VALIDATION REPORT

JIANGXI PROVINCE LE'AN COUNTY FOREST FARM CARBON SINK PROJECT

Document Prepared By Bureau Veritas Certification

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Summary:

Bureau Veritas Certification has conducted the validation of Jiangxi Province Le'an County Forest Farm Carbon Sink Project, owned by Beijing Shengdahuitong Carbon Management Co., Ltd., which is located in Le'an County, Jiangxi Province of P. R. China, and applying the methodology VM0010 version 1.2 "Methodology for Improved Forest Management: Conversion of Logged to Protected Forest", on the basis of Voluntary Carbon Standard (VCS) Version 3.3, as well as criteria given to provide for consistent project operations, monitoring and reporting.

The validation 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 and the baseline and monitoring plan; ii) on-site visit and follow-up interviews with project stakeholders; iii) resolution of outstanding issues and the issuance of the final validation report and opinion. The overall validation, from Contract Review to Validation Report & Opinion, was conducted using Bureau Veritas Certification internal procedures.

The Project involves the improved forestry management, such as conversion of logged to protection forest whose carbon credit rights owned by Beijing Shengdahuitong Carbon Management Co., Ltd. The forestry management conversion includes 7,746.7 ha *logged to Protected Forest* (LtPF) spreading over Jinzhu department, Zhaoxie department, Zengtian department, Niutian department, Shipi department, Gongxi department; Huping Harvest-Nuture department, Shipi Harvest-Nuture department and Zhaoxie Harvest-Nuture department. All these departments are state-owned forests and have the legal right to forest ownership. The conversion started from 01/01/2006, and then all the forestry are protected as non-commercial forestry and reduce the GHG emissions as anthropogenic GHG removals by sinks for about 2,206,173 tCO_2e in 30 years.

The first output of the validation process is a list of Clarification and Corrective Actions Requests (CL and CAR), presented in Annexure-II. Taking into account this output, the project proponent revised its project design document.

In summary, it is Bureau Veritas Certification's opinion that the Project correctly applies the approved Methodology for Improved Forest Management: Conversion from Logged to Protected Forest, v1.2 and meets the relevant VCS Standard version 3.3 requirements, Agriculture, Forestry and Other Land Use (AFOLU) Requirements (Ver. 3.3) and the relevant host country criteria.

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1 INTRODUCTION

1.1 Objective

DTM (Beijing) Energy Technology Development Co., Ltd. has commissioned Bureau Veritas Certification to verify the emission reductions of the Jiangxi Province Le'an County Forest Farm Carbon Sink Project (hereafter referred to as "the Project") owned by Beijing Shengdahuitong Carbon Management Co., Ltd. (hereafter referred to as "the PP"), which is located in Le'an County, Jiangxi Province of P. R. China.

Bureau Veritas Certification as the validation/validation 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 validation is to verify of the project description, in particular, the Project's baseline, the monitoring plan (MP), and the Project's compliance with relevant Voluntary Carbon Standard version 3.3 are validated in order to confirm that the project design, as documented, is sound and reasonable, and meets the stated requirements and identified criteria. Validation is a requirement for all VCS projects and is seen as necessary to provide assurance to stakeholders of the quality of the Project and its intended generation of Voluntary Carbon Units (VCU).

1.2 Scope and Criteria

The validation 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 version 3.3 requirements, UNFCCC rules and associated interpretations.

The validation 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.

1.3 Level of assurance

Bureau Veritas Certification has undertaken a reasonable assurance engagement in accordance with VCS version 3.3. It requires a reasonable level of assurance in validation that GHG assertions are free of material errors, omissions and misrepresentations. The validation 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 Le'an County, Jiangxi Province of P. R. China, with the geo-coordinate range of 26.83°N-27.75°N and 115.58°E-116.17°E. The annual estimated emission reductions are 73,539 tCO_2e.

The Project involves 7,746.7 ha logged to Protected Forest (LtPF) project which belongs to the improvement forestry management (IMF). It applies methodology *VM0010 version 1.2* "*Methodology for Improved Forest Management: Conversion of Logged to Protected Forest*". The protected species are Chinese Fir and Slash Pine.

According to the Government-approved timber management plan, the LtPF area is identified as 7,746.7 ha.

The Project Start Date is 01/01/2006, when the forest protection contract signed between the local government and the forest farms took into effect.

Project title:	*Jiangxi Province Le'an County Forest Farm Carbon Sink Project*
Project Proponents:	*China (host): Beijing Shengdahuitong Carbon Management Co., Ltd.*
Methodologies used:	*VM0010 version 1.2*
Location of the Project:	*Le'an County, Jiangxi Province of P. R. China*
Geo coordinates:	26.83°N-27.75°N and 115.58°E-116.17°E

2 VALIDATION PROCESS

2.1 Method and Criteria

The overall validation, from Contract Review to Validation Report & Opinion, was performed using Bureau Veritas Certification internal procedures.

Bureau Veritas Certification validated the project against the requirements set in VCS standard version 3.3 (/7/).

2.2 Document Review:

The VCS Project Description (VCS-PD) was submitted by DTM (Beijing) Energy Technology Development Co., Ltd. and additional background documents related to the project design and baseline were reviewed.

Furthermore, cross checks were made between information provided in the VCS-PD and information from sources other than those used.

To address Bureau Veritas Certification corrective action and clarification requests, the PD was revised to version 03 and resubmitted on 12/10/2013, and the validation conclusions presented in this report relate to the project as described in the VCS-PD version 03 dated 12/10/2013.

2.3 Site *Inspection and Interviews:*

During period 13/01/2013 to 18/01/2013, Bureau Veritas Certification performed a site visit and interviews with project stakeholders to confirm selected information and to resolve issues identified in the document review. Representatives of Beijing Shengdahuitong Carbon Management Co., Ltd. and DTM (Beijing) Energy Technology *Development Co., Ltd.* were interviewed (see References). The main topics of the interviews are summarized in Table 1.

Table 1 Interview topics

Interviewed organization	Interview topics
Beijing Shengdahuitong Carbon Management Co., Ltd. (the Project Owner) Two forestry farm	➢ 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.
DTM (Beijing) Energy Technology Development Co., Ltd. (the Consultant)	➢ Applicability of selected methodology. ➢ Baseline determination. ➢ Emission reductions calculation. ➢ Emission reduction monitoring plan.
Local Stakeholders	➢ Project background in details ➢ Stakeholder comments ➢ Social and environmental impact of the Project

2.4 Resolution of Any Material Discrepancy:

The objective of this phase of the validation is to resolve issues that require further elaboration, research or expansion prior to Bureau Veritas Certification's positive conclusion on the project design.

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

(a) The project participants have made mistakes that will influence the ability of the project activity to achieve real, measurable, verifiable and additional emission reductions;

(b) The applicable VCS requirements have not been met;

(c) There is a risk that emission reductions cannot be monitored or calculated.

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) may also be raised during validation, to identify issues related to project implementation that require review during the first validation of the project activity.

To guarantee the transparency of the validation process, the issues raised, the responses provided by the project participants, the means of validation of such responses and references to any resulting changes in the VCS-PD or supporting annexes are documented in the Appendix A.

3 VALIDATION FINDINGS

3.1 Project Design

As per VCS Standard version 3.3, the scope of VCS program includes:

- *All six Kyoto Protocol greenhouse gases;*
- *Ozone-depleting substances as set out in VCS document ODS Requirements.*

- *Project activities supported by a methodology approved under the VCS Program through the methodology approval process;*
- *Project activities supported by a methodology approved under a VCS approved GHG program, unless explicitly excluded under the terms of VCS approval;*
- *Jurisdictional REDD+ programs and nested REDD+ projects as set out in VCS document JNR Requirements*

The scope of the VCS Program excludes:

- *Projects that can reasonably be assumed to have generated GHG emissions primarily for the purpose of their subsequent reduction, removal or destruction;*
- *Projects that reduce hydrofluorocarbon (HFC) emissions from the production of HCFC-22 in Kyoto Protocol Annex B countries.*

Bureau Veritas Certification recognizes the initiative of the PP in helping country fulfill its goals of promoting sustainable development. The Project employs improved forestry management, such as conversion of logged to protection forest whose carbon credit rights owned by Beijing Shengdahuitong Carbon Management Co., Ltd. and protected by the "Forestry industry Co., Ltd." and "Shiyan Forestry Farm". The forestry management conversion includes 7,746.7 ha logged to Protected Forest (LtPF) located in Le'an County, Jiangxi Province, China, spreading over 50 parcels of Jinzhu department, Zhaoxie department, Zengtian department, Niutian department, Shipi department, Gongxi department; Huping Harvest-Nuture department, Shipi Harvest-Nuture department and Zhaoxie Harvest-Nuture department. All these departments are state-owned forests and have the legal right to forest ownership. The Project contributes to GHG emissions by protecting the logging forest to keep the stock live as a carbon sink removal.

Project start date is the date 01/01/2006, when the forest protection contract signed between the local government and the forest farms took into effect. The crediting period is 30 years, from 01/01/2006 to 31/12/2035. The Project is expected to be operational for at least 30 years. The Project involves the improved forestry management, such as conversion of logged to protection forest (Protected species are: Slash Pine and Chinese Fir) whose carbon credit rights owned by Beijing Shengdahuitong Carbon Management Co., Ltd. The forestry management conversion includes 7,746.7 ha logged to Protected Forest (LtPF). The estimated average annual emission removals are expected to 73,539 tCO_2e.

The PP has provided the evidence of proof of title through the right of use arising by virtue of the "Business license of *Beijing Shengdahuitong Carbon Management Co., Ltd.*". Bureau Veritas Certification reviewed the document and confirms the ownership of the PP.

The Project has not created any other forms of environmental credits. Currently in China, the other environmental credit that could have been created is Certified Emission Reductions (CER) under the CDM process. By checking the database of CDM projects and regulation of CDM in China, Bureau Veritas Certification confirmed that the Project has not been involved in the CDM program.

The project uses approved Methodology for Improved Forest Management: Conversion from Logged to Protected Forest, v1.2, which belongs to the type of Improved Forest Management, scope14 "Agriculture, Forestry, Land Use". The VCS Association has granted this project an extension to the

validation deadline until 25 November 2013 (/34/). And the Project lists the monitoring parameters and sets a management plan for the leakage in the operation of the crediting period.

3.2 Application of Methodology

3.2.1 Title and Reference

The project uses approved *VCS Methodology VM0010 i.e.* Methodology for Improved Forest Management: Conversion from Logged to Protected Forest, v1.2.

3.2.2 Applicability

The Project falls within the AFOLU project category "IFM Logged to Protected Forest" as defined in the most recent version of the VCS AFOLU Guidance document, VM0010 Methodology for Improved Forest Management: Conversion from Logged to Protected Forest, v1.2 (/6/), VCS Standard version 3.3 (/7/) and the related tools (/8//9/). Specific conditions under which this methodology is applicable are satisfied as below:

✓ Forest management in the baseline scenario must be planned timber harvest;

The forest management in the baseline scenario can be validated as planned timber harvest according to the historical management records and the forestry right certificates. Bureau Veritas Certification checked the forest right certificate of the Project (/12/, /13/ and /14/), and can confirm the applicability.

✓ Under the project scenario, forest use is limited to activities that do not result in commercial timber harvest or forest degradation;

Under the project scenario, the forest use of the Project activity is switched to the ecological forestry which is forbidden to be logged, thus the forest use is limited to activities that do not result in commercial timber harvest or forest degradation (/15/).

✓ Planned timber harvest must be estimated using forest inventory methods that determine allowable offtake as volume of timber (m3 ha-1);

The timber harvest plan estimated the volume of timber with the allometric equation for the local region and the special species of the Project.

✓ The boundaries of the forest land must be clearly defined and documented;

The boundaries of the forest land are clearly defined in line with administrative division in the maps and documented in the local forestry government (/16/).

✓ Baseline condition cannot include conversion to managed plantations;

The baseline plantations are timber forest, not including the conversion to managed plantations. Bureau Veritas Certification checked the forest right certificate of the Project (/14/), and can confirm the applicability.

✓ Baseline scenario, project scenario and project case cannot include wetland or peatland.

There is no wetland or peatland in the Project (/16/)

3.2.3 Project Boundary

According to VM0010 version 1.2, the spatial boundaries of the project activity so as to facilitate accurate measuring, monitoring, accounting, and verifying of the project's emissions reductions and removals is defined below:

Step 1: *Geographical Boundaries*

The Project is implemented in Le'an County, Jiangxi Province of China with 7,746.7 ha area, including 50 parcels spreading over Jinzhu department, Zhaoxie department, Zengtian department, Niutian department, Shipi department, Gongxi department; Shipi Harvest-Nuture department and Zhaoxie Harvest-Nuture department.

Detailed information to describe physical project boundaries per discrete area including:

- name of the project area (including compartment number, allotment number, local name);
- unique identifier for each discrete land parcel used in the timber harvest plan
- map(s) of the area (hard paper)
- geographic coordinates of each polygon vertex
- total land area; and
- details of forest land rights holder and user rights.

The Forestry Right Certificates are provided to identify the information above (/14/). Bureau Veritas Certification checked the documents provided and found the information listed in the PD and the ER calculation of the Project are consistent with the Forestry Right Certificates, and the geographic boundaries of the Project are fixed and thus do not change over the project lifetime.

Following the VCS definition of market leakage the geographic boundaries for leakage from market effects are those of the country in which the project area occurs.

Step 2: *Temporal Boundaries*

The following temporal boundaries are defined:

Step 2.1: Start date and length of the project crediting period

According to VCS standard version 3.3, the start date of the project activity is 01/01/2006 on which date the ecological protection contract was effective. The length of the project crediting period is 30 years.

Step 2.2: Duration of the monitoring periods

The project proponent decides the periodicity of verifications every 5 years.

Step 3: *Carbon pools*

The carbon pools included or excluded from the project boundary are shown in Table 2:

Table 2: Carbon pools

Carbon pools	Included/Optional/ Excluded	Justification / Explanation of choice
Aboveground trees	Included	The stock change in the aboveground tree biomass is estimated
Aboveground non-tree	Excluded	Exclusion is always conservative when forests remains as forest
Belowground	Excluded	Unlikely to change significantly in forests remaining as forests and is difficult to measure - omission is conservative
Dead wood (logging slash)	Included in the baseline	Required under VCS Tool for AFOLU Methodological Issues
Dead wood (naturally accumulated)	Excluded	Required under VCS Tool for AFOLU Methodological Issues
Harvested wood products	Included	Will be greater in baseline than project scenario and significant
Litter	Excluded	Insignificant and exclusion is conservative
Soil organic carbon	Excluded	Exclusion is always conservative when forests remains as forest

Step 4: *Greenhouse Gases*

The emissions sources included in or excluded from the project boundary are shown in Table 3：

Table 3: Emission sources other than resulting from changes in stocks in carbon pools

Gas	Sources	Included/ Excluded	Justification/explanation of choice
Carbon dioxide (CO2)	Combustion of fossil fuels (in vehicles, machinery and equipment)	Excluded	Conservative as emissions will be greater in the baseline scenario than in the project case.

	Removal of herbaceous vegetation	Excluded	Based on CDM EB decision reflected in paragraph 11 of the report of the 23rd session of the board: cdm.unfccc.int/Panels/ar/023/ar_023_rep.pdf
Methane (CH4)	Combustion of fossil fuels (in vehicles, machinery and equipment)	Excluded	Conservative as emissions will be greater in the baseline scenario than in the project case.
	Burning of Biomass	Included	Included as CO2 equivalent emission
Nitrous oxide (N2O)	Combustion of fossil fuels (in vehicles, machinery and equipment)	Excluded	Potential emissions are negligible
	Nitrogen based fertilizer	Excluded	Potential emissions are negligible. Following the VCS update to the Tool for AFOLU Methodological Issues and Guidance for AFOLU Projects emissions through the use of fertilizer are considered insignificant and are not considered here
	Burning of Biomass	Excluded	Potential emissions are negligible

3.2.4 Selection of Baseline

According to the applied methodology, the baseline scenario is identified using the "Tool for the Demonstration and Assessment of Additionality in VCS Agriculture, Forestry and Other Land Use (AFOLU) Project Activities" version 3.0. (/9/) as section 3.2.7 below, the baseline of the Project is the trees are logged based on a valid and verifiable government-approved timber management plan for harvesting the project area.

3.2.5 Modelling the baseline scenario

A historical practices (/13/) of the local region as baseline agent of timber harvest was modelled to be the baseline scenario, which includes the documents provided by project proponent as below:

- ✓ Historical records of forest management exist for a minimum of 5 or more years preceding the project start date;
- ✓ Historical records indicate that the management practices have surpassed the legal requirements provided by conforming with all local and regional forest legislation
- ✓ Historical records that indicate that the historical management surpasses financial barriers by providing above average financial returns

A timber harvest plan including a detailed timber harvesting schedule based on the historical common practice and the academic research are provided (/26/ and /27/). Bureau Veritas Certification checked the evidences provided and cross-checked with local forestry bureau, and confirm the timber harvest plan is reasonable and following local best practice for timber harvest and the timber resource volume and extraction quotas defined in the legal requirements.

The timber harvest plan includes:

a. The species to be harvested are: Chinese Fir and Slash Pine;

b. The detailed years for the timber harvest of the land is scheduled to occur;

c. the number of years each land parcel is in a post-harvest state during the project crediting period;

d. the maximum and minimum diameters at breast height (DBH), at stump and at top for tree harvesting ;

e. the planned harvesting regime (clearfelling, specie/stratum-selective logging, area-selective logging);

f. technical specifications for the categories of wood products to be harvested; and

g. the total volumes or fractions to be harvested, broken down by categories of wood products defined as sawnwood, wood-based panels, other industrial roundwood, paper and paper board, and other.

3.2.6 Stratification

As the project activity area contains different forest types or forests with different carbon density, stratification is carried out in order to improve the accuracy and precision of carbon stock estimates.

Based on the availability of data regarding the nature and composition of forest stocks in the project area, stratification is developed on the basis of existing vegetation stratification, where these are documented in the legal right to harvest.

The strata of the Project in baseline are identified according to tree age and species as below:

Serial number of strata	Area (ha)	Tree species	Age in 2005
Chinese Fir-I	822.93	Chinese Fir	0~5
Chinese Fir-II	116.93	Chinese Fir	6-10
Chinese Fir-III	6,703.65	Chinese Fir	14-19
Slash Pine-I	43.20	Slash Pine	0~5
Slash Pine-II	60.00	Slash Pine	12~16

5	**7,746.7**		

3.2.7 Additionality

According to the applied methodology, the additionality are demonstrated using the "Tool for the Demonstration and Assessment of Additionality in VCS Agriculture, Forestry and Other Land Use (AFOLU) Project Activities" version 3.0. (/9/) as below:

3.2.7.1 *Identification* of alternative land use scenarios to the AFOLU project activity;

3.2.7.1.1 Identify credible alternative land use scenarios to the proposed VCS AFOLU project activity

a) Identify realistic and credible land-use scenarios that would have occurred on the land within the proposed project boundary in the absence of the AFOLU project activity under the VCS. The scenarios should be feasible for the project area taking into account relevant national and/or sectoral policies and circumstances, such as historical land uses, practices and economic trends. The identified land use scenarios shall at least include:

   i). Continuation of the pre-project land use as the timber harvest plan as analysed in section 2.4;

   ii). Project activity on the land within the project boundary performed without being registered as the VCS AFOLU project.

   iii). If applicable, activities similar to the proposed project activity on at least part of the land within the project boundary of the proposed VCS AFOLU project at a rate resulting from:

   - Legal requirements; or
   - Extrapolation of observed similar activities in the geographical area with similar socio-economic and ecological conditions to the proposed VCS AFOLU project activity occurring in the period beginning ten years prior to the project start date.

b) All identified land use scenarios must be credible. All land-uses within the boundary of the proposed VCS AFOLU project that are currently existing or that existed at some time in the period beginning ten years prior to the project start date but no longer exist, may be deemed realistic and credible. For all other land use scenarios, credibility shall be justified. The justification shall include elements of spatial planning information (if applicable) or legal requirements and may include assessment of economic feasibility of the proposed land use scenario.

   For (iii), the lands within the project boundary of the proposed VCS AFOLU project are all with the same legal requirements and are existed as timber forests more than ten years prior to the project start date. So (iii) is not applicable.

   Pre-project land use scenario is the timber forest which is the common practice in China, it is feasible for the project area taking into account Forest Law of People's Republic of China. The (i) and (ii) identified land-use scenarios that would have occurred on the land within the proposed project boundary in the absence of the AFOLU project activity under the VCS are realistic and credible, as all land-uses within the boundary of the project activity that existed in

the period beginning ten years prior to the project start date but no longer exist. Therefore, the 2 identified realistic and credible alternative land used scenarios that could have occurred on the land within the project boundary of the VCS AFOLU project are listed above, and deemed realistic and credible.

3.2.7.1.2 Consistency of credible land use scenarios with enforced mandatory applicable laws and regulations

All the scenarios identified above are consistent with enforced mandatory applicable laws and regulations of China.

3.2.7.1.3 Selection of the baseline scenario:

The scenarios i) and ii) are realistic and credible.

Outcome of section 3.2.7.1:

The identified land use scenarios include the two scenario below:

i). Continuation of the pre-project land use;

ii). Project activity on the land within the project boundary performed without being registered as the VCS AFOLU project.

3.2.7.2 Investment analysis to determine that the proposed project activity is not the most economically or financially attractive of the identified land use scenarios; or

Determine whether the proposed project activity, without the revenue from the sale of GHG credits is economically or financially less attractive than at least one of the other land use scenarios.

3.2.7.2.1 Determine appropriate analysis method

According to the VT0001 VCS AFOLU Additionality Tool v3.0, there are three options can be applied for investment analysis, namely simple cost analysis (Option I), investment comparison analysis (Option II) and benchmark analysis (Option III).

As the Project will earn subsidies from the protected forest fund (/18/), thus investment comparison analysis (Option II) .

3.2.7.2.2 Option II. Apply investment comparison analysis

As the PP compared to determine which one is the more economic attractive scenario in the 2 scenarios identified in section 3.2.7.1.1, NPV will be used as the financial indicator to calculate the discounting in 30 years for decision-making context.

3.2.7.2.3 Calculation and comparison of financial indicators (only applicable to options II and III):

1) Calculate the suitable financial indicator for the proposed VCS AFOLU project without the financial benefits from the VCS for the two alternatives identified in section 3.2.7.1.

The assumptions and input data for the investment analysis are shown in below:

Item	Unit	Project scenario	baseline scenario	Data source
Chinese Fir Price	RMB/m^3		435.31	Financial statement
Pine Price	RMB/m^3		540.02	Financial statement
Subsidy	RMB/Mu	5		Forest management and protected agreement
Total Area	Mu	116,200.5[1]		
A/R cost	RMB/Mu	0	330.00	A/R agreement
Harvest cost	RMB/m^3	0	120	Harvest agreement
Woods-raising fund	%	0	12%	Collecting of Woods-raising fund and Maintenance of Simple Reproduce Fee management regulation of Jiangxi Province
Maintenance of Simple Reproduce Fee	%	0	8%	
Administration Fee	RMB/Mu	11	11	Project Proposal
Forest Maintain Fee	RMB/Mu	1	0	Forest management and protected agreement
Discount rate		8%	8%	National regulation

For the price of the wood sale, the data source is the financial statement. Bureau Veritas Certification checked the historical wood sale receipts and found the wood price is consistent with the historical sale receipts and the current common practice in the local region in the base year of the project (2005).

The subsidy and Forest Maintain Fee of the protected forest are consistent with the Forest management and protected agreement which signed between the the local forest bureau and the forest farm (/19/) and in line with the national regulation (/18/).

The Woods-raising fund rate and Maintenance of Simple Reproduce Fee rate are consistent with the Collecting of Woods-raising fund and Maintenance of Simple Reproduce Fee management regulation of Jiangxi Province. (/20/)

The Administration Fee are consistent with the historical financial level and the national regulation (/31/).

[1] equal to 7,746.7 ha

The discount rate of the NPV calculation is consistent with the "Economic Evaluation Method and Parameters for Project Construction" (version 3).

2) Present the investment analysis in a transparent manner and provide all the relevant assumptions in the VCS AFOLU project description.

Comparison of NPV at different scenarios

	NPV (10^4 Yuan)
Scenario of Logging	¥8,314
Scenario of protected	¥-916

3.2.7.2.4 Sensitivity analysis

For the project, the key parameters are identified as: Price of the trees, the O&M cost, the volume of the extracted trees, and the subsidy price are taken into account of the sensitivity analysis. The analysis of the four key parameter is listed below:

(1) Price of the trees

If the Price of the trees was decreased by 38.11%, the NPV under protected scenario will exceed the NPV under logged scenario. However, the purchasing price indices for raw materials have been increasing in China in recent years which can impact the price of the trees. Take 2010 for example, the general index of investment price for fixed assets increased 3.6% compared with 2009, and the price of raw materials increased by 9.6%[2]. Consequently it is impossible to improve the financial attraction due to the decrease of Price of the trees. So it is impossible for Price of the trees to decrease by 38.11%.

(2) O&M cost

If the annual O&M cost of the project increase by 45.27%, the NPV under protected scenario will exceed the NPV under logged scenario. However, as the PP will make their best to manage the project as well as they can, they will control the O&M cost not to increase so much and not to let the NPV decrease. Therefore, although maybe the price of material and salaries of the employees are increasing, it will not reach to the range of 45.27%. Thus, it is nearly impossible for the operating costs decreasing by 45.27%.This assumption is highly unlikely.

(3) Volume of the extracted trees

In order to the NPV under protected scenario will exceed the NPV under logged scenario, the Volume of the extracted trees of the project must be increased by 75.85%. However, the estimation of the volume of the extracted trees is calculated through the selected allometric equations which are actually verified correctly. Therefore, this rate of decrease on Volume of the extracted trees of the project in the whole crediting period will be unlikely to happen

(4) Subsidy price

[2]http://www.stats.gov.cn/tjgb/ndtjgb/qgndtjgb/t20110228_402705692.htm

In order to the NPV under protected scenario will exceed the NPV under logged scenario, the subsidy price of the project must be increased more than 1000%.

The subsidy price is given by the government which is strictly regulated and keep still. Even though it could be increase, the range of increase controlled by the government could not be huge, such as 1000%. Therefore, it is not possible to let the NPV under protected scenario exceed the NPV under logged scenario by increasing the subsidy price.

3.2.7.3 *Barriers analysis*

Not applicable.

3.2.7.4 *Common practice analysis*

There was a significant Reform of Forest Right taken by Jiangxi Province from September 2004 and then the Forest System was different compared to the situation before the reform, and stated-owned forest are significantly different from the collectively owned forest. As the project activity belongs to the stated-owned forest, there are essential distinctions between the project activity and the other collectively owned activities in Le'an county. Therefore, only stated-owned activities are included in the analysis.

China has a vast territory, the development policies and investment environment for projects in each province of China are not same. The investment climate varies considerably depending on the local conditions from province to province, even region to region as the forestry development is combined with not only the natural forest stand but also the investment environment including the laws and regulations. The Project is located in Jiangxi Province. However, the geographic and geomorphic conditions are totally different in the whole province. For example, the forest development area has been divided to 6 areas based on the landform characteristics and the forest production situation by the Jiangxi Province Forest Department according to the Jiangxi province Forestry D*evelopment* Plan. In this Plan, Le'an County belongs to the middle-east hilly mountain area of the Jiangxi Province together with the other 8 counties, which are Nancheng, Nanfeng, Jinxi, Zixi, Lichuan, Chongren, Yihuang and Guangchang.

Therefore, the stated-owned activities in the middle-east hilly mountain area of the Jiangxi Province operated since September 2004 are identified.

In the middle-east hilly mountain area of the Jiangxi Province from September 2004, Le'an county and Guangchang county are two national level poverty-stricken counties and the economic environment is not the same as other counties (/21/).

However, the Guangchang county was a central Soviet area county before and could earn additional national subsidies for its economic development from 2001 till now (/33/). So the economic environment in Guangchang county is different from Le'an county. And the Project is the only stated-owned forest in Le'an county.

Therefore, according to the analysis above, essential distinctions which include a fundamental and verifiable change in circumstances under which the proposed VCS AFOLU project activity is implemented when compared to circumstances under which similar activities were carried out. So there are no similar activities in Le'an county.

Therefore, the project activity is not the baseline scenario and, hence, it is additional.

3.2.8 Quantification of GHG Emission Reductions and Removals

The values are calculated based on the measured DBH and the height of two species (Slash Pine and Chinese Fir) of the Project boundary sourced from the national forest inventory in 2005, using the suitable allometric equation for local region published in the academic paper. All the field data are measured in accordance with the China's forestry inventory guideline/regulations (/25/).

i. **Baseline Scenario Greenhouse Gas Emissions**

Baseline projections are calculated ex-ante and are not adjusted through-out the project lifetime.

The baseline net greenhouse gas emissions are determined from calculation of deadwood generated in the process of timber harvest the emissions resulting from production and subsequent retirement of wood products derived from the timber harvesting, minus the rates of forest re-growth post timber harvest.

Baseline commercial timber volumes must be derived for development of the timber harvest plan and for ex-post accounting of emissions resulting from natural forest disturbance.

The equations calculate the total emissions across the project crediting period for each emission source. Total emissions are averaged across the crediting period to give annual emissions and are multiplied by t*, time elapsed since the start of project activity. Ex- post, t* is updated so baseline projections are available for each proposed future verification date.

Data for input into these carbon stock change calculations for the baseline scenario shall be established from the same data used to create the timber harvesting plan.

According to VM0010 Version 1.2,

1) Calculation of carbon stocks in commercial timber volumes

This step calculates $C_{HB,j,i|BSL}$, the mean carbon stock in total harvested biomass in tC·ha-1 and $C_{EX,j,i|BSL}$, the mean carbon stock in extracted timber (merchantable timber that leaves the forest) in $tC \cdot ha^{-1}$.

Estimation of the merchantable volume of trees is based on locally derived allometric equations (/26/ and /27/).

The estimate of merchantable volume for each species *j* at the sample plot level will be calculated as:

$$V_{j,i,sp} = \sum_{l=1}^{L} V_{l,j,i,sp}$$

Where:

$V_{j,i,sp}$	merchantable volume for species *j* in stratum *i* in sample plot *sp*, m^3;
$V_{l,j,i,sp}$	merchantable volume for tree l of species j in stratum i in sample plot sp, m^3;
l	1, 2, 3 …*L* sequence of individual trees in sample plot;
I	1, 2, 3 …*M* strata;
sp	1, 2, 3 …*SP* sample plots; and

j 1, 2, 3 …*J* tree species.

Therefore, the merchantable volume per unit area of species j in stratum i will be calculated as the mean merchantable volume in all sample plots in stratum i:

$$V_{j,i|BSL} = \frac{1}{SP} * \sum_{sp=1}^{SP} \frac{V_{j,i,sp}}{A_{sp}}$$

Where:

$V_{j,i|BSL}$ mean merchantable volume per unit area of species j in stratum i in the baseline scenario, $m^3 \cdot ha^{-1}$;

$V_{j,i,sp}$ merchantable volume for species j in stratum i in sample plot *sp*; m^3;

A_{sp} area of sample plot *sp*, ha;

i 1, 2, 3 …M strata;

sp 1, 2, 3 …SP sample plots; and

j 1, 2, 3 …j tree species.

Therefore, the carbon stock of timber harvested per unit area for species j in stratum i will be calculated from this mean volume of extracted timber:

Where:

$$C_{HB,j,i|BSL} = V_{EX,j,i|BSL} * BCEF_R * CF_j$$

$C_{HB,j,i|BSL}$ mean carbon stock of harvested biomass per unit area for species j in stratum i, $tC \cdot ha^{-1}$;

$V_{EX,j,i|BSL}$ mean volume of extracted timber per unit area for species j in stratum i, $m3 \cdot ha^{-1}$;

$BCEF_R$ biomass conversion and expansion factor applicable to wood removals in the project area, t.d.m m^{-3};

CF_j carbon fraction of biomass for species j, tC t $d.m^{-1}$;

i 1, 2, 3 …M strata; and

j 1, 2, 3 …J tree species.

Not all of the harvested biomass leaves the forest because the timber harvested has two components: 1) wood removed to market (extracted timber) and, 2) wood remaining in the forest as a result of harvest.

Therefore, the mean carbon stock of extracted timber per unit area for species j in stratum i will be calculated from the mean volume of extracted timber multiplied by plant density and carbon fractions:

$$C_{EX,j,i|BSL} = V_{EX,j,i|BSL} * D_j * CF_j$$

Where:

$C_{EX,j,i|BSL}$ mean carbon stock of extracted timber per unit area for species j in stratum i; $tC \cdot ha^{-1}$;

$V_{EX,j,i|BSL}$ mean volume of extracted timber per unit area for species j in stratum i; in $m^3 \cdot ha^{-1}$;

D_j basic wood density of species j; t d.m. m^{-3};

CF_j carbon fraction of biomass for species j; tC t $d.m.^{-1}$;

i 1, 2, 3 …M strata; and

j 1, 2, 3 …J tree species.

For the calculation of net baseline emission (**$GHG_{NET|BSL}$**),

(1). There are 5 strata for the baseline scenario (*i*=5) and 2 species (*j*=2). For every stratum, the value of $V_{ex,j,i|BSL}$ is based on data from actual field measurements in Year 2005 shown below quoted from the inventory data.

Therefore, the calculation details of carbon stock of timber harvested per unit area for species *j* in stratum *I see* the ER sheet.

Therefore, the mean carbon stock of extracted timber per unit area for species j in stratum i will be calculated from the mean volume of extracted timber multiplied by density and carbon fractions as listed as below:

Tree Species	Age in 2005	$V_{EX,j,i\|BSL}$ (m^3 ha^{-1})	Dj	$C_{EX,j,i\|BSL}$ (tC ha^{-1})
Chinese Fir-I	0~5	309	0.307	47.46
Chinese Fir-II	6-10	281	0.307	43.17
Chinese Fir-III	14-19	217	0.307	33.30
Slash Pine-I	0~5	268	0.38	50.83
Slash Pine-II	12~16	174	0.38	33.12

Bureau Veritas Certification performed a random field surveys for validation of the estimated commercial timber volumes and the field measured data sourced from the harvest plan. There are three sample plots for each strata established randomly to validate the validity of the pre-existing forest inventory data according to the methodology. And the results (/28/) showed that all the validated estimate of volume performed by Bureau Veritas Certification are greater than the estimate calculated from pre-existing forest inventory data, thus the -existing forest inventory data can be used for the estimation of baseline and the harvest plan.

2) *Calculation of dead wood (logging slash) generated in the process of timber harvest*

According to the methodology, the change in carbon stock in the dead wood pool in stratum i in land parcel p will be calculated as the difference between the total carbon stock of the harvested biomass and the carbon stock of the extracted timber:

$$\Delta C_{DWSLASH,i,p|BSL} = \left[\sum_{j=1}^{J}(C_{HB,j,i|BSL} - C_{EX,j,i|BSL})\right]$$

3) *Calculation of baseline carbon sequestered in wood products*

The conceptual framework detailed in Winjum *et al* (1998) is used here, applying the simplifying assumption that all extracted biomass not retained in long-term wood products after 100 years is emitted in the year harvested, instead of tracking annual emissions through retirement, burning and decomposition. All factors are derived from Winjum *et al* (1998).

The carbon stock of extracted timber across species is calculated as:

$$C_{EX,i|BSL} = \sum_{j=1}^{J} C_{EX,j,i|BSL}$$

Where:

$C_{EX,i\|BSL}$	change in carbon stock of extracted wood products resulting from timber harvest per unit area in stratum *i*, tC·ha^{-1}
$C_{EX,j,i\|BSL}$	mean carbon stock of extracted wood per ha, tC·ha^{-1}

In accordance with the VCS AFOLU Requirements, the amount of carbon stored in wood products that would decay within 3 years after harvest (ie, the Wood Waste (WW) and the Short Lived Fraction (SLF)), are assumed to be emitted at the time of harvest.

Wood products that are retired between 3 and 100 years after harvest (ie, the Additional Oxidised Fraction, OF), must be accounted according to a 20 year linear decay function

All other wood product pools are considered to permanently store carbon.

According to the methodology, the carbon stock of extracted timber that is immediately emitted to the atmosphere at the time of harvest is calculated as:

$$C_{WPO,i|BSL} = \sum_{k} C_{EX,i,k|BSL} * (WW_k + SLF_k)$$

Where:

$C_{WP0,i\|BSL}$	carbon stock of extracted timber from stratum i that is assumed to be emitted immediately at the time of harvest, in tC·ha^{-1};
$C_{EX,i\|BSL}$	mean carbon stock of extracted timber per unit area in stratum i, for wood product type k, tC·ha^{-1};
WW_k	fraction of biomass carbon from wood waste that is assumed to be emitted to the atmosphere immediately at the time of harvest for wood product k, dimensionless;
SLF_k	fraction of biomass carbon from the short lived wood product pool that is assumed to that be emitted to the atmosphere immediately at the time of harvest for wood product k, dimensionless;
i	1, 2, 3 …M strata; and
k	Wood products (sawnwood, wood base products, etc).

The amount of extracted carbon stock that is assumed to enter the wood products pool that is not immediately emitted at harvest is calculated as per below:

$$C_{WPi|BSL} = \sum_{k} C_{EX,i,k|BSL} - C_{WP0,i|BSL}$$

Therefore, the amount of extracted carbon stock that is assumed to enter the wood products pool that is not immediately emitted at harvest is calculated as:

$$C_{WPi|BSL} = \sum_k C_{EX,i,k|BSL} - C_{WP0,i|BSL}$$

Where:

$C_{WP,i\|BSL}$	carbon stock of extracted timber from stratum i that is assumed to enter the wood products pool that is not immediately emitted at the time of harvest ,in tC·ha-1;
$C_{EX,i\|BSL}$	mean carbon stock of extracted timber per unit area in stratum i, for wood product type k, tC·ha-1;
$C_{WP0,i\|BSL}$	carbon stock of extracted timber from stratum i that is assumed to be emitted immediately at the time of harvest, in tC·ha-1;
i	1, 2, 3 …M strata; and
k	Wood products (sawnwood, wood base products, etc)

Therefore, the carbon stock of wood products assumed to be retired between 3-100 years following harvest is calculated as:

$$C_{WP100,i|BSL} = C_{WP,i|BSL} * OF_k$$

Where :

$C_{WP100,l,p\|BSL}$	Amount of carbon stored in wood products that are assumed to be retired between 3-100 years after harvest from stratum i in land parcel p, tC·ha^{-1};
$C_{WP,i\|BSL}$	carbon stock of extracted timber from stratum i that is assumed to enter the wood products pool that is not immediately emitted at the time of harvest ,in tC·ha^{-1};
OFk	fraction of biomass carbon for wood product type k that is assumed to be emitted to the atmosphere between 3 and 100 years of timber harvest, dimensionless; and
i	1, 2, 3 …M strata

4) *Change in carbon stocks due to forest regrowth after harvest*

The carbon sequestration in the baseline resulting from forest regrowth after timber harvest up to year *t* is equal to the forest regrowth rate multiplied by the number of years since timber harvest multiplied by the area of each stratum in each land parcel. Therefore, carbon sequestration resulting from forest regrowth after timber harvest is calculated as:

$$C_{RG,i,p|BSL} = \sum_i RGRC_i$$

Where:

$C_{RG,i,p\|BSL}$	carbon sequestration resulting from forest regrowth after timber harvest in stratum *i* in land parcel *p*, tC ha^{-1} yr^{-1};
RGR_i	regrowth rate of forest post timber harvest for stratum *i*, tC ha-1 yr-1;
i	1, 2, 3 …*M* strata;

5) *Calculation of baseline scenario greenhouse gas emissions from change in carbon stocks*

The net carbon stock change to be converted to emissions is equal to the carbon stock change as a result of timber harvest plus the carbon stock change resulting from conversion and retirement of wood products minus carbon sequestration from forest regrowth after harvest.

In order to generate the annual carbon stock change in the baseline scenario, the total net change in carbon stocks for parcels within is multiplied by the area of forest in the particular age class (ie, years since harvest in the baseline).

The annualized calculations vary between years 1, 2-10; 10-20; and all years since the start of the project activity, depending on which decay functions apply.

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

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

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

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

Where:

$\Delta C_{NET|BSL(2\text{-}10)}$ net change in carbon stock across all parcels in the baseline scenario in years 2-10 since harvest in the baseline scenario, in tC;

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

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

Where:

$\Delta C_{NET|BSL(11\text{-}20)}$ net change in carbon stock across all parcels in the baseline scenario in years 11 - 20 since the start of the project activity, in tC;

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 according to equation 14 below. Note that there will be no more emissions quantified from decay of logging slash or wood products.

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

Where:

$\Delta C_{NET|BSL(1+)}$ net change in carbon stock due to forest regrowth in all parcels that have been harvested in the baseline scenario, in tC;

$\Delta C_{RG,i,p|BSL}$ carbon sequestration resulting from forest regrowth after timber harvest in stratum *i* in land parcel *p*, tC ha-1;

Therefore, according to the methodology, 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:

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

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

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

Where:

$GHG_{NET\|BSL}$	net greenhouse gas emissions in the baseline scenario since the start of the project activity, tCO2e;
$\Delta C_{NET\|BSL}$	net change in carbon stock across all parcels in the baseline scenario since the start of the project activity, tC; and
44/12	ratio of molecular weights of carbon dioxide and carbon, tCO_2-e tC^{-1}.

BVC has verified the VCS PD and the ER calculation sheet, and confirmed that the calculation of Baseline Scenario Greenhouse Gas Emissions is in accordance with the methodology, and the estimated baseline GHG emissions for the 30 years crediting period are:

$GHG_{NET|BSL,30}$ =731,414 tCO_2-e

ii. Project Scenario Greenhouse Gas Emissions

This step calculates $GHG_{NET|PRJ,}$ the net greenhouse gas emissions in the project scenario, in tCO_2-e.

Greenhouse gas emissions from Improved Forest Management (IFM) activities implemented in the project scenario must be accounted subject to application of the *de minimis* rule, as prescribed by the VCS AFOLU Guidance Document.

The type and extent of the activities implemented in the project scenario will be described by the project proponents as part of the documentation submitted with the VCS-PD.

In accordance with the applicability conditions the project scenario does not allow commercial timber harvest. As a result, carbon stock changes due to vegetation management and fuel removal will be negligible.

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

The potential for illegal extraction of trees from the project area shall be assessed ex-ante and ex-post through a participatory rural appraisal (PRA) of the communities in and surrounding the project area.

1) *Ongoing forest growth in the project scenario*

This step calculates $\Delta C_{AB,t|PRJ}$ annual carbon stock change in aboveground biomass of trees in the project scenario, in tCO_2e.

Equation selection or development must follow the criteria described for *fj(X,Y...)*, the aboveground biomass of trees based on allometric equation for species group *j* based on measured tree variable(s). For the ex-ante ER calculation, the equation used the allometric

equation widely used for the local forest region and for the verification the equations will be based on the measured variable.

Therefore, the sum of the carbon stock in each sample plot will be calculated as:

$$C_{AB,j,i,t,sp|PRJ} = \sum_{i=1}^{L_{j,i,sp,t}} f_j(X, Y \ldots) * CF$$

Where:

$C_{AB,j,i,t,sp\|PRJ}$	carbon stock in aboveground biomass of trees of species *j* in plot *sp* in stratum *i* at time *t* in the project scenario, tC
CFj	carbon fraction of biomass for tree group *j*, tC t d.m.-1;
fj(X,Y...)	aboveground biomass of trees based on allometric equation for species group *j* based on measured tree variable(s), t. d.m. tree-1;
i	*1, 2, 3, …M* strata;
j	*1, 2, 3 … J* tree species;
l	*1, 2, 3, … Lj,i,t,sp* sequence number of individual trees of species group *j* in stratum *i* at time *t* in sample plot *sp;*
t	*0, 1, 2, 3, …t** years elapsed since start of the project activity; and
sp	1, 2, 3 …*SP* sample plots.

The total carbon stock in the aboveground biomass of all trees present in sample plot sp in stratum i at time t, shall be calculated as:

$$C_{AB,i,t,sp|PRJ} = \sum_{j=1}^{J} C_{AB,j,i,sp|PRJ}$$

Where:

$C_{AB,i,t,sp\|PRJ}$	aboveground biomass carbon stock of all trees of stratum *i* at time *t* in sample plot *sp* in the project scenario, tC;
$C_{AB,j,i,t,sp\|PRJ}$	carbon stock in aboveground biomass of trees of species *j* in plot *sp* in stratum *i* at time *t* in the project scenario, tC
i	*1, 2, 3, …M* strata;
j	*1, 2, 3 … J* tree species;
t	*0, 1, 2, 3, …t** years elapsed since start of the project activity; and

Therefore, the mean carbon stock in aboveground biomass for each stratum per unit area is calculated as:

$$C_{AB,i,t|PRJ} = \frac{1}{SP} * \sum_{sp=1}^{SP} \left(\frac{C_{AB,i,t,sp|PRJ}}{A_{sp}}\right)$$

Therefore, the detailed calculation of $C_{AB,i,t,sp|PRJ}$ at time 2035 and the $C_{AB,i,t,|PRJ}$ pls. refer to the ER sheet (CF_j=0.5 according to VM0010 version 1.2).

The annual carbon stock change in aboveground biomass of trees in year t is the difference in mean carbon stock in aboveground biomass between sampling events and, when expressed in tCO_2e, is calculated as:

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

Where:

$\Delta C_{AB,t\|PRJ}$	annual carbon stock change in aboveground biomass of trees in year t, tCO2e yr-1;
$C_{AB,i,t\|PRJ}$	mean aboveground biomass carbon stock of trees in stratum i at time t, tC ha-1;
$A_{,i}$	area covered by stratum i, ha;
T	number of years between monitoring time t1 and t2 (T = t2 – t1); years;
i	1, 2, 3, …M strata;
t	0, 1, 2, 3, …t* years elapsed since start of the project activity; and
44/12	ratio of molecular weights of carbon dioxide and carbon, tCO2e tC-1.

2) *Forest disturbance in the project scenario*

This step calculates $\Delta C_{DIST\_FR,t|PRJ,}$ carbon stock change due to fire disturbance in the project scenario; tCO_2-e, $\Delta C_{DIST,t|PRJ}$, carbon stock change due to non-fire natural disturbance in the project scenario; tCO_2-e and $\Delta C_{DIST\_IL,i,t|PRJ}$, the net carbon stock changes as a result of illegal logging in stratum *i* at time *t*; in tCO_2e.

a. Natural disturbance

✓ For fire damage it is assumed that a fire burning in the project scenario would also have burned in the baseline. Project emissions are therefore equal to the fire damage to biomass absent in the baseline case (harvested and removed) but present in the project case.

Where fires occur *ex post* in the project area, the area burned shall be delineated.

Therefore, based on the IPCC 2006 Inventory Guidelines, estimation of greenhouse gas emissions from biomass burning shall be calculated as:

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

Where:

$\Delta C_{DIST\_FR,t\|PRJ}$	net greenhouse gas emissions resulting from fire disturbance in year t, tCO2e ;
$A_{burn,i,t}$	area burnt for stratum i at time t, ha;
$B_{i,t\|PRJ}$	average aboveground biomass stock present in the project scenario but absent in the baseline scenario before burning stratum i, time t; t d. m. ha^{-1};
$COMF_i$	combustion factor for stratum i, dimensionless;
$G_{g,i}$	emission factor for stratum i for methane, g kg^{-1}dry matter burnt;
GWP_{CH4}	global warming potential for CH4 (IPCC default: 21), tCO2e $tCH4^{-1}$;

i	1, 2, 3 …M strata; and
t	1, 2, 3, … t* years elapsed since the start of the IFM project activity.

The average aboveground biomass stock present in the project scenario but absent in the baseline scenario before burning for a particular stratum shall be calculated as:

$$B_{i,t|PRJ} = \sum_{j=1}^{J} \{V_{EX,i,j|BSL} * BCEF_R\}$$

Where:

$B_{i,t\|PRJ}$	average aboveground biomass stock present in the project scenario but absent in the baseline before burning for stratum i, time t, t d. m. ha^{-1};
$V_{EX,j,i\|BSL}$	mean volume of extracted timber per unit area for species j in stratum i, $m3 \cdot ha^{-1}$;
B_{CEFR}	biomass conversion and expansion factor applicable to wood removals in the project area, t.d.m m^{-3};
i	1, 2, 3 …M strata; and
j	1, 2, 3 …J tree species; and
t	1, 2, 3, … t* years elapsed since the start of the IFM project activity.

Bureau Veritas Certification checked the historical record provided by the local forest government and found there is no burnt area, thus the calculation of $\Delta C_{DIST\_FR,t|PRJ}$ can be treated as zero in the validation process. Detailed data will be monitored in the monitoring period.

✓ For non-fire natural disturbance it is assumed that a disturbance event in the project scenario would also have occurred in the baseline. Project emissions are therefore equal to the non-fire natural disturbance to biomass absent in the baseline case (harvested and removed) but present in the project case.

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.

Where non-fire natural disturbances occur *ex post* in the project area, the area disturbed shall be delineated.

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

Where:

$\Delta C_{DIST,t\|PRJ}$	net greenhouse gas emissions resulting from non-fire natural disturbance in year t, tCO_2e ;
$A_{dist,i,t}$	area disturbed for stratum i at time t, ha;
$C_{AGB,i\|BSL}$	carbon stock in aboveground biomass per unit area in stratum i, $tC \cdot ha^{-1}$;
44/12	ratio of molecular weights of carbon dioxide and carbon, tCO_2etC^{-1};

i 1, 2, 3 …M strata; and

j 1, 2, 3 …J tree species; and

t 1, 2, 3, … t* years elapsed since the start of the IFM project activity.

b. Illegal logging

It is a requirement that any greenhouse gas emissions from illegal logging above *de minimis* that may occur in the project area ($\Delta C_{DIST\_IL,i,t|PRJ}$) are monitored.

A participatory rural appraisal (PRA) of the communities surrounding the project area shall be completed to determine if there is the potential for illegal extraction of trees from the project area. If this assessment finds no potential pressure for these activities then illegal logging ($\Delta C_{DIST\_IL,i,t|PRJ}$) can be assumed to be zero and no monitoring is needed.

The PRA must be repeated every 2 years.

For the Project validation ,Bureau Veritas Certification checked the PRA pre-Project and confirm there is no potential pressure for illegal logging, thus the emission due to illegal logging are estimated as zero temporally. The illegal logging is set as g monitoring parameters in the following monitoring periods and used to determine the GHG emission.

Where the PRA and the limited sampling indicate degradation is occurring, net carbon stock changes as a result of illegal logging shall be calculated as:

$$\Delta C_{DIST-IL,t|PRJ} = \sum_{m=1}^{M} \left(A_{DIST-IL,j} * \frac{C_{DIST-IL,i,t|PRJ}}{AP_i} \right)$$

Where:

$\Delta C_{DIST\_IL,t|PRJ}$ net carbon stock changes as a result of illegal logging at time t, tCO2e;

$A_{DIST\_IL,i}$ area potentially impacted by illegal logging in stratum I, ha;

$C_{DIST\_IL,i,t|PRJ}$ biomass carbon of trees cut and removed through illegal logging in stratum i at time t, tCO2e;

AP_i total area of illegal logging sample plots in stratum i, ha;

i 1, 2, 3 …M strata; and

t 1, 2, 3, … t* years elapsed since the start of the IFM project activity.

3) Net greenhouse gas emissions in the project scenario

The net greenhouse gas emissions in the project scenario are the sum of net greenhouse gas emissions resulting from fire and non-fire forest disturbance, plus any carbon stock changes that occur as a result of illegal logging, minus the annual carbon stock change in the aboveground biomass of trees due to forest growth.

Therefore, net greenhouse gas emissions in the project scenario in year t, are calculated as:

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

Where:

$\Delta C_{NET,t|PRJ}$ net greenhouse gas emissions in the project scenario in year t, tCO_2-e;

$\Delta C_{DIST\_FR,t\|PRJ}$	net greenhouse gas emissions resulting from fire disturbance in year t, tCO_2e ;
$\Delta C_{DIST,t\|PRJ}$	net greenhouse gas emissions resulting from non-fire natural disturbance in year t, tCO_2e ;
$\Delta C_{DIST\_IL,t\|PRJ}$	Net carbon stock changes as a result of illegal logging at time t, tCO_2e;
$\Delta C_{AB,t\|PRJ}$	annual carbon stock change in aboveground biomass of trees in year t, tCO_2e yr-1; and
t	1, 2, 3, … t* years elapsed since start of the project activity.

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

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

BVC has verified the VCS PD and the ER calculation sheet, and confirmed that the calculation of Project Scenario Greenhouse Gas Emissions is in accordance with the methodology, and the estimated project GHG emissions for the 30 years crediting period are:

$GHG_{NET|BSL,30}$ = -2,645,737 tCO_2-e

iii. Project Leakage

1) *Activity shifting leakage*

There is no leakage due to activity shifting. As the total area belonged to the Project proponent keeps the same since 2001 (/14/), thus there is no leakage due to activity shifting.

2) *Market leakage*

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, The leakage factor is thus defined as a dimensionless number with values between 0 and 1 assigned *ex ante* on the basis of a comparison between the ratio of merchantable biomass to total biomass across all strata in the base year, and the ratio of merchantable biomass to total biomass of the country's forest estate where harvesting would likely be displaced to.

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

Where:

$GHG_{LK\|LtPF,t*}$	total market leakage as a result of IFM LtPF activities, tCO_2e;
LF_{ME}	the dimensionless leakage factor for market-effects calculations;
$GHG_{NET\|BSL}$	net greenhouse gas emissions in the baseline scenario since the start of the project activity, tCO_2e.

As the values of China for the ratio of merchantable biomass to total biomass are not available in the validation process, thus the conservative default value are used temporarily and will be determined in the verification.

Thus the LF_{ME} is 0.7 and the estimated leakage for the Project is 511,990 tCO_2e.

iv. Summary of GHG Emission Reductions and Removals

1) Net Project Greenhouse Gas Emission Reductions (Ex-ante)

According to VM0010 version 1.2, the total estimated Net Project Greenhouse Gas Emission Reductions in the whole 30years crediting period are calculated as:

$$GHG_{CREDITs|LtPF,t*} = GHG_{NET|BSL,t*} - GHG_{NET|PRJ,t*} - GHG_{LK|LtPF,t*}$$

$$= 731,414 - (-2,645,737) - 511,990$$

$$= 2,865,161\ tCO_2e$$

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

2) Adjustment for uncertainty

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

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

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

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

$$U_{TOTAL|LtPF} = \sqrt{U^2_{|PRJ} + U^2_{|BSLJ}}$$

Where:

$U_{total|LtPF}$ total uncertainty for LtPF Project, dimensionless;

$U_{|PRJ}$ total uncertainty for the improved forest management activities in the project scenario, dimensionless; and

$U_{|BSL}$ total uncertainty for the baseline scenario, dimensionless.

Project proponents must justify the selection of uncertainty propagation in the VCS-PD. If $U_{total|LtPF} \leq 0.15$ then no deduction will result for uncertainty.

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

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

Where:

$Credits_{total|LtPF}$ total greenhouse gas credits adjusted for uncertainty for each year t in the project crediting period;

$GHG_{credits|LtPF}$ project greenhouse gas credits associated with the implementation of improved forest management (IFM) activities in the project scenario, $tCO_2e \cdot year^{-1}$; and

$U_{total|LtPF}$ total uncertainty for LtPF Project, dimensionless.

3) Calculation of verified carbon units (ex-post)

The number of Verified Carbon Units (VCUs) for each year t in the project crediting period is the greenhouse gas emission reductions and removals adjusted for uncertainty and risk.

They shall be subject to deductions based on application of the most recent version of the VCS Tool for AFOLU Non-Permanence Risk Analysis and Buffer Determination.

Therefore, the amount of VCU's that can be issued at time t=t2 (the date of verification) for monitoring period T=t2-t1, is calculated as:

$$VCU_{net|LtPF} = \left(Credits_{total,t2|LtPF} - Credits_{total,t1|LtPF}\right) - Bu_{|IFM-VCS}$$

Where:

$VCU_{net|LtPF}$ number of verified carbon units; dimensionless;

$Credits_{total.t1|LtPF}$ net anthroprogenic greenhouse gas removals by sinks, as estimated for t*=t1 in tCO_2e;

$Credits_{total.t2|LtPF}$ net anthroprogenic greenhouse gas removals by sinks, as estimated for t*=t2 in tCO_2e; and

$Bu_{|IFM-VCS}$ total number of credits withheld in VCS buffer account.

Bureau Veritas Certification has reviewed the Jiangxi Province Le'an County Forest Farm Carbon Sink Project Non-Permanence Risk Report (/35/) and the related evidences, include the Forest management and protected agreement signed between the local forest bureau and the forest farm (/19/), Forest management plan of Jiangxi Province Le'an County Forest Farm Carbon Sink Project (/36/) and records of stakeholder interview (/37/), Bureau Veritas Certification 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 Bureau Veritas Certification confirms that the evidences are substantial, and the overall risk rating is 23% based on the provided evidences and the AFOLU Non-Permanence Risk Tool, VCS version 3.

For the baseline scenario:

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

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

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

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

Where:

U_{total} 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 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:

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

Where:

U_{total} 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 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 field survey inventory data and legal right of harvest, so no data are from measurement and monitoring. Therefore, it is deemed as 0 in the period of validation. It will be monitored in the period of verification.

2) Uncertainty of expansion factors:

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

3) Uncertainty of carbon stock:

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

4) Uncertainty of regrowth

The uncertainty of regrowth is only associated with the parameter RGRi, which is quoted from IPCC Guidelines for National Greenhouse Gas Inventories (2006), Table 4.9, and the uncertainty for non-industrialized countries of 30% is regulated on page 4.19 at the same time. As China is a non-industrialized country, the uncertainty of RGRi and regrowth is 30%.

Thus, according to the Rule A, $U_{|BSL}$ is 8.87% for the baseline scenario.

For the project scenario:

According to *Carbon Inventory Methods*, the uncertainty in the project scenario is expressed for parameter $C_{AB,i,t2|PRJ}$ (tC/ha). The uncertainty across combined strata for $C_{AB,i,t2|PRJ}$ is calculated with the revised equation below:

$$U_{|PRJ} = \frac{\sqrt{(U_{\text{Chines Fir-k|PRJ}} \times E_{Chinese\ Fir-k|PRJ})^2 + (U_{\text{Slash Pine-j|PRJ}} \times E_{\text{Slash Pine-}j|PRJ})^2}}{E_{Chinese\ Fir-k|PRJ} + E_{\text{Slash Pine-j|}PRJ}}$$

Where:

$U_{\|PRJ}$	Total uncertainty in project scenario; %
$U_{\text{Chinese Fir-k\|PRJ}}$	Uncertainty in project scenario in stratum Chinese Fir-k; %; k=I, II, III …Strata
$U_{\text{Slash Pine-j\|PRJ}}$	Uncertainty in project scenario in stratum Slash Pine-j; %; j= I, II, III …Strata
$E_{\text{Chinese Fir-k\|PRJ}}$	Sum of net change in carbon stock in stratum Chinese Fir-k in the project case; t CO_{2e} k=I,II,III…Strata
$E_{\text{Slash Pine-j\|PRJ}}$	Sum of net change in carbon stock in stratum Slash Pine-j in the project case; t CO_{2e} j= I,II,III…Strata

VCUs adjusted for uncertainty and risk will be considered in the period of verification. Therefore, it will be considered $U_{|PRJ}$=0 in VCS-PD.

Total uncertainty

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

$U_{total|LtPF}$=0.0887

As $U_{total} \leq 0.15$, then no deduction will result for uncertainty.

Therefore, according to the formula:

$$VCU_{net|LtPF} = \left(Credits_{total,t2|LtPF} - Credits_{total,t1|LtPF}\right) - Bu_{|IFM-VCS}$$

=2,865,161 - 2,865,161 *(1-23%)

=2,206,173tCO_2e

The annual gas verified carbon units are 73,539tCO2e (=2,206,173/30):

3.2.9 Methodology Deviations

N/A

3.2.10 Monitoring Plan

The data and parameters available in the validation

1) $V_{l,j,i,sp,}$ Merchantable volume for tree l of species j in sample plot spin stratum i
2) CF_j , Carbon fraction of dry matter for species j
3) D_j , Basic wood density of species j in t d.m. m^{-3}
4) $f_j(X,Y…)$, Allometric equation(s) for species j linking measured tree variable(s) to aboveground biomass of living trees 5) Total area of illegal logging sample plots in stratum i (APi)
5) $BCEF_R$, Biomass conversion and expansion factor applicable to wood removals in the project area
6) OF, SLF,WW , OF = Fraction of wood products that will be emitted to the atmosphere between 5 and 100 years after production; SLF = Fraction of wood products that will be emitted to the atmosphere within 5 years of production; and WW = Fraction of extracted biomass effectively emitted to the atmosphere during production
7) RGR_i , Forest re-growth rate post timber harvest for stratum i m
8) $V_{EX,j,i|BSL}$, Mean volume of extracted timber per unit area for species j in stratum i l
9) $TH_{i,p}$, Number of years since timber harvest in stratum I in land parcel p;
10) $A_{i,p}$, Area covered by stratum I over land parcel p
11) $A_{1,i,p}$: The area of stratum i in land parcel p that was harvested 1 year ago
12) $A_{2\text{-}10,i,p}$: The area of stratum i in land parcel p that was harvested between 2 and 10 year ago
13) $A_{11\text{-}20,i,p}$: The area of stratum i in land parcel p that was harvested between 11 and 20 year ago

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

15) A_{sp}, Area of sample plot

16) t_{VAL}, Two-sided Student's t-value, at infinite degrees of freedom in the first iteration and at degrees of freedom equal to (n-1) in subsequent iterations, for the required confidence level; dimensionless;

17) E, Acceptable margin of error (i.e. one-half the confidence interval) in estimation of biomass stock within the project boundary; in units used for S_i

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

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

The data and parameters monitored

1) Illegal Logging PRA Results;

2) Result of Limited Illegal Logging Survey;

3) A_i Area covered by stratum i

4) DBH, Field measurements in sample plots

5) N, Total number of possible sample plots within the project boundary (the sampling space or the population);

6) W_i Relative weight of the area of stratum i; dimensionless;

7) S_i, Estimated standard deviation of biomass stock in stratum i.Standard deviation of biomass stock per unit area (in t d.m. ha-1) may alsobe used for this purpose;

8) $A_{burn,i,t}$ Area burnt in stratum i at time t

9) $A_{dist,i,t}$,Area disturbed in stratum i at time t

10) $A_{DIST\_IL,i}$ Area potentially impacted by illegal logging in stratum i

11) $C_{DIST\_IL,i,t|PRJ}$ biomass carbon of trees cut and removed through illegal logging in stratum i at time t

12) AP_i Total area of illegal logging sample plots in stratum i

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

Monitoring plan

The monitoring plan with monitoring parameters can determine changes in forest carbon stocks and greenhouse gas emissions from project activity; and determine changes in forest carbon stocks and greenhouse gas emissions from disturbance and illegal logging. Commonly accepted principles of forest inventory and management are implemented;

Commonly accepted principles of forest inventory and management are implemented;

The ante stratification of the project area in the project scenario maybe adjust based sample because of:

a) unexpected disturbances occurring during the project crediting period affecting differently various parts of an originally homogeneous stratum and/or

b) forest management activities that are implemented in a way that affects the existing stratification in the project scenario.

Sample method

To monitoring the actual carbon stock changes of the Project, field sample method will be adopted with 1) adequate forest stratification, sample size estimation methods and consider uncertainty, 2) a sampling framework including sample size, plot size, plot shape and information to determine plot location according to the latest version of " Tool for calculation of the number of sample plots for measurements within A/R CDM project activity" (/23/)

QA/QC

Standard operating procedures (SOPs) and quality control/quality assurance (QA/QC) procedures for forest inventory including field data collection and data management will be applied. SOPs already applied in national forest monitoring or available from published handbooks or from the IPCC GPG LULUCF 2003 will be used.

All data collected as part of monitoring will be archived electronically and be kept at least for 2 years after the end of the project crediting period. All measurements will be conducted according to relevant standards. Data archiving shall take both electronic and paper forms, and copies of all data shall be provided to each project participant.

The archives shall include:

- Copies of all original field measurement data, laboratory data, data analysis spreadsheets;
- Estimates of the carbon stock changes in all pools and non-CO_2 GHG and corresponding calculation spreadsheets;
- GIS products; and
- Copies of the measuring and monitoring reports.
- Conservative approach and uncertainty

Project proponents will also apply all relevant equations for the ex-ante calculation of net anthropogenic GHG removals by sinks with care and provide transparent estimations for the parameters that are monitored during the project crediting period. These estimates shall be based on measured or existing published data where possible and project proponents should retain a conservative approach; that is, if different values for a parameter are equally plausible, a value

that does not lead to over-estimation of net anthropogenic GHG removals by sinks must be selected

An uncertainty analysis is required for all estimates from monitoring related to change in area, change in carbon stocks and emissions for both the baseline and project case.

3.3 Environmental Impact

As the AFOLU is environment-friendly project and Environmental Impact Assessment (EIA) is not required for logged to protected forest projects according to Construction project classification management of environmental impact assessment list. The key mitigation action of the project activity is avoiding the illegal harvest of the forest, which can protect and improve the surviving environment, keep the ecological balance, save the species resources and enhance homeland security.

3.4 Comments by stakeholders

Comments by stakeholders have been invited using PRA approaches which were held in Dec 2005.

The comments received from the PRA survey were fully taken into account as follows:

- ✓ All the stakeholders supported the conversion activity from logged to protected forest;
- ✓ Participation of local farmers/communities and companies/farms is on a voluntarily basis;
- ✓ All tree species used are native to local, and a mixed species arrangements will be used;
- ✓ Use of chemical pesticides will be limited. Rather, disease and pest will be controlled by mixed tree species arrangement and other biological measures;
- ✓ Slash and burn site preparation and overall ploughing for soil preparation will not be used.

In order to familiarize with the opinions and advices of this project from all stakeholders and to provide benefit to the residents of the areas affected, 14 local farmers were visited on 15/01/2012. All of the stakeholders and the residents of the areas supported the conversion activity from logged to protected forest.

4 VALIDATION CONCLUSION

Bureau Veritas Certification has performed the validation of Jiangxi Province Le'an County Forest Farm Carbon Sink Project owned by Beijing Shengdahuitong Carbon Management Co., Ltd., which applied the methodology VM0010 version 1.2. The validation was performed on the basis of VCS Standard version 3.3 and host country criteria and also on the criteria given to provide for consistent Project operations, monitoring and reporting.

The validation consisted of the following three phases: i) a desk review of the project design and the baseline and monitoring plan; ii) on-site visit and follow-up interviews with local stakeholders; iii) the resolution of outstanding issues and the issuance of the final validation report and opinion.

Through detailed analysis of the Project, it is concluded that the Project is likely to result in reductions of GHG emissions. The VT0001 VCS AFOLU Additionality Tool v3.0 has been applied to demonstrate that the Project is not a plausible baseline scenario. Emission reductions attributable to the Project are hence additional to any that would occur in the absence of the Project. Given that the Project is implemented and maintained as designed, the Project is likely to achieve the estimated average annual emission reductions are 73,539 tCO_2e and 2,206,173 tCO_2e over the chosen 30-year crediting period.

The review of the project description (version 03) and the subsequent follow-up interviews have provided Bureau Veritas Certification with sufficient evidences to determine the fulfilment of stated criteria. The PD (version 03) was subsequently revised on 12/10/2013 to resolve the issues raised during the interviews and subsequent interactions. In our opinion, the Project correctly applies and meets the relevant VCS requirements according to " VCS Standard version 3.3" and "Agriculture, Forestry and Other Land Use (AFOLU) Requirements Version 3.3".

5 REFERENCE

Documents reviewed:

/1/ VCS-PD version 01 dated 13/12/2012

/2/ VCS-PD version 03 dated 12/10/2013

/3/ ER Calculation Spreadsheet

/4/ Plot and Uncertainty Calculator of Jiangxi Province Le'an County Forest Farm Carbon Sink Project

/5/ NPV comparison calculation of Jiangxi Province Le'an County Forest Farm Carbon Sink Project

/6/ VM0010 version 1.2 dated 27/03/2013

/7/ VCS Standard version 3.3 dated 04/10/2012

/8/ Agriculture, Forestry and Other Land Use (AFOLU) Requirements Version 3.3

/9/ 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

/10/ AFOLU Non-Permanence Risk Tool, VCS version 3

/11/ Valid and verifiable Government-approved timber management plan for harvesting the project area

/12/ Business license of the project proponent

/13/ Historical management records more than 5 years of the local forestry farm which contract with the Project proponent

/14/ Forestry Right Certificates of the Project dated 2001

/15/ Ecological forestry application materials and the certification from local forest government

/16/ Maps of the Project issued from local forestry government

/17/ http://v-c-s.org

/18/ Ecological regulations of Jiangxi Province

/19/ Forest management and protected agreement signed between the local forest bureau and the forest farm

/20/ Collecting of Woods-raising fund and Maintenance of Simple Reproduce Fee management regulation of Jiangxi Province

/21/ National level poverty-stricken counties list

/22/ The national forestry inventory (II) in 2005

/23/ Tool for calculation of the number of sample plots for measurements within A/R CDM project activity

/24/ http://www.gov.cn/gongbao/content/2009/content_1265996.htm

/25/ Technical guidelines for national forest inventory. SFA 2004 No.25

/26/ Allometric equations for Jiangxi Province of the Chinese Fir published in academic papers

/27/ Allometric equations for Jiangxi Province of the Slash Pine published in academic papers

/28/ Field survey records of the Project conducted by Bureau Veritas Certification

/29/ IPCC Guidelines for National Greenhouse Gas Inventories (2006), Table 4.9.

/30/ Historical Sale Receipts of the Wood

/31/ "Economic Evaluation Method and Parameters for Project Construction" (version 3)

/32/ http://www.jxly.gov.cn/zwgk/fzgh/sjgh/201112/t20111215_61299.htm

/33/ History of support regulations on the central Soviet area
http://finance.ifeng.com/news/region/20120710/6730207.shtml

/34/ Email from VCS Association to grant this project an *extension to the validation deadline until 25 November 2013*

/35/ Jiangxi Province Le'an County Forest Farm Carbon Sink Project Non-Permanence Risk Report version 01 dated 12-10-2013

/36/ Forest management plan of Jiangxi Province Le'an County Forest Farm Carbon Sink Project

/37/ Records of stakeholder interview dated 15/01/2012

Persons interviewed:

	Beijing Shengdahuitong Carbon Management Co., Ltd.	
/1/	Mr. Yuan Ye	Project Manager
/2/	Mr. Peng Tingxuan	Project Manager
/3/	Mr. Wang Zhiguo	Project Manager
/4/	Mr. Yi Da	Project Manager
	DTM (Beijing) Energy Technology Development Co., Ltd.	
/5/	Ms. Tao Yun	Director
/6/	Ms. Cui Fangyu	Project Manager
	Le'an Forest Government	
/7/	Mr. Zhan Misheng	Vice Director
	Local Forest Farm	
/8/	Mr. Wen Tao	General Technical Manager
/9/	Mr. Liu Zhihua	General Technical Manager
/10/	Mr. Yuan Guohuan	Forest nursy

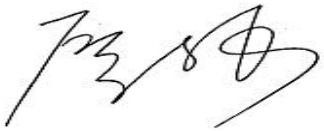
6 CURRICULUM VITAE OF THE VALIDATION TEAM MEMBER

Mr. Liao Ling	Bureau Veritas Certification, China	Team Leader, Climate Change Lead Verifier, He holds a Bachelor Degree in Atmosphere Science. Before joining BV in 2008, he gained 2 years of technical working experience of CDM in P.R China. He obtained the certificate of CDM Verifier and Lead Auditor for EMS ISO 14001. He has completed the course assessment for the ISO 14064:2006.
Ms. Coco Geng Yan	Bureau Veritas Certification, China	Team Member, Climate Change Lead Verifier. She holds a Master Degree in Ecology and a bachelor degree in Forestry. She has 2 years of experience in CDM in P.R China. She obtained the certificate of CDM Verifier in 2010, Lead Auditor for ISO 14001 and has successfully completed the course assessment for ISO 14064.
Mr. Yang Jiaming	Bureau Veritas Certification, China	Technical Reviewer, Climate Change Lead Verifier. He holds a Master and Engineer Degree in Wood Science and Technology. Before joining BV in Mar 2011, he gained almost two years of audit experience Wood Trading industry. He obtained the certificate of Lead Auditor for ISO9001 and has successfully completed the works related of FSC, PEFC and national forestry programs.

Mr. Yang Jiaming

Internal Technical Reviewer

24/10/2013



Mr. Liao Ling

Team Leader

24/10/2013

APPENDIX A: 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
CAR 1 Latest version of VCS standard has not been used.	The VCS Standard version 3.3 dated 04/10/2012 is used in the PD.	Bureau Veritas Certification has checked the latest PD against the VCS Standard version 3.3 and can confirm the CAR is closed.
CAR 2 The species of logged forestry in baseline are not consistent with the evidences provided, such as forest right certificates approved by local government.	The species involved in this Project excludes the inconsistent species in line with the forest right certificates approved by local government. The total species decreases to only two (Slash Pine and Chinese Fir) and the estimated annual ERs value decrease to 73,539 tCO_2 accordingly.	Bureau Veritas Cortication checked the species and their areas of the Project described in the PD, ER sheet against with the project maps and forest right certificates, and found that the PP excluded the species other than Slash Pine and Chinese Fir and their areas for ER calculation for clearly definition and calculation of the Project, which leads the ERs decrease to 73,539 tCO_2, thus the CAR is closed.
CAR 3 Sensitivity analysis should be conducted re-produced in the financial analysis sheet.	The financial analysis of the Project is updated with the sensitivity analysis can be re-produced.	Bureau Veritas Certification has checked the financial analysis sheet and confirm the CAR is closed.
CAR 4 The common practice of the Project should be completed according to the requirements of applied methodology.	The common practice of the Project is completed and updated according to the requirements of applied methodology	Bureau Veritas Certification has checked the common practice against VCS Standard version 3.3 and the actual situation of the Project region, thus confirm the CAR is closed
CAR 5 The data sources of the basic parameters of the financial analysis should be stated clearly with evidences provided.	The financial analysis of the Project is updated with clearly displayed, and the historical timber invoice, harvest plan and the historical harvest quota are provided for crosscheck.	Bureau Veritas Certification has checked the financial analysis sheet against the evidences provided, found the key parameters are sourced from the actual invoice and the reason bale, thus confirm the CAR is closed.
CAR 6 The ER calculation should be	The ER calculation is corrected with the species	Bureau Veritas Certification has checked the

Draft report clarifications and corrective action requests by validation team	Summary of project participant response	Validation team conclusion
corrected according to the actual situation considering the suitable allometric equation for the Project, as the calculation logic is inconsistent with the applied methodology	decrease and allometric equation change to the suitable for local region and the Project, thus the annual estimated ERs decrease to 73,539 tCO_2 accordingly.	species against with the forest right certificates and found the species left for the Project are consistent with evidences and conservatively adopted. The allometric equation used for the updated ERs sheet are sourced from the academic conclusion based on the field experiments in the local region, which is much accurate and suitable for the Project, and the correct calculation logic is updated in accordance with the applied methodology, thus the CAR is closed.
CAR 7 The data and parameters for validation and verification should be completed	The data and parameters for validation and verification are completed according to the monitoring plan and the ERs calculation.	Bureau Veritas Certification has checked the updated monitoring plan and the parameters listed and confirmed the CAR is closed.
CL 1 Please provide license of the forestry farm and the project owner as evidence of right of use.	The licenses of the forest farms which takes care of the Project protection and the project owner Beijing Shengdahuitong Carbon Management Co., Ltd. are provided to identify the right of use.	Bureau Veritas Certification has checked licenses of the forest farms which takes care of the Project protection and the project owner Beijing Shengdahuitong Carbon Management Co., Ltd. and confirm the Project owner has the right to develop and use the carbon credit of the Project. Thus the CL is closed.
CL 2 Please provide the documentary proof of legal permissibility for timber harvest, intent to harvest and a description of the timber resource to demonstrate the rights to forestry management according to the requirements in Page 11 of applied	A historical forest management record, a government approved forest management and a historical harvest quota were provided to demonstrate the applicable of the applied methodology.	Bureau Veritas Certification has checked the evidences provided and confirm the harvest intent and the legal permissibility for timber harvest of the Project, thus the CL is closed.

Draft report clarifications and corrective action requests by validation team	Summary of project participant response	Validation team conclusion
methodology		
CL 3 Please provide the Project maps per discrete area to state the Project boundary in details according to the requirements of the applied methodology.	The electronic copy of maps for the Project with details were provided.	Bureau Veritas Certification has checked the maps and confirmed the area and the boundary of the Project are consistent with the maps with discrete area, thus the CL is closed.
CL 4 Please provide the documental evidence of the start date of the Project	The ecological protection and management contract of the Project and the certification of the local forest government were provided to prove the start date of the Project is 01/01/2006.	Bureau Veritas Certification checked the ecological protection and management contract of the Project and the certification of the local forest government, and found that the two documents states the same day for the Project starting date, 01/01/2006. Thus the CL is closed.
CL 5 Please complete the summary of the Project in 1.1 of PD and the other parts according to the applied methodology and related tools	The PD was updated with summary completed in 1.1 and the additionality description in line with the additionality tool.	Bureau Veritas Certification checked the updated PD and can confirm the CL is closed.
CL 6 Please provide the ex-ante determined timber harvest schedule planned from the timber harvest plan according to the requirements in Box 1 of applied methodology.	The ex-ante determined timber harvest schedule planned from the timber harvest plan is provided.	Bureau Veritas Certification checked the ex-ante determined timber harvest schedule against the Box 1 of the applied methodology and found that the plan fulfils the requirements of the methodology, thus confirm the CL is closed.
CL 7 Please provide the electronic copy of the pre-existing forest inventory data for baseline with its data source certificate and applicable date clearly stated in the PD.	The inventory data of the local region including the Project sourced from the national forestry inventory in 2005 are provided, the data focus on the Project was confirmed by local government and used as the field data of the Project as 1) the date of the data are suitable according to the	Bureau Veritas Certification checked the Project data sourced from the forestry inventory in 2005 and the number plot of the sample, confirms that, the data sourced from the forestry inventory (II) in 2005 followed the national forest field guidelines which is much

Draft report clarifications and corrective action requests by validation team	Summary of project participant response	Validation team conclusion
	applied methodology; 2) the sample of the national forestry inventory (II) in 2005 are much more accurate than the sample requirements for the Project.	accurate than the requirements in methodology, and more sample plots to yield the measurement data, thus the CL is closed.