

# VERIFICATION REPORT OF INNER MONGOLIA KEYIHE IFM (CONVERSION OF LOGGED TO PROTECTED FOREST) PROJECT

Document Prepared By China Environmental United Certification Center Co., Ltd.



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**Summary:**

China Environmental United Certification Center Co., Ltd ( hereafter refers to 'CEC') has conducted the verification of Inner Mongolia Keyihe IFM (conversion of logged to protected forest) Project, owned by Inner Mongolia Keyihe Forest Industry LLC and Beijing Shengdahuitong Carbon Management Co., Ltd., which is located in Oroqen Autonomous Banner, Hulun Buir City, Inner Mongolia Autonomous Region, P.R.C.,and applying the VCS methodology VM0010 version 1.3, on the basis of VCS Standard Version 3.7, as well as criteria given to provide for consistent project operations, monitoring and reporting.

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

The first output of the verification process is 0 Corrective Actions Request (CAR) and 2 Clarification (CL). Project Participant took corrections and revised the project design document. The CAR and CL was successfully closed.

In summary, CEC confirms that the project is implemented as planned and described in the validated VCS project description. The forestry management conversion includes 20,526 ha commercial forest from logged to protected. The monitoring system is in place and reduces the GHG emissions as anthropogenic GHG removals by sinks. The GHG emission removals by sinks verified totalize 506,367 tCO<sub>2</sub>e for the monitoring period.

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

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

Reporting period	01/01/2013 to 30/06/2017
Baseline net GHG removals by sinks	67,766 tCO <sub>2</sub> e
Actual net GHG removals by sinks	-581,427 tCO <sub>2</sub> e
GHG emissions due to leakage	0 tCO <sub>2</sub> e
Total number of credits withheld in VCS buffer account	142,826 tCO <sub>2</sub> e
Net anthropogenic GHG removals by sinks	506,367 tCO <sub>2</sub> e

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## 1 INTRODUCTION

### 1.1 Objective

Inner Mongolia Keyihe Forest Industry LLC and Beijing Shengdahuitong Carbon Management Co., Ltd. (hereafter referred to as “the PP”) has commissioned China Environmental United Certification Center Co., Ltd (CEC) to verify the emission removals of Inner Mongolia Keyihe IFM (conversion of logged to protected forest) Project (hereafter referred to as “the Project”) owned by Inner Mongolia Keyihe Forest Industry LLC and Beijing Shengdahuitong Carbon Management Co., Ltd., which is located in Oroqen Autonomous Banner, Hulun Buir City, Inner Mongolia Autonomous Region, P.R.C. for the period from 01/01/2013 to 30/06/2017.

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

The objective of verification is to verify the reported emission removals generated by the Project for the period from 01/01/2013 to 30/06/2017 and to confirm that actual monitoring systems and procedures are in compliance with that described in the monitoring plan and the additional requirements stated by the VCS Association (VCSA).

### 1.2 Scope and Criteria

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

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

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

- VCS Program Guide, version 3.7, dated 21/06/2017
- VCS Standard, version 3.7, dated 21/06/2017
- Registration & Issuance Process, version 3.8, dated 21/06/2017
- VCS Validation and Verification Manual, version 3.2, dated 19/10/2016
- VM0010 "Methodology for Improved Forest Management: Conversion of Logged to Protected Forest" version 1.3, dated 28/04/2016
- Other rules and requirements

### 1.3 Level of Assurance

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

### 1.4 Summary Description of the Project

The Project is located in Oroqen Autonomous Banner, Hulun Buir City, Inner Mongollia Autonomous Region, P.R.C.. The annual estimated emission removals are 100,279 tCO<sub>2e</sub>.

The Project involves 20,526 ha logged to Protected Forest (LtPF) project which belongs to the improvement forestry management (IMF). It applies methodology VM0010 version 1.3 "Methodology for Improved Forest Management: Conversion of Logged to Protected Forest". The protected species are Birch, and Larch.

The Project Start Date is 01/01/2013, which is indicated in the notice on the forbidding commercial logging issued by Keyihe Forestry Bureau on 18/12/2012.

## 2 VERIFICATION PROCESS

### 2.1 Method and Criteria

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

CEC verified the project against the VCS requirements.

### 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 02 and emission reduction calculation spreadsheet. Qualitative information comprises information on internal management controls, calculation procedures, procedures for transfer of data, frequency of emissions reports, and review and internal audit of calculations.

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

- (a) The VCS-PD and the monitoring plan;
- (b) The validation report
- (c) The applied monitoring methodology;

(d) Other information and references relevant to the project activity's resulting emission reductions (e.g. IPCC reports, 3<sup>rd</sup> party measurement reports or national regulations).

## 2.3 Interviews

On 09/10/2017, the verification team performed a site visit and interviews with project stakeholders to confirm selected information and to resolve issues identified in the document review. Representatives of Keyihe Forestry Bureau and Beijing Shengdahuitong Carbon Management Co., Ltd. were interviewed (see References). The main topics of the interviews are listed as below.

<i>Interview topics</i>	<i>Organization</i>	<i>Name</i>
<ul style="list-style-type: none"> <li>- Project background information.</li> <li>- Project technology, operation and maintenance.</li> <li>- Project approval and right of use</li> <li>- Project implementation status.</li> <li>- Project management and monitoring plan.</li> <li>- Stakeholder consultation process</li> </ul>	Keyihe Forestry Bureau	Jiang Cheng Lian Guiping Yao Xinfu Liu Qi Liu Haibo Wang Yang
<ul style="list-style-type: none"> <li>- Applicability of selected methodology.</li> <li>- Baseline determination.</li> <li>- Emission reductions calculation.</li> <li>- Emission reduction monitoring plan.</li> </ul>	Beijing Shengdahuitong Carbon Management Co., Ltd.	Tao Yun Guo Yiqu

## 2.4 Site Inspections

On 09/10/2017 - 10/10/2017, the verification team performed the site inspection with the project proponent of the project activity. During this site inspection interviews with the representatives of the project owner, the consultant and project stakeholders were carried out to confirm selected information and to resolve issues identified in the document review.

## 2.5 Resolution of Findings

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

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

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

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

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

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

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

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

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

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

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

No FAR and no other findings raised during the validation.

### **2.5.1 Forward Action Requests**

No Forward Action Request is raised during this monitoring period.

## **2.6 Eligibility for Validation Activities**

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

## **3 VALIDATION FINDINGS**

### **3.1 Participation under Other GHG Programs**

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

### **3.2 Methodology Deviations**

Not applicable, no deviation from methodology.

### **3.3 Project Description Deviations**

Not applicable, no deviation from project description in the VCS PD version 03 dated 15/11/2017.

### 3.4 Grouped Project

Not applicable, the project is not a grouped project.

## 4 VERIFICATION FINDINGS

### 4.1 Project Implementation Status

CEC has performed a site visit and found that the Project has been implemented since 01/01/2013. The verification team checked VCS development consultation and service agreement signed between Inner Mongolia Keyihe Forest Industry LLC and Beijing Shengdahuitong Carbon Management Co., Ltd. on 20/12/2012. The project is implemented by Inner Mongolia Keyihe Forest Industry LLC. and Beijing Shengdahuitong Carbon Management Co., Ltd.. The forest ownership and legal right of the project belongs to Inner Mongolia Keyihe Forest Industry LLC, which commissioned Beijing Shengdahuitong Carbon Management Co., Ltd. to apply the emission reductions from their IFM project activity using VCS standard. The project start date is 01/01/2013, which is indicated in the notice on the forbidding commercial logging was issued by Keyihe Forestry Bureau on 18/12/2012. It is indicated in this notice issued by local forest authority that from 01/01/2013 the commercial timber harvest was strictly forbidden in the project area. On the basis of this site visit and the reviewed project description it can be confirmed that, the improved forestry management, such as conversion of logged to protection forest (Protected species are: Birch and Larch) are implemented.

The forestry management conversion includes 20,526 ha logged to Protected Forest (LtPF), in 1,969 subcompartments spreading over Kuya department, Molengge department, Suotuhan department, Tele department, Tuohe department of Inner Mongolia Keyihe Forest Industry LLC.. The different forest types, as well as the monitoring system, metering equipment and the monitoring procedure have been implemented and managed as described in the VCS PD and monitoring plan.

*CEC has onsite checked the boundary of the Project and confirmed they are consistent with those stated in the VCS PD* Through checking Keyihe VCS Project Monitoring Report issued by Keyihe forest Bureau Forest Inventory Group, and the on-site visit and interviewing local people, CEC confirmed that the project will promote local sustainable developments. Major contributions of the project are as follows:

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

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

## 4.2 Accuracy of GHG Emission Reduction and Removal Calculations

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

### Monitoring parameters

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

#### 1) Illegal Logging PRA Results;

The value is zero. Local forest authority has taken comprehensive forest protection measures to prevent the illegal logging, fire and other disease & insect pest. The measures include strengthening routine patrol, publicity and education. CEC has checked the documents provided by the Keyihe Forest Bureau and confirmed there is no illegal logging happened during the period from 01/01/2013 to 30/06/2017. Hence, the value applied is consistent with the methodology.

#### 2) Result of Limited Illegal Logging Survey;

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

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

N/A, no forest of the Project burnt during this monitoring period. CEC has checked the documents provided by the Keyihe Forest Bureau and confirmed there is no fire happened during the period from 01/01/2013 to 30/06/2017. Hence, the value applied is consistent with the methodology.

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

N/A, no forest of the Project disturbed during this monitoring period. CEC has checked the documents provided by the Keyihe Forest Bureau and confirmed there is no forest disturbance happened during the period from 01/01/2013 to 30/06/2017. Hence, the value applied is consistent with the methodology.

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

N/A, no forest of the Project will be disturbed during this monitoring period. By on-site interview checking the documents provided by the Keyihe Forest Bureau, CEC confirmed that no forest of the Project will be disturbed during this monitoring period.

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

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

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

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

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

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

9)  $A_i$ : Area covered by stratum  $i$

The value is from the forest second class investigation issued by Inner Mongolia autonomous region forestry survey and design institute, and is ex-ante in the validation. During this monitoring period, according to the Keyihe VCS Project Monitoring Report issued by Keyihe forest Bureau Forest Inventory Group (Certificate number: Bing 32-002, valid from 01/07/2013 to 30/06/2018), area covered by stratum  $i$  is as follows, there is no change compared to the value ex-ante in the validation

I.D	Stratum	Species	Area ( ha )
1	PROJ-1	Birch	10,454
2	PROJ-2	Larch	10,072

10) DBH: Diameter at breast height of tree

The value is from the Sample plot monitoring records and Keyihe VCS Project Monitoring Report issued by Keyihe forest Bureau Forest Inventory Group (Certificate number: Bing 32-002, valid from 01/07/2013 to 30/06/2018). According to the PD and monitoring plan, the sample plots number is listed in the following:

STRATA NO	Stratum Name	Number of Plots	
		Plot Quantity	Rounded Plot Quantity
Total Sample Size		106.31	
Strata 1	Birch	38.29	39
Strata 2	Larch	68.01	69
<b>TOTAL NUMBER OF PLOTS</b>			<b>108</b>

According to monitoring the DBH in the sample plot, the volume of every sample plot is calculated by Keyihe forest Bureau Forest Inventory Group as follows:

NO.	Plot No.	department	Species	Volume of sample plot (m <sup>3</sup> ) A	Volume of per unit (m <sup>3</sup> /ha) B=A/0.04
1	BH-TH-1	Tuohe	Birch	3.92	98.00
2	BH-TH-2	Tuohe	Birch	4.29	107.25
3	BH-TH-3	Tuohe	Birch	4.28	107.00
4	BH-TH-4	Tuohe	Birch	3.93	98.25
5	BH-TH-5	Tuohe	Birch	3.93	98.25
6	BH-TH-6	Tuohe	Birch	3.88	97.00
7	BH-TH-7	Tuohe	Birch	4.49	112.25
8	BH-TH-8	Tuohe	Birch	4.52	113.00
9	BH-TH-9	Tuohe	Birch	3.61	90.25
10	BH-TH-10	Tuohe	Birch	5.08	127.00
11	BH-TH-11	Tuohe	Birch	4.37	109.25
12	BH-TH-12	Tuohe	Birch	5.41	135.25
13	BH-TH-13	Tuohe	Birch	3.52	88.00
14	BH-STH-1	Suotuhan	Birch	2.36	59.00
15	BH-STH-2	Suotuhan	Birch	3.93	98.25
16	BH-STH-3	Suotuhan	Birch	3.93	98.25
17	BH-STH-4	Suotuhan	Birch	3.29	82.25
18	BH-STH-5	Suotuhan	Birch	4.12	103.00
19	BH-STH-6	Suotuhan	Birch	3.40	85.00
20	BH-STH-7	Suotuhan	Birch	3.40	85.00
21	BH-STH-8	Suotuhan	Birch	3.64	91.00
22	BH-STH-9	Suotuhan	Birch	4.24	106.00
23	BH-STH-10	Suotuhan	Birch	4.01	100.25
24	BH-STH-11	Suotuhan	Birch	3.21	80.25
25	BH-STH-12	Suotuhan	Birch	2.97	74.25
26	BH-KY-1	Kuya	Birch	3.48	87.00
27	BH-KY-2	Kuya	Birch	3.57	89.25
28	BH-KY-3	Kuya	Birch	3.20	80.00
29	BH-KY-4	Kuya	Birch	3.24	81.00
30	BH-KY-5	Kuya	Birch	3.26	81.50
31	BH-KY-6	Kuya	Birch	3.64	91.00
32	BH-KY-7	Kuya	Birch	3.44	86.00
33	BH-KY-8	Kuya	Birch	3.52	88.00
34	BH-KY-9	Kuya	Birch	3.52	88.00
35	BH-KY-10	Kuya	Birch	3.36	84.00
36	BH-MLG-1	Molengge	Birch	3.32	83.00
37	BH-MLG-2	Molengge	Birch	3.38	84.50
38	BH-TL-1	Tele	Birch	4.48	112.00

39	BH-TL-2	Tele	Birch	4.09	102.25
40	LYS-TH-1	Tuohe	Larch	5.44	136.00
41	LYS-TH-2	Tuohe	Larch	2.36	59.00
42	LYS-TH-3	Tuohe	Larch	5.76	144.00
43	LYS-TH-4	Tuohe	Larch	4.36	109.00
44	LYS-TH-5	Tuohe	Larch	4.38	109.50
45	LYS-TH-6	Tuohe	Larch	4.38	109.50
46	LYS-TH-7	Tuohe	Larch	3.44	86.00
47	LYS-TH-8	Tuohe	Larch	3.34	83.50
48	LYS-TH-9	Tuohe	Larch	4.60	115.00
49	LYS-TH-10	Tuohe	Larch	5.02	125.50
50	LYS-TH-11	Tuohe	Larch	6.16	154.00
51	LYS-TH-12	Tuohe	Larch	6.92	173.00
52	LYS-TH-13	Tuohe	Larch	6.92	173.00
53	LYS-TH-14	Tuohe	Larch	6.00	150.00
54	LYS-TH-15	Tuohe	Larch	3.77	94.25
55	LYS-TH-16	Tuohe	Larch	5.52	138.00
56	LYS-TH-17	Tuohe	Larch	5.52	138.00
57	LYS-TH-18	Tuohe	Larch	3.20	80.00
58	LYS-TH-19	Tuohe	Larch	3.20	80.00
59	LYS-TH-20	Tuohe	Larch	3.21	80.25
60	LYS-TH-21	Tuohe	Larch	4.72	118.00
61	LYS-TH-22	Tuohe	Larch	4.88	122.00
62	LYS-TH-23	Tuohe	Larch	5.86	146.50
63	LYS-TH-24	Tuohe	Larch	6.16	154.00
64	LYS-TH-25	Tuohe	Larch	5.96	149.00
65	LYS-TH-26	Tuohe	Larch	6.01	150.25
66	LYS-TH-27	Tuohe	Larch	7.04	176.00
67	LYS-TH-28	Tuohe	Larch	7.04	176.00
68	LYS-TH-29	Tuohe	Larch	7.24	181.00
69	LYS-TH-30	Tuohe	Larch	3.84	96.00
70	LYS-TH-31	Tuohe	Larch	7.42	185.50
71	LYS-TH-32	Tuohe	Larch	7.56	189.00
72	LYS-TH-33	Tuohe	Larch	4.44	111.00
73	LYS-TH-34	Tuohe	Larch	6.52	163.00
74	LYS-STH-1	Suotuhan	Larch	1.80	45.00
75	LYS-STH-2	Suotuhan	Larch	3.16	79.00
76	LYS-STH-3	Suotuhan	Larch	5.44	136.00
77	LYS-STH-4	Suotuhan	Larch	5.68	142.00
78	LYS-STH-5	Suotuhan	Larch	5.36	134.00
79	LYS-STH-6	Suotuhan	Larch	5.36	134.00

80	LYS-STH-7	Suotuhan	Larch	5.36	134.00
81	LYS-STH-8	Suotuhan	Larch	6.12	153.00
82	LYS-STH-9	Suotuhan	Larch	5.52	138.00
83	LYS-STH-10	Suotuhan	Larch	8.92	223.00
84	LYS-STH-11	Suotuhan	Larch	5.06	126.50
85	LYS-STH-12	Suotuhan	Larch	3.16	79.00
86	LYS-STH-13	Suotuhan	Larch	4.17	104.25
87	LYS-STH-14	Suotuhan	Larch	4.17	104.25
88	LYS-STH-15	Suotuhan	Larch	5.72	143.00
89	LYS-STH-16	Suotuhan	Larch	5.72	143.00
90	LYS-KY-1	Kuya	Larch	4.04	101.00
91	LYS-KY-2	Kuya	Larch	5.64	141.00
92	LYS-MLG-1	Molengge	Larch	2.61	65.25
93	LYS-MLG-2	Molengge	Larch	3.15	78.75
94	LYS-MLG-3	Molengge	Larch	3.20	80.00
95	LYS-MLG-4	Molengge	Larch	3.04	76.00
96	LYS-MLG-5	Molengge	Larch	3.04	76.00
97	LYS-MLG-6	Molengge	Larch	3.49	87.25
98	LYS-MLG-7	Molengge	Larch	4.84	121.00
99	LYS-MLG-8	Molengge	Larch	1.80	45.00
100	LYS-MLG-9	Molengge	Larch	1.80	45.00
101	LYS-MLG-10	Molengge	Larch	3.84	96.00
102	LYS-MLG-11	Molengge	Larch	3.88	97.00
103	LYS-TL-1	Tele	Larch	5.06	126.50
104	LYS-TL-2	Tele	Larch	5.98	149.50
105	LYS-TL-3	Tele	Larch	2.24	56.00
106	LYS-TL-4	Tele	Larch	5.67	141.75
107	LYS-TL-5	Tele	Larch	6.40	160.00
108	LYS-TL-6	Tele	Larch	6.40	160.00

CEC checked the Sample plot monitoring records, Keyihe VCS Project Monitoring Report issued by Keyihe forest Bureau Forest Inventory Group, and the calculation sheet, and confirmed the DBH and the calculation process is correct and appropriate. The following data analysis also shows that the precision level of the sample carbon stock is 99.39%, larger than 90%, there is no need to deduct the emissions.

Average carbon stock:	143.66
Square deviation	0.1961
Standard deviation	0.4428
Two-sided Student's t-value	1.9826
absolute error	0.8779

relative error	0.61%
sampling precision	99.39%

The critical parameter used for the determination of the Emission Removals is the area of forest, diameter at breast height of a tree and other parameters relate to the forest inventory. The data pertaining to the above parameters are maintained in the identified records. All the data are in compliance with that stated in the Monitoring Report version 02.

### **Data and Parameters Available at Validation**

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

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

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

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

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

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

Three methods have been recommended by the methodology, for the project activity, method a) National species-specific or group of species-specific values, with the highest preference is adopted. The value from the GHG inventory of land use change and Forestry from the "the second national information notice on China's climate change" is applied to the project activity. CEC checked the Chapter "Land Use Change and Forestry GHG Inventory (2013)" and confirmed the application value of 0.541 and 0.490 with Birch and Larch is correct.

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

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

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

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

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

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

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

WW:24%; SLF: 0.12; OF: 0.62

CEC checked the methodology and confirmed the appropriateness.

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

Three methods have been recommended by the methodology, for the project activity, method b) National species-specific or group of species-specific values, is adopted. The value from the GHG inventory of land use change and Forestry from the “the second national information notice on China’s climate change” is applied to the project activity. CEC checked the Chapter "Land Use Change and Forestry GHG Inventory (2013)" and confirmed the application value of 0.770 and 0.694 with Birch and Larch is correct.

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

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

8)  $RGR_i$  , Forest re-growth rate post timber harvest for stratum  $i$

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

### **Calculation process and results**

#### **(1) Baseline Emissions**

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

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

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

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

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

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

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

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

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:

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

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

Period	GHG <sub>NET,BSL,t</sub> (tCO <sub>2</sub> e )
01/01/2013-31/12/2013	15,491
01/01/2014-31/12/2014	12,958
01/01/2015-31/12/2015	9,317
01/01/2016-31/12/2016	24,464
01/01/2017-30/06/2017	5,536 <sup>1</sup>
<b>Total</b>	<b>67,767</b>
<b>Average annual GHG<sub>NET BSL</sub></b>	<b>15,059<sup>2</sup></b>

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

## (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.

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

<sup>1</sup> The baseline scenario emission reduction of 2017 is 11,073 in VCS-PD, the period of 01/01/2017-30/06/2017 is half year, so GHG<sub>NET,BSL,t</sub> of 01/01/2017-30/06/2017 is calculated by 11,073\*0.5=5,536 tCO<sub>2</sub>

<sup>2</sup> The average annual GHG<sub>NET|BSL</sub> is calculated by 67,767/4.5=15,059 tCO<sub>2</sub>/yr

For the calculation result of annual carbon stock change in aboveground biomass of trees, since the total carbon stock change is calculated based on the monitoring data from 01/01/2013 to 30/06/2017, and the annual carbon stock change cannot be separately monitored, the average growth method is adapted to calculate the annual carbon stock change. The verification team checked the “forest resource operation and management” published by Chinese Forest Press in 2001, and confirmed that the average growth method is acceptable and reasonable based on the expertise and experience.

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

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

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

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

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

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

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

Period	$\Delta C_{DIST-FR,t,PRJ}$ (tCO <sub>2</sub> e)	$\Delta C_{DIST,t,PRJ}$ (tCO <sub>2</sub> e)	$\Delta C_{DIST\_IL,t,PRJ}$ (tCO <sub>2</sub> e)	<sup>3</sup> $\Delta C_{AB,t,PRJ}$ (tCO <sub>2</sub> e)	$\Delta C_{NET,t,PRJ}$ (tCO <sub>2</sub> e)
01/01/2013-31/12/2013	0	0	0	129,206	-129,206
01/01/2014-31/12/2014	0	0	0	129,206	-129,206
01/01/2015-31/12/2015	0	0	0	129,206	-129,206
01/01/2016-31/12/2016	0	0	0	129,206	-129,206

<sup>3</sup> In fact, the total carbon stock change in project scenario from 01/01/2013 to 30/06/2017 is calculated based on the monitored growth during 2013 to 2017. In order to calculate the annual carbon stock change, the total carbon stock change is averaged by these 4.5 years. This method is also commonly accepted in forestry. As stated in P169-171 of the professional college textbook “forest resource operation and management” published by Chinese Forest Press in 2001, the forest growth is divided into average growth and current annual increment, the latter is usually difficult to measure and have a high error, therefore, the former is commonly used to determine the forest growth. The results of carbon stock change are the same if calculated by these two methods, but the current annual increment is unavailable for the project, so the total carbon stock change is averaged to obtain the annual carbon stock change.

01/01/2017-30/06/2017	0	0	0	64,603 <sup>4</sup>	-64,603
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>581,427</b>	<b>-581,427</b>
<b>Average annual value</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>129,206</b>	<b>-129,206</b>

### (3) Leakage

#### Activity shifting leakage

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

According to Forest law of the People's Republic of China<sup>5</sup> Article 6 and Regulations of the People's Republic of China on forestry law<sup>6</sup> Article 28, forest cutting management quota system is implemented in China. The central government issued the maximum timber harvest to provinces and larger state-owned forest enterprises every five years. And the provincial forestry authority issued the timber harvest approval and restrictions to its subordinate based on its limit.

Also, the China Forest Law also clearly stipulates the punishment for the illegal logging, which not only requires 5-10 times compensation of replanting, but also 2-10 times economic penalty.

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

Therefore, there is no leakage due to activity shifting.

#### Market leakage

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

CEC has verified the following documents:

- According to the National Forestry Law of P.R. China, the forest concessions must be strictly implemented;

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<sup>4</sup> The project scenario emission reduction of 2017 is 129,206 as calculated in MR-ER sheet, the period of 01/01/2017-30/06/2017 is half year, so  $GHG_{NET,PRJ,t}$  of 01/01/2017-30/06/2017 is calculated by  $129,206 * 0.5 = 64,603$  tCO<sub>2</sub>

<sup>5</sup> [http://www.law-lib.com/law/law\\_view.asp?id=95233](http://www.law-lib.com/law/law_view.asp?id=95233)

<sup>6</sup> [http://www.law-lib.com/law/law\\_view.asp?id=7](http://www.law-lib.com/law/law_view.asp?id=7)

- 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 13th Five-year Forest Harvest Limit issued by State Council (Guohan [2016] No.32) , the maximum timber harvest volume in China from 2016 to 2020 is  $25,403.6 \times 10^4 \text{ m}^3$  per year, the maximum timber harvest volume in Inner Mongolia Autonomous Region during the period from 2016 to 2020 is  $142.1 \times 10^4 \text{ m}^3$  per year, and the planned annual average harvest volume of the project is  $12.0 \times 10^4 \text{ m}^3$  during the period from 2016 to 2020, accounting 0.04% of the national harvest volume, 8.44% of the Inner Mongolia Autonomous Region harvest volume, which will not result in the significant national concession and illegal logging.

CEC 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,  $LF_{ME} = 0$ .

**(4) Net GHG Emission Reductions and Removals**

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

$$GHG_{CREDITS, LIPF, t^*} = GHG_{NET, BSL, t^*} - GHG_{NET, PRJ, t^*} - GHG_{LK, LIPF, t^*} \tag{10}$$

Where:

$GHG_{CREDITS, LIPF}$  project greenhouse gas credits associated with the implementation of improved forest management (IFM) activities in the project scenario, tCO<sub>2</sub>e

$GHG_{NET, BSL}$  net greenhouse gas emissions in the baseline scenario in the year t\* since the start of the project activity, tCO<sub>2</sub>e

$GHG_{NET, PRJ}$  net greenhouse gas emissions in the project scenario in the year t\* since the start of the project activity, tCO<sub>2</sub>e

$GHG_{LK, LIPF}$  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<sub>2</sub>e

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

Period	Baseline emissions or removals (tCO <sub>2</sub> e)	Project emissions or removals (tCO <sub>2</sub> e)	Leakage emissions (tCO <sub>2</sub> e)	Net GHG emission reductions or removals (tCO <sub>2</sub> e)
01/01/2013-31/12/2013	15,491	-129,206	0	144,697

01/01/2014-31/12/2014	12,958	-129,206	0	142,164
01/01/2015-31/12/2015	9,317	-129,206	0	138,523
01/01/2016-31/12/2016	24,464	-129,206	0	153,670
01/01/2017-30/06/2017	5,536	-64,603	0	70,139
<b>Total</b>	<b>67,767</b>	<b>-581,427</b>	<b>0</b>	<b>649,193</b>
<b>Average annual value</b>	<b>15,059</b>	<b>-129,206</b>	<b>0</b>	<b>144,265</b>

### (5) Adjusted for uncertainty

According to the methodology, the uncertainty in the baseline scenario is associated with parameters and coefficients including estimates of area, carbon stocks, regrowth and expansion factors, the calculation process follows the two rules below:

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

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

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

Where:

$U_{total}$  is the percentage uncertainty in the sum of the quantities (half the 95% confidence interval divided by the total (i.e. mean) and expressed as a percentage);

$E_i$  and  $U_i$  are the uncertain quantities and the percentage uncertainties associated with them, respectively

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

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

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

Where:

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

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

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

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

#### 1) Uncertainty of Area:

In the baseline scenario, the area of every stratum are quoted from the second class forestry investigation and forest right certificate, so no data are from measurement and monitoring. Therefore, it is deemed as 0 in the period of validation. It will be monitored in the period of verification.

#### 2) Uncertainty of expansion factors:

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

For Birch:

Uncertainty of BCEF-Birch		5.95%	
Uncertainty of BEF-Birch	5.89%	Uncertainty of D-Birch	0.84%
BEF		D	
Sample size	55	Sample size	62
Sample mean (BEF)	1.180	Sample mean (D)	0.541
Standard deviation	0.257	Standard deviation	0.018
Average error	0.035	Average error	0.002
Confidence level	0.950	Confidence level	0.950
Degree of freedom	54	Degree of freedom	61
Two-sided Student's t-value	2.005	Two-sided Student's t-value	2.000
Allowable error	0.069	Allowable error	0.005
Lower confidence limit	1.111	Lower confidence limit	0.536
Upper confidence limit	1.249	Upper confidence limit	0.546
Confidence interval	0.069	Confidence interval	0.005

For Larch:

Uncertainty of BCEF-Larch		5.76%	
Uncertainty of BEF-Larch	3.16%	Uncertainty of D-Larch	4.81%
BEF		D	
Sample size	321	Sample size	13
Sample mean (BEF)	1.416	Sample mean (D)	0.490
Standard deviation	0.408	Standard deviation	0.039
Average error	0.023	Average error	0.011
Confidence level	0.950	Confidence level	0.950
Degree of freedom	320	Degree of freedom	12
Two-sided Student's t-value	1.967	Two-sided Student's t-value	2.179
Allowable error	0.045	Allowable error	0.024
Lower confidence limit	1.371	Lower confidence limit	0.466
Upper confidence limit	1.461	Upper confidence limit	0.514
Confidence interval	0.045	Confidence interval	0.024

### 3) Uncertainty of carbon stock:

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

For Year 2013

Uncertainty of carbon stock-Birch	6.02%	Uncertainty of carbon stock-Larch	5.95%
Uncertainty of volume-Birch	0.90%	Uncertainty of volume-Larch	1.52%
carbon stock-Birch	677734.22	carbon stock-Larch	548648.87
Area(ha)	10454.00	Area(ha)	10072.00
Sample size	830	Sample size	1139
Sample mean (m <sup>3</sup> /ha)	168.31	Sample mean (m <sup>3</sup> /ha)	157.02
Standard deviation	22.23	Standard deviation	40.98
Average error	0.77	Average error	1.21
Confidence level	0.95	Confidence level	0.95
Degree of freedom	829	Degree of freedom	1138
Two-sided Student's t-value	1.96	Two-sided Student's t-value	1.96
Allowable error	1.51	Allowable error	2.38
Lower confidence limit	166.79	Lower confidence limit	154.64
Upper confidence limit	169.82	Upper confidence limit	159.40
Confidence interval	1.51	Confidence interval	2.38

For Year 2017

Uncertainty of carbon stock-Birch	7.76%	Uncertainty of carbon stock-Larch	9.60%
Uncertainty of volumn-Birch	4.99%	Uncertainty of volumn-Larch	7.68%
carbon stock-Birch	56.71	carbon stock-Larch	116.23
Area(ha)	1.56	Area(ha)	2.76
Sample size	39	Sample size	69
Sample mean (m3/ha)	94.38	Sample mean (m3/ha)	121.39
Standard deviation	14.53	Standard deviation	38.82
Average error	2.33	Average error	4.67
Confidence level	0.95	Confidence level	0.95
Degree of freedom	38	Degree of freedom	68
Two-sided Student's t-value	2.02	Two-sided Student's t-value	2.00
Allowable error	4.71	Allowable error	9.33
Lower confidence limit	89.67	Lower confidence limit	112.06
Upper confidence limit	99.09	Upper confidence limit	130.71
Confidence interval	4.71	Confidence interval	9.33

#### 4) Uncertainty of regrowth

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

#### Baseline Emission Uncertainty calculation

Based on the calculation of the 4 parameters and coefficients above, the  $U_{total}$  is 5.84%, the detailed calculation is listed as follows:

The baseline emission uncertainty has been listed in the PD of the project as 1.12%, the details for the project emission uncertainty is updated as:

Baseline Emission Uncertainty

Stratum	Parameter	A <sub>area</sub> (Ha)	V <sub>EX,j,i BSL</sub> (m3/ha)	BEF	D(tdm/m3)	BCEFR <sub>R</sub> (tdm/m3)	CF <sub>f</sub> (tc/tdm)	C <sub>HB,j,i BSL</sub> (tC/ha)	C <sub>EX,j,i BSL</sub> (tC/ha <sup>-1</sup> )	ΔC <sub>DW,i,p BSL</sub>
		a	b	c	d	e=c*d	f	g=b*e*f	h=b*d*f	i=g-h
								$U_g = \sqrt{U_b^2 + U_e^2}$	$U_h = \sqrt{U_b^2 + U_d^2}$	$U_i = \frac{\sqrt{(E_g * U_g)^2 + (E_h * U_h)^2}}{(E_g + E_h)}$
Birch	E	10454.00	114.54	1.424	0.541	0.770	0.5	44.12	30.98	13.14
	U	0	0.90%	5.89%	0.84%	5.95%		6.02%	1.23%	3.57%
Larch	E	10072.00	118.26	1.416	0.490	0.694	0.5	41.03	28.97	12.05
	U	0	1.52%	3.16%	4.81%	5.76%		5.95%	5.04%	4.07%

Stratum	Parameter	WW <sub>k</sub>	SLF <sub>k</sub>	C <sub>wp,0 BSL</sub> (tc/ha)	C <sub>WP,i BSL</sub> (tc/ha)	OF <sub>k</sub>	ΔC <sub>WP,100 BSL</sub> (tc/ha)	A <sub>i,p</sub> (ha)	ΔC <sub>NET BSL(1)</sub> (tC)
		j	k	l=h*(j+k)	m=h-l	n	o=m*n	p	q=(i/10+l+o/20)*p
				U <sub>l</sub> =U <sub>h</sub>	$U_m = \frac{\sqrt{(E_h * U_h)^2 + (E_l * U_l)^2}}{(E_h + E_l)}$		U <sub>o</sub> =U <sub>m</sub>	U <sub>p</sub> =0	$U_q = \frac{\sqrt{(E_i * U_i)^2 + (E_l * U_l)^2 + (E_o * U_o)^2}}{(E_i + E_l + E_o)}$
Birch	E	24%	0.12	11.15	19.83	0.62	12.29	2116.60	27688.84
	U			1.23%	0.96%		0.96%		1.37%
Larch	E	24%	0.12	10.43	18.54	0.62	11.50	1562.42	19078.64
	U			5.04%	3.94%		3.94%		2.50%

Stratum	Parameter	$\Delta C_{NET BSL(2-10)}(tC)$	$\Delta C_{NET BSL(11-20)}(tC)$	regrowth rate (m3/ha/yr)	$\Delta C_{NET BSL,t^*}(tC)$	$\Delta C_{NET, i,P BSL}$
		$r=(i/10+o/20)*p$	$s=o/20*p$	t	$v=e*f*p*t$	$w=q+r+s-v$
		$U_r = \frac{\sqrt{(E_i * U_i)^2 + (E_o * U_o)^2}}{(E_i + E_o)}$	$U_s = U_o$	$U_i = 10\%$	$U_r = \sqrt{U_e^2 + U_t^2}$	$U_w = \frac{\sqrt{(E_q * U_q)^2 + (E_r * U_r)^2 + (E_s * U_s)^2 + (E_v * U_v)^2}}{(E_q + E_r + E_s + E_v)}$
Birch	E	4081.45	1301.03	1.56	1271.86	31799.46
	U	1.90%	0.96%	10.00%	11.64%	1.21%
Larch	E	2781.40	898.16	1.83	991.92	21766.27
	U	2.83%	3.94%	10.00%	11.54%	2.10%
					$U_{BSL}$	1.12%

**Project Emission Uncertainty**

Stratum	Parameter	Area(Ha)	$V_{AB,i,2013}$ (m <sup>3</sup> ha <sup>-1</sup> )	BEF	D(tdm/m3)	BCEFR (tdm/m3)	CFj (tc/tdm)	$V_{AB,i,2017}$ (m <sup>3</sup> ha <sup>-1</sup> )	$\Delta V_{AB,i PRJ}(m^3 ha^{-1})$	$\Delta C_{AB,i PRJ}(tCO_2)$
		a	b	c	d	e=c*d	f	g	h=g-b	i=h*a*e*f*44/12
									$U_h = \frac{\sqrt{(E_b * U_b)^2 + (E_g * U_g)^2}}{(E_b + E_g)}$	$U_i = \sqrt{U_h^2 + U_e^2}$
	E	10454.00	84.31	1.42	0.541	0.770	0.5	94.38	10.07	148714.98
Birch	U	0.00	0.90%	5.89%	0.84%	5.95%		4.99%	2.67%	6.52%
	E	10072.00	86.52	1.42	0.490	0.694	0.5	121.39	34.87	446749.92
Larch	U	0.00	1.52%	3.16%	4.81%	5.76%		7.68%	4.53%	7.33%
									$U PRJ$	5.73%

Therefore,  $U_{Total|LtPF} = \sqrt{U_{BSL}^2 + U_{PRJ}^2} = \sqrt{1.12\%^2 + 5.73\%^2} = 5.84\% = 0.0584$

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

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

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

The uncertainty propagation  $U_{total|LtPF} = 5.84\% \leq 0.15$  in this monitoring period; therefore,

$Credits_{total|LtPF} = GHG_{credits|LtPF}$

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

$VCU_{net|LtPF} = (Credits_{total,t2|LtPF} - Credits_{total,t1|LtPF}) - Bu_{|IFM-VCS}$  (12)

Where:

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

$Credits_{total,t1|LtPF}$  net anthropogenic greenhouse gas removals by sinks, as estimated for  $t^*=t_1$  in  $tCO_2e$ ;

$Credits_{total,t2|LtPF}$  net anthropogenic greenhouse gas removals by sinks, as estimated for  $t^*=t_2$  in  $tCO_2e$ ; and

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

**CL01** was raised requesting the PP to provide transparent calculation process and related evidence for the determination of uncertainty. The PP provided the uncertainty analysis calculation spreadsheet of the project. The validation team checked the spreadsheet and confirmed that the calculation process has been conducted according to the methodology; related evidence has also been provided and validated by CEC. The result has been correctly calculated. Hence, **CL01** was closed.

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

Therefore, the emission reduction detail is listed:

Year	GHG <sub>NET,BSL</sub> (tCO <sub>2</sub> e)	GHG <sub>NET,PRJ</sub> (tCO <sub>2</sub> e)	GHG <sub>LK</sub> (tCO <sub>2</sub> e)	Credits <sub>total,LtPF</sub> (tCO <sub>2</sub> e)	Risk Score	VCU <sub>NET,IFM</sub> (tCO <sub>2</sub> e)
------	--	--	---	---	---------------	--

01/01/2013-31/12/2013	15,491	-129,206	0	144,697	22	112,863
01/01/2014-31/12/2014	12,958	-129,206	0	142,164	22	110,887
01/01/2015-31/12/2015	9,317	-129,206	0	138,523	22	108,047
01/01/2016-31/12/2016	24,464	-129,206	0	153,670	22	119,862
01/01/2017-30/06/2017	5,536	-64,603	0	70,139	22	54,708
<b>Total</b>	<b>67,766</b>	<b>-581,427</b>	<b>0</b>	<b>649,193</b>		<b>506,367</b>
<b>Average annual value</b>	<b>15,059</b>	<b>-129,206</b>	<b>0</b>	<b>144,265</b>		<b>112,526</b>

### 4.3 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 02.

Key data have been cross-checked via external sources.

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

For the data and parameters monitored, the data and parameters related to forest disturbance in the project scenario, such as fire and non-fire disturbance, illegal logging was verified through reviewing the statement issued by local forestry authority, the statement was sourced from local authority and the reliability is confirmed. For the parameter DBH, the data was sourced from Sample plot monitoring records and Keyihe VCS Project Monitoring Report issued by Keyihe forest Bureau Forest Inventory Group (Certificate number: Bing 32-002, valid from 01/07/2013 to 30/06/2018) based on the National Forest Resource Continuous Investigation Technical Regulation issued by the State Forestry Bureau. Hence, the reliability is confirmed.

### 4.4 Non-Permanence Risk Analysis

The non-permanence risk is analyzed as below:

Step 1. Risk Analysis

Sub-step 1.1: Internal Risks

According to the AFOLU Non-Permanence Risk Tool (version 3.3), project management (PM), financial viability (FV), opportunity cost (OC), project longevity (PL) shall be assessed using the specified table. Every risk factor has been identified and the relevant risk rating has been presented in the non-permanence risk report as follows:

Project Management		
Risk Factor	Risk Factor and/or Mitigation Description	Risk Rating
a)	Species planted (where applicable) associated with more than 25% of the stocks on which GHG credits have previously been issued are not native or proven to be adapted to the same or similar agro-ecological zone(s) in which the project is located.	Not Applicable
b)	Ongoing enforcement to prevent encroachment by outside actors is required to protect more than 50% of stocks on which GHG credits have previously been issued.	Not Applicable
c)	Management team does not include individuals with significant experience in all skills necessary to successfully undertake all project activities (ie, any area of required experience is not covered by at least one individual with at least 5 years experience in the area).	Not Applicable
d)	Management team does not maintain a presence in the country or is located more than a day of travel from the project site, considering all parcels or polygons in the project area.	Not Applicable
e)	<b>Mitigation:</b> Management team includes individuals with significant experience in AFOLU project design and implementation, carbon accounting and reporting (eg, individuals who have successfully managed projects through validation, verification and issuance of GHG credits) under the VCS Program or other approved GHG programs.	Not Applicable
f)	<b>Mitigation:</b> Adaptive management plan in place.	-2 <sup>7</sup>
<b>Total Project Management (PM) [as applicable, (a + b + c + d + e + f)]</b>		<b>-2</b>
Total may be less than zero.		

Financial Viability		
Risk Factor	Risk Factor and/or Mitigation Description	Risk Rating
a)	Project cash flow breakeven point is greater than 10 years from the current risk assessment	3 <sup>8</sup>
b)	Project cash flow breakeven point is greater than 7 and up to 10 years from the current risk assessment	Not Applicable
c)	Project cash flow breakeven point greater than 4 and up to 7 years from the current risk	Not

<sup>7</sup> Through reviewing the management regulations, CEC confirmed that the project proponent has established a complete set of management regulation in the operation & maintenance, disturbance prevention and the related contingency plan.

<sup>8</sup> Through reviewing the NPV calculation spreadsheet, CEC confirmed that the project cash flow breakeven point from the current risk is greater than 10 years.

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

Opportunity Cost		
Risk Factor	Risk Factor and/or Mitigation Description	Risk Rating
a)	NPV from the most profitable alternative land use activity is expected to be at least 100% more than that associated with project activities; or where baseline activities are subsistence-driven, net positive community impacts are not demonstrated.	8 <sup>9</sup>
b)	NPV from the most profitable alternative land use activity is expected to be between 50% and up to 100% more than from project activities	Not Applicable
c)	NPV from the most profitable alternative land use activity is expected to be between 20% and up to 50% more than from project activities	Not Applicable
d)	NPV from the most profitable alternative land use activity is expected to be between 20% more than and up to 20% less than from project activities; or where baseline activities are subsistence-driven, net positive community impacts are demonstrated	Not Applicable
e)	NPV from project activities is expected to be between 20% and up to 50% more profitable than the most profitable alternative land use activity	Not Applicable
f)	NPV from project activities is expected to be at least 50% more profitable than the most profitable alternative land use activity	Not

<sup>9</sup> Through reviewing the NPV calculation spreadsheet, NPV from the most profitable alternative land use activity is ¥17,313, however the NPV from the project activity is negative.

		Applicable
g)	<b>Mitigation:</b> Project proponent is a non-profit organization	Not Applicable
h)	<b>Mitigation:</b> Project is protected by legally binding commitment (see Section 2.2.4) to continue management practices that protect the credited carbon stocks over the length of the project crediting period.	-2 <sup>10</sup>
i)	<b>Mitigation:</b> Project is protected by legally binding commitment (see Section 2.2.4) to continue management practices that protect the credited carbon stocks over at least 100 years	Not Applicable
<b>Total Opportunity Cost (OC) [as applicable, (a, b, c, d, e or f) + (g + h or i)]</b> Total may not be less than 0.		<b>6</b>

Project Longevity		
a)	Without legal agreement or requirement to continue the management practice	= 24 - (project longevity/5)
b)	With legal agreement or requirement to continue the management practice <sup>11</sup>	= 30 - (project longevity/2) =30-30/2=15
<b>Total Project Longevity (PL)</b> May not be less than zero		<b>15</b>

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

#### Sub-step 1.2: External Risks

According to the AFOLU Non-Permanence Risk Tool (version 3.3), land and resource tenure (LT), community engagement (CE), political risk (PC), project longevity shall be assessed using the specified table. Every risk factor has been identified and the relevant risk rating has been presented in the non-permanence risk report as bellows:

Land Tenure and Resource Access/Impacts		
Risk Factor	Risk Factor and/or Mitigation Description	Risk Rating

<sup>10</sup> CEC reviewed the VCS development consultation and service agreement signed between Inner Mongolia Keyihe Forest Industry LLC. and Beijing Shengdahuitong Carbon Management Co., Ltd. and confirmed that project is protected by legal binding commitment with at least 30 years over the length of the project crediting period. .

<sup>11</sup> CEC reviewed the VCS development agreement signed between PP and the companies and the farmers and confirmed that the project period will be at least 20 years stipulated in their cooperation agreement..

a)	Ownership and resource access/use rights are held by same entity(s)	0 <sup>12</sup>
b)	Ownership and resource access/use rights are held by different entity(s) (eg, land is government owned and the project proponent holds a lease or concession)	Not Applicable
c)	In more than 5% of the project area, there exist disputes over land tenure or ownership	Not Applicable
d)	There exist disputes over access/use rights (or overlapping rights)	Not Applicable
e)	WRC projects unable to demonstrate that potential upstream and sea impacts that could undermine issued credits in the next 10 years are irrelevant or expected to be insignificant, or that there is a plan in place for effectively mitigating such impacts.	Not Applicable
f)	<b>Mitigation:</b> Project area is protected by legally binding commitment (eg, a conservation easement or protected area) to continue management practices that protect carbon stocks over the length of the project crediting period.	-2 <sup>13</sup>
g)	<b>Mitigation:</b> Where disputes over land tenure, ownership or access/use rights exist, documented evidence is provided that projects have implemented activities to resolve the disputes or clarify overlapping claims	Not Applicable
<b>Total Land Tenure (LT) [as applicable, ((a or b) + c + d + e + f + g)]</b>		<b>0</b>
Total may not be less than zero.		

Community Engagement		
Risk Factor	Risk Factor and/or Mitigation Description	Risk Rating
a)	Less than 50 percent of households living within the project area who are reliant on the project area, have been consulted	Not Applicable
b)	Less than 20 percent of households living within 20 km of the project boundary outside the project area, and who are reliant on the project area, have been consulted	Not Applicable
c)	<b>Mitigation:</b> The project generates net positive impacts on the social and economic well-being of the local communities who derive livelihoods from the project area	-5 <sup>14</sup>
<b>Total Community Engagement (CE) [where applicable, (a + b + c)]</b>		<b>-5</b>
Total may be less than zero.		

<sup>12</sup> Through reviewing the Land Right Certificates of the Project and the business licence of PP, CEC confirmed that the ownership and resource access/use rights are held by same entity, which is Inner Mongolia Keyihe Forest Industry LLC.

<sup>13</sup> CEC reviewed the the VCS development consultation and service agreement signed between Inner Mongolia Keyihe Forest Industry LLC. and Beijing Shengdahuitong Carbon Management Co., Ltd. and confirmed that project is protected by legal binding commitment with at least 30 years over the length of the project crediting period.

<sup>14</sup> Based on the on-site inspection and interviewing with stakeholder, the stakeholders have positive attitude towards the implementation of the project, they agree that the project generates net positive impacts on the social and economic well-being of the local communities.

Political Risk		
Risk Factor	Risk Factor and/or Mitigation Description	Risk Rating
a)	Governance score of less than -0.79	Not Applicable
b)	Governance score of -0.79 to less than -0.32	4 <sup>15</sup>
c)	Governance score of -0.32 to less than 0.19	Not Applicable
d)	Governance score of 0.19 to less than 0.82	Not Applicable
e)	Governance score of 0.82 or higher	Not Applicable
f)	<b>Mitigation:</b> Country is implementing REDD+ Readiness or other activities, as set out in this Section 2.3.3.	-2 <sup>16</sup>
<b>Total Political (PC) [as applicable ((a, b, c, d or e) + f)]</b> Total may not be less than zero.		<b>2</b>

External Risk	
<b>Total External Risk (LT + CE + PC)</b> Total may not be less than zero.	=0

#### Sub-step 1.3: Natural Risks

According to the AFOLU Non-Permanence Risk Tool (version 3.3), natural Risks shall be assessed using the specified table. Every risk factor has been identified and the relevant risk rating has been presented in the non-permanence risk report as follows:

Natural Risks					
	Likelihood				
Significance	Less than every 10 years	Every 10 to less than 25 years	Every 25 to less than 50 years	Every 50 to less than 100 years	Once every 100 years or more, or risk is not applicable

<sup>15</sup> <http://info.worldbank.org/governance/wgi/index.aspx#home>

<sup>16</sup> China has an established Designed National Authority under the CDM and has at least one registered CDM Afforestation/Reforestation project. Thus, the mitigation discount can be applied.

					to the project area <sup>17</sup>
Catastrophic(70% or more loss of carbon stocks)	Not applicable	Not applicable	Not applicable	Not applicable	0
Devastating (50% to less than 70% loss of carbon stocks)	Not applicable	Not applicable	Not applicable	Not applicable	0
Major(25% to less than 50% loss of carbon stocks)	Not applicable	Not applicable	Not applicable	Not applicable	0
Minor (5% to less than 25% loss of carbon stocks)	Not applicable	Not applicable	Not applicable	Not applicable	0
Insignificant(less than 5% loss of carbon stocks) or transient (full recovery of lost carbon stocks expected within 10 years of any event)	Not applicable	Not applicable	Not applicable	Not applicable	0
No Loss	Not applicable	Not applicable	Not applicable	Not applicable	0
LS Score					
Mitigation					
Prevention measures applicable to the risk factor are implemented					0.5
Project proponent has proven history of effectively containing natural risk					0.5
Both of the above					0.25
None of the above					Not applicable

<sup>17</sup> Through interviewing with the local forestry administration, CEC confirmed that the risks identified (i.e. fire, pest and disease outbreaks, extreme weather events, geological risk, and any other natural risks) is not applicable to the project area.

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

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

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

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

**CL02** was raised requesting the PP to provide Non-Permanence Risk Analysis according to the AFOLU Non-Permanence Risk Tool v3.3. The PP provided the Non-Permanence Risk Report. Through reviewing the report, the validation confirmed that the Non-Permanence risk analysis is correctly conducted according to the AFOLU Non-Permanence Risk Tool (version 3.3) and the buffer credits is correctly calculated. Hence, **CL02** was closed.

CEC has reviewed the Non-Permanence Risk Report (version 03, dated 20/04/2018) and the related evidences, include the documents provided by PP (business license, VCS development consultation and service agreement, financial analysis calculation and Timber Harvest Plan), and other public available information (WGI published by World Bank, etc.), and interviewed with stakeholders, CEC has evaluated the risk assessment undertaken by the project proponent and assess all data, rationales, assumptions, justifications and documentation provided by the project proponent to support the non-permanence risk rating, then CEC confirms that the evidences are substantial, and the overall risk rating is 22% based on the provided evidences, AFOLU Non-Permanence Risk Tool and VCS Standard.

## 5 SAFEGUARDS

### 5.1 No Net Harm

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

## 5.2 Local Stakeholder Consultation

The survey was conducted by distributing 40 questionnaires and collected the stakeholders' comments on Dec, 2012. The summary of comments presented in the MR has been cross-checked with the questionnaires and found to be complete.

## 6 VERIFICATION CONCLUSION

China Environmental United Certification Center Co., Ltd has conducted the verification of Inner Mongolia Keyihe IFM (conversion of logged to protected forest) Project, owned by Inner Mongolia Keyihe Forest Industry LLC and Beijing Shengdahuitong Carbon Management Co., Ltd., which is located in Oroqen Autonomous Banner, Hulun Buir City, Inner Mongolia Autonomous Region, P.R.C., and applying the VCS methodology VM0010 version 1.3, on the basis of VCS Standard Version 3.7, as well as criteria given to provide for consistent project operations, monitoring and reporting.

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

In summary, CEC confirms that the project is implemented as planned and described in the validated VCS project description. The forestry management conversion includes 20,526 ha logged to Protected Forest (LtPF). The monitoring system is in place and reduces the GHG emissions as anthropogenic GHG removals by sinks. The GHG emission removals by sinks verified totalize 506,367 tCO<sub>2</sub>e 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 01/01/2013 to 30/06/2017

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

Year	GHG <sub>NET,BSL</sub> (tCO <sub>2</sub> e)	GHG <sub>NET,PRJ</sub> (tCO <sub>2</sub> e)	GHG <sub>LK</sub> (tCO <sub>2</sub> e)	Credits <sub>total,LtPF</sub> (tCO <sub>2</sub> e)	Risk Score	VCU <sub>NET,IFM</sub> (tCO <sub>2</sub> e)
01/01/2013-31/12/2013	15,491	-129,206	0	144,697	22	112,863
01/01/2014-31/12/2014	12,958	-129,206	0	142,164	22	110,887
01/01/2015-31/12/2015	9,317	-129,206	0	138,523	22	108,047

01/01/2016-31/12/2016	24,464	-129,206	0	153,670	22	119,862
01/01/2017-30/06/2017	5,536	-64,603	0	70,139	22	54,708
<b>Total</b>	<b>67,766</b>	<b>-581,427</b>	<b>0</b>	<b>649,193</b>		<b>506,367</b>
<b>Average annual value</b>	<b>15,059</b>	<b>-129,206</b>	<b>0</b>	<b>144,265</b>		<b>112,526</b>

## 7 REFERENCE

- /1/ VCS-PD version 04 dated 26/04/2018
- /2/ VCS-MR version 03 dated 26/04/2018
- /3/ ER calculation spreadsheet version 02 dated 20/12/2017
- /4/ Uncertainty Analysis spreadsheet version 02 dated 20/12/2017
- /5/ Non-Permanence Risk Report version 02 dated 20/12/2017
- /6/ Validation Report version 2.0 dated 29/11/2017
- /7/ Agriculture, Forestry and Other Land Use (AFOLU) Requirements Version 3.6 dated 21/06/2017
- /8/ Tool for the Demonstration and Assessment of Additionality in VCS Agriculture, Forestry and Other Land Use (AFOLU) Project Activities” (VT0001 VCS AFOLU Additionality Tool v3.0) dated 01/02/2012
- /9/ AFOLU Non-Permanence Risk Tool, VCS version 3.3 dated 19/10/2016
- /10/ Tool for the “Calculation of the number of sample plots for measurements within A/R CDM project activities” (version 02.1.0) approved by the CDM Executive Board.
- /11/ VCS Validation and Verification Manual, version 3.2, dated 19/10/2016
- /12/ Business license of Inner Mongolia Keyihe Forest Industry LLC.
- /13/ The notice on the forbidding commercial logging issued by Keyihe Forestry Bureau on 18/12/2012
- /14/ VCS development consultation and service agreement signed between Inner Mongolia Keyihe Forest Industry LLC. and Beijing Shengdahuitong Carbon Management Co., Ltd. on 20/12/2012
- /15/ Timber harvest plan issued by Keyihe forest bureau
- /16/ Forest second class investigation data by Inner Mongolia autonomous region forestry survey and design institute
- /17/ The certificate of Inner Mongolia autonomous region forestry survey and design institute (Certificate number: A 05-001, valid from 01/07/2013 to 30/06/2018)
- /18/ Sample plot monitoring records issued by Keyihe forest Bureau Forest Inventory Group

- /19/ Keyihe VCS Project Monitoring Report issued by Keyihe forest Bureau Forest Inventory Group
- /20/ The certificate of Keyihe forest Bureau Forest Inventory Group (Certificate number: Bing 32-002, valid from 01/07/2013 to 30/06/2018)
- /21/ Agriculture land Right Certificates of the Project
- /22/ Maps of the Project
- /23/ Document on no illegal logging and forest disturbance activities during the period from 01/01/2013 to 30/06/2017
- /24/ 13th Five-year Forest Harvest Limit issued by State Council (Guohan [2016] No.32)
- /25/ The Notice of the Review Opinion published by the State Council
- /26/ National Forestry Law of China
- /27/ "Land Use Change and Forestry GHG Inventory (2013)" of "Second national information notification on China
- /28/ Forestry Part of China's greenhouse gas emissions list
- /29/ National Forest Resource Continuous Investigation Technical Regulation issued by the State Forestry Bureau
- /30/ Tool for calculation of the number of sample plots for measurements within A/R CDM project activity
- /31/ IPCC Guidelines for National Greenhouse Gas Inventories (2006), Table 4.9.
- /32/ <http://v-c-s.org>

**APPENDIX A: RESOLUTION OF CORRECTIVE ACTION /CLARIFICATION / FORWARD ACTION REQUESTS**

<b>Draft report clarifications and corrective action requests by validation team</b>	<b>Summary of project participant response</b>	<b>Validation team conclusion</b>
<p><b>CL01</b> was raised requesting the PP to provide transparent calculation process and related evidence for the determination of uncertainty.</p>	<p>The uncertainty analysis calculation spreadsheet has been provided to DOE for validation.</p>	<p>The PP provided the uncertainty analysis calculation spreadsheet of the project. The validation team checked the spreadsheet and confirmed that the calculation process has been conducted according to the Methodology, related evidence has also been provided and validated by CEC. The result has been correctly calculated. Hence, CL01 was closed.</p>
<p><b>CL02</b> was raised requesting the PP to provide Non-Permanence Risk Analysis according to the AFOLU Non-Permanence Risk Tool v3.3.</p>	<p>The Non-Permanence Risk Analysis has been provided to DOE for validation.</p>	<p>The PP provided the Non-Permanence Risk Report. Through reviewing the report, the validation confirmed that the Non-Permanence risk analysis is correctly conducted according to the AFOLU Non-Permanence Risk Tool (version 3.3) and the buffer credits is correctly calculated. Hence, CL02 was closed.</p>

## APPENDIX B CERTIFICATE

## List of Assessment Team

Validation Team	Role	Qualification	Specific scope	Participated in the on-site visit
XUE Jinghua	Team Leader	Auditor	--	√
ZHANG Huan	Team Member	Auditor	--	√
WU Xiuli	Team Member	Technical Expert	√	√

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

## Brief background information of assessment team:

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

Zhang Huan is a Greenhouse Gas (GHG) assessor. She has attended various internal and external training courses on CDM, GS, ISO14064, GHG protocol, Energy Performance Contracting (EPC), environmental labeling and other GHG related training courses. Since she joined CEC in 2012, she has participated in and finished several CDM, ISO14064 and EPC auditing in the area of renewable energy, green lighting, energy system optimization.

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

Cui Xiaodong is a lead Greenhouse Gas(GHG) assessor. He has attended various internal and external training courses on EMS, energy audit, CDM related knowledge and GHG accounting related courses since 2009. He has participated in and finished over 10 validation/verification CDM/VCS projects both in China and abroad in the areas of hydropower, wind power and biomass power generation.

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

**XUE Jinghua**

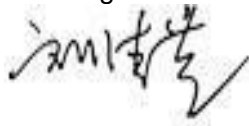
Qualification in accordance with CEC-4001C-C/1.2 *Operation Instruction for Personal Competence Assessment* for CDM

CDM Auditor: Yes

Industry Sector Expert for Technical Area (s): 1.2

Beijing, 25 Sep 2015

LIU Qingzhi



XU Linghua

**ZHANG Huan**

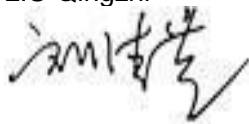
Qualification in accordance with CEC-4001C-C/1.2 *Operation Instruction for Personal Competence Assessment* for CDM

CDM Auditor: Yes

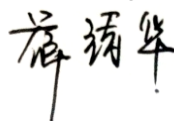
Industry Sector Expert for Technical Area (s): 1.2

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LIU Qingzhi



XUE Jinghua



CDM Supervisor, Technical Director

Quality Assurance Management Division

**WU Xiuli**

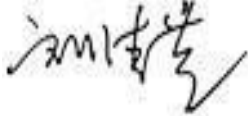
Qualification in accordance with CEC-4001C-C/1.2 *Operation Instruction for Personal Competence Assessment* for CDM

CDM Technical Expert: Yes

Industry Sector Expert for Technical Area(s): 14.1

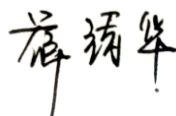
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CDM Supervisor, Technical Director

XUE Jinghua



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**CUI Xiaodong**

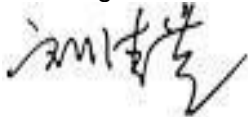
Qualification in accordance with CEC-4001C-C/1.2 *Operation Instruction for Personal Competence Assessment* for CDM

CDM Auditor: Yes

Industry Sector Expert for Technical Area (s): 1.1, 1.2

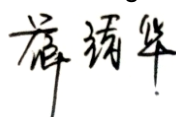
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CDM Supervisor, Technical Director

XUE Jinghua



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**ZHANG Xiaoquan**

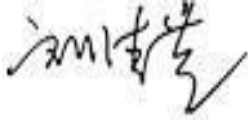
Qualification in accordance with CEC-4001C-C/1.2 *Operation Instruction for Personal Competence Assessment* for CDM

CDM Auditor: Yes

Industry Sector Expert for Technical Area(s): 14.1

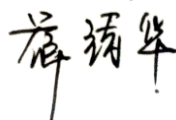
Beijing, 25 Sep 2015

LIU Qingzhi



CDM Supervisor, Technical Director

XUE Jinghua



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