VERIFICATION REPORT

Inner Mongolia Chao'er Improved Forest Management Project

Document Prepared By CHINA QUALITY CERTIFICATION CENTER

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Summary:

CHINA QUALITY CERTIFICATION CENTER (CQC) has conducted the verification of Inner Mongolia Chao'er Improved Forest Management Project, owned by Chao'er Forest Bureau, which is located in south region of the Greater Khingan Mountains, Hulun Buir City, Inner Mongolia Autonomous Region, P.R.C, and applying the VCS methodology VM0010 version 1.2, on the basis of VCS Standard Version 4.0, as well as criteria given to provide for consistent project operations, monitoring and reporting.

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

In summary, CQC confirms that the project is implemented as planned and described in the validated VCS project description. The forestry management conversion includes 11,010 ha logged to Protected Forest (LtPF) spreading in Wuyi Forestry Centre, which are protected as non-commercial forestry. The monitoring system is in place and reduces the GHG emissions as anthropogenic GHG removals by sinks. The GHG emission removals by sinks verified totalize343,998 tCO_2e (VCUs eligible for issuance) with the annual emission reduction of 68,800tCO_2e ,with buffer deduction for the second monitoring period.

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

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

Reporting period	01/01/2015 to 31/12/2019
Baseline net GHG removals by sinks	39,093
Actual net GHG removals by sinks	-343,127
GHG emissions due to leakage	0
Net anthropogenic GHG removals by sinks	382,220
Total number of credits withheld in VCS buffer account	38,222
VCUs eligible for issuance	343,998

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1 INTRODUCTION

1.1 Objective

Beijing Institute of Green Resources (hereafter referred to as “BIGR”) has commissioned CQC to verify the emission removals of the Inner Mongolia Chao’er Improved Forest Management Project (hereafter referred to as “the Project”) for the period from 01/01/2015 to 31/12/2019. CQC as the validation/verification body (VVB) of the Project has been accredited as a DOE by VERRA and UNFCCC and also meets the competence requirements as set out in ISO 14065:2007.

The objective of verification is to verify the reported voluntary emission removals generated by the Project for the period from 01/01/2015 to 31/12/2019 and to confirm that actual monitoring systems and procedures are in compliance with that described in the monitoring plan and the additional requirements stated by the Verra.

1.2 Scope and Criteria

The verification scope is defined as an independent and objective review of the VCS project description (VCS-PD) /1/ VCS monitoring report (VCS-MR)/2,3/and other relevant documents list below. The information in these documents is reviewed against VCS version 4.0 requirements, UNFCCC rules and associated interpretations.

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

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

- VCS Program Guide, version 4.0, dated 19/09/2019//10/0/
- VCS Standard, version 4.0, dated 19/09/2019 /9/
- Registration & Issuance Process, version 4.0, dated 19/09/2019 /11/
- VCS Validation and Verification Manual, version 3.2, dated 19/10/2016//15//
- VM0010, Version 1.2 "Methodology for Improved Forest Management: Conversion from Logged to Protected Forest/8/
- Other rules and requirements

1.3 Level of Assurance

CQC has undertaken a reasonable assurance engagement in accordance with VCS version 4.0. It requires a reasonable level of assurance in verification that GHG assertions are free of material errors, omissions and misrepresentations. The verification conclusion is based on the VCS-PD[/1/], VCS-MR[/2//3/], supporting evidences made available to the verifier and information collected through performing interviews and on-site inspection.

1.4 Summary Description of the Project

The Project is located in south region of the Greater Khingan Mountains, Hulun Buir City, Inner Mongolia Autonomous Region, P.R.C, with the geo-coordinate range of 120°17′52″E~121°37′50″E and 47°35′21″N~48°10′13″N. The annual estimated emission removals are 69,326 tCO_2e.

The Project involves 11,010 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 Brich and Pinus (Larch).

The Project Start Date is 01/01/2010, when a forest protection plan was issued by local government to cancel the commercial timber harvest.

Through reviewing the Clarification on the project lifetime issued by project owner[/44/] and Technical Specification for inventory for forest management planning and design (GB/T 26424-2010)[/45/],Chinese national standard ,CQC team confirms that the natural maturity age of larch is more than 141 years, which are the main tree species in the project area. Thus 60 years determined to be the project lifetime from January 1, 2010 to December 31, 2069 by project owner.is conservative and reasonable, while the crediting period is 20 years assumed that both the crediting period and the project lifetime begin on the project start date.

The project generated 380,247tCO_2e emission reductions within the first monitoring period from 01/01/2010 to 31/12/2014 with the average annual emission reductions of 76,049 t CO_2e. The first 5 years’VCU was proved in Nov, 2016.During the second monitoring period from 01/01/2015 to 31/12/2019, the project has generated 343,998 tCO_2e (VCUs eligible for issuance) with the annual emission reduction of 68,800 tCO_2e with buffer deduction.

2 VERIFICATION PROCESS

2.1 Method and Criteria

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

CQC verified the project against the VM0010, Version 1.2 "Methodology for Improved Forest Management: Conversion from Logged to Protected Forest, and requirements set in VCS version 4.0.

2.2 Document Review

The assessment of the project documentation provided by the project participant is based upon both quantitative and qualitative information on emission reductions. Quantitative information comprises the reported numbers in the VCS monitoring report (MR) version 01 dated 01/01/2020/2/ and MR-ER spread sheet version 01 dated 01/01/2020/4/. Qualitative information comprises information on internal management controls, calculation procedures, procedures for transfer of data.

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

(a) The VCS-PD and the monitoring plan/1/;

(b) The validation report/6/;

(c) The applied monitoring methodology;

(d) The non-permanence risk report/22/;

(d) Other information and references relevant to the project activity's resulting emission reductions (e.g. IPCC reports, 3rd party measurement reports or national regulations, evidence/statements from local authority).

2.3 Interviews

On 03/01/2020 and 04/01/2020, CQC performed a site visit and interviews with project stakeholders to confirm selected information and to resolve issues identified in the document review. Local villagers, local officials and Representatives of Beijing Institute of Green Resources were interviewed (see References). The main topics of the interviews are summarized as follows.

Date	Interviewee	Organization	Interview Topics
03/01/2020 04/01/2020	Yu Shiping Wang Zhenli Tan Mengquan Yu Tao	Chao'er Forest Bureau (project owner)	-Technical details of the project - Sampling plot - Project Boundary - Monitoring plan and arrangements - Monitoring data -Project activity starting date -Ownership -local stakeholder consultation
	Li Jinliang	Beijing Institute of Green Resources (the Consultant)	- Local stakeholder consultation - Project risk - Project activity starting date - project management and monitoring -ER calculation

2.4 Site Inspections

On 03/01/2020 and 04/01/2020, CQC verification team performed the site inspection with the project proponent of the project activity. During this site inspection, interviews with the representatives of the project owner, the consultant were carried out to confirm selected information and to resolve issues identified in the document review.

2.5 Resolution of Findings

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

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

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

(a) Non-compliance with the monitoring plan or methodology are found in monitoring and reporting and has not been sufficiently documented by the project participants, or if the evidence provided to prove conformity is insufficient;

(b) Modifications to the implementation, operation and monitoring of the registered project activity has not been sufficiently documented by the project participants;

(c) Mistakes have been made in applying assumptions, data or calculations of emission reductions that will impact the quantity of emission reductions;

(d) Issues identified in a FAR during validation to be verified during verification or previous verification(s) have not been resolved by the project participants.

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

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

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

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

No FAR and no other findings raised during the validation.

2.1.1 Forward Action Requests

No Forward Action Request is raised during this monitoring period.

2.6 Eligibility for Validation Activities

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

3 VALIDATION FINDINGS

3.1 Participation under Other GHG Programs

N/A, the project has not been registered, or is seeking registration under any other GHG programs Hence, CQC verification team confirms that the project is eligible to participate under the VCS Program.

3.2 Methodology Deviations

N/A, no deviation from methodology.

3.3 Project Description Deviations

N/A, no deviation from project description in the VCS PD version 03 dated 10/11/2014.

3.4 Grouped Project

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

4 VERIFICATION FINDINGS

4.1 Project Implementation Status

CQC has performed a site visit and found that the Project has been implemented since 01/01/2010, when a forest protection plan was issued by local government to cancel the commercial timber harvest. On the basis of this site visit and the reviewed project description it can be confirmed that, the improved forestry management, such as conversion of logged to protection forest (Protected species are: Pinus and Brich) are implemented.

The forestry management conversion includes 11,010 ha logged to Protected Forest (LtPF). The different forest types, as well as the monitoring system, metering equipment and the monitoring procedure have been implemented and managed as described in the VCS PD.

CQC has on site checked the boundary of the Project and confirmed they are consistent with those stated in the VCS PD.

The project generated 380,247t CO_2e emission reductions within the first monitoring period from 01/01/2010 to 31/12/2014 with the average annual emission reductions of 76,049 t CO_2e. The first 5 years' VCU was proved in Nov, 2016.During the second monitoring period from 01/01/2015 to 31/12/2019, the project has generated 343,998 tCO_2e (VCUs eligible for issuance) with the annual emission reduction of 68,800tCO2e

On the basis of site visit and the reviewed project description, CQC confirms no changes to the project design have been identified during this verification. The implementation and operation of the project activity have been conducted in accordance with the description contained in the VCS PD.

On the basis of onsite inspection and Monitoring Manual[/39/] and Monitoring Records[/38/] provided by

project owner, CQC confirms that there are no material discrepancies between the actual monitoring system, and the monitoring plan set out in the project description and the applied methodology.

Based on the above findings, CQC confirms that the project has been implemented as described in the project description during the second monitoring period.

4.2 Safeguards

4.2.1 No Net Harm

During the visit, CQC team has interviewed the PP, the consultant and confirms the project activity is compliance with National and Local Laws and Regulations and no negative environmental and socio-economic impacts identified.

4.2.2 Local Stakeholder Consultation

In order to make the potential stakeholders receive information of the meeting,155 questionnaires/37/ were distributed to local stakeholders, received 100% (155 questionnaires returned out of 155) at the validation period. And there were no adverse comments on the project activity. In general, the interviewees think this project can bring benefit for the local social, economic and environmental development and express the opinion on supporting this project.

During on-site visit, CQC verification team found that no villagers live nearby the project site, the only stakeholders are the staff of Wuyi Forest Center, i.e. project owner who were interviewed. Furthermore, through reviewing the internal meeting minutes/36/ of project owner from year 2016 to year 2019, CQC confirms that the project owner continues to communicate with the local stakeholders(the staff of Wuyi Forest Center) with regard to the necessary relevant information about the project implementation, risks, costs and benefits, relevant laws and regulations and the process of VCS Program verification during the monitoring period.

4.3 AFOLU-Specific Safeguards

As a result of the project implementation, the once commercial harvest is cancelled and only tending and managing is permitted. In order to mitigate the risks for fire and other natural disturbance, the project owner hired more patrollers and equipped with more sensors to invest more on disturbance prevention.

During on-site visit, CQC verification team found that no villagers live nearby the project site, the only stakeholders are the staff of Chao'er Forestry Bureau. Furthermore, through on-site interview and reviewing the internal meeting minutes/ref/ of project owner from year 2016 to year 2019, CQC confirms that the project proponent to communicate and consult with local stakeholders (the staff of Wuyi Forest Center) during the monitoring period and there is no negatively impact or conflicts on local stakeholders.

4.4 Accuracy of GHG Emission Reduction and Removal Calculations

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

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

- Illegal Logging PRA Results;

The value is zero since there is clear infrastructure, hiring and policies are in place to prevent illegal logging. CQC has checked the documents (participatory rural appraisal (PRA) /23/ provided by the local Forest Public Security Bureau and confirmed there is no illegal logging happened during the period from year 2015 to year 2019. Hence, the value is no need in this monitoring.

- Result of Limited Illegal Logging Survey;

CQC has checked the documents (participatory rural appraisal (PRA) provided by the local Forest Public Security Bureau and confirmed there is no illegal logging happened during the period from year 2015 to year 2019. Hence, the value is zero since and no need in this monitoring.

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

N/A.During the onsite visit, CQC verification team reviewed the Notice to reward the subordinate units with 10-year or 1-year smooth operation without fire accident issued by the Chao'er Forest industrial Cooperation dated 08/03/2019/29/, 2 forestry centres, including Wuyi forestry centre was awarded ¥20,000 Yuan for their continuous 10 years' distinguished forest operation& management without any fire accident. Other 5 units was awarded for ¥3,000 for the last year, therefore, there is no forest burnt during this monitoring period.

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

N/A, During the onsite visit, CQC verification team reviewed Statement on fire and natural disturbance issued by the local forestry authority at the end of 2019/27/, and confirms that there is no fire and natural disturbance occurred from Jan 2015 to Dec 2019. Hence, the value of $A_{dist,i,t}$=0.

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

N/A, As stated above, there is no illegal logging during this monitoring period, Hence, the value of $A_{DIST\_IL,i}$=0.

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

N/A, As stated above, there is no illegal logging during this monitoring period

- A_{Pi}: Total area of illegal logging sample plots in stratum i

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

- PMP_i: Merchantable biomass as a proportion of total above ground tree biomass for stratum i within the project boundaries

N/A. As the leakage factor of this project is zero which is confirmed at the validation period and this verification period. CQC verification team confirms that it is unnecessary to calculate PMP_i .

- A_i: Area covered by stratum i

During the onsite visit, CQC verification team confirms that the value is from the national second class forest investigation, (/41/), which is conducted in 2014 by Chao'er Forest Bureau and will updated every 10 years .Additionally, during the onsite visit, CQC verification team confirms that the area of each stratum is reexamination in Nov.2019 (/42/) and the area of each stratum is unaltered.

Parameters determined ex-ante:

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

- $V_{l,j,i,sp}$, Merchantable volume for tree l of species j in sample plot spin stratum i
- CF_j , Carbon fraction of dry matter for species j
- D_j , Basic wood density of species j in t d.m. m^{-3}
- $f_j(X,Y…)$, Allometric equation(s) for species j linking measured tree variable(s) to above ground biomass of living trees
- Total area of illegal logging sample plots in stratum i (A_{Pi})
- $BCEF_R$, Biomass conversion and expansion factor applicable to wood removals in the project area
- G_{gi} , Emission factor for stratum *i* for gas *g*
- RGR_i , Forest re-growth rate post timber harvest for stratum i
- $V_{EX,j,i|BSL}$, Mean volume of extracted timber per unit area for species j in stratum i

- $A_{i,p}$, Area covered by stratum I over land parcel p

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

However, CQC raised **CL01** as parameters determined ex-ante are not sufficiently listed in monitoring report(version 1.0). PP made a supplement in the monitoring report (Version03) which are consistent with applied methodology and registered PD, therefore, **CL01** is closed (see Appendix B for details).

Calculation process and results

(1) Baseline Emissions

The critical parameter used for the determination of the Emission Removals is the area of forest, number of plant, diameter at breast height of a tree and other parameters relate to the forest inventory. The data pertaining to the above parameters are maintained in the identified records. All the data are in compliance with that stated in the Monitoring Report Version 03.

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

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

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

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

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

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

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

$$\Delta C_{NET,BSL(1+)} = \sum_{i=1}^{M}\sum_{p=1}^{p} A_{i,p,t^*} * (-\Delta C_{RG,i,p,BSL}) \quad (4)$$

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

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

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

$$GHG_{NET,BSL,t^*} = \Delta C_{NET,BSL,t^*} * \frac{44}{12} \quad (6)$$

CQC has checked the Emission Removals calculation sheet and registered VCS-PD and found the baseline calculation is correct. The value of baseline calculation is listed below:

Monitoring period	$\triangle C_{NET,BSL(1+)}$(tc)	$\triangle C_{NET,BS,t}$(tc)	Conversion factor	$GHG_{NET,BSL,t}$（tCO_2）
01/01/2015-31/12/2015	6,270	2,695	3.67	9,883
01/01/2016-31/12/2016	7,315	2,414	3.67	8,851
01/01/2017-31/12/2017	8,360	2,132	3.67	7,819
01/01/2018-31/12/2018	9,405	1,851	3.67	6,786
01/01/2019-31/12/2019	10,450	1,569	3.67	5,754

(2) Project Emissions

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

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

For the calculation result of annual carbon stock change in aboveground biomass of trees, since the total carbon stock change is calculated based on the monitoring data of five years (2015-2019), and the annual carbon stock change cannot be separately monitored, the average growth method is adapted to calculate the annual carbon stock change. CQC checked the “forest resource operation and management” published by Chinese Forest Press in 2001, and confirmed that the average growth method is acceptable and reasonable based on the expertise and experience.

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

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

During the on site visit, CQC checked the notice issued by the Chao'er Forest industrial Cooperation in 2019, it said the Wuyi forestry centre has been awarded ¥10,000 Yuan for its distinguished forest operation& management without any fire accident with continuous 5 years，, thus CQC verification team confirms that $\Delta C_{DIST-FR,t,PRJ}$ is equal to 0.

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

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

As indicates by the relevant statement issued by the local authority at the end of 2019, no natural disasters occurred during the monitoring period, $\Delta C_{DIST,t,PRJ}$ is equal to zero.

CQC has checked the Emission Removals calculation sheet and found the net greenhouse gas emissions in the project scenario is correct. The value of project emission is listed below:

Year	Monitoring period	△$C_{DIST-FR,t,PRJ}$ (tCO_2e)	△$C_{DIST,t,PRJ}$ (tCO_2e)	△$C_{DIST\_IL,I,t,PRJ}$ (tCO_2e)	△$C_{AB,t,PRJ,}$ (tCO_2e)	△$C_{NET,t,PRJ}$ (tCO_2e)
1-10	01/01/2010 to 31/12/2019	0	0	0	1052210	-1052210
1-5	01/01/2010 to 31/12/2014	0	0	0	709082	-709082

$GHG_{NET,PRJ,\ 2019}$ =△ $C_{NET,PRJ,2019}$= −1052210 (tCO_2e)

$GHG_{NET,PRJ,\ 2014}$ =△$C_{NET,PRJ,2014}$= −709082 (tCO_2e)

Monitoring period	△$C_{DIST-FR,t,PRJ}$ (tCO_2)	△$C_{DIST,t,PRJ}$ (tCO_2)	△$C_{DIST\_IL,I,t,PRJ}$ (tCO_2)	△$C_{AB,t,PRJ}$ (tCO_2)	△$C_{NET,t,PRJ}$ (tCO_2)
01/01/2015-31/12/2015	0	0	0	68,625	-68,625
01/01/2016-31/12/2016	0	0	0	68,625	-68,625
01/01/2017-31/12/2017	0	0	0	68,625	-68,625
01/01/2018-31/12/2018	0	0	0	68,625	-68,625
01/01/2019-	0	0	0	68,625	-68,625

31/12/2019					

（3）Leakage

- **Activity shifting leakage**

According to VM0010 version 1.2, there may be no leakage due to activity shifting. This was demonstrated through:

The verification team reviewed the historical timber production completion records from 2008 to 2014/40/, confirmed that the total extracted volume of Chao'er Forestry Bureau is decreasing compared with the plan from the with-project time period. In 2008, 2010 and 2014 the total timber production of Chao'er Forestry Industry Co., Ltd is 275,600 m^3, 225,500m^3, and 143,900m^3 respectively, with the drop rate of 44.42%.

Additionally, CQC team also reviewed the timber production completion records of Chao'er Forestry Industry Co., Ltd and the data is 59,056m^3, with sharply drop rate of 58.96%, comparing with 2014. Furthermore, the commercial timber production has been completely canceled by reviewing the the Notice on the complete cessation of commercial logging issued by the state forestry administration on16/02/2015/28/, and conclusion can be made that the total timber production plan is decreasing even complete cessation instead of increasing, not affected by the project activity.

Hence, it is confirmed that there is no deviation from historical trends.

The verification team reviewed the timber production plan/16/ issued by Chao'er Forestry Bureau every year based on the overall national five-year-plan, the total timber production plan is decreasing. Take the plan of 2001, 2008 ,2010, 2014 for example, the figure dropped from 299,700 m^3, 275,600m^3, 225,500 m^3, to 143,900 m^3, with the drop rate of 47.79%. Furthermore, the timber production plan of 2015 keeps the same with 2014 of 143,900m^3, from then on, no more production plan has been issued.

Therefore, CQC team confirms the activity shifting leakage is zero.

- **Market leakage**

According to the Validation Report version 1.0 (/6/), the leakage factor for market-effects calculations (LF_{ME}) is 0.

CQC has verified the following documents:

- According to the National Forestry Law of P.R. Chin/26/ a, the forest concessions must be strictly implemented;

- According to the Forestry Law of P.R. China, Illegal logging in China will be faced punished by replanting, penalty, or criminal responsibilities.

- In recent years, the illegal logging is absent in China.

- According to the 12th Five-year plan issued by State Forest Bureau (Guofa [2011] No.3)/30/, the annual extracted volume from 2011 to 2015 is 27,105.4*104 m^3.

- According to the 13th Five-year plan issued by State Forest Bureau (Guohan [2016] No.32)/31/, the annual extracted volume from 2016 to 2020 is 25,403.6*104 m^3.

Based above findings, CQC can confirm that the logging is impossible increased as a result of the decreased supply of the timber caused by the project in this monitoring period.

Therefore, $LF_{ME} = 0$.

According to VM0010 version 1.2, the Net Project Greenhouse Gas Emission removals in the monitoring period are calculated as:

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

Where:

$GHG_{CREDITS|LtPF}$ project greenhouse gas credits associated with the implementation of improved forest management (IFM) activities in the project scenario, tCO_2e

$GHG_{NET|BSL}$ net greenhouse gas emissions in the baseline scenario in the year t* since the start of the project activity, tCO_2e

$GHG_{NET|PRJ}$ net greenhouse gas emissions in the project scenario in the year t* sincethe 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 theproject scenario, tCO_2e

According to the VCS PD, if the uncertainty propagation $U_{total|LtPF} \leq 0.15$ then no deduction will result for uncertainty; If $U_{total|LtPF} > 0.15$ then the amount of greenhouse gas emission credits associated with IFM activities will be deducted as follows:

$$Credits_{total|LtPF} = GHG_{credits|LtPF} * (1 - U_{total|LtPF}) \quad (11)$$

CQC Verification team has checked the uncertainty analysis spreadsheet and confirms that the baseline emission uncertainty has been correctly calculated in the PD of the project as 4.328%, the project emission uncertainty is calculated and listed below:

Stratum	Parameter	Area (ha)	$V_{j,I,BSL,2014}$ (m3/ha)	BEF	D (tdm/m^3)	BCEF (tdm/m^3)	CF (tC/tdm)	$V_{j,i,BSL,2019}$ (m^3/ha)	$\triangle V_{AB,t,PRJ}$ (m^3/ha)	$\triangle C_{AB,t,PRJ}$ (tCO_2e)
		a	b	c	d	e=c*d	f	g	h=g-b	i=h*a*e*f*44/12
										$u_i = \sqrt{U_h^2 + $
Brich	E	1,313	71.515	1.586	0.443	0.703	0.5	77.287	5.772	9,762.351
	U	0	2.89%	6.893%	0.445%	6.907%		4.028%	2.510%	7.349%
Pinus	E	9,697	116.663	1.416	0.490	0.694	0.5	141.280	24.616	303,640.957
	U	0	0.63%	3.164%	4.810%	5.757%		0.729%	0.491%	5.778%
U_{PRJ}										5.603%

CQC confirms that the value and data source and calculation of project emission uncertainty is correct,Therefore, $U_{total} = \sqrt{U_{BSL}^2 + U_{PRJ}^2} = \sqrt{4.328\%^2 + 5.603\%^2} = 7.080\%$,≤ 0.15 in this monitoring period,then no deduction will result for uncertainty; therefore,

$$Credits_{total|LtPF} = GHG_{credits|LtPF} \quad (12)$$

As per the methodology VM0010 version 1.2 and the VCS PD, 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:

Year	Monitoring period	$GHG_{NET,BSL,t}$ (tCO_2e)	$GHG_{NET,PRJ,t}$ (tCO_2e)	$GHG_{LK,LtPF,t}$ (tCO_2e)	$GHG_{CREDITS,LtPF,t}$ (tCO_2e)	$U_{total,LtPF}$	$Credits_{total,LtPF,t}$ (tCO_2e)
1-10	1Jan 2010 to 31Dec2019	103995	-1052210	0	1156205	7.080%	1156205
1-5	1Jan 2010 to 31Dec2014	64902	-709082	0	773985	7.053%	773985

Note: $U_{total,LtPF,t1}$ is 7.053%, refer to p37 in MONIT_REP_1529_01JAN2010_31DEC2014.

$Credits_{total,LtPF,t2-t1}$= $Credits_{total,LtPF,t2}$ - $Credits_{total,LtPF,t1}$=1156205 -773985=382220 (tCO_2e)

$VCU_{net|LtPF}$ = ($Credits_{total,t2|LtPF}$ - $Credits_{total,t1|LtPF}$) - $Bu_{|IFM-VCS}$ (13)

Where:

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

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

$Credits_{total.t2|LtPF}$ net anthropogenic 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.

For the project activity, the second monitoring periods lasts from 01/01/2015 to 31/12/2019 with 5 years, for the convenience of VCU selling, it should be divided into every single year instead of for the whole monitoring period of 5 years. The VCU in every year is also calculated with buffering deducting. The whole VCU during the 5 years is the sum of VCU in every single year. In a word, the results of VCU issued during the second monitoring period is the same as the sum of the VCU in every year.

According to the analysis in NON-PERMANENCE RISK REPORT(version 3.0), the overall risk rating is 10, then 10% of the total emission reductions shall be deducted. However, during the verification, CQC team found that the Project Longevity in NON-PERMANENCE RISK REPORT(version2.0) is 20 years, which is inconformity with the AFOLU Non-Permanence Risk Tool, therefore, CQC raised CAR 01 and successfully closed.

Therefore, the emission reduction detail is listed:

$Credits_{total,LtPF,t2-t1}$ (tCO_2e)	Risk Score(%)	$Bu_{IFM-VCS}$ (tCO_2e)	$VCU_{net,LtPF}$ (tCO_2e)
382220	10	38222	343998

$VCU_{net,,LtPF}$=382220-38222=343998 (tCO_2e)

Therefore,CQC verification team confirms that the $VCU_{net,LtPF}$ of the project is listed in the following:

Year	Monitoring period	Baseline emissions or removals (tCO_2e)	Project emissions or removals (tCO_2e)	Leakage emissions (tCO_2e)	Net GHG emission reductions or removals (tCO_2e)	Buffer pool allocation (tCO_2e)	VCUs eligible for issuance (tCO_2e)
6	01/01/2015-31/12/2015	9883	-68625	0	78509	7851	70658
7	01/01/2016-31/12/2016	8851	-68625	0	77476	7748	69728
8	01/01/2017-31/12/2017	7819	-68625	0	76444	7644	68800
9	01/01/2018-31/12/2018	6786	-68625	0	75412	7541	67871
10	01/01/2019-31/12/2019	5754	-68625	0	74379	7438	66941
	Total	39093	-343127	0	382220	38222	343998
	Average	7819	-68625	0	76444	7644	68800

However, **CL02** was raised requesting the PP to demonstrate whether the PP has the ability to conduct the (e) Mitigation. Measurement of Project Management in terms of internal risk which is not considered in the first monitoring period. The PP provided the training record and relevant evidences, and CQC team reviewed the evidences and interviewed with PP during the on site visit, and concluded that the PP has significant experience in AFOLU project design and implementation, carbon accounting and reporting under the VCS Program. Therefore, **CL02** was closed (see Appendix B for details).

Hence, CQC verification team confirms that GHG emission reductions and removals have been quantified correctly in accordance with the project description and applied methodology.

4.5 Quality of Evidence to Determine GHG Emission Reductions and Removals

All necessary documentation is collected, referenced and is easily accessible in hard-copy or electronic format. The data pertaining to the monitored parameters are maintained in the identified internal records and consistent with the values stated in the Monitoring Report Version 03. Key data have been cross-checked via external sources, such as records of Filed measurement of Forest management inventory.

For the data and parameters available at validation, the related evidence has been validated at validation stage and the reliability of the evidence, and the source and nature of the evidence has

been confirmed and correctly applied at verification stage.

For the data and parameters monitored, the data and parameters related to forest fire in the project scenario,was verified through reviewing the statement issued by local forestry authority, the statement was sourced from local authority and the reliability is confirmed.

For the parameter DBH, as well as the area of each sample plot, the data were sourced from Sample plot monitoring records. During the onsite visit, spot checks were made on sample plots No.09, No. 01, No.29, No.33 and No.36, and also measured the DBH of trees and geographical coordinates of sample plot. These data mentioned above measured by CQC team is consistent with the raw sample plot monitoring records. Hence, the reliability is confirmed.

For the area of each stratum, the data was sourced from the national second class forest investigation(/41/), which is conducted in 2014 by Chao'er Forest Bureau and will updated every 10 years . Additionally, during the onsite visit, CQC verification team confirms that the area of each stratum is reexamination in Nov.2019 (/42/) and the area of each stratum is unaltered.Hence, the reliability is confirmed

CQC verification team confirms that the quantity of evidence is sufficient and appropriate to determine the GHG reductions and removals.

4.6 Non-Permanence Risk Analysis

The non-performance risk report and Risk Calculation Sheet are provided by PP, the risk assessment was conducted according to the VCS Procedural Document “AFOLU Non-Permanence Risk Tool” (version 4.0) . PP adopted the Risk Report Short template and combining with the Risk-Report Calculation-Tool excel sheet.

CQC has reviewed the Non-Permanence Risk Report (/22/) ,Risk Calculation Sheet and the related evidences, include the Timber Management Plan (/16/), and interviewed with stakeholders, CQC 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 CQC confirms that the evidences are substantial, and the overall risk rating is 10% based on the provided evidences, AFOLU Non-Permanence Risk Tool (version 4.0) and VCS Standard(version 4.0) .

Each risk category was calculated based on the VCS guidance and the input provided by the PP. The information was verified and cross-checked through document and literature review, on site visits of the project area and interviews conducted.

However, **CL02** was raised requesting the PP to demonstrate whether the PP has the ability to conduct the (e) Mitigation. Measurement of Project Management in terms of internal risk which is not considered in the first monitoring period. The PP provided the training record and relevant evidences, and CQC team reviewed the evidences and interviewed with PP during the on site visit, and concluded that the PP has significant experience in AFOLU project design and

implementation, carbon accounting and reporting under the VCS Program. Therefore, **CL02** was closed (see Appendix B for details).

5 VERIFICATION CONCLUSION

CQC has conducted the verification of Inner Mongolia Chao'er Improved Forest Management Project, owned by Chao'er Forest Bureau, which is located in south region of the Greater Khingan Mountains, Hulun Buir City, Inner Mongolia Autonomous Region, P.R.C, and applying the VCS methodology VM0010 version 1.2, on the basis of VCS Standard Version4.0, as well as criteria given to provide for consistent project operations, monitoring and reporting.

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

In summary, CQC confirms that the project is implemented as planned and described in the validated VCS project description. The forestry management conversion includes 11,010 ha logged to Protected Forest (LtPF) spreading in Wuyi Forestry Centre, which are protected as non-commercial forestry. The monitoring system is in place and reduces the GHG emissions as anthropogenic GHG removals by sinks. The GHG emission removals by sinks verified totalize343,998 tCO_2e with buffer account deduction for the monitoring period.

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

Verification period: From 01/01/2015 to 31/12/2019

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

Monitoring Period	Baseline emissions or removals (tCO_2e)	Project emissions or removals (tCO_2e)	Leakage emissions (tCO_2e)	Net GHG emission reductions or removals (tCO_2e)	Buffer pool allocation (tCO_2e)	VCUs eligible for issuance (tCO_2e)
01/01/2015-31/12/2015	9883	-68625	0	78509	7851	70658
01/01/2016-31/12/2016	8851	-68625	0	77476	7748	69728
01/01/2017-	7819	-68625	0	76444	7644	68800

31/12/2017						
01/01/2018-31/12/2018	6786	-68625	0	75412	7541	67871
01/01/2019-31/12/2019	5754	-68625	0	74379	7438	66941
Total	39093	-343127	0	382220	38222	343998
Average	7819	-68625	0	76444	7644	68800

APPENDIX A: DOCUMENTS REVIEWED OR REFERENCED

/1/ VCS-PD version 01.1 dated 10/11/2014

/2/ VCS-MR version 01 dated 01/01/2020

/3/ VCS-MR version 02 dated 10/01/2020

/4/ ER calculation spreadsheet

/5/ Uncertainty Analysis spreadsheet

/6/ Validation Report version 1.0 dated 12/13/2014

/7/ Verification Report version 1.0 dated 13/01/2016 for the first monitoring

/8/ VM0010 version 1.2 dated 27/03/2013

/9/ VCS Standard, version 4.0, dated 19/09/2019;

/10/ VCS Program Guide, version 4.0 dated 19/09/2019;

/11/ Registration & Issuance Process, version 4.0, dated 19/09/2019

/12/ 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

/13/ AFOLU Non-Permanence Risk Tool, VCS version 4.0

/14/ Tool for the "Calculation of the number of sample plots for measurements within A/R CDM project activities" (Version 03.1.0) approved by the CDM Executive Board.

/15/ VCS Validation and Verification Manual, version 3.2, dated 19/10/2016;

/16/ Timber Management Plan

/17/ Business license of the project proponent

/18/ Historical management records

/19/ Forestry Right Certificates of the Project

/20/ Maps of the Project

/21/ Certification issued by local Forest Public Security Bureau on illegal logging

/22/ Non-Permanence Risk Report (Version 3.0)

/23/ Participatory rural appraisal (PRA) provided by the local Forest Public Security Bureau

/24/ http://v-c-s.org

/25/ The national forestry inventory (II) in 2005

/26/ National Forestry Law of China

/27/ Statement on fire and natural disturbance issued by the local forestry authority at the end of 2019

/28/ Notice on the complete cessation of commercial logging issued by the state forestry administration on16/02/2015

/29/ Notice to reward the subordinate units with 10-year or 1-year smooth operation without fire accident issued by the Chao'er Forest industrial Cooperation dated 08/03/2019

/30/ The 12th Five-year plan issued by State Forest Bureau (Guofa [2011] No.3)

/31/ The 13th Five-year plan issued by State Forest Bureau (Guohan [2016] No.32)

/32/ Technical guidelines for national forest inventory. SFA 2004 No.25

/33/ IPCC Guidelines for National Greenhouse Gas Inventories (2006), Table 4.9.

/34/ "Economic Evaluation Method and Parameters for Project Construction" (version 3)

/35/ Forest resource operation and management published by Chinese Forest Press in 2001.

/36/ Training record and meeting minutes.

/37/ 155 questionnaires of local stakeholders prior to the implementation of the project.

/38/ Sample plot monitoring records

/39/ Monitoring Manual and monitoring plan.

/40/ timber production completion records.

/41/ National second class forest investigation conducted by Chao'er Forest Bureau in 2014 .

/42/ The report of forest investigation issued by Chao'er Forest Bureau dated 02/12/2019.

/43/ VCS-MR version 03 dated 29/07/2020.

/44/ Clarification on the project lifetime issued by project owner on 28th July,2020

/45/ Chinese national standard GB/T 26424-2010 Technical Specification for inventory for forest management planning and design.

/46/ VCS-MR Version 03 dated 29/07/2020

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

Draft report clarifications and corrective action requests by validation team	Summary of project participant response	Verification team conclusion
CAR 01 CQC team found that the Project Longevity in NON-PERMANENCE RISK REPORT(version2.0) is 20 years, which is inconformity with the AFOLU Non-Permanence Risk Tool.	PP made a supplement in the monitoring report (Version 3.0) .	The figure of project longevity in the previous non-permanence risk report was just typing error , which was not found timely due to negligence during the validation and verification. Through reviewing the Clarification on the project lifetime issued by project owner and Technical Specification for inventory for forest management planning and design (GB/T 26424-2010),Chinese national standard ,CQC team confirms that the natural maturity age of larch is more than 141 years, which are the main tree species in the project area. Thus 60 years determined to be the project lifetime from January 1, 2010 to December 31, 2069 by project owner.is conservative and reasonable. CQC team also reviews the latest Monitoring report (version 03) the non-permanence risk report (version 3.0), Chao'er 1529-Risk-Report-Calculation-Tool(version 4.0) and ER calculation sheet (version 3.0) and confirms that the overall risk rating(10%) and VCUs eligible for issuance are corrected accordingly. Thus, **CAR 01** was closed.
CL01 was raised as parameters determined ex-ante are not sufficiently listed in monitoring report(version 1.0).	PP made a supplement in the monitoring report (Version 3.0).	In the revised MR (Version 3.0 dated 10/01/2020), the PP made a supplement in the monitoring report (Version 3.0) which are consistent with applied methodology and registered PD,the verification team can confirm that **CL01** was closed.

Draft report clarifications and corrective action requests by validation team	Summary of project participant response	Verification team conclusion
CL02 was raised requesting the PP to demonstrate whether the PP has the ability to conduct the (e) Mitigation. Measurement of Project Management in terms of internal risk which is not considered in the first monitoring period.	The PP provided the training record and relevant evidences to CQC	CQC team reviewed the evidences (training record and meeting minutes) and interviewed with PP during the on site visit, and concluded that the PP has significant experience in AFOLU project design and implementation, carbon accounting and reporting under the VCS Program. Therefore, **CL02** was closed.