	Parameter	Area(Ha)	$V_{EX,j,i BSL}$ (m ³ /ha)	BEF	D(tdm/m ³)	$BCEFR$ (tdm/m ³)	CFj(tc/tdm)	$C_{HB,j,i BSL}$ (tC/ha)	$C_{EX,j,i BSL}$ (tC ha ⁻¹)	$\Delta C_{DW,i,p BSL}$
		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	4143.40	226.98	1.514	0.482	0.730	0.5	82.82	54.70	28.12
	U	0.00%	3.32%	2.99%	0.42%	3.02%		4.48%	3.35%	3.01%
Chinese fir	E	1843.43	158.46	1.634	0.307	0.502	0.5	39.74	24.32	15.42
	U	0.00%	4.99%	2.06%	0.80%	2.21%		5.46%	5.06%	3.89%
Pinus massoni ana	E	585.30	169.55	1.472	0.380	0.559	0.5	47.42	32.21	15.21
	U	0.00%	7.71%	1.82%	1.54%	2.38%		8.07%	7.86%	5.76%

Stratum	Parameter	WW _k	SLF _k	$C_{wp,0 BSL}$ (tc/ha)	$C_{WP,i BSL}$ (tc/ha)	OF _k	$\Delta C_{WP,100 BSL}$ (tc/ha)	Ai,p(ha)	$\Delta C_{NET BSL(1)}(tC)$
		j	k	l=h*(j+k)	m=h-l	n	o=m*n	p	q=(i/10+l+o/20)*p
		/	/	$U_l = U_h$	$U_m = \frac{\sqrt{(E_h * U_h)^2 + (E_l * U_l)^2}}{(E_h + E_l)}$	/	$U_o = U_m$	$U_p = 0$	$U_q = \frac{\sqrt{(E_i * U_i)^2 + (E_l * U_l)^2 + (E_o * U_o)^2}}{(E_i + E_l + E_o)}$
Broad-leaved tree	E	24%	0.12	19.69	35.01	0.86	30.11	4143.40	99484.18
	U			3.35%	2.62%		2.62%	0.00%	1.71%
Chinese fir	E	24%	0.12	8.76	15.57	0.86	13.39	1843.43	20218.23
	U			5.06%	3.95%		3.95%	0.00%	2.43%
Pinus massoni ana	E	24%	0.12	11.60	20.62	0.86	17.73	585.30	8196.70
	U			7.86%	6.15%		6.15%	0.00%	3.75%

Stratum	Parameter	$\Delta C_{NET BSL(2-10)}(tC)$	$\Delta C_{NET BSL(11-20)}(tC)$	regrowth rate (m3/ha/yr)	$\Delta C_{NET BSL,t^*}(tC)$	$\Delta C_{NET, i,P BSL}$
		$r=(i/10+o/20)*p$	$s=o/20*p$	t	$v=e*f*p*t$	$w=q+r+s-v$
		$U_r = \frac{\sqrt{(E_i * U_i)^2 + (E_o * U_o)^2}}{(E_i + E_o)}$	$U_s = U_o$	$U_t = 10\%$	$U_r = \sqrt{U_e^2 + U_t^2}$	$U_w = \frac{\sqrt{(E_q * U_q)^2 + (E_r * U_r)^2 + (E_s * U_s)^2 + (E_v * U_v)^2}}{(E_q + E_r + E_s + E_v)}$
Broad-leaved tree	E	160989.76	52752.46	3.11	82133.08	231093.33
	U	1.99%	2.62%	10.00%	10.44%	2.38%
Chinese fir	E	36689.82	9880.27	4.89	38421.20	28367.12
	U	2.78%	3.95%	10.00%	10.24%	3.91%
Pinus massoniana	E	12679.69	4016.33	3.95	10817.03	14075.69
	U	4.25%	6.15%	10.00%	10.28%	3.63%
					U_{BSL}	2.06%

Project Emission Uncertainty

Stratum	Parameter	Area(Ha)	$V_{AB,i 2016}$ (m ³ /ha)	BEF	D(tdm/m ³)	$BCEFR$ (tdm/m ³)	CFj (tc/tdm)	$V_{AB,i 2020}$ (m ³ /ha)	$\Delta V_{AB,i PRJ}$ (m ³ /ha)	$\Delta C_{AB,i PRJ}$ (tCO ₂)
		a	b	c	d	e=c*d	f	g	h=g-b	i=h*a*e*f*44/12
										$U_i = \sqrt{U_e^2 + U_f^2}$
Broad-leaved tree	E	4143.40	226.98	1.514	0.482	0.730	0.5	114.57	-112.41	635106.70
	U	0	3.32%	2.99%	0.42%	3.02%		18.84%	6.69%	19.08%
Chinese fir	E	1843.43	158.46	1.634	0.307	0.502	0.5	135.05	-23.40	228960.05
	U	0	4.99%	2.06%	0.80%	2.21%		22.01%	10.48%	22.12%
Pinus massoniana	E	585.30	169.55	1.472	38.00%	0.559	0.5	71.82	-97.73	43105.94
	U	0	7.71%	1.82%	1.54%	2.38%		26.42%	9.55%	26.53%
								U_{PRJ}		14.53%

$$\text{Therefore, } U_{Total/LtPF} = \sqrt{U_{BSL}^2 + U_{PRJ}^2} = \sqrt{2.06\%^2 + 14.53\%^2} = 14.68\% = 0.1468$$

According to the methodology, if $U_{total,LtPF} \leq 0.15$ then no deduction will result for uncertainty, therefore, it is unnecessary for the project to deduct for the uncertainty.

According to the VCS PD, 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:

$$\text{Credits}_{total|LtPF} = \text{GHG}_{credits|LtPF} * (1 - U_{total|LtPF}) \quad (11)$$

The uncertainty propagation $U_{total|LtPF} = 0.1468 \leq 0.15$ in this monitoring period; therefore,

$$\text{Credits}_{total|LtPF} = \text{GHG}_{credits|LtPF}$$

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:

$$\text{VCU}_{net|LtPF} = (\text{Credits}_{total,t2|LtPF} - \text{Credits}_{total,t1|LtPF}) - \text{Bu}_{IFM-VCS} \quad (12)$$

Where:

$\text{VCU}_{net|LtPF}$ number of verified carbon units; dimensionless;

$\text{Credits}_{total,t1|LtPF}$ net anthropogenic greenhouse gas removals by sinks, as estimated for $t^*=t_1$ in $t\text{CO}_2\text{e}$;

$\text{Credits}_{total,t2|LtPF}$ net anthropogenic greenhouse gas removals by sinks, as estimated for $t^*=t_2$ in $t\text{CO}_2\text{e}$; and

$\text{Bu}_{IFM-VCS}$ total number of credits withheld in VCS buffer account.

CL01 was raised requesting the PP to use the latest VCS-Monitoring-Report-Template-V4.1. VCS-MR version 01 is based on Monitoring-Report-Template-V4.0, but the Monitoring-Report-Template-V4.1 has been updated On 20/01/2022. CEC checked the VCS-MR version 05 and confirmed that VCS-MR version 05 was prepared according to the latest template V4.1, CL01 was closed.

According to the Non-permanence Risk Report and VCS MR, the overall risk rating in this monitoring period is 22; hence, 22% of the total emission reductions were deducted.

Therefore, the emission reduction detail is listed:

Year	GHG _{NET,B} SL(tCO ₂ e)	GHG _{NET,P} RJ(tCO ₂ e)	GHG _{LK} (tCO ₂ e)	Credits _{total,LtPF} (tCO ₂ e)	Risk Score	VCU _{NET,IF} M (tCO ₂ e)
01/03/2016- 28/02/2017	133,202	-44,048	26,640	150,610	22	117,475
01/03/2017- 28/02/2018	117,018	-44,048	23,404	137,662	22	107,376
01/03/2018- 28/02/2019	124,604	-44,048	24,921	143,731	22	112,110
01/03/2019- 28/02/2020	115,126	-44,048	23,025	136,149	22	106,196
01/03/2020- 31/08/2020	58,008	-22,024	11,602	68,430	22	53,375
Total	547,958	-198,216	109,591	636,582	/	496,532
Average annual value	121,768	-44,048	24,353	141,462	/	110,340

4.5 Quality of Evidence to Determine GHG Emission Reductions and Removals

All necessary documentation is collected, referenced and is easily accessible in hard-copy or electronic format. 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 05.

Key data have been cross-checked via external sources.

For the data and parameters available at validation, the related evidence has been validated at validation stage and the reliability of the evidence, and the source and nature of the evidence has been confirmed and correctly applied at verification stage.

For the data and parameters monitored, the data and parameters related to forest disturbance in the project scenario, such as fire and non-fire disturbance, illegal logging was verified through reviewing the statement issued by local forestry authority, the statement was sourced from local authority and the reliability is confirmed. For the parameter DBH, the data was sourced from Sample plot monitoring records and Guangxi Jinxiu VCS Project Monitoring Report issued by Shenzhen Huannong Garden Co., Ltd. (Certificate No.: LDG Bing 2020-072, valid from

19/05/2020 to 19/05/2023) based on the National Forest Resource Continuous Investigation Technical Regulation issued by the State Forestry Bureau. Hence, the reliability is confirmed.

4.6 Non-Permanence Risk Analysis

The non-permanence risk is analyzed as below:

Step 1. Risk Analysis

Sub-step 1.1: Internal Risks

According to the AFOLU Non-Permanence Risk Tool (version 4.0), project management (PM), financial viability (FV), opportunity cost (OC), project longevity (PL) shall be assessed using the specified table. Every risk factor has been identified and the relevant risk rating has been presented in the non-permanence risk report as follows:

Project Management		
Risk Factor	Risk Factor and/or Mitigation Description	Risk Rating
a)	Species planted (where applicable) associated with more than 25% of the stocks on which GHG credits have previously been issued are not native or proven to be adapted to the same or similar agro-ecological zone(s) in which the project is located.	Not Applicable
b)	Ongoing enforcement to prevent encroachment by outside actors is required to protect more than 50% of stocks on which GHG credits have previously been issued.	Not Applicable
c)	Management team does not include individuals with significant experience in all skills necessary to successfully undertake all project activities (ie, any area of required experience is not covered by at least one individual with at least 5 years experience in the area).	Not Applicable
d)	Management team does not maintain a presence in the country or is located more than a day of travel from the project site, considering all parcels or polygons in the project area.	Not Applicable
e)	Mitigation: Management team includes individuals with significant experience in AFOLU project design and implementation, carbon accounting and reporting (eg, individuals who have successfully managed projects through validation, verification and issuance of GHG credits) under the VCS Program or other approved GHG programs.	Not Applicable
f)	Mitigation: Adaptive management plan in place.	-2 ⁵
Total Project Management (PM) [as applicable, (a + b + c + d + e + f)] Total may be less than zero.		-2

⁵ Through reviewing the monitoring manual, CEC confirmed that the project proponent has established a complete set of management regulation in the operation & maintenance, disturbance prevention and the related contingency plan.

Financial Viability		
Risk Factor	Risk Factor and/or Mitigation Description	Risk Rating
a)	Project cash flow breakeven point is greater than 10 years from the current risk assessment	3 ⁶
b)	Project cash flow breakeven point is greater than 7 and up to 10 years from the current risk assessment	Not Applicable
c)	Project cash flow breakeven point greater than 4 and up to 7 years from the current risk assessment	Not Applicable
d)	Project cash flow breakeven point is 4 years or less from the current risk assessment	Not Applicable
e)	Project has secured less than 15% of funding needed to cover the total cash out before the project reaches breakeven	Not Applicable
f)	Project has secured 15% to less than 40% of funding needed to cover the total cash out required before the project reaches breakeven	Not Applicable
g)	Project has secured 40% to less than 80% of funding needed to cover the total cash out required before the project reaches breakeven	Not Applicable
h)	Project has secured 80% or more of funding needed to cover the total cash out before the project reaches breakeven	Not Applicable
i)	Mitigation: Project has available as callable financial resources at least 50% of total cash out before project reaches breakeven.	Not Applicable
Total Financial Viability (FV) [as applicable, ((a, b, c or d) + (e, f, g or h) + i)] Total may not be less than zero.		3

Opportunity Cost		
Risk Factor	Risk Factor and/or Mitigation Description	Risk Rating
a)	NPV from the most profitable alternative land use activity is expected to be at least 100% more than that associated with project activities; or where baseline activities are subsistence-driven, net positive community impacts are not demonstrated.	8 ⁷
b)	NPV from the most profitable alternative land use activity is expected to be between 50% and up to 100% more than from project activities	Not Applicable
c)	NPV from the most profitable alternative land use activity is expected to be between 20% and up to 50% more than from project activities	Not Applicable

⁶ Through reviewing the NPV calculation spreadsheet, CEC confirmed that the project cash flow breakeven point from the current risk is greater than 10 years.

⁷ Through reviewing the NPV calculation spreadsheet, the NPV from baseline scenario is 40839*10⁴ Yuan, and the NPV from project is -10173*10⁴ Yuan.

d)	NPV from the most profitable alternative land use activity is expected to be between 20% more than and up to 20% less than from project activities; or where baseline activities are subsistence-driven, net positive community impacts are demonstrated	Not Applicable
e)	NPV from project activities is expected to be between 20% and up to 50% more profitable than the most profitable alternative land use activity	Not Applicable
f)	NPV from project activities is expected to be at least 50% more profitable than the most profitable alternative land use activity	Not Applicable
g)	Mitigation: Project proponent is a non-profit organization	Not Applicable
h)	Mitigation: Project is protected by legally binding commitment (see Section 0) to continue management practices that protect the credited carbon stocks over the length of the project crediting period.	-2 ⁸
i)	Mitigation: Project is protected by legally binding commitment (see Section 0) to continue management practices that protect the credited carbon stocks over at least 100 years	Not Applicable
Total Opportunity Cost (OC) [as applicable, (a, b, c, d, e or f) + (g + h or i)] Total may not be less than 0.		6

Project Longevity		
a)	Without legal agreement or requirement to continue the management practice	Not Applicable
b)	With legal agreement or requirement to continue the management practice ⁹	= 30 - (project longevity/2) = 30 - 30/2 = 15
Total Project Longevity (PL) May not be less than zero		15

Internal Risk	
Total Internal Risk (PM + FV + OC + PL) Total may not be less than zero.	= -2+3+6+15=22

Sub-step 1.2: External Risks

⁸ CEC reviewed the VCS development consultation and service agreement signed among Jinxiu Yao Autonomous County Zhengtong Asset Management Co., Ltd, Guangzhou Guotan Asset Management Co., Ltd., and forest owners, and confirmed that project is protected by legal binding commitment least 20 years over the length of the project crediting period.

⁹ CEC reviewed the VCS development agreement signed between PP and the forest owners and confirmed that the project period will be at least 20 years stipulated in their cooperation agreement.

According to the AFOLU Non-Permanence Risk Tool (version 4.0), land and resource tenure (LT), community engagement (CE), political risk (PC), project longevity shall be assessed using the specified table. Every risk factor has been identified and the relevant risk rating has been presented in the non-permanence risk report as bellows:

Land Tenure and Resource Access/Impacts		
Risk Factor	Risk Factor and/or Mitigation Description	Risk Rating
a)	Ownership and resource access/use rights are held by same entity(s)	Not applicable
b)	Ownership and resource access/use rights are held by different entity(s) (eg, land is government owned and the project proponent holds a lease or concession)	2 ¹⁰
c)	In more than 5% of the project area, there exist disputes over land tenure or ownership	Not Applicable
d)	There exist disputes over access/use rights (or overlapping rights)	Not Applicable
e)	WRC projects unable to demonstrate that potential upstream and sea impacts that could undermine issued credits in the next 10 years are irrelevant or expected to be insignificant, or that there is a plan in place for effectively mitigating such impacts.	Not Applicable
f)	Mitigation: Project area is protected by legally binding commitment (eg, a conservation easement or protected area) to continue management practices that protect carbon stocks over the length of the project crediting period.	-2 ¹¹
g)	Mitigation: Where disputes over land tenure, ownership or access/use rights exist, documented evidence is provided that projects have implemented activities to resolve the disputes or clarify overlapping claims	Not Applicable
Total Land Tenure (LT) [as applicable, ((a or b) + c + d + e + f + g)] Total may not be less than zero.		0

Community Engagement		
Risk Factor	Risk Factor and/or Mitigation Description	Risk Rating
a)	Less than 50 percent of households living within the project area who are reliant on the project area, have been consulted	Not Applicable

¹⁰ All the forests in the projects belong to different owns, some forests are state-owned and some are privately-owned. The owners authorized the project proponent Jinxiu Yao Autonomous County Zhengtong Asset Management Co., Ltd. to apply this VCS project on their behalf.

¹¹ CEC reviewed the VCS development consultation and service agreement among between Jinxiu Yao Autonomous County Zhengtong Asset Management Co., Ltd., Guangzhou Guotan Asset Management Co., Ltd. and forest owners, and confirmed that project is protected by legal binding commitment with at least 20 years over the length of the project crediting period.

b)	Less than 20 percent of households living within 20 km of the project boundary outside the project area, and who are reliant on the project area, have been consulted	Not Applicable
c)	Mitigation: The project generates net positive impacts on the social and economic well-being of the local communities who derive livelihoods from the project area	-5 ¹²
Total Community Engagement (CE) [where applicable, (a + b + c)] Total may be less than zero.		-5

Political Risk		
Risk Factor	Risk Factor and/or Mitigation Description	Risk Rating
a)	Governance score of less than -0.79	Not Applicable
b)	Governance score of -0.79 to less than -0.32	4 ¹³
c)	Governance score of -0.32 to less than 0.19	Not Applicable
d)	Governance score of 0.19 to less than 0.82	Not Applicable
e)	Governance score of 0.82 or higher	Not Applicable
f)	Mitigation: Country is implementing REDD+ Readiness or other activities, as set out in this Section 2.3.3.	-2 ¹⁴
Total Political (PC) [as applicable ((a, b, c, d or e) + f)] Total may not be less than zero.		2

External Risk	
Total External Risk (LT + CE + PC) Total may not be less than zero.	0

Sub-step 1.3: Natural Risks

¹² Based on the on-site inspection and interviewing with stakeholder, the stakeholders have positive attitude towards the implementation of the project, they agree that the project generates net positive impacts on the social and economic well-being of the local communities.

¹³ <http://info.worldbank.org/governance/wgi/index.aspx#home>

¹⁴ China has an established Designed National Authority under the CDM and has at least one registered CDM Afforestation/Reforestation project. Thus, the mitigation discount can be applied..

According to the AFOLU Non-Permanence Risk Tool (version 4.0), natural Risks shall be assessed using the specified table. Every risk factor has been identified and the relevant risk rating has been presented in the non-permanence risk report as bellows:

Natural Risks					
	Likelihood				
Significance	Less than every 10 years	Every 10 to less than 25 years	Every 25 to less than 50 years	Every 50 to less than 100 years	Once every 100 years or more, or risk is not applicable to the project area ¹⁵
Catastrophic(70% or more loss of carbon stocks)	Not applicable	Not applicable	Not applicable	Not applicable	0
Devastating (50% to less than 70% loss of carbon stocks)	Not applicable	Not applicable	Not applicable	Not applicable	0
Major(25% to less than 50% loss of carbon stocks)	Not applicable	Not applicable	Not applicable	Not applicable	0
Minor (5% to less than 25% loss of carbon stocks)	Not applicable	Not applicable	Not applicable	Not applicable	0
Insignificant (less than 5% loss of carbon stocks) or transient (full recovery of lost carbon stocks expected within 10 years of any event)	Not applicable	Not applicable	Not applicable	Not applicable	0
No Loss	Not applicable	Not applicable	Not applicable	Not applicable	0
LS Score					

¹⁵ Through interviewing with the local forestry administration, CEC confirmed that the risks identified (i.e. fire, pest and disease outbreaks, extreme weather events, geological risk, and any other natural risks) is not applicable to the project area.

Mitigation	
Prevention measures applicable to the risk factor are implemented	0.5
Project proponent has proven history of effectively containing natural risk	0.5
Both of the above	0.25
None of the above	Not applicable

Score for each natural risk applicable to the project (Determined by $LS \times M$)	
Fire (F)	0
Pest and Disease Outbreaks (PD)	0
Extreme Weather (W)	0
Geological Risk (G)	0
Other natural risk (ON)	0
Total Natural Risk (as applicable, F + PD + W + G + ON)	0

Step 2: Overall non-permanence risk rating and buffer determination

According to the above step, the overall non-permanence risk rating is as follows:

Risk Category	Rating
a) Internal Risk	22
b) External Risk	0
c) Natural Risk	0
Overall Risk Rating (a + b + c)	22

CEC has reviewed the Non-Permanence Risk Report (version 04, dated 15/05/2021) and the related evidences, include the documents provided by PP (business license, VCS development consultation and service agreement, financial analysis calculation and Timber Harvest Plan), and other public available information, and interviewed with stakeholders, CEC has evaluated the risk assessment undertaken by the project proponent and assess all data, rationales, assumptions, justifications and documentation provided by the project proponent to support the non-permanence risk rating, then CEC confirms that the evidences are substantial, and the

overall risk rating is 22% based on the provided evidences, AFOLU Non-Permanence Risk Tool and VCS Standard.

5 VERIFICATION CONCLUSION

China Environmental United Certification Center Co., Ltd has conducted the verification of GUANGXI JINXIU IFM (conversion of logged to protected forest) Project, owned by Jinxiu Yao Autonomous County Zhengtong Asset Management Co., Ltd. and Guangzhou Guotan Assets Management Co., Ltd., which is located in Jinxiu Yao Autonomous County, Laibin City, Guangxi Zhuang Autonomous Region, P.R.C., and applying the VCS methodology VM0010 version 1.3, on the basis of VCS Standard version 4.3, as well as criteria given to provide for consistent project operations, monitoring and reporting.

The verification scope is defined as an independent and objective review and ex-post determination of the monitored GHG emission reductions, and consisted of the following three phases: i) desk review of the project design, the baseline and monitoring plan; ii) follow-up interviews with project stakeholders; iii) resolution of outstanding issues and the issuance of the final verification report and opinion. The overall verification, from Contract Review to Verification Report & Opinion, was conducted using CEC internal procedures.

In summary, CEC confirms that the project is implemented as planned and described in the validated VCS project description. The forestry management conversion includes 6,572.13 ha logged to Protected Forest (LtPF). The monitoring system is in place and reduces the GHG emissions as anthropogenic GHG removals by sinks. The GHG emission removals by sinks verified totalize 496,532tCO₂e for the monitoring period.

Our opinion relates to the projects' actual net GHG removals by sinks and resulting net anthropogenic GHG removals by sinks is reported and related to the valid and registered project baseline, monitoring plan and its associated documents.

Verification period: From 01/03/2016-31/08/2020

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

Year	GHG _{NET,BSL} (tCO ₂ e)	GHG _{NET,PRJ} (tCO ₂ e)	GHG _{LK} (tCO ₂ e)	Credits _{total,LtPF} (tCO ₂ e)	Risk Score	VCU _{NET,IFM} (tCO ₂ e)
01/03/2016-28/02/2017	133,202	-44,048	26,640	150,610	22	117,475
01/03/2017-28/02/2018	117,018	-44,048	23,404	137,662	22	107,376

01/03/2018- 28/02/2019	124,604	-44,048	24,921	143,731	22	112,110
01/03/2019- 28/02/2020	115,126	-44,048	23,025	136,149	22	106,196
01/03/2020- 31/08/2020	58,008	-22,024	11,602	68,430	22	53,375
Total	547,958	-198,216	109,591	636,582	/	496,532
Average annual value	121,768	-44,048	24,353	141,462	/	110,340

APPENDIX A : REFERENCE

- /1/ VCS-PD version 07 dated 24/05/2022
- /2/ VCS-MR version 05 dated 14/03/2023
- /3/ ER calculation spreadsheet version 02 dated 17/07/2022
- /4/ Uncertainty Analysis spreadsheet version 02 dated 17/07/2022
- /5/ Non-Permanence Risk Report version 04 dated 15/05/2021
- /6/ Validation Report version 6.0 dated 24/05/2022
- /7/ Agriculture, Forestry and Other Land Use (AFOLU) Requirements Version 3.6 dated 21/06/2017
- /8/ Tool for the Demonstration and Assessment of Additionality in VCS Agriculture, Forestry and Other Land Use (AFOLU) Project Activities” (VT0001 VCS AFOLU Additionality Tool v3.0) dated 01/02/2012
- /9/ AFOLU Non-Permanence Risk Tool, VCS version 4.0 dated 19/09/2019
- /10/ Tool for the “Calculation of the number of sample plots for measurements within A/R CDM project activities” (version 02.1.0) approved by the CDM Executive Board.
- /11/ VCS Validation and Verification Manual, version 3.2, dated 19/10/2016
- /12/ Business license of Jinxiu Yao Autonomous County Zhengtong Asset Management Co., Ltd.
- /13/ The notice of Guangxi Jinxiu IFM (Conversion of Logged to Protected Forest) Project issued by Jinxiu Yao Autonomous County Forestry Bureau on 20/01/2016.
- /14/ Timber harvest plan issued by Guangzhou Peisen Landscape Architecture Design Co., Ltd
- /15/ Timber harvest plan approval issued by Jinxiu Yao Autonomous County Forestry Bureau
- /16/ Certificate of Guangzhou Peisen Landscape Architecture Design Co., Ltd
- /17/ VCS development consultation and service agreement signed among Jinxiu Yao Autonomous County Zhengtong Asset Management Co., Ltd, Guangzhou Guotan Assets Management Co., Ltd and forest owners
- /18/ Forest second class investigation data by Laibin City Forestry Survey and Design Institute

- /19/ Certificate of Laibin City Forestry Survey and Design Institute
- /20/ Notice of Guangxi Jinxiu IFM (Conversion of Logged to Protected Forest) Project issued by Jinxiu Yao Autonomous County Forestry Bureau on 20/01/2016.
- /21/ Monitoring service agreement of Forestry carbon sink signed between Guangzhou Guotan Assets Management Co., Ltd. and Shenzhen Huannong Garden Co., Ltd.
- /22/ Certificate of Shenzhen Huannong Garden Co., Ltd(Certificate No.: LDG Bing 2020-072, valid from 19/05/2020 to 19/05/2023)
- /23/ Sample plot monitoring records issued by Shenzhen Huannong Garden Co., Ltd.
- /24/ Guangxi Jinxiu VCS Project Monitoring Report issued by Shenzhen Huannong Garden Co., Ltd on 30/06/2022
- /25/ Agriculture land Right Certificates of the Project
- /26/ Maps of the Project
- /27/ Document on no illegal logging and forest disturbance activities during the period from 01/03/2016-31/08/2020
- /28/ 13th Five-year Forest Harvest Limit issued by State Council (Guohan [2016] No.32)
- /29/ The Notice of the Review Opinion published by the State Council
- /30/ National Forestry Law of China
- /31/ "Land Use Change and Forestry GHG Inventory (2013)" of "Second national information notification on China
- /32/ Forestry Part of China's greenhouse gas emissions list
- /33/ National Forest Resource Continuous Investigation Technical Regulation issued by the State Forestry Bureau
- /34/ Tool for calculation of the number of sample plots for measurements within A/R CDM project activity
- /35/ IPCC Guidelines for National Greenhouse Gas Inventories (2006), Table 4.9.

APPENDIX B: RESOLUTION OF CORRECTIVE ACTION /CLARIFICATION / FORWARD ACTION REQUESTS

Draft report clarifications and corrective action requests by validation team	Summary of project participant response	Validation team conclusion
CL01 was raised requesting the PP to use the latest VCS-Monitoring-Report-Template-V4.1.	VCS-MR version 05 has been modified according to the latest template V4.1.	VCS-MR version 01 is based on Monitoring-Report-Template-V4.0, but the Monitoring-Report-Template-V4.1 has been updated On 20/01/2022.CEC checked the VCS-MR version 05 and confirmed that VCS-MR version 05 was prepared according to the latest template V4.1, CL01 was closed.

APPENDIX C: CERTIFICATE

List of Assessment Team

Validation Team	Role	Qualification	Specific scope	Participated in the on-site visit
WU Xiuli	Team Leader	Auditor	√	√
Cao Dandan	Team Member	Auditor	--	√
XU Zhengxu	Team Member	Auditor Trainee	--	√

Technical Review	Role	Specific Scope	Participated in the on-site visit
XUE Jinghua	Technical Reviewer	--	--
ZHANG Xiaoquan	Technical Reviewer	√	--

Brief background information of assessment team:

Wu Xiuli is a technical expert in technical areas 14.1. She gained Master Degree in Garden and Senior Engineer. She has worked in National Forestry Bureau for more than 15 years, gaining extensive working experiences in Forestry Technical Area. During the work, Mrs. Wu was responsible for forestry (architecture) teaching, scientific research and management work. She also drafted the "national forestry and ecological construction management mode". She involved in various CDM conference and training courses since 2010 and attended more than 20 hours CDM training.

CAO Dandan is a Greenhouse Gas (GHG) assessor. She has attended various internal and external training courses on CDM, GS, ISO14064, GHG protocol, environmental labeling and other GHG related training courses. Since she joined CEC in 2015, she has participated in and finished several CDM, ISO14064 CCER auditing in the area of renewable energy, green lighting, energy system optimization.

Xue Jinghua is a lead Greenhouse Gas(GHG) assessor. She has attended extensive internal and external training courses on EMS, energy audit, CDM and CDM related knowledge since 2007. She has participated in over 30 validation/verification CDM projects in the areas of hydropower, wind power, coal mine methane recovery and utilization, waste heat recovery and landfill gas recovery and utilization. Besides CDM auditing, Ms. Xue has also participated in the assessment of hydroelectric projects against the criteria set by the World Commission on Dams and energy saving auditing.

Zhang Xiaoquan is a Greenhouse Gas(GHG) assessor. He worked as a management staff in state-owned forest farm for over 10 years before come to CEC. He is an experienced senior EMS/ QMS Auditor and Environmental Labeling auditor, who has also completed various CEC CDM training courses and GHG accounting related courses since 2007.

WU Xiuli

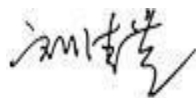
Qualification in accordance with CEC-4001C-C/1.2 *Operation Instruction for Personal Competence Assessment* for CDM

CDM Auditor: Yes

Industry Sector Expert for Technical Area(s): 14.1

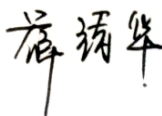
Beijing, 25 Sep 2015

LIU Qingzhi



CDM Quality Manager

XUE Jinghua



Quality Assurance Management Division

CAO Dandan

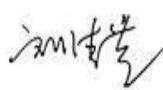
Qualification in accordance with CEC-4001C-C/1.5 *Operation Instruction for Management of Personnel Competence in the Validation/Verification Function*

CDM Auditor: Yes

Industry Sector Expert for Technical Area(s): 1.2

Beijing, 23 Mar 2020

LIU Qingzhi



CDM Quality Manager

ZHANG Huan



Quality Assurance Management Division

XUE Jinghua

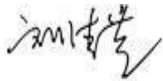
Qualification in accordance with CEC-4001C-C/1.5 Operation Instruction for Management of Personnel
Competence in the Validation/Verification Function

CDM Auditor: Yes

Industry Sector Expert for Technical Area (s): 1.2,4.1

Beijing, 25 Feb 2019

LIU Qingzhi



CDM Quality Manager

ZHANG Huan



Quality Assurance Management Division

ZHANG Xiaoquan

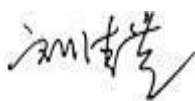
Qualification in accordance with CEC-4001C-C/1.2 Operation Instruction for Personal Competence
Assessment for CDM

CDM Auditor: Yes

Industry Sector Expert for Technical Area(s): 14.1

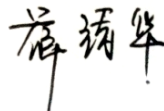
Beijing, 25 Sep 2015

LIU Qingzhi



CDM Quality Manager

XUE Jinghua



Quality Assurance Management Division