

GAP VALIDATION AND VCS VERIFICATION OF “HEQING SOLAR COOKER PROJECT II”

Shenzhen CTI International Certification Co., Ltd (CTI)

Project Title	Heqing Solar Cooker Project II
Version	1.1
Report ID	CTI/VCS/2019/03

Report Title	Gap Validation and VCS Verification of “Heqing Solar Cooker Project II”
Client	Clean Air Trade, Inc.
Pages	36
Date of Issue	27/01/2019
Prepared By	Shenzhen CTI International Certification Co., Ltd (CTI)
Contact	Room 102, Unit 3, Building 55, Balizhuang Xili, Chaoyang District, Beijing, China Telephone : +86 10 65580012 Email : linwu@cti-cert.com Website : www.cti-cert.org
Approved By	Mr. Wu Lin
Work Carried Out By	Mr. Timothy Chan (Lead Auditor), Ms. Shunrong Lin (Technical Reviewer)

Summary:

Shenzhen CTI International Certification Co., Ltd (CTI) performed a verification of the CDM Project Activity “Heqing Solar Cooker Project II” in China (hereafter “project activity”). This report summarises the findings of the verification of the project, performed on the basis of paragraph 62 of the CDM modalities and procedures, as well as criteria given to provide for consistent project operations, monitoring and reporting and the subsequent decisions by the CDM Executive Board. The objective of this verification is to verify and certify emission reductions reported for the “Heqing Solar Cooker Project II” in China (UNFCCC Ref. No. 5106) for the period 01/12/2016-30/11/2017.

The verification shall ensure that reported emission reductions are complete and accurate in order to be certified. The verification comprises a review of the monitoring report over the monitoring period 01/12/2016-30/11/2017 based on the registered CDM PDD in part of the monitoring parameters and monitoring plan, emission reduction calculation spreadsheet, monitoring methodology and all related evidence provided by project participants. On-site visit and stakeholders’ interviews are also performed as part of the verification process.

In CTI’s opinion, the GHG emission reductions reported for the project in the monitoring report are fairly stated. The GHG emission reductions were calculated correctly on the basis of the approved monitoring methodology AMS-I.C. (Version 18) and the monitoring plan contained in the Project Design Document (version 9 dated 03/08/2011). There is no finding or uncertainty observed during verification.

CTI confirmed that the GHG emission reductions are calculated without material misstatements. Based on the evidence and information that are considered necessary to guarantee that GHG emission reductions are appropriately calculated, CTI is able to certify that emission reductions from “Heqing Solar Cooker Project II” during the period amount to 154,035 tCO₂e.

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1 INTRODUCTION

1.1 Objective

The objective of this verification is to verify the verified carbon unit (VCUs) of the project “Heqing Solar Cooker Project II” (hereafter referred to as “the Project”), which is located at Gaotai county and Linze county of Zhangye in Gansu Province, China for the period from 01/12/2016 to 30/11/2017.

The verification under VCS standard version 3.7 /48/, CDM project Standard /38/ and UNFCCC criteria refers to Article 12 of the Kyoto Protocol, the CDM rules and modalities and the subsequent decisions by the CDM Executive Board, as well as the host country criteria is the independent ex-post quantification and certification of the greenhouse gas (GHG) emission reductions achieved by a project activity which has completed validation under Clean Development Mechanism (CDM). A gap validation is conducted for the project activity to check the compliance with VCS Standard. The above work is carried out through an independent assessment and a written assurance is provided on the GHG emission reductions achieved for the period specified.

1.2 Scope and Criteria

The scope of the verification is:

- To verify that actual monitoring systems and procedures are in compliance with the monitoring systems and procedures described in the monitoring plan.
- To evaluate the GHG emission reduction data and express a conclusion with a reasonable level of assurance about whether the reported GHG emission reduction data is free from material misstatement.
- To verify that reported GHG emission data is sufficiently supported by evidence.
- Where sampling is involved, sampling guidelines are applied to ensure the adequate sampling and survey method is followed in reaching professional judgements.

1.3 Level of Assurance

Consideration of materiality in planning the verification

No.	Risk that could lead to material errors, omissions or misstatements	Assessment of the risk		Response to the risk in the verification plan and/or sampling plan
		Risk level	Justification	

1.	Errors in manual transfer of records.	Low	The values of monitoring parameter B (i.e. the monthly operating time of each solar cooker) were manually transferred from the hand-written survey records to the ER calculation spreadsheet.	The verification team plans to check all the original monitoring data (for parameter B) of ALL 79 households recorded by the Rural Energy Station (RES)/16/, which was the original data from the credible third party.
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Consideration of materiality in conducting the verification

A set of simple random sampling was performed with sample size of 79 households each parameter, the verification team conducted on-site sampling check with a sample size of 38 (out of 79 PP sampled households) and acceptance number of 1 assuming 1% AQL and 10% UQL, and the producer's risk and the consumer's risk are set at 10% as recommended in the "Standard for sampling and surveys for CDM project activities and programme of activities" /41/.

With the above measure in verification, the verified GHG emission reduction data is free from material misstatement.

1.4 Summary Description of the Project

The project activity involves installation of 49,000 parabolic type solar cookers with 910.0 W rated power per unit and the total installed capacity of 44.59 MW_{thermal}, which are all located in the rural areas of Gaotai county and Linze county of Zhangye in Gansu Province. As stated in the registered CDM PDD, the PP planned to distribute the solar cookers to 15 townships (Shahe, Xinhua, Banqiao, Pingchuan, Liaoquan, Yanuan, Nijaying Xiangdao, Heli, Nanhua, Xinba, Luotuo Cheng, Xuanhua, Heiquan, and Luocheng) in Gansu Province.

2 VERIFICATION PROCESS

The verification has been performed as described in CDM validation and verification standard for project activities (version 02.0) and VCS Standard (Version 3.7), VCS Registration and Issuance Process (Version 3.8) which constitutes the following steps:

- Publication of Version 1.0 MR on the UNFCCC website (02/08/2018)
- Desk review of the MR (version 1.0 dated 01/08/2018) and the relevant documents
- On-site assessment (24/08/2018 to 25/08/2018)
- Withdrawal of Version 1.0 MR (11/10/2018)
- Publication of Version 2.0 (7th monitoring period) MR on UNFCCC website (18/10/2018)
- Gap validation for VCS registration and verification
- Issuance of verification report

Version 1.0 CDM MR covers the monitoring period from 01/12/2016 – 31/07/2018 while Version 2.0 CDM MR covers 01/12/2016 – 30/11/2017. The PP requested to withdraw version 1.0 CDM

MR according to para 192 of CDM PCP. PP resubmitted separated CDM MRs which breaks down the original monitoring period (1-year 8 months) into 2 (7th monitoring period: 01/12/2016 – 30/11/2017; 8th monitoring period: 01/12/2017-31/07/2018). Since the scope of on-site audit conducted in Aug 2018 had included data verification for 01/12/2016 – 31/07/2018, additional on-site audit is not necessary. VCS MR Version 01 is prepared materially identical to CDM MR by the project proponent.

2.1 Method and Criteria

The PP has performed a set of simple random sampling with sample size of 79 households each, the verification team conducted on-site sampling check with a sample size of 38 (out of 79 PP sampled households) and acceptance number of 1 assuming 1% AQL and 10% UQL, and the producer's risk and the consumer's risk are set at 10% as recommended in the "Standard for sampling and surveys for CDM project activities and programme of activities" /41/.

2.2 Document Review

Desk review of the monitoring plan, monitoring report, monitoring methodology, project design document, applicable tools in particular attention to the sampling, QA/QC procedures and other relevant documents. Please refer to Appendix 1.

2.3 Interviews

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
/i/	Pan	Cong	Beijing Harmonious Energy Development Co., Ltd.	24/08/2018 – 25/08/2018	- Project design and implementation - Project related legal issues - Equipment installation and starting of operation - Monitoring period for this verification - Monitoring plan and Procedures - QA and QC - Training history and records - Data collection and record keeping - Operation and maintenance records - Missing Data handling - Emission Reductions Calculation - Management system	Timothy Chan
/ii/	Wu	Jian	Gaotai Rural Energy Station (RES)	24/08/2018 – 25/08/2018	- Monitoring plan and procedures - QA and QC - Training history and records	Timothy Chan
	Zhai	Lin	Gaotai Rural	24/08/2018 –		

			Energy Station (RES)	25/08/2018	- handling - Data collection and record keeping - Operation and maintenance records - Operation situation	
/iii/	38 households (for monitoring period) 7 th	Nanhua, Xiangdao, Heli, Heiquan, Xuanhua, Luotuo Cheng, Shahe, Yanuan, Banqiao, Pingchuan, Liaoquan, Xinhua, Nijiaying Township		24/08/2018 – 25/08/2018	- Monitoring plan and procedures - QA and QC - Training history and records - Missing Data handling - Data record and report - Operation situation	Timothy Chan

2.4 Site Inspections

Duration of on-site inspection: 24/08/2018 to 25/08/2018				
No.	Activity performed on-site	Site location	Date	Team member
1.	Visit 38 solar cooker household participants (for 7 th monitoring period)	Nanhua, Xiangdao, Heli, Heiquan, Xuanhua, Luotuo Cheng, Shahe, Yanuan, Banqiao, Pingchuan, Liaoquan, Xinhua, Nijiaying Township	24/08/2018 – 25/08/2018	Timothy Chan

2.5 Resolution of Findings

Table 1. Remaining FAR from validation and/or previous verifications

FAR ID	N/A	Section no.	N/A	Date: N/A
Description of FAR				
N/A				
Project participant response				Date: N/A

N/A	
Documentation provided by project participant	
N/A	
DOE assessment	Date: N/A
N/A	

Table 2. CL from this verification

CL ID	N/A	Section no.	N/A	Date: N/A
Description of CL				
N/A				
Project participant response				Date: N/A
N/A				
Documentation provided by project participant				
N/A				
DOE assessment				Date: N/A
N/A				

Table 3. CAR from this verification

CAR ID	N/A	Section no.	N/A	Date: N/A
Description of CAR				
N/A				
Project participant response				Date: N/A
N/A				
Documentation provided by project participant				
N/A				
DOE assessment				Date: N/A

N/A

There is no CAR/CL finding during the verification.

2.5.1 Forward Action Requests

Table 4. FAR from this verifications

FAR ID	N/A	Section no.	N/A	Date: N/A
Description of FAR				
N/A				
Project participant response				Date: N/A
N/A				
Documentation provided by project participant				
N/A				
DOE assessment				Date: N/A
N/A				

There is no FAR issued during the verification.

2.6 Eligibility for Validation Activities

CTI is a Designated Operational Entity (DoE) accredited by UNFCCC for Sectors 1-15¹, it is eligible to conduct both validation and verification for the project activity. CTI is also an accredited VVB of VCS². In this regard CTI has conducted the Gap validation and CDM verification of the Project activity as per the requirements of VCS.

CDM9977 West African Biodigester Programme of Activities

CDM1620 Hedcor Sibulan 42.5MW Hydroelectric Power Project

CDM5119 Heqing Solar Cooker Project I

CDM 5106 Heqing Solar Cooker Project II

GS5303 Indonesia Domestic Biogas Programme of Activities (IDBP) (ID1172), VPA-2 (GS 5303)

3 VALIDATION FINDINGS

According to the VCS standard Version 3.7 for projects validated under the CDM, the cover page and sections 1.1, 1.2, 1.3, 1.5, 1.6, 1.7, 1.9, 1.10, 1.12.1, 1.12.2, 1.12.3, 1.12.4, 1.13 and 2.6 of the VCS Project Description Template shall be completed and a validation/verification body shall undertake a validation of same to provide a gap validation for the project's compliance with the VCS rule.

CTI verified the information reported in the VCS-PD version 01 dated 04/12/2018 /44/ against the registered CDM-PDD /32/ and CDM validation report /33/, VCS MR, Version 01, dated 07/01/2019 /45/ against CDM MR Version 2.0, dated 13/09/2018.

The detailed validation process is documented in the Table below:

VCS criteria as in PD requirement	Reference	Validation Opinion	Conclusion
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¹ <http://cdm.unfccc.int/DOE/list/index.html>

² <https://verra.org/project/vcs-program/validation-verification/>

1.1 Summary Description of the Project	VCS-PD, CDM-PDD, CDM Validation report	The project description is line with the that in the registered CDM PDD.	OK
1.2 Sectoral Scope and Project Type	VCS-PD, CDM-PDD, CDM Validation report	The project is the dissemination of solar cookers to harness solar power. The project activity falls under Sectoral scope: 01 – Energy industries (renewable/ non-renewable sources)	OK
1.3 Project Proponent	VCS-PD, CDM-PDD, CDM Validation report	Clean Air Trade, Inc. has acquired the ownership of carbon emission reduction from the project proponents (Beijing Harmonious Energy Development Co., Ltd.).	OK
1.5 Project Start Date	VCS-PD, CDM-PDD, CDM Validation report	The project start date is consistent with the registered CDM PDD	OK
1.6 Project Crediting Period	VCS-PD, CDM-PDD, UNFCCC	The crediting period is consistent with the CDM project website ³	OK
1.7 Project Scale and Estimated GHG Emission Reductions or Removals	VCS-PD, CDM-PDD, CDM Validation report	The project is small scale and the estimated annual GHG emissions are consistent with that of the registered CDM PDD	OK
1.9 Project Location	VCS-PD, CDM-PDD, CDM Validation report	The project location is consistent with the description in the registered CDM PDD	OK

³ <http://cdm.unfccc.int/Projects/DB/TUEV-RHEIN1313040491.29/view>

1.10 Conditions Prior to Project Initiation	VCS-PD, CDM-PDD, CDM Validation report	The conditions prior to project initiation has been confirmed by the approved CDM Validation report.	OK
1.12.1 Project Ownership	VCS-PD, CDM-PDD, CDM Validation report	The project is owned by Clean Air Trade, Inc.. who has the full ownership of the carbon credits generated by this project activity as confirmed by the Emission Reduction Transfer Agreement.	OK
1.12.2 Emissions Trading Programs and Other Binding Limits	VCS-PD, CDM-PDD	The project is a voluntary CDM project. The project is not involved in any emission training programs.	OK
1.12.3 Other Forms of Environmental Credit	VCS-PD, CDM-PDD	Apart from CDM, there is no other environmental credit that the project has involved.	OK
1.12.4 Participation under Other GHG Programs	VCS-PD, CDM-PDD, CDM Final Validation report	The project has been registered as a CDM project activity on 16/08/2011. There is no credit issued for the monitoring period indicated in the monitoring report under CDM. No double counting has observed.	OK

1.13 Additional Information Relevant to the Project Eligibility Criteria Leakage Management Commercially Sensitive Information Sustainable Development	VCS-PD, CDM-PDD, CDM Final Validation report	This is not a grouped project activities, eligibility criteria are not applicable. Leakage is not applicable to this project activity. No commercial sensitive information excluded for public access. Through the interviews with participating households, the verification team agrees on the following points regarding to the promotion of sustainability development by the project activity: 1. Provision of clean energy to rural residents in project area as the solar energy is renewable without any emissions. 2. Improving the indoor hygiene by reducing the use of firewood for cooking 3. Improving the living condition and quality of rural resident as the solar energy is free of access. 4. Mitigating GHG emissions by reducing the use of firewood	OK
2.6 Methodology Deviation	VCS-PD, CDM-PDD, VCS MR	There is no deviation from the applied methodology.	OK

3.1 Participation under Other GHG Programs

The project description as per the requirement of Gap Validation is provided as follows:

<i>Name of the approved GHG program</i>	<i>Clean Development Mechanism (CDM)</i>
<i>Registration no.</i>	<i>5106</i>
<i>Project details</i>	The project involves installation of 49,000 parabolic type solar cookers with 910.0 W rated power per unit and the total installed capacity of 44.59 MW _{thermal} , which are all located in the rural areas of Gaotai county and Linze county of Zhangye in Gansu Province. As stated in the registered PDD, the PP planned to distribute the solar cookers to 15 townships (Shahe, Xinhua, Banqiao, Pingchuan, Liaoquan, Yanuan, Nijiaying Xiangdao, Heli, Nanhua, Xinba, Luotuocheng, Xuanhua, Heiquan, and Luocheng) in Gansu Province, China. This project generates GHG emissions reduction by replacing the use of fuel used in baseline scenario.

CTI has performed the gap validation of Heqing Solar Cooker Project II which is a CDM registered project (ref No. 5106). The baseline and monitoring methodology applied was AMS-I.C Thermal energy production with or without electricity (Version 18) which is an approved CDM methodology. The validation was performed based on the requirements set by VCS Standard Version 3.7, UNFCCC criteria for the CDM and relevant guidance provided by CMP and the CDM Executive Board.

The Gap validation consisted of the following three phases:

- i) desk review of the project design and the baseline and monitoring plan;
- ii) interviews with project stakeholders and onsite visit;
- iii) issuance of the final verification report

Beijing Harmonious Energy Development Co., Ltd. (BHED) is responsible for the preparation of the GHG emissions data and the reported GHG emission reductions of the project on the basis set out within the project Monitoring Plan in the registered CDM-PDD. The development and maintenance of records and reporting procedures in accordance with that plan, including the calculation and determination of GHG emission reductions from the Project, is the responsibility of the management of the Project. Also, BHED has agreed and transferred the ownership of all GHG reductions generated by this project to Clean Air Trade Inc. (CAT) /47/.

CTI has verified the project Description in the VCS MR, version 01 dated 07/01/2019. Analysis as provided by the applied VCS program approved methodology demonstrates that the project activity is not a likely baseline scenario. Emission reductions attributable to the project are hence additional to any that would occur in the absence of the project activity. Given that the project is implemented as designed as per the requirements of the registered CDM PDD, the project is likely to achieve the estimated amount of emission reductions as specified within the VCS-PD version 1 dated 04/12/2018 as observed from the Gap validation performed as per VCS 3.7 requirements stated above. The review of the PD version 1 and the information made available to the verification team determined the fulfillment of stated criteria. According to the verification team, the project correctly applies and meets the relevant VCS requirements and the relevant host country criteria and qualifies as a VCS project.

3.2 Methodology Deviations

Not applicable. There is no deviation from the applied methodology.

3.3 Project Description Deviations

Not applicable. There is no deviation from the project description in the registered CDM PDD.

3.4 Grouped Project

Not applicable. This project is not a grouped project.

4 VERIFICATION FINDINGS

4.1 Project Implementation Status

In line with the registered CDM PDD, the project activity involves installation of 49,000 parabolic type solar cookers with 910.0 W rated power per unit and the total installed capacity of 44.59 MW_{thermal}, which are all located in the rural areas of Gaotai county and Linze county of Zhangye in Gansu Province. As stated in the registered PDD, the PP planned to distribute the solar cookers to 15 townships (Shahe, Xinhua, Banqiao, Pingchuan, Liaoquan, Yanuan, Nijiaying Xiangdao, Heli, Nanhua, Xinba, Luotuo Cheng, Xuanhua, Heiquan, and Luocheng) in Gansu Province. Through on-site interview with the PP /i/ and document review /25/ /26/, the verification team confirms that all the solar cookers of the project activity are located in Gaotai county and Linze county of Zhangye in Gansu Province and the total number of solar cookers is 49,000, as confirmed from the Participation agreement between the solar cooker user and PP and equipment receiving records /10/ and monitoring records /15/ /16/ which are consistent with the registered CDM PDD.

It is confirmed from the sales receipts provided by manufacturer of solar cookers for the purchase of 49,000 solar cookers for the project /10/. It is also further confirmed by Gaotai RES and Linze Res /ii/ for distributing 49,000 solar cookers to users in Gaotai County and Linze County /25/. It is further checked by onsite checking of 49,000 sets of distribution record for 49,000 participated users /10/. Moreover, it is confirmed by the Gaotai RES and Linze RES /ii/ during the on-site verification that there is no relocation of the 49,000 participated users during the indicating monitoring period. Thus it can be confirmed that 49,000 solar cookers were distributed to the participated users.

The technical specifications of solar cookers are confirmed from the solar cooker purchase contracts /5/ /6/, which fulfils the requirement of National standard /29/ and the solar cooker test reports /7/ /8/ which were conducted by local RES.

According to the registered CDM PDD, the monitoring work for this project activity would be coordinated by the local government entity, RES. Before the starting of the 7th monitoring period, the project owner implemented the following measures so as to ensure fulfilling the applied monitoring methodology AMS-I.C. version 18 /34/ and the monitoring plan stated in the registered CDM PDD /32/.

1. Provided the CDM monitoring training to the monitoring team including the monitoring personnel from (i) RES monitoring personnel and (ii) project owner's monitoring personnel before the monitoring period /18/ /19/;
2. Established the monitoring team /14/ and detailed monitoring manuals for Parameter A and Parameter B /23/;
3. The two sets of 79 samples (one set for parameter A and the other set for parameter B) were randomly selected using MS Excel software from the full list of 49,000 solar cooker users on 09/11/2016. Then the PP signed agreements /17/ with one set of sample users (Parameter B) for stipulating the users' obligation in cooperating with the project monitoring programme before the monitoring commenced. The sampling process records (i.e. screenshots of sampling process in Microsoft Excel software) /12/ /13/ were checked. The verification team confirms that the sampling process is correct and the sampling is valid.

As the above and document review, verification team considers that the project activity operated properly in the way complying with the implementation plan and monitoring plan stipulated in the registered CDM PDD /32/ and the monitoring programme was performed in a transparent and comprehensive manner during the 7th monitoring period.

The project activity is a registered CDM project activity. There is no observation that the project has received or sought any other form of environmental credit, or has become eligible to do so since validation or previous verification. No evidence showing that the project has participated or been rejected under any other GHG programs since validation or previous verification. Sustainable development contributions is confirmed as per the Section 3 above.

It is concluded that the project was implemented according to the registered CDM PDD.

4.2 Accuracy of GHG Emission Reduction and Removal Calculations

The accuracy of GHG emission reductions and removals, including accuracy of spreadsheet formulae, conversions and aggregations, and consistent use of the data and parameters:

Verification of monitoring parameters:

As per AMS-I.C. / version 18 and section B.7.1. of the registered CDM PDD /32/, there are four monitoring parameters to be monitored for estimating the emission reductions.

1. n: number of solar cookers in operation in the proposed project (monitoring parameter A)

Monitored value: 49,000

According to the registered CDM PDD, for monitoring the number of solar cookers in operation, CDM monitoring team A has been set up to track the number of operating solar cookers. The RES as government officials assisted the PP to perform the monitoring since they are familiar with the rural villager habit and the living/cooking style. This is consistent with the registered CDM PDD in which the monitoring work for this project activity will be coordinated by the RES, with PP's arrangement of project implementation issues and training.

In line with the registered monitoring plan, the maximum value of this parameter was determined by the solar cooker purchase contract /5/ /6/, sales receipts /10/ and distribution records /11/. 49,000 solar cookers were distributed to participating users, i.e. each user got one solar cooker. Then this parameter was monitored, recorded and archived annually.

For this monitoring period, the monitoring team checked 79 sampled users randomly selected, and confirmed all sampled solar cookers were under operation and operated in good condition. The random selection of 79 samples from the whole population of 49,000 participated users is fully in compliance with the monitoring plan in the registered CDM PDD.

Thus this sampling result can be projected to the whole population and it is concluded that all 49,000 solar cookers were in operation in this monitoring period.

Prior to the operation of the project activity, RES signed an agreement /3/ /4/ with project owner for project operation, management and monitoring as an independent third party. Thus after the project registration, the RES implemented the agreement and started relevant works for the project operation, management and monitoring. RES is an official governmental organization in charge of rural energy including solar energy in Gaotai county and Linze county of Zhangye. As a government organization, RES has sufficient official authority and abundant rural working network/resources/experiences. The personnel from RES are familiar with local administrative boundary/delineation and are able to make good communication with local households by using dialect and hand-on experiences for the management of various rural households' affairs. Thus the RES is considered to be the suitable entity to assist the PP for the coordination of the monitoring work as per the monitoring plan in the registered CDM PDD.

The RES carried out the coordination work for the arrangement of on-site monitoring work. Monitoring team A was established for this monitoring period. The monitoring group consisted of one person from Gaotai RES, one person from Linze RES and one person from project owner. All team members received the training for monitoring this parameter including up-to-date procedure, guidance, data management, missing/damaged data handling and etc. /18/ before the monitoring work.

The random selection of 79 samples from the whole population of 49,000 participated users is fully in compliance with the monitoring plan in the registered CDM PDD.

Considering the rural residents live together in villages, it only took a short time for the monitoring group to monitor the solar cooker in operation through visual observation and verbal confirmation from the households. As confirmed by the PP and RES, there was no migration of participating users found in this monitoring period.

Moreover, the verification team checked the monitoring records for parameter A, in which the monitoring records were endorsed and approved by the RES /15/.

Thus the verification team considers that the monitoring work was reliable and the monitoring was conducted within a reasonable time period. Thus the verification team considers the monitoring records and data are valid and credible.

As per the registered CDM PDD, the value of this parameter is determined by annual monitoring results. For the monitoring of this parameter, the name list of all sampled users are grouped by address (township/village level) and printed out as checklist for recording along with corresponding name and address of the solar cooker users.

The monitoring data are recorded in the checklist as per Clause 3 section B.7.2 of the registered CDM PDD. The dates of on-site monitoring are also recorded.

All records of solar cooker status are confirmed by two members in the same team (one from RES and one from project owner) with their signatures together.

The household names of the solar cookers and corresponding list of participating solar cooker users were kept by the project owner for tracking the number of system in operation. The monitoring data is recorded in the table as per Clause 3 section B.7.2 of the registered CDM PDD.

For the sake of conservativeness, if the solar cookers were found damaged or lost, or if the participating user was found moved from previous place during monitoring, it will be counted as zero. This approach is documented in the CDM manual by project owner /23/ and accepted by the verification team.

After the monitoring finished, all monitoring data obtained on-site by the monitoring team A for this parameter are checked internally by RES, and examined by the supervisors in the RES for the confirmation of monitoring procedures. Then the monitoring data was reported to the project owner. The data were aggregated to calculate the final result of this parameter for this monitoring period.

As the verification team checked the reporting data, which are reported at least annually, thus it is confirmed that the reporting frequency is in compliance with the registered CDM PDD and monitoring records /15/ for this monitoring period.

No monitoring equipment is used for monitoring this parameter. The number of operating solar cooker is counted and determined by on-site visual observation by the trained monitoring team.

The reported data are cross-checked with solar cooker purchase contract /5/ /6/ and their sales receipts /10/ as well as the equipment receiving records /11/.

- As checked from the training records /18/, all the members of monitoring team A have received training regarding the monitoring parameter A including up-to-date procedure, guidance, data management, missing/damaged data handling and etc.
- The monitoring was conducted by monitoring team A. The monitoring team A consisted of two persons, among them one was from project owner and the other one from Gaotai RES and Linze RES, i.e. from the independent governmental entity to ensure the collected data has been crosschecked by each other.
- The solar cookers would be maintained by the project owner within the project lifetime. As checked from the maintenance record /22/, it is found that repair and maintenance were done in this period by the PP in order to keep good condition and smooth use of the solar cookers, such as lubricating the handgrip of the solar cookers.
- QA/QC procedures for handling missing or damaged data are documented in the CDM manual /23/ for this parameter. The supervisors of RES are responsible to check and confirm the completeness, accuracy and validity of the monitoring data according to QA/QC procedure. After checking, they signed on the monitoring records /15/. It is found that no missing or damaged data happened in the monitoring period.
- The reported data were double-checked by the project owner to ensure correct transfer and conversion of data from written record to electronic data for ER calculation.
- All monitoring data would be archived in paper and electronic form and kept for at least 2 years after the whole crediting period as per the CDM manual /23/.

The verification team checked the monitoring procedure, monitoring records and further interviewed the relevant monitoring personnel and confirmed that the reported data for this monitoring parameter is deemed to be reliable and credible. The data management (from monitoring equipment to emission reduction calculation) can be ensured for correct transfer of data and reporting of emission reductions and necessary QA/QC processes were in place.

2. t: the monthly operating time of each solar cooker (monitoring parameter B)

Dec 2016	139.32
Jan 2017	136.18
Feb 2017	122.12
Mar 2017	148.17
Apr 2017	134.42
May 2017	134.33
Jun 2017	138.86
Jul 2017	135.28
Aug 2017	136.71
Sep 2017	147.84

Oct 2017	144.12
Nov 2017	140.21

As per the monitoring plan in the registered CDM PDD /32/, considering the population of the solar cooker user is 49,000 and the situation of the participating users are similar to each other, simple random sampling was applied for the target population. This approach has been approved in the registered CDM PDD.

By interviewing the managing representative /i/ and document review of the sampling records /13/, it is verification team's opinion that the sampling approach is in line with the registered CDM PDD.

In the registered CDM PDD, it is indicated the data will be measured daily and reported monthly, it is confirmed by the verification team through document review the daily measurement records and monthly monitoring records /16/.

As verified in the previous section, the on-site monitoring work was assisted by the RES. The monitoring team B was set up with the monitoring team members from Gaotai RES and Linze RES /ii/. The team consisted of 2 persons. All team members received the training for monitoring this parameter including up-to-date procedure, guidance, data management, missing/damaged data handling and etc. /19/ before this monitoring period.

Two sets of 79 samples were randomly selected from 49,000 participating users on 09/11/2016.

The project owner then signed the monitoring agreement with the 79 sampled users individually /17/, so that the 79 sampled users agreed to cooperate with the monitoring team for the monitoring of parameter B. 79 sampled users were all trained by RES, and understood the procedure of monitoring this parameter, and finally endorsed in the agreement with their signature.

The sampled users would report to RES the daily usage time for the solar cooker. When the solar cooker started to be used, the time was counted by them via timing tools such as clock, watches, phone-clock etc. For every evening, the time was accumulated (accurate to minutes) by the households as the total usage time for solar cooker for one day. At the end of every day, the sampled users reported to the monitoring team members from RES, for the daily solar cooker operational time of solar cooker through phone call/SMS. The daily usage hours were recorded by 2 RES monitoring team members, and they also filled the monitoring record form in paper format as the original data records.

The monitoring form contains the name list of all 79 sampled users grouped by name and address (township/village level). All original records of daily solar cooker usage hours in the monitoring form are confirmed by the monitoring personnel with their signatures on the monitoring form. The set of original data /15/ were checked by the verification team as complete for this monitoring period.

Therefore, the verification team considers that measurement frequency complies with the requirements in the registered CDM PDD, the monitoring has been carried out in accordance with registered monitoring plan in PDD, i.e., the monitoring team collected and recorded the data reported by the sampled users that were selected by the sampling survey and the monitoring data are reliable.

In the registered CDM PDD, it is indicated the data will be measured daily and reported monthly, it is confirmed by the verification team through document review the daily measurement records and monthly monitoring records /16/.

The supervisor from the RES conducted an internal checking on the filled monitoring forms each month to verify any missing or wrong data. Then the RES provided the verified data to project owner with signature for the confirmation of data reliability. The project owner monitoring staff would then cross-check if there was any missing or wrong data in the monitoring form. Then the data will be input as computerized electronic data every month.

Statistical analysis was done and average monthly operation hour of each solar cooker was calculated and demonstrated in the ER spreadsheet /2/. The monthly operation hour (accuracy to minute) of solar cookers from 79 sampling users was collected for the period from 01/12/2016 - 30/11/2017, sum-up and then divided by 79 (i.e. the total number of sampling users B) to give an average monthly operation hour of each solar cooker in that period. This complies with the monitoring plan of the registered CDM PDD.

Household timing tools (e.g. clock, watch, phone-clock and etc.) were used for monitoring this parameter. As the timing tools are simple general timing device for households, the accuracy is not required to be specified and the time record would just limit to minutes. The verification team checked that there is also no such requirement in accuracy in the applied methodology and registered CDM PDD. Considering the general timing device can already fulfill the time recording purpose, the verification team also considers that the common timing tool can be in good condition and it did not affect greatly on the accuracy of ER calculation.

The calibration is not required or specified in the PDD or the applied methodology. The applied value is verified though checking the original records from RES /16/.

- All the members of monitoring team B have received training regarding the monitoring parameter B including up-to-date procedure, guidance, data management, missing/damaged data handling and etc. /19/.
- The monitoring for this monitoring parameter was independently conducted by personnel from RES. The project owner is only responsible for data check, computerization and archiving. It avoids the unintended or intended manipulation or loss of the measured data.
- QA/QC procedures for handling missing or damaged data are documented in the CDM manual /23/. It is consistent with the description in the monitoring report. The most conservative estimation, i.e. zero will be applied for emission reduction calculation.

- If some individual data reported by the user are abnormally higher than normal range compared with other users in the same area, the monitoring personnel would ask for the specific reasons. If it is confirmed that the higher usage hours were due to irregular activities such as holiday celebration, wedding/funeral and family/friends party, the value would be double-confirmed by the solar cooker households and recorded by the monitoring personnel. The verification team also checked for those abnormal data record as double-confirmed by RES after direct communication with the sampled user. Then the value would be still considered as valid data. Otherwise, zero value is used for conservativeness. Thus the verification team considers that the QA/QC process is in place for ensuring the data management approach as per the monitoring plan in the registered CDM PDD.
- The reported data was double-checked by the project owner CDM department to ensure correct transfer and conversion of data from written record to electronic data for ER calculation.
- All monitoring data was archived in paper and electronic form and kept for at least 2 years after the whole crediting period as per the CDM manual /23/.

The verification team checked the monitoring procedure, monitoring records and further interviewed the relevant monitoring personnel and confirmed that the reported data for this monitoring parameter is deemed to be reliable and credible. The verification team also checked for those abnormal data record as double-confirmed by RES after direct communication with the sampled user. The data management (from monitoring equipment to emission reduction calculation) can ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes are in place.

3. Ri: monthly solar irradiance rate in project region

Jan	408.7 W/m ²
Feb	503.4 W/m ²
Mar	635.1 W/m ²
Apr	738.5 W/m ²
May	799.7 W/m ²
Jun	814.4 W/m ²
Jul	829.2 W/m ²
Aug	767.8 W/m ²
Sep	696.3 W/m ²
Oct	537.1 W/m ²
Nov	410.8 W/m ²
Dec	363.0 W/m ²

It is sourced from official latest available data from 1996-2011 records from Gansu Meteorological Service Center released on 25/11/2013, which confirmed to be the latest available information to be applied in the whole monitoring period through document review by verification team /28/. The data is from an official source. No additional QA/QC procedure is necessary.

4. EF_{FF,CO2}: baseline emission factor of Coal

Monitored value: 94.6 CO₂e/TJ

It is confirmed from IPCC 2006 report /30/, which is also in accordance with the applied methodology AMS-I.C. / version 18. The data come from an official source (latest information from IPCC). There is no updated data available. No additional QA/QC procedure is necessary.

Verification of the monitoring parameters by sampling

For the two monitoring parameters applied sampling, a step-wise approach is applied for assessment as below.

1. n: Number of solar cookers in operation in the proposed project (monitoring parameter A)

(i) Sample size check

According to the monitoring plan in the registered CDM PDD /32/, the monitoring team monitored 79 sampled users (A) for each set of sample and confirmed all sampled solar cookers were under operation and operated in good condition.

(ii) Reliability check

79 sampled users were monitored for this monitoring period. A reliability check was done in the monitoring report by PP, through assessment of the reliability check, it is confirmed that the calculation is correctly applied as per “Best Practices Examples Focusing on Sample Size and Reliability Calculations” (EB67, Annex 6), the relative precision is correctly calculated as 1.68% in the MR /1/, in which it is within the 10% precision level as specified in the registered CDM PDD /32/ for applying confidence/precision level of 90/10. Therefore, the verification team is of the opinion that the sample size meets the 90/10 confidence/precision required by the “Standard for sampling and surveys for CDM project activities and programme of activities” /41/ and is considered to be reliable.

(iii) Parameter value check

According to the monitoring plan in the registered CDM PDD /32/, the PP monitored 79 sampled users. According to “Standard for sampling and surveys for CDM project activities and programme of activities” /41/, the verification team may use acceptance sampling approach in order to verify the monitored record. By using verification team’s own professional judgment and referring to the abovementioned Standard, the verification team conducted acceptance sampling.

For the verification of number of operating solar cooker, a DOE's sample size of 38 was selected for DOE's acceptance sampling of the monitoring period for each set of samples.

For this monitoring period, the verification team thus conducted acceptance sampling by randomly selecting 38 users from the 79 sampled users (A). Please note these 79 samples households were randomly sampled for monitoring purpose from the total 49,000 of participating solar cooker households to represent the population as described in the monitoring plan. Then the verification team conducted the on-site visit and interviews with 38 households /iii/. The physical existence and normal working condition of solar cookers were confirmed by visual observation from the verification team.

Furthermore, the name of solar cooker user and logo of Heqing II project marked on cement back plate of the solar cooker were recorded and compared with the name and corresponding address documented in the signed participation agreement and equipment receiving records /11/ to confirm whether the solar cooker was involved in this project activity. It is confirmed that all the solar cookers were involved in this project activity and operated in good condition within this monitoring period. The result of DOE's observation for 38 solar cookers are consistent with PP's monitoring records /15/. No discrepancy occurred. Thus according to the result of DOE's sampling, it is confirmed that the PP's records are acceptable and valid.

2. ti: The monthly operating time of each solar cooker (monitoring parameter B)

(i) Sample size check

According to the monitoring plan in the registered CDM PDD and applied methodology, simple random sample method was used. The sample size was ex-ante determined as 79 households. Thus 79 sample users (B) were selected from 49,000 households by using applying "Random" function of MS Excel.

(ii) Reliability check

It is requested in clause 10 of the "Standard for sampling and surveys for CDM project activities and programme of activities" /41/ that:

"Where there is no specific guidance in the applicable methodology, project proponents shall use 90/10 confidence/precision as the criteria for reliability of sampling efforts for small-scale project activities and 95/10 for large scale project activities".

For the project activity, 90/10 confidence/precision is applied as small-scale type and no specific guidance in AMS-I.C. version 18.

It is calculated according to "Guidelines for sampling and surveys for CDM project activities and programme of activities" /38/. The standard error of the mean and the t-value are calculated based on the sample size of 79, the population of 49,000, the sample variance, the confidence level of 90%.

By checking the ER calculation sheet /2/, it is confirmed that the precision is calculated as less than 10% for each month and also for overall data in the monitoring period, thus the data is within the required specification of 10% precision. Therefore, the verification team is of the opinion that the sample size meets the 90/10 confidence/precision required by the "Standard for sampling and surveys for CDM project activities and programme of activities" /41/ and is considered to be reliable.

(iii) Parameter value check

The Clause 24 of "Standard for sampling and surveys for CDM project activities and programme of activities" mentions: "When a sampling approach is applied by the project proponents, the DOE may use acceptance sampling...as part of validation/verification activities...".

For the above procedure of data collecting described in section 3.3.1 and the registered CDM PDD, the usage time which was the historical data directly reported by the user to the RES's monitoring teams, was recorded by the RES on daily basis, thus these original data records from RES constituted the original data record for the solar cooker usage time. Moreover, it is deemed irrational for the solar cooker users to recall the daily usage time on a specific date over this past monitoring period during the verification team's on-site interview with user households. Due to the historical nature of monitored data and conservative approach, the verification team then decided to verify all the RES's original data of this parameter with the PP's applied electronic record instead of any sampling approach. The verification team also considered that it would be more reliable and conservative to verifying all RES's original data compared with other sampling approach.

Considering the local living condition and living habit of solar cooker users which are at very preliminary level, it would be unrealistic for the solar cooker users to keep continuous records management by themselves without the help from a third party, i.e. RES. Thus the data are reported by the sampled users daily and systematically collected and recorded by the RES monitoring team.

In order to verify the monitored data and determine whether the data applied is acceptable for ER calculation, the verification team therefore checked ALL the original monitoring data of ALL 79 households recorded by the RES /16/, which were the original data from the credible third party. Since these were historical data recorded and confirmed by the monitoring team of RES /16/, the verification team then verified the validity of the data by checking the procedures and approaches applied during the monitoring and these procedures and approaches were found to be in accordance with the monitoring plan in PDD. The monitoring data were cross-checked with the Irradiation Rate and sunshine hours for Zhangye 1996-2011 provided by Gansu Provincial Meteorological Service Center /28/, which is the latest available official document that provides the local monthly average sunlight hours. By comparing with this official document, the actual monthly average cooker usage time from the monitoring records /16/ are within and below the monthly average sunlight hours which shows the reasonability. Moreover, during the on-site visit, the verification team interviewed with the solar cook users /iii/ about their normal usage time on the solar cooker for cross check. The monitoring data were further cross-checked with "Explanation on solar cooker usage time and cooking habits" (footnote 15 on page 18 of PDD), an official document by local government regarding the solar cooker usage time, the actual average usage time in the monitoring records were in line with the data provided in this document. In addition, the sampled users and monitoring team were adequately trained, has the capability and the right attitude to properly report and record the usage hours. It is concluded that the original monitoring data (for parameter B) of ALL 79 households recorded by the RES /16/ are in the normal range for daily use. As indicated in the previous sections, the monitoring is confirmed to be complied with the monitoring plan in the registered CDM PDD.

According to the registered CDM PDD, the baseline emissions are calculated as:

$$BE_y = n * \sum [910.0 * (R_i / 700) * t_i * (3.6 \times 10^{-9})] * EF_{FF,CO_2/\eta_{BL,thermal}}$$

Where

n The total number of solar cookers installed by the proposed project (i.e. monitoring parameter A)

R_i The actual solar irradiance rate in month i in W/m^2 (monitoring parameter since the ex-post approach is selected)

t_i The usage time of each solar cooker in month i in hour (i.e. monitoring parameter B)

EF_{FF,CO_2} The CO₂ emission factor per unit of coal (monitoring parameter since the ex-post approach is selected)

$\eta_{BL,thermal}$ The efficiency of the plant using fossil fuel (i.e. 14.6%) that would been used in the absence of the project activity

There are four monitoring parameters, i.e. i) n : number of solar cookers engaged in the proposed project; ii) t_i : the monthly operating time of each solar cooker; iii) R_i : monthly solar irradiance rate in project region; and iv) EF_{FF,CO_2} : baseline emission factor of coal. The data are referenced to the monitoring report /1/, registered CDM PDD /32/ and the monitoring records /15/ /16/.

$$ER_y = BE_y - PE_y - L_y$$

The verification team has confirmed that the calculation of the emission reductions is correct. As verified above, the PE_y and L_y are 0, Thus, the emission reductions for the project in the period 01/12/2016 – 30/11/2017 are accounted as follows:

$$ER_y = BE_y = 154,035 \text{ tCO}_2e$$

CTI concludes that the GHG emission reductions and removals have been quantified correctly in accordance with the project description and applied methodology.

4.3 Quality of Evidence to Determine GHG Emission Reductions and Removals

During OSV, the project owner demonstrated the CDM monitoring organization of the project which was the same as Section B.7.2 of the registered CDM PDD /32/ and MR /1/. It can be classified into 4 categories as following.

- 1) The project owner, is in- charge of the CDM project monitoring and management.
- 2) Clean Air Capital Ltd., which is responsible for providing consultation services on CDM validation and verification of the project, including assistance in preparation of PDD, monitoring report and so on; directly reports to project owner.
- 3) Project Owner's CDM monitoring staff, including (i) data checker, (ii) data analyst and (iii) data recording for the management of all monitoring data & records and (iv) monitoring team for monitoring parameters.
- 4) Gaotai RES and Linze RES, the governmental organization in charge of the rural energy affairs in Gaotai County and Linze County of Zhangye, which assisted the Project owner in the coordination of monitoring data collection of Parameter A and Parameter B. All the original monitoring data were independently and fully collected by RES monitoring personnel from the solar cooker users in this project. All the monitoring records of original data have been checked by RES and confirmed valid by signatures of RES monitoring members.

Moreover, the verification team also interviewed the following personnel:

- 1) Project Owner's monitoring team; they were responsible for monitoring of parameters A and B.

For parameter A, the PP /i/ confirmed that their monitoring team also participated the on-site checking along with the monitoring team of RES. They were clear with the monitoring process for parameter A.

For parameter B, they handled data management and statistics.

- 2) Monitoring team of RES /ii/, they were responsible for monitoring of parameters A and B.

For parameter A, they participated the on-site checking along the monitoring team of project owner. They were clear with the monitoring process for parameter A.

For parameter B, they confirmed their responsibility including (i) users' reporting time and methods; (ii) process of recording the daily usage hours of responsible sampling users; (iii) procedures of handling missing or damaged data (remark: no missing data happened during this monitoring period).

Based on the interview results and the monitoring organization chart provided by project owner /14/, the verification team confirms that the monitoring responsibility of each monitoring personnel was handled according to the monitoring plan of registered CDM PDD and the responsible personnel were clearly aware of monitoring procedures and were capable to work on their responsibilities.

Regarding to the monitoring parameters by sampling, the 2 sets of 79 samples (1 set for parameter A and the other set for parameter B) were randomly selected using MS Excel software from the full list of 49,000 solar cooker users on 09/11/2016. Then the PP signed agreements /17/ with these sampling users (Parameter B) for stipulating the users' obligation in cooperating with the project monitoring programme before the monitoring commenced. The sampling process records (i.e. screenshots of sampling process in Microsoft Excel software) /12/ /13/ were checked. The verification team confirms that the sampling process is correct and the sampling is valid.

For this monitoring period, the monitoring team checked the results of 79 sampled users (for parameter A) randomly selected, and confirmed all sampled solar cookers were under operation and operated in good condition. The random selection of 79 samples from the whole population of 49,000 participated users is fully in compliance with the monitoring plan in the registered CDM PDD.

Thus this sampling result can be projected to the whole population and it is concluded that all 49,000 solar cookers were in operation in this monitoring period.

The sampled users (for parameter B) would report to RES the daily usage time for the solar cooker. When the solar cooker started to be used, the time was counted by them by timing tools such as clock, watches, phone-clock etc. Every evening, the time was accumulated (accurate to minutes) by the households as the total usage time for solar cooker for one day. At the end of every day, the sampled users reported to the monitoring team members from RES, for the daily solar cooker operational time of solar cooker through phone call/SMS. The daily usage hours were recorded by 2 RES monitoring team members, and they also filled the monitoring record form in paper format as the original data records.

The monitoring form contains the name list of all 79 sampled users (for parameter B) grouped by name and address (township/village level). All original records of daily solar cooker usage hours in the monitoring form are confirmed by the monitoring personnel with their signatures on the monitoring form. The set of original data /16/ was checked by the verification team as complete for this monitoring period.

CTI confirms the sufficiency of quantity, and appropriateness of quality, of the evidence used to determine the GHG reductions and removals.

4.4 Non-Permanence Risk Analysis

Non-permanence risk analysis is applicable to AFOLU project and hence not applicable to this project activity.

5 SAFEGUARDS

5.1 No Net Harm

The project activity is the dissemination of solar cooker to participating household. There is no fuel used in the operations of the solar cooker. There is no environmental and socio-economic impacts identified.

5.2 Local Stakeholder Consultation

Not applicable. This is a registered CDM project which had conducted local stakeholder consultation in 2010. There is no on-going local stakeholder consultation.

6 VERIFICATION CONCLUSION

Shenzhen CTI International Certification Co., Ltd (CTI) has performed the verification of the emission reductions that have been reported for the CDM project activity “Heqing Solar Cooker Project II” in China for the period 01/12/2016-30/11/2017. The project activity was correctly implemented according to selected monitoring methodology and monitoring plan. The monitoring sampling was carried out in a proper manner, while collected monitoring data are allowed to verify the amount of achieved GHG emission reductions.

The verification is based on the baseline and monitoring methodology AMS-I.C. (Version 18), the validated CDM PDD (Version 9 dated 03/08/2011) and the CDM 7th monitoring report (Version 2.0 dated 13/09/2018) the VCS PD Version 01 dated 04/12/2018 and the VCS MR Version 01 dated 07/01/2019. The verification consisted of four phases: i) desk review of the project design and the

baseline and monitoring plan; ii) on-site visit and follow-up interviews with project participants and relevant stakeholders; iii) Gap validation; iv) issuance of the final verification report.

It is CTI's responsibility to provide an independent verification statement on the reported GHG emission reductions for the project. Based on an understanding of the risks associated with reporting of GHG emission data and the controls in place to mitigate these, CTI planned and performed our work to obtain the information and explanations that we considered necessary to provide reasonable assurance that reported GHG emission reductions are fairly stated. The Gap validation was based on the review of the registered CDM – PDD, CDM Validation report Version 1.3 04/08/2011, the VCS PD Version 01 dated 04/12/2018 and the VCS MR Version 01 dated 07/01/2019. Based on the VCS Verification conducted, CTI is of the opinion that the project complies with the Verification criteria for projects set out in VCS Version 3.7. Therefore CTI is pleased to issue a positive verification opinion.

CTI confirms that the GHG emission reductions are calculated without material misstatements. Based on the evidence and information that are considered necessary to guarantee that GHG emission reductions are appropriately calculated, CTI confirms that the emission reductions from the "Heqing Solar Cooker Project II" in China during the period 01/12/2016-30/11/2017 amount to 154,035tCO₂e.

Verification period: From 01/12/2016 to 30/11/2017

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

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 2016	7,515	0	0	7,515
Year 2017	146,520	0	0	146,520
Total				154,035

APPENDIX 1: <DOCUMENT REVIEWED OR REFERENCED>

No.	Author	Title	References to the document	Provider
/1/	Beijing Harmonious Energy Development Co., Ltd. (BHED)	Monitoring report for Heqing Solar Cooker Project II	Version 1.0 dated 01/08/2018 Version 2.0 dated 14/09/2018	Project participants
/2/	Beijing Harmonious Energy Development Co., Ltd. (BHED)	Emission reduction calculation spreadsheet	-	Project participants
/3/	Beijing Harmonious Energy Development Co., Ltd. (BHED) and Gaotai Rural Energy Station (RES)	Service Agreement for project operation, management and monitoring	17/09/2010	Project participants
/4/	Beijing Harmonious Energy Development Co., Ltd. (BHED) and Linze Rural Energy Station (RES)	Service Agreement for project operation, management and monitoring	17/09/2010	Project participants
/5/	BHED and Huining County Yongming Solar Cooker Co., Ltd.	Solar Cooker Purchase Contract	20/10/2011	Project participants
/6/	BHED and Lanzhou Juren Solar Energy Co., Ltd.	Solar Cooker Purchase Contract	24/10/2011	Project participants
/7/	Gaotai County Rural Energy Station	Solar Cooker Testing Report	06/06/2011 (Product Manufacturer)	Project participants

			: Huining County Yongming Solar Cooker Co., Ltd.)	
/8/	Gaotai County Rural Energy Station	Solar Cooker Testing Report	06/06/2011 (Product Manufacturer : Lanzhou Juren Solar Energy Co., Ltd.)	Project participa nts
/9/	Shengjing Bank	Payment receipt of Shengjing Bank for confirmation of PP paid to the manufacturer for the purchase of cooker	04/07/2011	Project participa nts
/10/	BHED and 2 signed solar cooker manufacturers	49,000 Solar Cookers' sales receipts from 2 signed solar cooker manufacturers	-	Project participa nts
/11/	BHED and solar cooker users	Participation agreement and equipment receiving records (49,000 sets)	-	Project participa nts
/12/	BHED	Screenshot of random sampling process for random selection of sampling users for parameter A by applying "Random" function of MS Excel for this monitoring period on 09/11/2016	-	Project participa nts
/13/	BHED	Screenshot of random sampling process for random selection of sampling users for parameter B by applying "Random" function of MS Excel for this monitoring period on 09/11/2016	-	Project participa nts
/14/	BHED	Project Monitoring Organization Chart of management and monitoring personnel	-	Project participa nts
/15/	RES and BHED	Project monitoring records for monitoring parameter A which is to measure the numbers of solar cookers engaged in the project covering this monitoring period	22/10/2017 – 29/10/2017	Project participa nts
/16/	RES	Project monitoring records for monitoring parameter B which is to measure the average operating hour of each solar cooker covering this monitoring period	01/12/2016 – 31/11/2017	Project participa nts

/17/	BHED and sampling users	Monitoring agreement for 79 sampling users	12/11/2016 - 16/11/2016	Project participants
/18/	BHED	CDM monitoring training for RES's and BHED's monitoring personnel regarding monitoring parameter A for this monitoring period	21/10/2017	Project participants
/19/	BHED	CDM monitoring training for RES's monitoring personnel regarding monitoring parameter B for this monitoring period	11/11/2016	Project participants
/20/	BHED	Solar cooker operation on-site training records for the household users	-	Project participants
/21/	BHED	Heqing Solar Cooker Project II maintenance and repair method	-	Project participants
/22/	BHED	Operation and maintenance records (covering this monitoring period)	Dec 2016 – Nov 2017	Project participants
/23/	BHED	CDM Manual (including monitoring scheme, method, working process, responsibility and etc.)	-	Project participants
/24/	BHED	Product Quality Control, Inspection Procedures and Standards	-	Project participants
/25/	Gaotai County RES	Confirmation letter from Gaotai County RES for distribution of solar cookers	04/02/2013	Project participants
/26/	Linze County RES	Confirmation letter from Linze County RES for distribution of solar cookers	04/02/2013	Project participants
/27/	Huining County Yongming Solar Cooker Co., Ltd.	Declaration from Huining County Yongming Solar Cooker Co., Ltd. for the confirmation of solar cooker preliminary contract in June 2011 and receipt of first payment from PP in July 2011	05/02/2013	Project participants
/28/	Gansu Provincial Meteorological Service Center	Irradiation Rate and sunshine hours for Zhangye 1996-2011	25/11/2013	Project participants
/29/	China National Standard	Focusing type solar cooker standard	2003	Others

		(NY/T219- 2003)		
/30/	IPCC	Revised 2006 IPCC Guidelines for National Greenhouse Gas Inventories	Table 2.5, Page 2.22, Chapter 2, Volume 2	Others
/31/	-	Documents of previous verifications (Monitoring report, verification report, ER calculation sheet)	-	Others
/32/	-	Registered PDD for CDM project “Heqing Solar Cooker Project II”, Registration No. 5106, version 9, 03/08/2011	-	Others
/33/	-	Validation report for CDM project “Heqing Solar Cooker Project II”, version 01.3, 04/08/2011	-	Others
/34/	UNFCCC	Approved monitoring methodology: AMS-I.C. “Thermal energy for the user with or without electricity”, version 18	-	Others
/35/	UNFCCC	CDM-MR-FORM - Monitoring report form (version 06.0)	-	Others
/36/	UNFCCC	CDM validation and verification standard for project activities (version 02.0)	-	Others
/37/	UNFCCC	CDM project cycle procedure for project activities (Version 02.0)	-	Others
/38/	UNFCCC	CDM project standard for project activities (Version 02.0)	-	Others
/39/	UNFCCC	Guidelines on the application of Materiality in Verifications (EB 82, Annex 11, version 02.0)	-	Others
/40/	UNFCCC	Guidelines for sampling and surveys for CDM project activities and programme of activities (EB75, Annex 8, version 03.0)	-	Others
/41/	UNFCCC	Standard for sampling and surveys for CDM	-	Others

		project activities and programme of activities (version 04.1)		
/42/	UNFCCC	Demonstration of additionality of small scale project activities (version 10.0)	-	Others
/43/	UNFCCC	Best Practices Examples Focusing on Sample Size and Reliability Calculations" (EB67, Annex 6)	-	Others
/44/	Clean Air Trade, Inc.	VCS Project Description, Version 01	04/12/2018	Project proponent
/45/	Clean Air Trade, Inc.	VCS Monitoring Report, Version 01	07/01/2019	Project proponent
/46/	Clean Air Trade, Inc.	The DEED of REPRESENTATION	07/01/2019	Project proponent
/47/	Clean Air Trade, Inc.	Emission Reduction Transfer Agreement	10/01/2018	Project proponent
/48/	VCS	VCS Standard, Version 3.7	21/06/2017	VCS
/49/	VCS	Registration and Issuance Process, Version 3.8	21/06/2017	VCS