



VALIDATION REPORT
for the CDM Project Activity

Heqing Solar Cooker
Project I

in
P.R. China

Report No. 01 997 9105061231

Version No. 01.3, 2011-08-04

TÜV Rheinland Japan Ltd.

I. Project description:

Project title: Heqing Solar Cooker Project I
Host Country: P. R. China
Methodology: AMS-I.C. version 18 ☐ Large Scale ☒ Small Scale
Annual average emission reductions (estimate): 143,762 tCO₂e/yr
GHG reducing measure/technology:

Party	Project Participants	Party considered a project participant
People's Republic of China (Host)	Beijing Harmonious Energy Development Co., Ltd.	No
Netherlands	Clean Air Capital Ltd	No

II. Validation:

Contract party: Beijing Harmonious Energy Development Co., Ltd.

Validation Team:

Role	Full name	Appointed for Sectoral Scopes	Affiliation
Team Leader	Harold Hai	1.2, 13.1	TÜV Rheinland Hong Kong Ltd.
Team Member	Tommy Lo	1.2, 13.1	
	Minglong Huang	1.2, 5.1, 11.1, 12.1	
Technical Reviewer	Cuiping Deng	1.2, 5.1, 11.1, 12.1	TÜV Rheinland China Ltd.

Validation Phases:

- ☒ Desk Review
☒ Follow up interviews
☒ Resolution of outstanding issues

Validation Status:

- ☐ Corrective Actions / Clarifications Requested
☒ Full Approval and Submission for Registration
☐ Rejected

III. Validation Report:

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Final approval: ☒	Released on: 2011-08-05 By: Dr. Manfred Brinkmann	Designated Operational Entity (DOE): TÜV Rheinland Japan Ltd. Shin Yokohama Daini Center Bldg., 3-19-5, Shin Yokohama Kohoku-ku, Yokohama, JAPAN 222-0033 Tel.: +81 45 470 1850, Fax: +81 45 470-2361 E-mail: cdm@tuv.com
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Executive Summary – Validation Opinion

The validation team assigned by the DOE (TÜV Rheinland Japan Ltd.) concludes that the CDM Project Activity “Heqing Solar Cooker Project I” in P.R. China, as described in the PDD (version 9 dated 3rd August 2011), meets all relevant requirements of the UNFCCC for CDM project activities including article 12 of the Kyoto Protocol, the modalities and procedures for CDM (Marrakesh Accords) and the subsequent decisions by the COP/MOP and CDM Executive Board. The selected baseline/monitoring methodology is applicable to the project and correctly applied. The DOE therefore request the registration of the project as a CDM project activity.

The validation was executed in the following steps so far:

- Desk review of preliminary PDD (GSP version 1, 8th August 2010)
- Public stakeholder comment process (19th August 2010 to 17th September 2010)
- On-site visit with stakeholder interviews (24th August 2010 to 26th August 2010)
- Issue of checklist with corrective action requests (CARs) and clarification requests (CLs) and the draft validation report & protocol (9th September 2010)
- Desk review of revised PDD (version 9, 3rd August 2011)
- Review of proposed corrections and clarifications
- Issue of the final validation report & protocol

The host country is the P.R. China. The LoA issued by the DNA of the P.R. China – National Development & Reform Commission of the P.R. China (NDRC) was validated. The NDRC has authorized Beijing Harmonious Energy Development Co., Ltd. as a voluntary project participant and confirmed that the project assists China in achieving sustainable development.

The project is a bi-lateral CDM-project, with Netherlands identified as the Annex I party. The LoA issued by the DNA of the Netherlands for confirming Clean Air Capital Ltd as the voluntary project participant has been validated.

The validation did not reveal any information that indicates that the project can be seen as a diversion of ODA funding towards China.

The validation team has checked that the project correctly applies AMS-I.C./Version 18 – “Thermal energy for the user with or without electricity”.

The project results in reductions of CO₂ emissions that are real, measurable and give long-term benefits to the mitigation of climate change. Emission reductions attributable to the project are additional to any that would occur in the absence of the project activity. The total emission reductions from the project are estimated to be on the average 143,762 tCO₂e per year over the selected 10-year fixed crediting period. The estimation of emission reductions has been validated, and confirmed to be valid.

Monitoring procedures have been designed according to the monitoring methodology AMS-I.C./Version 18. Training plan and materials are available, and the training programme will be provided by the project developer to the participating villagers when the project is submitted for request for registration.

In summary, it is the validation team's opinion that the Heqing Solar Cooker Project I in the P.R. China, as described in the PDD of 3rd August 2011, meets all the relevant UNFCCC requirements for the CDM project and relevant host country criteria. The validation team of TÜV Rheinland Japan Ltd. thus would recommend the proposed project to be registered as a CDM project activity with the UNFCCC.

Abbreviations

The abbreviations that have been used in the report are listed here.

BE _y	Baseline Emissions
BHED	Beijing Harmonious Energy Development Co., Ltd.
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
CL	Clarification Request
CO ₂	Carbon Dioxide
DNA	Designated National Authority
DOE	Designated Operational Entity
DR	Document Review
EB	Executive Board
EIA	Environmental Impact Assessment
EIAR	Registration Form for Environmental Impact on Construction Projects
EPB	Environmental Protection Bureau
ER	Emission Reductions
ERPA	Emission Reduction Purchase Agreement
FAR	Forward Action Request
FSR	Feasibility Study Report
GHG	Greenhouse Gas
GWh	Giga Watt Hours
I	Interview
IM	Interim Measures for Operation and Management of CDM projects
IPCC	Intergovernmental Panel on Climate Change
IRR	Internal Rate of Return
kW	Kilo Watt
kWh	Kilo Watt Hours
LoA	Letter of Approval
LoI	Letter of Intent
L _y	Leakage
MOU	Memorandum of Understanding
MoV	Means of Validation
MW	Mega Watt
MWh	Mega Watt Hours
NDRC	National Development and Reform Commission of the People's Republic of China
NGO	Non Government Organisation
NO _x	Nitrogen Oxides
NPV	Net Present Value
O&M	Operation and Maintenance
OSV	On Site Visit
PDD	Project Design Document
PE _y	Project Emissions
RES	Rural Energy Station
SA	Sensitivity Analysis
SO ₂	Sulphur Dioxide
T	Tonne
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
VAT	Value-added Tax
VVM	Validation and Verification Manual

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1 INTRODUCTION

Beijing Harmonious Energy Development Co., Ltd., has commissioned the DOE TÜV Rheinland Japan Ltd. to perform a validation of the CDM Project Activity “Heqing Solar Cooker Project I” in P. R. China (hereafter called “the project”). This report summarises the findings of the validation of the project, performed on the basis of UNFCCC criteria for the CDM, as well as criteria given to provide for consistent project operations, monitoring and reporting. The term “UNFCCC criteria” refers to Article 12 of the Kyoto Protocol, the CDM modalities and procedures or the simplified modalities and procedures for small-scale CDM project activities (as applicable) and the subsequent decisions by the CDM Executive Board.

1.1 Objective

The purpose of a validation is to have an independent third party assess the project design. In particular, the project's baseline, monitoring plan, and the project's compliance with relevant UNFCCC and host Party criteria are validated in order to confirm that the project design, as documented, is sound and reasonable and meets the identified criteria. Validation is a requirement for all CDM projects and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of certified emission reductions (CERs).

1.2 Scope

The validation scope is defined as an independent and objective review of the project design document (PDD). The PDD is reviewed against the relevant criteria (see above) and decisions by the CDM Executive Board, including the approved baseline and monitoring methodology. The validation team has, based on the recommendations in the Validation and Verification Manual employed a rules-based approach, focusing on the requirements of the EB's VVM for project implementation and the generation of CERs.

The validation is not meant to provide any consulting towards the project participants. However, stated requests for clarifications and/or corrective actions may have provided input for improvement of the project design.

2 METHODOLOGY

The validation consists of the following four phases:

- I submit the Project Design Document (PDD) for GSP
- II desk review of the project design documents for GSP
- II on-site visit and follow-up interviews with project stakeholders
- III the resolution of outstanding issues and the issuance of the final validation report and opinion.

The following sections outline each step in more detail.

2.1 Desk Review of the Project Design Documentation

The following table outlines the documentation reviewed during the validation:

/1/	/1.1/	Project Design Document (PDD), Version 1, 8 th August 2010 (GSP)
	/1.2/	Project Design Document (PDD), Version 9, 3 rd August 2011
/2/	CDM Validation and Verification Manual (Version 01.2) EB55 Annex 1	
/3/	/3.1/	CDM-SSC-PDD - Project Design Document form for Small-Scale project activities, Version 03 http://cdm.unfccc.int/Reference/PDDs_Forms/PDDs/index.html
	/3.2/	Guidelines for Completing the Project Design Document (CDM-PDD) And the Proposed New Baseline And Monitoring Methodologies (CDM-NM), Version 05 http://cdm.unfccc.int/Reference/Guidclarif/pdd/index.html
	/3.3/	Glossary of CDM terms http://cdm.unfccc.int/Reference/Guidclarif/glos_CDM.pdf
/4/	UNFCCC Approved Baseline & Monitoring Methodology: AMS-I.C./Version 18, "Thermal energy production with or without electricity", EB56	
/5/	UNFCCC, General Guidelines to SSC CDM methodologies, version 17, EB61	
/6/	Beijing Harmonious Energy Development Co., Ltd., Project Proposal, January 2010	
/7/	Beijing Harmonious Energy Development Co., Ltd., Project Training Plan for Solar Cooker User	
/8/	Project Geographical Location Information (with all the involved townships)	
/9/	Beijing Harmonious Energy Development Co., Ltd., Project Monitoring Plan (Chinese Version)	
/10/	Zhangye Rural Energy Office, Clarification of Fuel Consumption and Usage Time for Baseline Scenario, 27 th August 2010	

/11/	Beijing Harmonious Energy Development Co., Ltd., Agreement of Solar cooker with rural residents (Template) for Heping Solar Cooker Project I
/12/	Beijing Harmonious Energy Development Co., Ltd., Solar cooker contract with product specification and inspection requirements for potential solar cooker manufacturer (Template)
/13/	Returned Questionnaire of local stakeholder's comment (100 nos.) and the Summary of the Survey, April 2010
/14/	China National Standard, Concentration type solar cooker standard (NY/T219-2003), 2003
/15/	Lanzhou Juren Solar Cooker Limited, Solar Cooker Project Specification and Certificates
/16/	Lanzhou Juren Solar Cooker Limited, Solar Cooker Operation and Maintenance Manual
/17/	Qinghai Provincial Product Quality Inspection Institute, Testing Report for Solar Cooker from Manufacturer of Lanzhou Juren Solar Cooker Limited (Ref. no.: DZ2007-0737), 9 th November 2007
/18/	Gansu Provincial Construction Material Quality Inspection Institute, Testing Report for Solar Cooker from Manufacturer of Lanzhou Juren Solar Cooker Limited (Ref. no.: Others 10052), 6 th August 2010
/19/	China Statistics Press, China Energy Statistical Yearbook 2006-2008
/20/	Revised 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Table 2.5, Page 2.22, Chapter 2, Volume 2
/21/	UNDP, Clean Energy for Development and Economic Growth: Biomass and Other Renewable Energy Options to Meet Energy and development Needs in Poorer Nations, 2002 (http://www.undp.org/energy/publications/2002/2002b.htm)
/22/	Chinese National Standard, Method for testing household coal and stoves (GB6412-86)
/23/	Institute for Global Health University of California and School of Public Health University of California, Improved Household Stoves in China: An Assessment of the National Improved Stove Program (NISP), September 2004
/24/	Office of National Coordination Committee on Climate Change, NDRC, Baseline emission Factor Calculation Result of China Grids, 2 nd July 2009
/25/	TÜV Rheinland Hong Kong Ltd. and Beijing Harmonious Energy Development Co., Ltd., CDM Validation Service Contract, 13 th August 2010

/26/	Gansu Province Highway Booklet (with population information), Planet Map Publication Limited
/27/	Gansu Statistical Bureau, Economic Index of Zhangye City, January 2009
/28/	Gansu Meteorological Information and Technical Equipment Security Centre, Solar Irradiance Data in Zhangye 1993-2008, 30 th August 2010
/29/	Beijing Harmonious Energy Development Co., Ltd. and Clean Air Capital, Term Sheet for CER purchase, 30 th April 2010
/30/	Zhangye City Development and Reform Commission, Notification of Project Development for Heqing Solar Cooker Project I [Ref. no.: ZhangFaGaiNengJiaoBei (2010) no. 47], 25 th September 2010
/31/	Zhangye City Rural Energy Work Office, Clarification of Project Boundary between Heqing Solar Cooker Project I and II [Ref. no.: ZhangNongNengBan (2010) no. 9], 12 th October 2010
/32/	Lanzhou Huaneng Solar Cooker Limited, Solar Cooker Product Specifications and Operation Manual
/33/	PingLuoNingWei Solar Cooker Limited, Solar Cooker Product Specifications and Operation Manual
/34/	Pangyang Yongming Solar Cooker Manufacturer, Solar Cooker Product Specifications and Operation Manual
/35/	Gansu DingXi Wuming Solar Cooker Manufacturer, Solar Cooker Product Specifications and Operation Manual
/36/	Xiji Dongfenghong Solar Cooker Limited, Solar Cooker Product Specifications and Operation Manual
/37/	Lanzhou Juren Solar Cooker Limited, Solar Cooker Quotation, October 2010
/38/	Xiji Dongfenghong Solar Cooker Limited, Solar Cooker Quotation, October 2010
/39/	Xiji Ningyuen Solar Cooker Limited, Solar Cooker Quotation, October 2010
/40/	The Ministry of Housing, Spatial Planning and The Environment (i.e. The Dutch DNA), Letter of Approval (Ref no.: 2010.ANL.420), 14 th December 2010
/41/	The Ministry of Housing, Spatial Planning and The Environment, Overview of submitted Written Approvals Carbon Credits http://regelingen.agentschapnl.nl/content/overview-submitted-written-approvals-carboncredits
/42/	Beijing Harmonious Energy Development Co., Ltd., Declaration of no ODA for

	the project activity, 24 th January 2011
/43/	Hexi College Physics, Mechanical and Electrical Engineering, Testing Report for household coal stoves in Zhangye, 28 th September 2010
/44/	Beijing Harmonious Energy Development Co., Ltd., Financial Analysis Worksheet
/45/	CER Calculation Worksheet
/46/	Zhangye City Agricultural Bureau, Clarification of No ODA for the project, 25 th February 2011
/47/	National Development and Reform Commission of the People's Republic of China (i.e. The Chinese DNA), Letter of Approval (English version, ref no.: 3005), June 2011 N.B. It is noted that a Chinese version of LoA was also issued by NDRC with ref. no. 1222 dated 13 th June 2011 as one of the official documents required in NDRC, in which same contents are presented in both LoAs)
/48/	UNFCCC CDM: Recommendation Query for Small Scale Methodologies, (Ref. no.: F-CDM-SSCwg ver 01 SSC_536), 24 th June 2011
/49/	Zhangye Environmental Protection Bureau, Agreement of Project Implementation in Zhangye, 9 th October 2010
/50/	Hexi College of Physics, Mechanical and Electrical Engineering, Clarification document for the equivalent application of National Standard GB6412-86 and GB6412-2009, 27 th June 2011

2.2 Follow-up Interviews with Project Stakeholders

The following table identifies the personnel who have been interviewed and/or provided additional information to the presented documentation:

	Date	Name	Organization	Title
/i/	2010-08-24	Han Shouren	Zhangye City Agricultural Bureau	Deputy Director
/ii/		Zhang Junming	Zhangye City Rural Energy Office	Officer
/iii/		Kou Xiping	Zhangye City Rural Energy Station	Head of Station
/iv/		Jin Guangze	Beijing Harmonious Energy Development Co., Ltd.	Project Manager
/v/		Ma Yan		Project Specialist
/vi/		Jiang Wei		Chief Consultant (Management Representative of the PP from host party)
/vii/		Hou Jinlong	Jiazidun Village, Jiantan Town, Ganzhou District	Chief Secretary
/viii/		Chen Jun		Secretary
/ix/		Liu Limin		Group Leader
/x/		Liu Lizhong		Group Leader
/xi/		Yang Shuyu	Group no. 7, Sunjiazha Village, Mingyong Township	Group Leader
/xii/		Zhou Xiaozong		Group Leader
/xiii/	2010-08-26	Ju Youwen	Lanzhou Juren Solar Cooker Limited	Director

Please note that additional on-site visit or interview with the relevant stakeholders or project participants can be arranged when necessary if comments were received during the GSP. According to UNFCCC's webpage, there was no public comment received during the GSP, this is also reported in the VR Section 3.10.

Table 1 Interview topics

	Date	Organization	Topic
/1/	2010-08-24 to 2010-08-26	Beijing Harmonious Energy Development Co., Ltd. (Project Participant from host party)	➤ Project design ➤ Project related legal issues ➤ Project & CDM development history ➤ Technical equipment ➤ Sustainable development issues ➤ Additionality ➤ Crediting period ➤ Monitoring plan ➤ Training Arrangement ➤ Management system ➤ Environmental impacts ➤ Stakeholder process ➤ Approval by the host country
/2/	2010-08-24 to 2010-08-26	Zhangye Ganzhou District Municipality & Local Community	➤ Project design ➤ Project related legal issues ➤ Project status ➤ Sustainable development issues ➤ Environmental impacts ➤ Stakeholder process ➤ Issues affecting the local community ➤ Approval by the local governments

2.3 Resolution of Outstanding Issues

The objective of this phase of the validation is to resolve any outstanding issues which need be clarified prior to TÜV Rheinland's conclusion on the project design. In order to ensure transparency a validation protocol is customised for the project. The protocol shows in transparent manner criteria (requirements), means of verification and the results from validating the identified criteria. The validation protocol serves the following purposes:

- It organises, details and clarifies the requirements a CDM project is expected to meet;
- It ensures a transparent validation process where the validator will document how a particular requirement has been validated and the result of the validation.

The validation protocol consists of two tables. The different columns in these tables are described in the figure below. The completed validation protocol for this project is enclosed in Appendix A to this report.

Findings established during the validation can either be seen as a non-fulfilment of CDM criteria or where a risk to the fulfilment of project objectives is identified. Corrective action requests (CAR) are issued, where:

- i) mistakes have been made with a direct influence on project results;
- ii) CDM and/or methodology specific requirements have not been met; or
- iii) there is a risk that the project would not be accepted as a CDM project or that emission reductions will not be certified.

A request for clarification (CL) may be used where additional information is needed to fully clarify an issue.

A revised PDD (Version 9, 3rd August 2011) was submitted to the validation team for final validation. The revision was based on the CARs and CLs in the draft validation report. The major amendments include: project description, version of methodology, starting date & expected crediting period of the project activity, estimation of the parameters applied in the investment analysis, and monitoring arrangement etc.

Validation Protocol Table 1: Requirement checklist				
Checklist Question	Reference	Means of verification (MoV)	Comment	Draft and/or Final Conclusion
<i>The various UNFCCC requirements as specified in the VVM are linked to checklist questions the project should meet. The checklist is organised in different sections, following the logic of the VVM.</i>	<i>Gives reference to documents where the answer to the checklist question or item is found.</i>	<i>Explains how conformance with the checklist question is investigated. Examples of means of verification are document review (DR) or interview (I). N/A means not applicable.</i>	<i>The section is used to elaborate and discuss the checklist question and/or the conformance to the question. It is further used to explain the conclusions reached.</i>	<i>This is either acceptable based on evidence provided (OK), or a corrective action request (CAR) due to non-compliance with the checklist question (See below). A request for clarification (CL) is used when the validation team has identified a need for further clarification.</i>

Validation Protocol Table 2: List of Request for Corrective Action (CAR) and Clarification (CL)				
CL/CAR No.	Draft report clarifications and corrective action requests	Ref. to checklist question in table 1	Summary of project owner response	Validation team conclusion
<i>CL/CAR XX</i>	<i>If the conclusions from the draft Validation are either a CAR or a CL, these should be listed in this section.</i>	<i>Reference to the checklist question number in Table 1 where the CAR or CL is explained.</i>	<i>The responses given by the project participants during the communications with the validation team should be summarised in this section.</i>	<i>This section should summarise the validation team's responses and final conclusions. The conclusions should also be included in Table 2, under "Final Conclusion".</i>

Table 3: List of forward action requests (FARs)			
FAR number	Reference	Summary of project owner response	Validation team conclusion
<i>Forward action request (FAR) to be raised during validation to highlight issues related to project implementation that require review during the first verification of the project activity. FARs shall not relate to the CDM requirements for registration.</i>	<i>Reference to the checklist question number in Table 2 where the CAR or CL is explained.</i>	<i>The responses given by the project participants during the communications with the validation team should be summarised in this section.</i>	<i>This section should summarise the validation team's responses and final conclusions. The conclusions should also be included in Table 2, under "Final Conclusion".</i>

Figure 1. Validation protocol tables

2.4 Internal Quality Control

The draft validation report including the initial validation findings underwent a local team review before being submitted to the project participant. The technical review will be then performed by a technical reviewer qualified in accordance with TÜV Rheinland's qualification scheme for CDM validation and verification.

2.5 Validation Team

Role	Full Name	Appointed for Sectoral Scopes	Affiliation
Team Leader	Harold Hai	1.2, 13.1	TÜV Rheinland Hong Kong Ltd.
Team Member	Tommy Lo Minglong Huang	1.2, 13.1 1.2, 5.1, 11.1, 12.1	
Technical Reviewer	Cuiping Deng	1.2, 5.1, 11.1, 12.1	TÜV Rheinland China Ltd.

3 VALIDATION FINDINGS

The findings of the validation are stated in the following sections. The validation criteria (requirements), the means of verification and the results from validating the identified criteria are documented in more detail in the validation protocol in Appendix A.

The final validation findings relate to the project design as documented and described in the revised and resubmitted project design documentation.

3.1 Approval and Participation

According to the GSP PDD, the project is a bilateral CDM project which involves two project participants: Beijing Harmonious Energy Development Co., Ltd. (BHED) from the host party, the P.R. China and Clean Air Capital Ltd from the Annex I party, Netherlands.

According to the project participant /vi/, Beijing Harmonious Energy Development Co., Ltd. is a Chinese investment entity based in Beijing. The host party, the P.R. China meets all relevant participation requirements in CDM. The Letter of Approval (LoA) issued by the DNA of P.R. China, i.e. NDRC is validated for authorizing BHED as a voluntary project participant and confirming that the project assists to China's sustainable development /47/. The relevant project approval has been announced in NDRC's webpage¹.

The Letter of Approval (LoA) from the DNA of Netherlands, i.e. Ministry of Housing, Spatial Planning and the Environment, that authorizes Clean Air Capital Ltd as a voluntary project

¹ Project Approval by NDRC, http://cdm.ccchina.gov.cn/website/CDM/pdf/Item_new/Item_new6423.pdf

participant has been reviewed /40/. The relevant project approval has been announced in the Dutch DNA's webpage /41/. Thus the authenticity of project approval is validated.

According to Annex 2 of the PDD, the project does not receive any public funding. The validation team do not reveal any information indicating that the project can be seen as a diversion of official development assistance (ODA) towards China. The validation team checked a self-explanatory document from the PP for the declaration of no ODA in the project activity /42/. As stated from the local Agricultural Bureau, Rural Energy Office /i, ii/ during the OSV, there is no ODA and financial support from the State and local government for the project activity. The validation team also reviewed the document issued by the Zhangye City Agricultural Bureau for clarification of no official financial support to the project activity /46/. The project developer stated that project funding will be raised from internal accrual only. The project total upfront investment was reported as about RMB 21.04 million. There was no indication of any capital received from official development assistance (ODA) funding.

The below table summarizes the project participants and parties involved.

Project participant	Beijing Harmonious Energy Development Co., Ltd.	Clean Air Capital Ltd
Parties involved	P.R. China (host)	Netherlands (Annex I party)
APPROVAL		
LoA received	Yes	Yes
Date of LoA	June 2011	14 th December 2010
Reference to document	Ref. no.: 3005 (English version)	2010.ANL.420
LoA received from	PP	PP
Validation of authenticity	Document Review and the announcement from NDRC's webpage ¹	Document review on the project approval announced in Dutch DNA's webpage /41/
Validity of LoA	Valid	Valid
PARTICIPATION		
Party is party to Kyoto Protocol	Yes. P. R. China ratified the Kyoto Protocol on 30 th August 2002. ²	Yes. Netherlands ratified the Kyoto Protocol on 31 st May 2002. ²
Voluntary participation	Yes. In statement 3 of LoA.	Yes. In statement 2 of LoA
Diversion of official development aid towards host country	N/A /47/	No

² Information from UNFCCC website:

http://unfccc.int/files/kyoto_protocol/status_of_ratification/application/pdf/kp_ratification.pdf

Project contribution to SD	Yes. In statement 2 of LoA.	N/A
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3.2 Project Design Document

The Project Design Document /1/ is based on the currently valid PDD template and is correctly completed in accordance with the applicable guidance document /3/.

3.3 Project Description

The “Heqing Solar Cooker Project I” is a small-scale solar cooker project to be implemented in the Ganzhou District, Zhangye City, Gansu Province of the P.R. China. The Ganzhou District is located at the district with approximately east longitude 100°27' (100.4500°) and north latitude 38°56' (38.9333°). The project will cover 18 townships in Ganzhou District. The geographic coordinates of the center points of the 18 townships are presented in the PDD /8/. The map and the corresponding coordinates of the 18 townships are checked by the validation team from the public map source, Google Earth, and are confirmed to be valid for indicating various locations of the participated townships.

The proposed project is the installation of 49,000 focusing type solar thermal cookers for the rural residents in remote areas. The rated power of each solar cooker is 910 W thermal, and this will be determined according to the manufacturer’s technical specifications for the rated thermal energy output. This fulfills the requirements in the AMS-I.C. version 18 clause 4 and footnote 2, in which “thermal energy generation capacity shall be manufacturer’s rated thermal energy output”. Thus the total installed capacity of the proposed project will be 44.59 MW thermal. According to the data from the Gansu Meteorological Information and Technical Equipment Security Centre issued in August 2010 /28/, based on the solar irradiance data in Zhangye from 1993-2008, the average sunlight time and solar irradiance rate in Zhangye region is 2,672 hour/year and 637.2 W/m² respectively. The proposed project will enable rural residents to efficiently utilize solar energy, and substitute for a portion of the fossil fuel (coal) used in daily cooking and water heating. Thus this could reduce greenhouse gas emissions that would otherwise be generated from fossil fuel consumption. The proposed project will neither generate any electricity nor connect to any power grids. There will be approximately 49,000 low-income households or 196,000 villagers directly benefiting from the implementation of the proposed project. (According to the Rural Energy Office /ii/ and the on-site interview with local villagers, there are about 4-5 people in one household.) The expected GHG emission reductions of the project activity are 143,762 tCO₂e annually over the next 10 years of the fixed crediting period.

As confirmed by the PP, the solar cookers applied in the project activity shall follow Chinese National Standard (GB NY/T219-2003) for technical requirements of solar cooker /14/. The project developer also confirmed that the solar cooker manufacturers have to provide certificates in order to ensure the solar cookers complying with the GB NY/T219-2003. The validation team reviewed the product specifications from 5 local solar cooker manufacturers (the PP stated that these could be the potential solar cooker supplier for the project activity) /32-36/, in which all of the solar cookers are manufactured according to the Chinese National Standard of NY/T219-2003. Moreover, the validation team checked the product report for one

of the potential solar cooker manufacturer /17/, in which it also complies with the GB NY/T219-2003. Thus the validation team considers that the project developer should be able to identify the solar cooker manufacturers with the capability for producing solar cooker according to the Chinese National Standard.

The validation team checked the “Gansu Province Highway Booklet” as one of the public information for the Gansu Province /26/. It is stated that the population in Ganzhou District is 500,000 in 2009. The validation team also reviewed the “Economic Index of Zhangye City” issued by Gansu Statistical Bureau in January 2009 /27/, in which it indicates that the average annual income for the rural households was about RMB 4,342 in 2007. According to the representative from local Agricultural Bureau /i/, the average annual income of the rural population in Ganzhou District is about RMB 5,000 per capita in 2009. About 340,000 people in Ganzhou District engage in the agricultural sector as farmers. Thus it is expected that the project will cover around 57% of the rural households in the project region. Their income is derived mainly from the sale of crops. This amount of income means that there is relatively less floating capital among the community.

According to the quotations from three local solar cooker manufacturers /37-39/, the market price of each 2m² solar cooker is ranged from RMB 395-400. Therefore, it is reasonable for the validation team to consider that the cost of a solar cooker is a significant portion of average annual income for one household. During the OSV, the representatives from the local Agricultural Bureau and Rural Energy Office /i, ii/ stated that the solar cookers are not easily available in the local retail market. This may be due to the relatively low demand of solar cookers in the region. According to the on-site interview with the local villagers /vii-xii/, they would not keen on purchasing solar cooker by sourcing from other markets outside their living region.

The project proposal was prepared by BHED in January 2010 /6/, was provided and notified to local Agricultural Bureau and Rural Energy Office. After understanding the project design, the representative from the local Agricultural Bureau /i/ stated that it is not necessary to obtain any official approval for this solar cooker project since the project does not involve any construction works. Instead, the project should be notified to the relevant local government officials. The validation team checked the official document issued by the Zhangye City Development and Reform Commission on 25th September 2010 /30/, in which it is indicated that the local government has been notified for the project development of Heqing Solar Cooker Project I. In addition, the Zhangye DRC also considers that the project complies with the local project registration requirements, and approves the project to be developed.

The validation team reviewed the term sheet for purchase of emission reductions signed between Beijing Harmonious Energy Development Co., Ltd. and Clean Air Capital Ltd on 30th April 2010 /29/, and confirmed this to be valid.

During the site interview with BHED's management representative /vi/, it is understood that BHED is responsible for organizing the necessary training for the operation, maintenance and monitoring of CDM project implementation. The training manuals for solar cooker users and monitoring team were reviewed by the validation team /7, 9/. According to the training manual, operation procedures in form of desktop calendar will be distributed to the end users

during the training sessions. According to the project developer, it is expected that the training will be started when the project is submitted for request for registration. Based on the on-site visit and the PDD, the validation team confirms that no construction is required in this project. The installation, transportation and maintenance of the solar cookers would be responsible by the solar cooker manufacturers under the supervision of BHED. In addition, the monitoring plan prepared by the project owner is reviewed /9/, in which the monitoring team will be training according to the monitoring procedures. The monitoring includes the regular inspection of solar cooker condition, recording the usage time, abnormal or damage situations, replacement procedures etc.

The templates for equipment purchase document /12/ and solar cooker agreement with rural residents /11/ were prepared by BHED for project implementation. It is confirmed by BHED's management representative /vi/ that the distribution of solar cookers to participants would be dependent on manufacturers' production capacities and the available manpower for equipment delivery. If necessary, it will be carried out batch by batch. Under such circumstances, the validation team considers that the PP is able to implement the project activity if the proposed project is registered as a CDM project.

According to the Section C of the PDD, the starting date of the project activity will be planned on 15th August 2011. The starting date is justified as the tentative date to start the tender bidding process. During the on-site interview, the project owner stated that the project would be tentatively started when the project is submitted for request for registration. The validation team agrees with the project implementation status for the selection of the starting date, and confirms that no implementation or real actions of the proposed project (such as purchase of solar cookers) have been carried out at this moment. A fixed crediting period of 10 years is selected and the starting date of the crediting period is 1st September 2011, or immediately from the date of project registration, whichever is later. Since the expected operational lifetime of the proposed project activity is 10 years, the validation team considers the selection of fixed crediting period of 10 years is reasonable.

It is stated by the project developer that once the project is started, they shall proceed to tendering process and place purchase orders to the solar cooker manufacturers. The purchase of solar cookers will be carried out batch by batch, depending on the manufacturers' production capacities. The equipment stock from the manufacturers will be distributed to the end users, and thus the emission reductions can be accounted once the first batch of solar cookers are being used by the users. According to the estimation from the project developer, it might take about one to two months to manufacture and distribute all the 49,000 cookers to the end users, and it will greatly depend on the production progress of the manufacturers. The emission reductions shall be based on the actual number of solar cooker used. However the estimated emission reductions from the start of crediting period are considered as full capacity for simplification. The usage record of solar cookers will be monitored by the project owner according to the monitoring plan. The validation of monitoring plan will be covered in Section 3.6 in details.

The critical project description milestones from the PDD are thus tabulated as follows:

Starting date of project	Expected project operational lifetime	Crediting period
15 th August 2011 (Tentative start date for project tendering process)	10 years	10-year crediting period: 1 st September 2011 – 31 st August 2021

In summary, under the validation by means of document review and on-site interviews with stakeholders, the validation team considers that the project description in PDD version 9 is accurate and complete.

3.4 Baseline and Monitoring Methodology

3.4.1 Applicability of the selected methodology to the project activity

The project applies the approved simplified baseline and monitoring methodology for small-scale CDM project activities AMS-I.C./Version 18 EB56 “Thermal energy for the user with or without electricity”.

Applicability criteria for the baseline methodology are assessed by the validation team by means of document review and interview. It is agreed in the validation team’s opinion that the project activity fully met the criteria as described below:

- The project activity applies renewable energy technology (solar cookers) that supplies individual households or users with thermal energy that displaces coal used for cooking and water-boiling. The technology of solar cookers is also included in the clause 1 of the approved methodology;
- The total installed capacity of the project activity is 44.59MW thermal, which does not exceed the threshold of 45MW thermal as stated in the approved methodology;
- The project activity only utilizes renewable solar energy without any fossil fuels. Thus it does not involve in any biomass system, co-fired system;
- The heat produced by the project activity is captured and used within the solar cookers. It does not involve in delivery to another facilities within the boundary;
- The project activity will be a new project using new solar cookers, and it does not seek to retrofit or modify any existing facility for renewable energy generation.

Thus the validation team considers that the project participant has correctly applied the approved methodology for the proposed project activity.

It should be noted that the version of approved methodology AMS-I.C. was changed between the PDD in GSP and the current version. Methodology AMS-I.C. version 17 was originally applied in GSP PDD. However, owing to the time constraint in the submission for requesting registration, another effective version of methodology (version 18) is applied in this project activity. According to AMS-I.C. version 18 History of the document, the major change between two versions is: “To include a procedure for determining baseline efficiency for a new cogeneration system.”

As the project activity does not involve in cogeneration system, the change is not applicable to the project activity. Thus the AMS-I.C. version 18 is also applicable to the project activity as discussed in the above paragraphs.

The overall expected annual emission reductions for the proposed project are 143,762 tCO₂e. As stated from the project developer /vi/, no auxiliary fuel will be used during the whole project period. Apart from this, the validation team confirms that there are no other major sources of emission reductions. Therefore the validation team considers that the greenhouse gas emissions occurring within the proposed CDM project activity boundary as a result of the implementation of the proposed CDM project activity which are not addressed by the applied methodology, is deemed to contribute less than 1% of the overall expected average annual emission reductions. Please refer to Section 3.4.4 for the detailed discussion.

With reference to "Guidelines on assessment of de-bundling for SSC project activities, version 3, EB54 Annex 13", the validation team has validated the project location for whether the project is not deemed to be a debundled component of a large scale project. The validation criteria are stated below:

- i. The same host project participant, BHED has got another solar cooker project in Gansu Province only, namely "Heqing Solar Cooker Project II" which is currently under validation³. Together with the proposed project activity, these two projects are in the same project category, applied with same technology, and located in the Gansu Province. The proposed project activity will be implemented in Ganzhou District of Zhangye City, which is adjacent to the Linze County, where is one of the project counties for "Heqing Solar Cooker Project II";
- ii. According to the clarification documents issued by the government from Zhangye Rural Energy Work Office /31/, it stated that "the boundary of the Heqing solar cooker projects I and II is area of rivers, small valleys and mud lands. There is no population within the 1km of the boundary between two projects as they are actually located in two different counties." This is confirmed with the project owner about the clarification of boarder line of the Heqing solar cooker projects I and II;
- iii. According to the physical observation during the on-site visit, the validation team visited one of the border points along the boundary between two projects under validation, and realized that the two projects were separated by a river and a large area of muddy land. There are no rural populations within 1 km along the boundary of the two projects.

In addition, the unit capacity of each solar cooker will be 910W, which is less than 1% of the threshold of AMS-I.C. of 45MW thermal, i.e. 450,000W thermal. According to the "Guidelines on Assessment of debundling for SSC project activities" EB 54, "if each of the independent subsystems (e.g., residential solar energy systems) included in one CDM project activity is no greater than 1% of the small scale thresholds defined by the applied methodology and the subsystems are indicated in the PDDs to be each implemented in multiple locations (e.g., installed at or in multiple homes), then the CDM project activity is exempted from performing a de-bundling check". Thus the validation team confirms that the project activity can be

³ UNFCCC CDM webpage,
<http://cdm.unfccc.int/Projects/Validation/DB/QHQSLO6Z17LR8VBZST4C7F8SGSKOTV/view.html>

exempted from debundling check, and considered as being not a de-bundled component of a large scale activity.

3.4.2 Project Boundary

During the on-site visit, the validation team has visited two of the villages in Ganzhou District (Jiazidun Village and Sunjiazha Village) that will participate in the project activity. It is confirmed that the villagers use coal for daily cooking, water heating and house warming as described in the PDD. They do not have any solar cookers in their houses as they considered the solar cookers were expensive. In addition, they stated that there is no solar cooker available in local retail market, and do not know where the solar cooker can be purchased.

The project boundary is clearly defined as the physical, geographical site of the project equipment producing the renewable solar energy, i.e. the locations within the 18 townships in Ganzhou District where the 49,000 nos. of solar cookers are to be operated by the end-users and implemented for the project activity. This is considered encompassing all anthropogenic emissions by sources of greenhouse gases under the control of the project participants that are significantly and reasonably attributable to the CDM project activity. These 49,000 spots are nevertheless not yet identified at the current stage because the proposed project will only be implemented and become realistic when the project is registered as CDM project. In addition, each solar cooker will be identified accordingly (in this case the identification is the project logo and user name). For the detailed validation of identification of solar cookers, this can be referred to Section 3.4.4 of this report. It is also confirmed that the project neither generates electricity on grid nor transports the thermal power to other regions. The project boundary is clear and reasonably demonstrated.

The system boundary and the selected sources and gases are justified transparently and are presented as below:

	GHGs involved	Description
Baseline emissions	CO ₂	Major emission source
Project emissions	--	The proposed project utilizes solar resources for heat generation where no auxiliary fuel shall be used. Project emissions are thus deemed to be negligible.
Leakage	--	Since the project activity is a new project and the energy generating equipment is not transferred from another activity, leakage is thus considered negligible as per AMS-I.C Version 18.

3.4.3 Baseline Identification

According to AMS-I.C./Version 18, since the project activity involves renewable energy technology (solar cooker) that displaces technology using fossil fuel (coal-fired stove), the simplified baseline is the fuel consumption of the technologies that would have been used in the absence of the project activity multiplied by an emission factor for the fossil fuel displaced.

During the on-site interview with the rural residents /vii-xii/, they stated that using coal-fired stoves for their daily cooking and water heating are the common practice locally. The straw of maize and other biomass residues are mainly used as feedstuff only, while the agricultural waste and animal manure will be used as fertilizers instead of fuel. This is also verified during the on-site interview with the official /iii/ and the clarification document from the local Rural Energy Office /10/, it is stated that the local villagers use coal as their major energy source for daily cooking and water heating. Deforestation without authorization is illegal so firewood cannot be used as cooking purpose. Electricity is mainly used for lighting and other electric devices as the tariff is comparatively expensive for the local villagers. The official also mentioned that about there are small amount of relatively rich households equip with biogas facilities (around 2,400 households), but the coverage is comparatively small for overall 89,000 households in the Ganzhou District. In addition, the biogas facility was built by the government in over 20 years ago for demonstration of biogas equipment, and are mainly located in the Zhangye city. He also considered that since the weather in Ganzhou district is relatively cold and dry, the biogas equipment is not worked in satisfactory efficiency. However, these households will not be the target participants of the project activity. According to the project developer /vi/, for those relatively rich household equipped with other cooking facilities apart from coal-fired stoves, they will not be included as the solar cooker end user in the project as the target participants will be the poor households only.

Therefore it can be confirmed that the baseline scenario is the emissions occurring due to cooking or water heating through coal-fired stoves. The baseline determination is considered as transparent and reasonable.

The validation team has checked the following in according to the latest version of Approved CDM Validation and Verification Manual /2/, and the results are tabulated as follows. The details can be referred to Appendix A.

The approved baseline methodology applicable to the project - explicit criteria - implicit criteria (e.g. available scenarios, applicability of formulas for BE/PE/LE calculations)	☒ Yes ☐ No	As per clause 13 of the AMS-I.C. /Version 18, the simplified baseline is prescribed. Please refer Section 3.4.1 for details.
PDD includes all assumptions and data used by project participants	☒ Yes ☐ No	As per clause 13 of the AMS-I.C. /Version 18, the simplified baseline is prescribed.
All the references and documents used are relevant for establishing the baseline scenario	☒ Yes ☐ No	As per clause 13 of the AMS-I.C. /Version 18, the simplified baseline is prescribed.
All the references and documents used are correctly quoted and conservatively interpreted in the PDD	☒ Yes ☐ No	As per clause 13 of the AMS-I.C. /Version 18, the simplified baseline is prescribed.
All relevant policies / regulations considered are listed in the PDD	☒ Yes ☐ No	As per clause 13 of the AMS-I.C. /Version 18, the simplified baseline is prescribed. In addition, there is no

		policy/regulations for the mandatory application of fuel for the households.
Identified potential baseline scenarios reasonably represent what would/could occur in the absence of the proposed project activity	☒ Yes ☐ No	As per clause 13 of the AMS-I.C. /Version 18, the simplified baseline is prescribed. The validation team also checked the official document /10/ from the local Rural Energy Office for the declaration of coal as baseline fuel in Ganzhou district. In addition, the validation team also observed from the OSV, in which the rural households in Ganzhou district use the coal-fired stoves in general.
The baseline scenario selection is appropriate and determined according to the methodology	☒ Yes ☐ No	As per clause 13 of the AMS-I.C. /Version 18, the simplified baseline is prescribed.
The approved methodology used is applicable to the identified baseline scenario	☒ Yes ☐ No	As per clause 13 of the AMS-I.C. /Version 18, the simplified baseline is prescribed.

3.4.4 GHG Emission Reductions

The GHG emissions calculations are transparently documented and appropriate assumptions regarding expected number of operating solar cooker and the relative operation time used to forecast emission reductions.

According to the selected methodology AMS-I.C./Version 18 for thermal energy production with or without electricity, the emission reductions (ER_y) by the project during the crediting period is the difference between the baseline emissions (BE_y), project emissions (PE_y) and leakage emissions (L_y).

As the project utilizes solar energy for heat generation, no auxiliary fuel will be used and this was also verified by the validation team during the on-site visit. Hence the project emissions could be regarded as zero.

It is noted during OSV that all the solar cookers involved in the proposed project will be newly purchased from the equipment manufacturers. There will be no transfer of heat generating equipments from another activity because the solar cookers will be new equipments. According to the PDD, a unique project logo will be assigned and fabricated on each solar cooker before distribution to the users for identification. The project logo can be a useful and simple identification strategy to differentiate the project solar cookers from other projects implemented by the project developer. The validation team confirmed with the management representative of BHED /vi/ that the monitoring team of BHED will check if there will be any transfers of the solar cookers by verifying the unique project logo during the regular monitoring schedule. In addition, the name of the user will be put on the back of the solar cooker when the user receives the solar cooker. Thus this could avoid possible confusion of

double-counting of solar cookers when the number of operating unit is monitored. The monitoring plan will be further discussed in Section 3.6. According to the AMS-I.C./Version 18, leakage emissions are not required to be considered and are assumed as zero.

Since the project emissions and leakage emissions within the project boundary are zero, the emission reductions of the proposed project are equal to the baseline emissions.

According to the equation (2) of AMS-I.C Version 18, the following equation is correctly applied in the PDD for the calculation of baseline emissions.

$$BE_y = BE_{\text{thermal},\text{CO}_2,y} = EG_{\text{thermal},y} / \eta_{\text{BL},\text{thermal}} * EF_{\text{FF},\text{CO}_2} \quad (\text{PDD Equation 2})$$

Where:

BE_y & $BE_{\text{thermal},\text{CO}_2,y}$ = The baseline emissions from heat (generated by burning coal) displaced by the project activity during the year y in tCO₂e

$EG_{\text{thermal},y}$ = The net quantity of heat supplied by the project activity during the year y in TJ

$EF_{\text{FF},\text{CO}_2}$ = The CO₂ emission factor of coal (tCO₂/TJ), IPCC default emission factors 2006 are used, which is in line with clause 13 of AMS-I.C. version 18

$\eta_{\text{BL},\text{thermal}}$ = The efficiency of the coal-fired stove (baseline unit) that would been used in the absence of the project activity

The equations (3), (4) and (5) in the PDD for the estimation of annual baseline emissions of the proposed project are correctly applied. The annual baseline emissions of the project ($BE_{\text{thermal},\text{CO}_2,y}$) are based on the amount of 12-monthly net heat supplied by the project activity, $EG_{\text{thermal},y}$, and $EF_{\text{FF},\text{CO}_2}$, and $\eta_{\text{BL},\text{thermal}}$, which are calculated as follows:

$$EG_{\text{thermal},y} = \sum EG_{\text{thermal},i} \quad (i = 1 \sim 12) \quad (\text{PDD Equation 3})$$

$$BE_{\text{thermal},\text{CO}_2,y} = \sum BE_{\text{thermal},\text{CO}_2,i} \quad (i = 1 \sim 12) \quad (\text{PDD Equation 4})$$

$$BE_{\text{thermal},\text{CO}_2,i} = EG_{\text{thermal},i} / \eta_{\text{BL},\text{thermal}} * EF_{\text{FF},\text{CO}_2} \quad (i = 1 \sim 12) \quad (\text{PDD Equation 5})$$

Where

$EG_{\text{thermal},i}$ = The net heat supplied in month i in TJ

$BE_{\text{thermal},\text{CO}_2,i}$ = The baseline emissions in month i in tCO₂e

Determination of thermal efficiency of baseline unit (coal-fired stove)

According to the on-site inspection and manufacturer's information, the project solar cooker is for household application, and it is not plausible to measure the individual energy output by meter in this equipment. According to the clause 27 of AMS-I.C Version 18, for household systems whose maximum output capacity is less than 45kW thermal (the unit capacity of each solar cooker for the project activity is 910W), the efficiency of the baseline units shall be determined by adopting one of the following criteria:

- (a) Highest measured operational efficiency over the full range of operating conditions of a representative sample of units with similar specifications, using baseline fuel (i.e. coal in the project activity). The efficiency tests shall be conducted following the guidance provided in relevant national/international standards;
- (b) Highest of the efficiency values provided by two or more manufacturers for units with similar specifications, using baseline fuel (i.e. coal in the project activity);
- (c) Highest efficiency from referenced literature values of default efficiency of 100%.

The project owner adopts the criteria (a) for the determination of efficiency of the baseline units by providing two references to justify the thermal efficiency of 14.6% for the traditional coal furnaces: #1) Testing Report for household coal stoves issued by Hexi College Physics, Mechanical and Electrical Engineering /43/; and #2) Document from the Zhangye Rural Energy Office /10/. The validation team also checked another reference material as #3) Publication “Clean Energy for Development and Economic Growth: Biomass and Other Renewable Energy Options to Meet Energy and Development Needs in Poor Nations” issued by United Nations Development Programme (UNDP) in 2002 /21/.

According to AMS-I.C/Version 18, the validation team has reviewed these three reference information, and the validation results are discussed in the following.

Reference #1)

The validation team checked the testing report for the coal stoves issued by Hexi College of Physics, Mechanical and Electrical Engineering in September 2010 /43/. According to the testing report, 100 sets of coal stoves from Zhangye rural areas (including Ganzhou District) were selected. The stove efficiency was tested as per Chinese National Standard GB6412-86 “Method for testing household coal and stoves” /22/. It is also confirmed by the Hexi College that this is equivalent to the updated National Standard GB6412-2009, in which the testing method is also applicable in the updated Standard /50/. It concluded that the coal stoves are traditional types with low heat efficiency. The coal stoves ranged from 9.8% to 14.6%, and averaged as 12.6%. The validation team considers that the test was carried out by the local technical university, with a representative sample of units with similar specifications in Zhangye rural areas using baseline fuel. Thus it is considered that the application of highest measured operational efficiency of 14.6% is reasonable and transparent.

Reference #2)

It is confirmed from the self-explanatory letter dated 27th August 2010 issued by the Zhangye Rural Energy Office /10/, the current practice by residents in the rural areas of Ganzhou District is the use of unimproved traditional stoves. The thermal efficiency of these stoves was below 15% and the fuel used by these stoves for cooking and water heating was coal.

Reference #3)

It is cited in the page 8 of the publication reference issued by UNDP that “the most common method of cooking throughout rural areas of the developing world is the open hearth or three-stone fire, which typically transfers only 5-15% of the fuel's energy into the cooking pot...” /21/. During the OSV, the validation team visited several rural households and observed the type of stoves used by the local population in general. The observed stoves fall into the category of traditional, unimproved stoves as defined in the reference source “Improved Household Stoves in China: An Assessment of the National Improved Stove Program (NISP)”

/23/. It is reported in page 17 of the reference source that the measured efficiency for traditional (unimproved) stoves is 10-15% in several provinces of China.

By considering the above 3 evidences, the measured thermal efficiency of the coal stoves being used in the rural areas of the proposed project location in Zhangye City Ganzhou District is maximum at 14.6%. Therefore the validation team considers it is reasonable to apply this thermal efficiency value in the calculation of baseline emissions.

Validation of heat supply by the solar cooker

The heat supplied as stated in the PDD is determined with the basic energy law. The formula of Heat below as stated in the PDD is correctly applied in accordance with physics principles. It is confirmed by the validation team to be appropriate for the heat estimation. The monthly net heat is calculated as follows:

$$\text{Heat} = \text{Power} * \text{Time}$$

$$EG_{\text{thermal},i} = n * [P_i * t_i * (3.6 \times 10^{-9} \text{ TJ/Wh})] \quad (\text{PDD Equation 6})$$

Where

n = The total number of solar cookers to be installed by the proposed project. According to the PDD, totally 49,000 sets solar cookers will be installed.

P_i = The actual average power of the solar cooker in month i in W

t_i = The usage time of each solar cooker in month i in hour. The value adopted in the PDD is 129.3 (4.25 hours per day, $4.25 \times 365 / 12 = 129.3$). According to the on-site interview with the representative from the local Rural Energy Office /ii/ and villagers /vii-xii/, they stated that the rural families in Ganzhou District and local villagers shall spend at least 4.25 hours per day for cooking and water heating by solar cookers in average. This is further checked for the official document issued by the Zhangye Rural Energy Office dated 27th August 2010 /10/. It is stated in the document that it is a reasonable estimation of the average heating requirement of a solar cooker for one household as 4.25 hours per day. In addition, the actual usage time will be monitored ex-post.

$$P_i = 910 * (R_i / 700) \quad (\text{PDD Equation 8})$$

Where

910W = Rated power of solar cooker, which shall be manufacturer's rated thermal energy output according to the AMS-I.C. This can be referred to the technical specifications of the solar cookers from the manufacturers. The validation team confirms that this is also one of the requirements for the equipment applied in the project activity as indicated in Section A.4.2 of the PDD.

According to the Chinese National Standard (GB NY/T219-2003), in which 700W/m^2 is used for the standard value of solar irradiance rate. Thus the actual power output is the rated power of solar cooker times the ratio of actual irradiance rate to the standard value of solar irradiance rate of 700 W/m^2 .

It is noted as per the clause 4 of the “General Guidelines for SSC CDM methodologies” version 17 EB 61, “maximum output” shall be calculated using a conversion factor of 700 Wth/m^2 for thermal applications of solar energy projects, however this is not applicable for solar thermal parabolic collectors (i.e. the type of solar cookers to be used in this project activity). Therefore, the PP applies the conversion factor determined by the Chinese National Standard, and the validation team considers that the chosen conversion factor is appropriate to the project activity.

Therefore the validation team consider the rated power of solar cooker of 910W is reasonable and transparent.

R_i = The actual solar irradiance rate in month i in W/m^2

The validation team has verified the Annex 3 of the PDD, in which the monthly solar irradiance and sunlight time are sourced from the authorized reference issued by the Gansu Meteorological Information and Technical Equipment Security Centre in August 2010 /28/. The average monthly solar insolation and sunlight time over the period of 1993 to 2008 was reported. The irradiance values were ranged from 364.2 W/m^2 (in December) to 822.2 W/m^2 (in July) and the yearly average was 637.2 W/m^2 . The validation team considers that the irradiance values are reasonably applied in the calculation of baseline emissions.

While the project emissions & leakage are zero; the baseline emissions are equal to the emission reductions and have been estimated to be 143,762 tCO_2e per year in the PDD, based on above formula, input values and the ex-ante baseline emission factor of coal (EFCO_2) which is $94.6\text{ tCO}_2\text{e/TJ}$ from the IPCC reference data⁴. The validation team has verified that a conservative emission factor has been adopted by the project owner among the emission factors of various coal products from the IPCC reference data, e.g. coke oven coke is $107\text{ tCO}_2\text{e/TJ}$, lignite is $101\text{ tCO}_2\text{e/TJ}$ and sub-bituminous coal is $96.1\text{ tCO}_2\text{e/TJ}$. The preciseness of the data was verified by the validation team through document review. According to the latest information⁵ issued by the Chinese DNA, the P.R. China grid emission factors are calculated using IPCC values due to the lack of national fuel emission information. The validation team considers that the application of default values of IPCC emission factors is reasonable, and it also fulfils the requirements in clause 13 in AMS-I.C./Version 18.

The ex-ante estimation of emission reductions is based on the monthly solar irradiance value and the relevant baseline emissions; therefore the validation team considers that the estimation was reasonably and transparently carried out.

⁴ Volume 2, 2006 IPCC guidelines for national greenhouse gas inventories (http://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_2_Ch2_Stationary_Combustion.pdf)

⁵ 2009 Baseline Emission Factors for Regional Power Grids in China, <http://cdm.ccchina.gov.cn/WebSite/CDM/UpFile/File2333.pdf>

All assumptions made for estimating GHG are listed in the PDD	☒ Yes ☐ No	As per PDD Section B.6., assumptions were made for ex-ante GHG emission reductions.
All data used by project participants are listed in the PDD	☒ Yes ☐ No	All data such as baseline emission factor, irradiance rate used by the PPs are listed in the Section B.6. of the PDD.
Their references and sources are also listed in the PDD	☒ Yes ☐ No	All data from public sources, such as IPCC, local meteorological report are listed in the Section B.6. of the PDD.
Formulas, parameters, values are complete, accurate, transparent and conservative	☒ Yes ☐ No	The validation team checked the reference information and confirms that the formulas, parameters, values applied in the PDD are complete, accurate, transparent and conservative.
All the references and documents used are correctly quoted and conservatively interpreted in the PDD	☒ Yes ☐ No	The validation team checked the public references and documents, and confirms that these are correctly quoted and conservatively interpreted in the PDD.
Methodology has been applied correctly to calculate project emissions, baseline emissions, leakage emissions and emission reductions	☒ Yes ☐ No	The AMS-I.C./Version 18 is applied correctly to calculate project emissions, baseline emissions, leakage emissions and emission reductions.
All the emissions of baseline emissions can be replicated using information provided in the PDD	☒ Yes ☐ No	The validation team checked the information provided in the PDD with the reference information, and all the emissions of baseline emissions can be replicated.

3.5 Additionality

According to the PDD, the project participant has provided an explanation to show the project activity would not have occurred anyway due to the investment barrier only. This fulfills the requirement of Attachment A to Appendix B of the simplified modalities and procedures for small-scale CDM project activities”, as referred to the “General Guidelines to SSC CDM methodologies version 17”.

3.5.1 CDM consideration

According to the document review and on-site interview, the validation team has assessed the project development and the corresponding CDM consideration scenario and these are summarized below:

According to the latest “Guideline on the demonstration and assessment of prior consideration of the CDM” released in EB49, Annex 22, the PP should demonstrate the prior CDM consideration to the project. The PP must inform a Host Party DNA and the UNFCCC secretariat in writing of the commencement of project activity and of their intention to seek CDM status. Such notification is not necessary if a PDD has been published for GSP before the project activity start date.

According to the project owner, the proposed project will be tentatively started when it is submitted for request for registration as a CDM project. The global stakeholder consultation was carried out from 19th August to 17th September 2010. Consideration of CDM income as an important part of the project has been demonstrated in the project proposal in January 2010, in which it was reported that the registration as a CDM project could assist in building up the project revenue through the sale of the CERs /6/. The revenue from CERs is reflected as the critical factor to decide whether the project is financially feasible. Since the project is not yet started up to the issue date of this report, thus the validation team considers the PP has fulfilled the requirements in the latest “Guideline on the demonstration and assessment of prior consideration of the CDM”.

In summary, here is the important milestone according to the PDD:

Starting date of project	Justification of and evidences (references) on the starting date of project	Date of CDM consideration
15 th August 2011	Tentative date of start of project tendering process	Project Proposal in January 2010 /6/ (this was the first time the PP consider to develop the project with CDM). However, the PP would not start the project if the project could not be registered. As mentioned above, according to “Guideline on the demonstration and assessment of prior consideration of the CDM”, after the global stakeholder consultation, the project is still not yet started, thus demonstration of prior CDM consideration is not required.

In addition, the project timeline is tabulated as follows for detailed project development.

Time Period	Project Milestone	Remarks
January 2010	The project proposal was prepared by BHED	Project proposal /6/
April 2010	Local Stakeholder Consultation	Returned questionnaires /13/
13 th August 2010	The project participant has commissioned the validation team of TÜV Rheinland to perform the validation of the project.	Validation service contract between the PP and TÜV Rheinland /25/

19 th August 2010 to 17 th September 2010	PDD publication on UNFCCC webpage (Details in Section 4.9.)	UNFCCC webpage
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3.5.2 Alternatives

The selected approved methodology AMS-I.C./Version 18 prescribes the baseline scenario and no further analysis of alternatives is thus required.

3.5.3 Investment analysis

According to Attachment A to Appendix B of the simplified modalities and procedures for small-scale CDM project activities” as referred to the “General Guidelines to SSC CDM methodologies version 17”, the project participant shall provide an explanation to show that the project activity would not have occurred anyway due to at least one barrier. As noted in the PDD, the investment barrier was selected, and the application of financial analysis of Net Present Value (NPV) without CDM revenue is carried out.

As indicated in the GSP PDD, the proposed project shall not generate any revenue after its implementation. If the project is carried out without CDM support, the upfront project investment of RMB 21.04 million shall result in no return. The result of financial analysis is presented in the PDD. The NPV of the project without CDM subsidies is a negative value (RMB -27.14 million) which demonstrates that the project activity is unlikely to be financially viable without CDM support. The project can be financially feasible with CER revenues, in which a project IRR of 18.8% is anticipated. As stated from the representative of BHED during the OSV, the project would charge a one-off payment of RMB35 per solar cooker from the participating residents for operation and maintenance of solar cookers throughout the entire project lifetime, i.e. 10 years.

During the OSV, the validation team has verified via the interview with local residents /vii-xii/ that they are willing to purchase the solar cookers from the proposed project activity, and pay the project developer with around RMB35 per cooker for each household as the project administrative costs. When compared to the unit price of solar cooker (average RMB396.7 as per the quotations from three local solar cooker manufacturer /37-39/), the proposed project administrative cost is much lower than the market price of solar cooker and should be affordable to the local residents. The interviewed local residents stated that the solar cookers could help them to save money through reducing coal consumption for daily cooking and water heating. However, due to the limitations of the solar cooker (i.e. limited sunshine during rainy and cloudy weather, solar radiation intensity at night and winter season), the solar cooker cannot completely replace the coal-fired stove. Thus, the villagers consider that the solar cooker is not an essential good for their livelihood. During the OSV, the representatives from the local Agricultural Bureau and Rural Energy Office /i, ii/ stated that the solar cookers are not easily available in the local retail market. This may be due to the relatively low demand of solar cookers in the region. According to the on-site with the local villagers, they do not know where the solar cooker can be purchased and would not keen on purchasing solar cooker by sourcing from other markets outside their living region.

In accordance with the “Guidance on the Assessment of Investment Analysis” from UNFCCC EB51 Report Annex 58, the validation team has independently checked the following critical project and financial input values for the NPV calculation as the basis of financial analysis. The validation of some of critical parameters based on the local and sectoral expertise of the validation team, is tabulated as follows:

Item	Data & Source	Remarks on Validation of Parameters
Project lifetime	10 years (PDD)	49,000 sets of 910W thermal rated power solar cookers (National standard of P.R. China (GB), GB No.: NY/T219-2003) Total power = 910W x 49,000 = 44.59MW thermal The validation team checked the product specifications from six potential solar cooker manufacturers for the project activity, and confirmed that the solar cooker lifetime is 10 years in average /15, 32-36/. In addition, it is in line with the “Guidance on the Assessment of Investment Analysis” in which a minimum period of 10 years will be appropriate for the project activity assets. The validation team also confirms that the estimation of project lifetime of 10 years in the PDD fulfils the requirements in the “Tool to determine the remaining lifetime of equipment”, EB50 Annex 15, in which the manufacturer’s information on the technical lifetime of equipment is applied.
Equipment cost	RMB 19.44 million (PDD)	The validation team checked the quotations from three local solar cooker manufacturers /37-39/, the unit price for solar cooker is ranged from RMB395-400 including the transportation, installation and first 3-year maintenance service costs. The average unit price is calculated as RMB396.7. For 49,000 solar cookers, the total equipment cost is estimated as = RMB 396.7 × 49,000 sets = 19.44 million Thus the validation team considers the estimation of RMB396.7 per solar cooker is reasonable in the financial analysis.
Project Development Cost	RMB 0.16 million (PDD)	The development includes the project expense during the preliminary stage, which includes the development of project proposal, coordination work with government and potential equipment

		vendors, management costs and training arrangement etc. Although there is no evidence for cross-checking of this cost as the project is not yet started, however the validation team considers that this estimated value is just a very minor expense, and this is a net expenditure and the NPV for the project will always be negative. Thus the validation team considers that the estimation of expense for project development is deemed reasonable.
Implementation Cost	RMB 1.47 million (PDD)	The implementation cost includes the project logistics management of solar cookers, training of users and monitoring team and project monitoring works, while the largest proportion will be contribute to the project monitoring cost. According to the project developer, the monitoring service will be carried out with the assistance from the local Rural Energy Office under the project developer's management. During the OSV, the representatives from the local government stated that they were willing to provide assistance for the project activity if it is necessary. The monitoring plan /9/ have been verified by the validation team, and confirmed to be valid. Although there is no evidence for cross-checking of the this cost as the project is not yet started, however the validation team also compares with other similar registered solar cooker project in the adjacent province of China, i.e. UNFCCC registered projects in Ningxia Province with ref. nos. 2307, 2311, 2924 and 3520. According to these projects, the project implementation is similar to the proposed project, the project implementation costs are about RMB 0.5 million for 17,000 solar cookers. As the estimation of implementation cost of the proposed project is RMB 1.47 million for 49,000 solar cookers, the validation team considers that the project implementation cost is comparable with other registered projects. Moreover, this is a net expenditure and the NPV for the project will always be negative. Thus the validation team considers that the estimation of project implementation cost is deemed reasonable.
Annual maintenance cost:	RMB 1.01 million for the 4 th year (PDD)	The validation team checked the quotation documents from three solar cooker manufacturers, the annual maintenance cost for

		the first 3 years will be RMB 20 per cooker /37-39/. The maintenance fee from the fourth to the tenth year will be responsible by BHED. It is estimated by the project developer that the maintenance cost of each solar cooker is RMB 20 per year plus the inflation rate for subsequent operational years. Thus, the forth year maintenance fee is RMB 1.01 million plus the annual 3.3% inflation rate for subsequent operational years. The validation team considers that the estimation of annual maintenance cost is reasonable and traceable.
Annual Inflation Rate	3.3% per annum (PDD)	The inflation rate of the P.R. China is sourced from the international financial entity "Global Economics Research of Trading Economics", in which it is based on the past 3-year (i.e. 2007-2009) monthly inflation values⁶. The monthly inflation rate in China in 2007-2009 is averaged in order to estimate an inflation rate value applied in the financial analysis /44/. Then the inflation rate in the subsequent years is assumed to be the same at 3.3% per annum. The validation team considers that the estimation of inflation rate is reasonable and traceable.
Income Tax Rate	25% (PDD)	The standard corporate income tax rate in China is 25%⁷, which is confirmed by the validation team. There will be no tax benefit or privilege from the government for this project, in which this was confirmed with the government officials during the OSV /i, ii/.
Discount Rate applied in Net Present Value:	3.6% (PDD)	For the project developer, the capital investment cost is the opportunity cost of depositing same amount of fund in the bank. The validation team agrees that the expected rate of return on investment is the bank deposit rate, which is used as the discount rate in the NPV calculation. The discount rate of 3.6%⁸ is used for NPV calculation, which is based on the 5-year deposit rate of RMB in Bank of China in December 2008. Since this is the latest long-term deposit rate available during the GSP, the validation team considers that the estimation of discount

⁶ Trading Economics: Global Economics Research, China Inflation Rate (<http://www.tradingeconomics.com/Economics/Inflation-CPI.aspx?Symbol=CNY>)

⁷ Corporation Income Tax Law of P.R. China, Clause 4 (http://www.gov.cn/ziliao/flfg/2007-03/19/content_554243.htm)

⁸ Bank of China, RMB deposit rate on December 2008, (http://www.boc.cn/finadata/iliv/fd31/200812/t20081222_508225.html)

		rate from the 5-year deposit rate is reasonable and transparent.
Contingency	8% of total investment (PDD)	Due to the innovative feature of project, there was no reference value for the contingency for such project type. 8% contingency is the estimation from the project proponent, which is based on its understanding of the project and its business experience. The validation team considers that the specific value of the contingency does not affect the additionality of the project, i.e., regardless of the contingency value, the NPV of the project without CDM is always negative.
Residual value	Nil	Since once the solar cooker is distributed to the users, the equipment belongs to the beneficiaries, there is no residual value left for the project developer.

3.5.3.1 Sensitivity analysis

It is noted in the PDD that the discussion of sensitivity analysis has not been carried out since the project does not generate any financial revenue except from CER revenues. The negative NPV indicates that the project encounters with a prohibitive financial barrier without CDM revenues. Under such circumstances, the proposed project would not be set up unless the proposed project is supported by CDM revenues.

In summary, based on the existing information provided by the project participant, the project activity could be deemed as “not the most financially attractive” option by applying the financial analysis.

3.5.4 Barrier analysis

As per the “General Guidelines to SSC CDM methodologies (version 17, EB61)”, other barrier analysis is not necessarily required. In the PDD, the project participant does not carry out the barrier analysis for the project activity, but provided an explanation to show the project activity would not have occurred anyway due to the investment barrier only.

3.5.5 Common practice analysis

According to the approved monitoring methodology AMS-I.C. Version 18, there is no requirement for common practice analysis. The project participant does not carry out the common practice analysis in the PDD.

In summary, the requirements iterated in the General Guidelines to SSC CDM methodologies (version 17, EB61) were followed and demonstrated by the project activity through the documentation review and the interviews. The project activity can be considered as “not the most financially attractive” option. According to the clause 95 of the VVM /1/, the project

activity without any CDM revenue is proven as additional and the project activity would not have occurred anyway due to the investment barrier.

3.6 Monitoring

The monitoring plan is included in PDD Section B.7 based on the clause 48 of the approved monitoring methodology AMS-I.C./Version 18, and is correctly applied to the proposed CDM project activity. Monitoring of GHG emission reductions is based on measuring the number of solar cookers operating and the operational time of solar cookers using survey method, in which this is transparently presented in Section B.7 of the PDD.

3.6.1 Parameters determined ex-ante

The project activity neither generates any project emissions nor leakage. The project is a new solar cooker project and there will be no equipment transfers from another activity. In addition, as confirmed with the project proponent during the OSV, no equipment will be transferred to other project activities. Hence leakage is not required to be considered in accordance with AMS-I.C./Version 18. In addition, no auxiliary fuel will be used for the proposed project, the project emissions are regarded as zero. Therefore the monitoring of project emissions and leakage emissions are not required.

3.6.2 Parameters monitored ex-post

As stipulated in clause 48 (Table 1, no.1) of AMS-I.C./Version 18, if the emission reductions per system are less than 5 tCO₂e per year, the project proponent has to: (i) record annually the number of systems in operation and; (ii) estimate the annual hours of operation of an average system.

The validation team checked that the expected emission reductions per solar cooker would be less than 5 tCO₂e per year (i.e. $143,762 \text{ tCO}_2\text{e} / 49,000 \text{ sets} = 2.8 \text{ tCO}_2\text{e/set} < 5 \text{ tCO}_2\text{e/set}$), thus the validation team considers that the proposed project has correctly applied the monitoring requirements in the AMS-I.C./Version 18.

The project monitoring plan in the PDD has clearly described the monitoring procedures in accordance with the monitoring methodology and identifies the responsible parties. In the monitoring plan, BHED will be responsible for the overall monitoring management. In order to demonstrate that the monitoring steps will be performed in a fair and independent way, Zhangye Rural Energy Office, i.e. a government organization under the Zhejiang Agricultural Bureau, has agreed to provide assistance to execute the monitoring work in the future, in which this will be managed by the BHED /i, ii/. BHED shall, prior to the installation of the solar cookers, provide appropriate training on monitoring procedures to ensure the competency of the monitoring staff. The accuracy of the monitoring data shall be under the supervision of the CDM buyer, i.e. Clean Air Capital Ltd.

Validation of monitoring of number of systems operating

The number of systems operating will be recorded during each monitoring period (and at least annually as requested in the AMS-I.C. version 18) using survey method as per “General Guidelines for Sampling and Surveys for Small-Scale CDM Project Activities, EB50 Annex 30”. Since there is no specific guidance in the AMS-I.C./Version 18, the project proponent applies the 90/10 confidence and precision level has been adopted for determining the sampling size for estimating the number of systems operating. The calculation of sample size according to 90/10 of confidence/precision level has been verified by the validation team and it is considered appropriate for the project. A sample size of 79 will be picked from the 49,000 solar cookers. Simple Random Sample will be applied and 79 participating households will be randomly selected by the monitoring team.

The record will be carried out by the monitoring team of the Ganzhou District Rural Energy Station. A checklist has been prepared for data recording as indicated in the PDD. The details of the data collection procedures have been described in the monitoring plan, which was verified and confirmed by the validation team to be valid. Therefore, the monitoring requirements of AMS-I.C./Version 18 (i.e. Table 1 no. 1 (i) record annually the number of systems operation) can be fulfilled.

Validation of monitoring of annual hours of operation of an average system

As stipulated in clause 48 (Table 1, no. 1)(ii) of the monitoring methodology, a survey method can be used to estimate the annual hours of operation of an average system. The annual hours of operation can be estimated from the total output, and output per hour. The details of the data collection procedures have been described in the sampling plan of the monitoring plan. According to the “General Guidelines for Sampling and Surveys for Small-Scale CDM Project Activities, EB50 Annex 30”, since there is no specific guidance in the AMS-I.C./Version 18, the project proponent applies the 90/10 confidence and precision level has been adopted for determining the sampling size for estimating the annual hours of operation of an average system. The calculation of sample size according to 90/10 of confidence/precision level has been verified by the validation team and it was considered appropriate for the project. Another sample batch size of 79 will be picked from the 49,000 solar cookers for the monitoring of annual operation hours of solar cookers. Simple Random Sample will be also applied and 79 participating households will be randomly selected by the monitoring team.

According to the monitoring plan, each household is required to fill in the record daily and Ganzhou District Rural Energy Office will collect the record at least once a month. Subsequently, the records will be consolidated annually. The monitoring requirements of AMS-I.C./Version 18, i.e. (ii) estimate the annual hours of operation of an average system, can be fulfilled. Therefore, the monitoring plan is deemed suitable for collection of the required data. The validation team considers that the monitoring plan has complied with the requirements in the approved methodology.

Validation of Sampling Plan

The validation team checked the sampling plan presented in the PDD and confirmed that it is prepared in accordance with the paragraph 33 of the “General Guidelines for Sampling and

Surveys for Small-Scale CDM Project Activities, EB50 Annex 30". The validation results are tabulated as follows:

Parameters	Validation Opinion
Sampling Objective	It is defined that both total number of solar cooker operating and operation hours of solar cooker will be determined during the crediting period with a 90/10 confidence/precision, which fulfills the requirements in the mentioned Guideline.
Field Measurement Objectives and Data to be collected	It is defined that both total number of solar cooker operating and operation hours of solar cooker will be measured on-site by visual inspection and operational logs.
Target Population and Sampling Frame	49,000 is selected as the target population for sampling and this is also the maximum population for the project activity.
Sampling Method	The general situations in rural areas are similar to each other, thus is considered to be homogenous for the rural households. Therefore the simple random sampling is applied as per the mentioned Guideline. The sampling will be carried out with the aid of software "Microsoft Excel".
Desired Precision/Expected Variance and Sample Size	The sampling size of 79 is determined according to the 90/10 confidence/precision. Two individual sets of 79 nos. of samples will be selected during each crediting period. The validation team considers that this fulfills the requirements as stipulated in the mentioned Guideline.
Procedures for Administering Data Collection and Minimizing Non-Sampling Errors	Quality assurance and quality control procedures for recording, maintaining and data collection will be implemented. It is noted that in case of missing, damaged or abnormal data without valid reasons is identified, the data will be considered as zero value. The validation team considers that it is the most conservative approach to deal with the missing, damaged or abnormal data during quality control process. This instruction is clearly indicated in the project monitoring plan (Chinese version) /9/, and the project owner also stated that the monitoring plan will be covered comprehensively during the training of monitoring team.
Implementation	It is defined in the PDD that before each crediting period, the sampling will be implemented in order to collect the data for the 2 measured parameters listed in the sampling objective. The data collection will be carried out by the trained monitoring team, with the support from the local Rural Energy Station. Thus the validation team considers that the qualifications and experience can be ensured providing that the monitoring team will be well trained as per the training plan. In addition, the potential conflicts of interest can be also avoided since the monitoring will be carried out with the aid of government from Rural Energy Station.

In addition, the validation team has reviewed the sampling plan, and confirmed that it complies with the requirements of paragraph 34 of the “General Guidelines for Sampling and Surveys for Small-Scale CDM Project Activities, EB50 Annex 30”. Here are the validation evaluations of the sampling plan:

- The sampling plan presents a reasonable approach for obtained unbiased, reliable estimates of the variable by using simple random sampling;
- The data collection/measurement method is likely to provide reliable data as the data collection will be carried out by the monitoring team with the aid from local Rural Energy Station;
- The sampling frame is clearly defined as the 49,000 for each sampling, which is the maximum population for the project activity;
- The sampling approach is suitable as it is fully complied with the requirements of the mentioned Guideline;
- The proposed sampling size is adequate as it follows the 90/10 confidence/precision as the criteria for reliability of sampling efforts as per the mentioned Guideline;
- The procedures for data measurements are well defined with the necessary forms to be used during the data measurement; adequate quality assurance and quality control procedures for recording, maintaining and data collection are also provided to avoid any bias. For the events such as the maintenance, transfer, and replacement of the cooker, there will be records which include the date of the event, the names of the users involved in the event. The validation team considers that since the measurement was based on sampling, and the no. of operating units should be only measured at least once per year as per AMS-I.C. In addition, the sampling method also fulfills the general concept of statistics, and follows EB’s General Guidelines for Sampling and Surveys for Small-Scale CDM Project Activities;
- The persons conducting the sampling activities should be qualified as they will be trained to implement the monitoring plan as well as the sampling procedures.

According to clause 17 of “General Guidelines for SSC CDM methodologies” version 17, data elements that generally constant and indirectly related to the emission reductions should be measured, thus the solar irradiance rate and emission factor of coal will be monitored by the PP at least annually. As the solar irradiance rate cannot be measured by the PP, the PP can only collect the latest available complete set of irradiance data from local meteorological entity at the time for each monitoring report preparation in each crediting period. The validation team considers that this is the best available data obtained by the PP from authoritative entity, and is considered as reasonably applied in the monitoring plan. For the emission factor of coal, as per AMS-I.D. version 18 clause 13, IPCC default value can be used. The PP would monitor this by checking the latest IPCC default value for each crediting period. The validation team considers that the monitoring plan is therefore complied with the requirements in the AMS-I.D.

As indicated in Section B.6.2. of the PDD, the solar cookers’ thermal efficiency is determined according to the Chinese National Standard (GB NY/T219-2003), in which 65% is used for

the standard value of solar cookers' thermal efficiency. The project developer also confirmed that the solar cooker manufacturers have to provide certificates in order to ensure the solar cookers' thermal efficiency.

The validation team also checked the product report for one of the potential solar cooker manufacturer /17/. The product test was carried out by Qinghao Provincial Product Quality Inspection Institute. The thermal efficiencies of 23 samples of solar cooker were measured according to the Testing Methodology for Focusing Solar Cooker. The measured thermal efficiencies were ranged from 65.2% to 68.9%, in which all are above the required standard of 65%. Thus the validation team considers that the project developer should be able to identify the solar cooker manufacturers with the capability for producing solar cooker according to the Chinese National Standard.

The validation team reviewed the product specifications and the operation manuals from 5 local solar cooker manufacturers (the PP stated that these could be the potential solar cooker supplier for the project activity), in which all manufacturers indicate that the lifetime of the solar cooker can be maintained for at least 10 years /32-36/. Their solar cooker products are all manufactured according to the Chinese National Standard of NY/T219-2003.

The validation team also checked the "Solar Cooker User Training Plan" /7/, in which it covers the operational and maintenance procedure of the solar cooker. It requires only regular cleaning in order to ensure that the reflective surface of the solar cooker is clean for solar capture. The validation team also considers that this is easily understandable for the end-users to follow. In addition, the PP will provide technical support from the Rural Energy Station, in case there are any operational problems encountered by the solar cooker users. The validation team considers that the thermal efficiency of the solar cookers can be maintained if the solar cookers can be operated according to the "Solar Cooker User Training Plan".

Regarding the solar cooker thermal efficiency, according to the UNFCCC's clarification document "F-CDM-SSCwg ver 01 SSC_536" dated 24 June 2011 /48/, *"the SSC WG agreed to clarify that use of literature value (e.g. value from a national standard) is in principle acceptable to determine the efficiency of project equipment."* Thus the PP applies the literature values (Chinese national standard) for the thermal efficiency of solar cookers. The validation team considers that this is applicable and traceable as per UNFCCC's clarification.

It is stated by the project developer that once the project is started, they shall proceed to tendering process and place purchase orders to the solar cooker manufacturers. The equipment stock from the manufacturers will be distributed to the end users, and thus the usage time can be recorded once the first batch of cookers is being used by the users. At the initial stage of the project, it might not be able to distribute all the solar cookers to users for full-scale operation. According to the estimation from the project developer, it might take about one to two months to manufacture and distribute all the 49,000 cookers to the end users, and it will greatly depend on the production progress of the manufacturers. The emission reductions shall be based on the actual number of solar cooker used. The usage record of solar cookers will be monitored by the project owner according to the monitoring plan described above.

In summary, the collected monitoring data, including (i) number of solar cookers in the proposed project, and (ii) the monthly operating time of each solar cooker, will be recorded and counter-verified against the sales contract and the sampling survey record. The overall monitoring procedure is clearly described in the monitoring plan, and has been verified by the validation team.

3.6.3 Management system and quality assurance

According to the PDD, the project's monitoring plan outlines the followings:-

- Monitoring Organization: establishment of management structure to carry out monitoring work;
- Data Monitored: including the number and operating time of solar cookers;
- Monitoring Method: the form and methodology for recording the above mentioned parameters by sampling;
- Data Collection: monitoring records will be kept and stored for validation and verification for a period of 2 years from the end of the crediting period;
- Maintenance: maintenance schedule and frequency for the solar cookers /7/;
- QA/QC Procedures:

Steps undertaken to assess the monitoring plan

The management team for monitoring of the project is identified in the PDD. As reported by the project developer, the training programme shall be provided to the management team and operation team in around the period of submission for request for registration in order to ensure that the relevant staffs are suitable and competent for carrying out the work. According to the monitoring plan, the training programme for project monitoring to the BHED management team and Ganzhou District Rural Energy Office should be started in around one month before the operation. The QA/QC procedures are also described in the PDD, including the procedures when errors are recorded. Detailed monitoring procedures have been developed and the implementation of these will enable subsequent verification of the project's emission reductions.

According to document review in PDD, on-site interview with representatives from the project developer /vi/ and the government officials /i-iii/, the monitoring arrangements described in the monitoring plan is assessed; it is reasonably believed that the monitoring plan can be feasible within the project operation stage. The validation team considered that project participant is capable to implement the monitoring plan provided that sufficient training can be arranged to the monitoring team, and with the assistance of CDM buyer and the Ganzhou District Rural Energy Office.

3.7 Sustainable Development

The project is considered to be contributing to sustainable development in the host country, P. R. China, by utilizing the renewable solar energy for heat generation, and eliminating the

environmental pollution caused by operation of coal-fired cooking units. In addition to CO₂ emission reductions, the project would mitigate emissions of other pollutants, such as SO₂, NO_x and particulates associated with heat generation from burning coal. Several more benefits would be expected by the implementation of the project activity, which includes providing rural residents with a clean and practical method for their daily cooking; and improving indoor air quality and therefore the health of rural residents through reducing coal burning. During the OSV, the validation team observed that all the cooking stoves in the region are placed inside the house without proper ventilation. Besides the hygiene problems caused by the dark smoke created during coal burning, the possible accumulation of carbon monoxide created by incomplete combustion could also be another health issue caused by coal burning. In addition, the reduction in coal consumption by using the solar cooker shall alleviate the financial burden of the poor households.

The representative from the project owner /vi/ indicated that job opportunities will be created to the local residents during the monitoring of the project activity. As confirmed by the local government officials from the Zhangye Agricultural Bureau /i/ during the on-site interview, the sustainable development of the social, environmental and economic aspects can be achieved by the implementation of the proposed project.

Moreover, the LoA from the DNA of P.R. China /47/ also confirms the contribution of the project towards sustainable development in the host country.

3.8 Environmental Impacts

During the OSV, the representatives from the local Agricultural Bureau and Rural Energy Office /i, ii/ consider that the project activity utilize renewable energy to generate heat energy for households' daily cooking and water heating usage, it is a clean energy project and would not cause any adverse impacts to the local environment, and no pollution will be induced from the project implementation. The local Agricultural Bureau has been notified for the project development, and claimed that since the project activity does not involve in construction activities, there is no special requirement for the project to conduct any analysis of environmental impacts for solar cooker projects, as solar cooker project is not in the list of monitoring projects from the local environmental protection regulations. In addition, the PP has notified the Zhangye Environmental Protection Bureau (EPB) for the project implementation, and the Zhangye EPB also issued a letter to the PP for the encouragement of the project activity /49/.

No significant environmental impacts were expected to be identified during the OSV and this was confirmed by representatives from the local villagers /vii-xii/. The officials from local Agricultural Bureau and Rural Energy Office also stated that they did not receive any environmental complaints on the project activity. No special environmental mitigation measures will be required by the proposed project.

3.9 Local Stakeholder Consultation

According to the PDD, a stakeholder survey was carried out by the project developer during April 2010 which was prior to the publication of the PDD on the UNFCCC website.

It is reported that totally 100 copies of survey forms were issued to the local rural residents with all pieces of reply received. The stakeholders' comments from the questionnaires are summarized and recorded in the Section E of the PDD. Totally 100 nos. of the returned questionnaires were checked by the validation team, and confirmed to be valid /13/. The surveyed stakeholders included representatives from different gender, age groups and education background. From the background of the stakeholders, it is reasonably believed that the survey have reflected the general attitudes towards the project from the local villagers who are possibly affected by the project. According to the returned questionnaires, all the participants expressed support to the project activity and considered that no negative impacts would be caused by the project.

During the on-site visit, the representatives from the local villages (Jiazidun Village and Sunjiazha Village /vii-xii/) were interviewed. In general, the interviewees showed adequate understanding of the nature of the proposed project through the introduction by the project developer and local Rural Energy Stations. Most of the interviewees are engaged in agricultural works. They considered that the project would benefit the improvement in local social, economic and environmental development. During the OSV, the representatives from the local Agricultural Bureau and Rural Energy Office /i, ii/ stated that the solar cookers are not easily available in the local retail market. The local villagers also indicated that they would not keen on purchasing solar cooker by sourcing from other markets outside their living region. However, they are willing to and even hope to pay for RMB30-40 for one solar cooker as stipulated in the project agreement template document for the rural residents /11/. The interviewees' overall response was supportive to the project activity.

The representatives from local Agricultural Bureau and Rural Energy Office also stated that they did not receive any complaint from the residents about the project activity.

3.10 Comments by Parties, Stakeholders and NGOs

The PDD version 1 dated 8th August 2010 was made publicly available on UNFCCC CDM's website:

(<http://cdm.unfccc.int/Projects/Validation/DB/LZ62M19M710GAD3UA3P1CULY01FVAH/view.html>) and parties, stakeholders and NGOs were invited to provide comments during a 30 days period from 19th August 2010 to 17th September 2010.

No public comments have been received during that period.

Appendix A

CDM VALIDATION PROTOCOL

PROJECT TITLE: HEQING SOLAR COOKER PROJECT I

PROJECT LOCATION: P. R. CHINA

REPORT No. 01 997 9105061231

Table 1: Validation requirements

(based on § 37 of the CDM Modalities and Procedures and on CDM Validation and Verification Manual)

Checklist question	Ref.	MoV ⁹	Findings, comments, references, data sources	Draft conclusion	Final conclusion
1. Approval					
1.1 Have Letters of Approval have been provided from all involved Parties? If yes, indicate: – when and by which Party the LoA has been issued, with a clear reference to the LoA itself and any supporting documentation; – whether the LoA was provided to the DOE by the project participants or directly by the DNA; – the means of validation employed to assess the authenticity of the document; and – by a clear statement, that the DOE considers the LoA to be valid. –	/2/	DR	The Letters of Approval (LoA) issued by the DNA of China and Netherlands are validated. CAR01 Please provide the relevant LoA from the DNA of P.R. China and Annex I party for validation.	CAR01	OK (Refer to Table 2)
1.2 Are all Parties, who issued the LoA, Parties to the Kyoto Protocol <u>and</u> is this stated in the LoA?	/2/	DR	Yes. P. R. China is the unique party to issue the LoA. P.R. China ratified the Kyoto Protocol on 30 th August 2002. The LoA issued by the DNA of the P.R. China is checked by the validation team.	OK	OK
1.3 Is every LoA from the Parties involved issued by an organisation listed as Designated National Authority (DNA) on the UNFCCC web	/2/	DR	Yes. National Development and Reform Commission of the P.R. China (NDRC) is listed as the DNA of the	OK	OK

⁹ MoV = Means of Verification, DR= Document Review, I= Interview, www = internet search.

Table 1: Validation requirements

(based on § 37 of the CDM Modalities and Procedures and on CDM Validation and Verification Manual)

Checklist question	Ref.	MoV ⁹	Findings, comments, references, data sources	Draft conclusion	Final conclusion
site? <i>Indicate the official name of the DNA and contact person name.</i>			P.R. China on the UNFCCC web site. Contact Person: Mr. Wang Shu Project Officer of the Department of Climate Change, NDRC The Ministry of Housing, Spatial Planning and the Environment is listed as DNA of Netherlands on the UNFCCC web site. Contact Person: Mrs. Marisa Gerards Director for International Affairs http://cdm.unfccc.int/DNA/index.html		
1.4 Is the participation in the CDM project activity voluntary <u>and</u> is this stated in all LoAs? <i>Indicate the source of proof.</i>	/2/	DR	Yes. As stated in the LoAs of China and Netherlands respectively, Beijing Harmonious Energy Development Co., Ltd. and Clean Air Capital Ltd participate in the CDM activity voluntarily.	OK	OK
1.5 Is the LoA unconditional with respect to 1.2 to 1.4?	/2/	DR	Yes. The LoAs for Beijing Harmonious Energy Development Co., Ltd. and Clean Air Capital Ltd are unconditional with respect to 1.2 to 1.4.	OK	OK
1.6 Is the title of the CDM project activity as given in the PDD identical with the title given in all LoAs and Modalities of Communication?	/2/	DR	Yes. The title of project in PDD is identical with LoAs and MoC.	OK	OK

Table 1: Validation requirements

(based on § 37 of the CDM Modalities and Procedures and on CDM Validation and Verification Manual)

Checklist question	Ref.	MoV ⁹	Findings, comments, references, data sources	Draft conclusion	Final conclusion
<i>Provide Yes/No answer, and include details into Tables 2, 3 and 4 accordingly.</i>					
1.7 If any of provided LoAs contains additional specification of the CDM project activity (PDD version number, validation report version number, amount of ER, etc.) are those specifications valid and consistent with other documents?	/2/	DR	No. The LoAs do not contain additional specification for the project activity.	OK	OK
1.8 Does the project activity involve any public funding from Annex I Parties? <u>If yes</u> , has Annex I Party provided a written confirmation that the use of such funding does not lead to the diversion of the official development assistance.	/2/	DR	According to Annex 2 of the PDD, the project does not receive any public funding. CL01 Please substantiate whether the BHED involves with any foreign investment capital, and clarify with supporting information for the financial arrangement of sources of capital of the project activity.	CL01	OK (Refer to Table 2)
2. Participation (VVM E.2)					
2.1 Are the Parties and project participants (PP) listed in the section A.3 of the PDD correctly <u>and</u> is this information consistent with the contact details provided in Annex 1 of the PDD?	/1/	DR	Yes. The project participants are correctly listed in the section A.3. of the PDD and they are consistent with the contact details provided in Annex 1 of the PDD.	OK	OK
2.2 Has every Party involved approved the participation of each corresponding PP, either	/2/	DR	Yes. The LoAs from China and Netherlands for approving the	OK	OK

Table 1: Validation requirements

(based on § 37 of the CDM Modalities and Procedures and on CDM Validation and Verification Manual)

Checklist question	Ref.	MoV ⁹	Findings, comments, references, data sources	Draft conclusion	Final conclusion
by means of a LoA or by a separate written document? <i>Indicate Yes / No answer and describe all inconsistencies in the Tables 2, 3 and 4 accordingly.</i>			participation of both PPs were issued respectively.		
3. Project Design Document (VVM E.3)					
3.1 Is the PDD presented for validation based on the latest template available at the UNFCCC website? <i>Indicate Yes / No answer and describe all inconsistencies in the Tables 2, 3 and 4 accordingly.</i>	/1/, /3/	DR	Yes. The Project Design Document (Version 9 dated 3 rd August 2011) is based on the latest template available at the UNFCCC website in accordance with the applicable guidance document /3/.	OK	OK
3.2 Has the PDD been established in accordance with the CDM requirements for completing PDDs issued by the CDM EB?	/1/, /3/	DR	Yes. The Project Design Document (Version 9 dated 3rd August 2011) has been established in accordance with CDM requirements. CAR02 Please update all the relevant methodology, tools and guidance applied in the project to the updated valid versions at the time of PDD finalization. CAR03 Please update all the relevant	CAR02 CAR03	OK (Refer to Table 2)

Table 1: Validation requirements

(based on § 37 of the CDM Modalities and Procedures and on CDM Validation and Verification Manual)

Checklist question	Ref.	MoV ⁹	Findings, comments, references, data sources	Draft conclusion	Final conclusion
			information of the PDD due to the project implementation progress, such as parameters related to emission reductions, project starting date and crediting period etc.		
4. Project Description (VVM E.4)					
4.1a) Does the PDD contain a description, which provides the reader with a clear understanding of the precise nature of the project activity and the technical aspects of its implementation? 4.1b) Is the description (incl. any process flow-charts, Spreadsheets etc.) complete, coherent and consistent with the provisions of the monitoring plan?	/1/, /6/, /7/, /8/, /9/, /12/, /13/	DR	A description is contained in the PDD, in which a clear understanding of the precise nature of the project activity and the technical aspects of its implementation is provided. The description is considered as complete, coherent and consistent with the provisions of the monitoring plan. <u>CL02</u> Please provide more detailed information for the range of the project location for transparent presentation. <u>CL03</u> Please provide the supporting information for the general conditions in Ganzhou District, such as population, average income and solar irradiance etc.	CL02 CL03 CL04 CL05 CL06	OK (Refer to Table 2)

Table 1: Validation requirements

(based on § 37 of the CDM Modalities and Procedures and on CDM Validation and Verification Manual)

Checklist question	Ref.	MoV ⁹	Findings, comments, references, data sources	Draft conclusion	Final conclusion
			CL04 Please provide the relevant documents for CER purchase to the validation team for validation. CL05 Please provide supporting information for whether relevant government officials have been notified for the project design. CL06 Please provide supporting information about the arrangement of CDM training to the end users and the project monitoring team.		
4.2 In the case of greenfield project activity, is the project design described sufficiently by means of specifications, drawings and manuals? <i>Provide Yes/No answer and indicate the documents which have been reviewed in relation to the issue.</i>	/1/, /6/, /7/, /8/, /9/	DR, I	Yes. The project activity is a greenfield project. The project design is sufficiently described from the technical specifications, drawings and manuals of solar cookers. In addition, the validation checked the equipment design and specification in the template purchase document for the solar cooker manufacturer prepared by the project developer.	OK	OK
4.3 Does the project activity reflects current good	/1/, /6/, /7/	DR, I	Yes. The solar cooker technology used	OK	OK

Table 1: Validation requirements

(based on § 37 of the CDM Modalities and Procedures and on CDM Validation and Verification Manual)

Checklist question	Ref.	MoV ⁹	Findings, comments, references, data sources	Draft conclusion	Final conclusion
practices, uses state of the art technology or would the technology result in a significantly better performance, than any commonly used technologies in the host country? <i>Provide the description of how validation has been carried out and what comparisons have been made.</i>	/8/, /9/		for the project reflects current good practices where on one hand renewable solar energy would be utilized for heat generation, and on the other hand the environmental pollution caused by coal burning could be reduced.		
4.4 In cases where the project activity involves the alteration of an existing installation or process, does the PDD provide a clear description of the differences between the project and the pre-project scenario? <i>Please, provide Yes/Now answer and update Tables 2, 3 and 4 accordingly, if there is anything unclear in the provided description.</i>	/1/, /2/, /3/	DR, I	N/A. According to validation team's physical inspection and on site interview with project participant, the project activity does not involve the alternation of existing installation or process.	OK	OK
5. Baseline and Monitoring methodology					
5.1 General requirements					
5.1.1 Is the methodology used in the project activity approved by the CDM EB <u>and</u> is the selected version still valid?	/1/, /2/, /3/	DR	Yes. The methodology used in the project activity is approved by the CDM EB and the selected version is still valid.	OK	OK
5.2 Applicability of the selected methodology					
5.2.1 Does the project activity qualify under the criteria for small-scale CDM project activities set out in § 6 (c) of decision 17/CP.7 and Annex II of the Modalities and Procedures for	/1/, /2/, /3/	DR, I	Yes. The project activity qualifies under the criteria for small-scale CDM project activities set out in § 6 (c) of decision 17/CP.7 and Annex II of the Modalities	OK	OK

Table 1: Validation requirements

(based on § 37 of the CDM Modalities and Procedures and on CDM Validation and Verification Manual)

Checklist question	Ref.	MoV ⁹	Findings, comments, references, data sources	Draft conclusion	Final conclusion
the CDM? <i>Please provide Yes/No response and description of how this was validated.</i> <i>In case of calculated emission reductions varying over time, SSC-applicability limits must be met for every single year in any of the max. 3 subsequent crediting periods.</i>			and Procedures for the CDM with application of AMS-I.C. Version 18: • The project activity applies renewable energy technology (solar cookers) that supply individual households or users with thermal energy that displaces coal used for cooking and water-boiling; • The total installed capacity of the project activity is 44.59MW thermal, which does not exceed the threshold of 45MW thermal as stated in the small-scale methodology; • The project activity only utilizes renewable solar energy without any fossil fuels. Thus it does not involve in any biomass system, co-fired system; • The heat produced by the project activity is captured and used within the solar cookers. It does not involve in delivery to another facilities within the boundary; • The project activity will be a new project using new solar cookers, and it does not seek to retrofit or modify any existing facility for renewable energy generation.		

Table 1: Validation requirements

(based on § 37 of the CDM Modalities and Procedures and on CDM Validation and Verification Manual)

Checklist question	Ref.	MoV ⁹	Findings, comments, references, data sources	Draft conclusion	Final conclusion
5.2.1.1 If yes, does the PDD extensively demonstrates and confirms that the small-scale project activity is not a debundled component of a larger project? <i>Please indicate Yes/No answer. In case of positive conclusion provide details of the validation measures taken and data found during the procedure. Otherwise amend the Tables 2, 3 and 4 accordingly.</i>	/1/, /2/, /3/	DR, I	Yes. The same host project participant, BHED has got another solar cooker project in Gansu Province only, namely “Heqing Solar Cooker Project II” which is currently under validation. Together with the proposed project activity, these two projects are in the same project category, applied with same technology, and located in the Gansu Province. The proposed project activity will be implemented in Ganzhou District of Zhangye City, which is adjacent to the Linze County, where is the project county for “Heqing Solar Cooker Project II”. According to the physical observation during the on-site visit, the validation team visited one of the border points along the boundary between two projects under validation, and realized that the two projects were separated by a river and a large area of muddy land. There are no rural populations within 1 km along the boundary of the two projects. CL07 Please provide supporting information about the boundary of the project activity, and clarify that whether the	CL07	OK (Refer to Table 2)

Table 1: Validation requirements

(based on § 37 of the CDM Modalities and Procedures and on CDM Validation and Verification Manual)

Checklist question	Ref.	MoV ⁹	Findings, comments, references, data sources	Draft conclusion	Final conclusion
			project activity will be implemented within 1 km of the project boundary of another project under validation.		
5.2.2 Are all applicability conditions of the selected baseline and monitoring methodology and all tools involved satisfied by the project activity? <i>Please indicate Yes/No answer. In case of positive conclusion provide details of the validation measures. Otherwise amend the Tables 2, 3 and 4 accordingly.</i>	/1/, /2/, /3/, /4/, /5/	DR	Yes. All applicability conditions of the selected baseline and monitoring methodology and all tools involved are satisfied by the project activity as the project activity fulfils all the requirements in AMS-I.C. Version 18.	OK	OK
5.2.3 Is the selection of the applied baseline and monitoring methodology justified?	/1/, /2/, /3/, /4/	DR	Yes. The selection of the applied baseline and monitoring methodology is justified As per AMS-I.C./Version 18.	OK	OK
5.2.4 Is the selected methodology correctly quoted in all related documents?	/1/, /2/, /3/, /4/	DR	Yes. The selected methodology is correctly quoted in the PDD.	OK	OK
5.2.5 Does the PDD sufficiently describe all the GHG emission sources or sinks occurring as a result of project activity, which have not been accounted for under the selected methodology and are expected to contribute more than 1% of the overall expected average annual emission reductions? <i>Provide Yes/No answer. Indicate the sources or sinks of GHG, which were proved to be negligible. Otherwise amend the Tables 2, 3 and 4 accordingly.</i>	/1/, /2/, /3/, /4/, /5/	DR	Yes. The GHG emissions occurring within the proposed CDM project activity boundary as a result of the implementation of the proposed CDM project activity is negligible, and assumed to be zero in project emissions and leakage. As stated from the project participant, no auxiliary fuel will be used during the whole project period. Apart from this, the validation team considers that there are no other major sources of emission reductions. Therefore the validation team	OK	OK

Table 1: Validation requirements

(based on § 37 of the CDM Modalities and Procedures and on CDM Validation and Verification Manual)

Checklist question	Ref.	MoV ⁹	Findings, comments, references, data sources	Draft conclusion	Final conclusion
			considers that the greenhouse gas emissions occurring within the proposed CDM project activity boundary as a result of the implementation of the proposed CDM project activity which are not addressed by the applied methodology, is deemed to contribute less than 1% of the overall expected average annual emission reductions.		
5.3 Project boundary					
5.3.1 Does the PDD correctly describe the project boundary? <i>Provide Yes/No answer. And amend the Tables 2, 3 and 4, if needed.</i>	/1/, /2/, /3/, /4/	DR	Yes. As per AMS-I.C./Version 18, the project boundary is clearly defined as the physical, geographical site of the project equipment producing the renewable solar energy, i.e. Ganzhou District of Zhangye City since the project neither generates electricity on grid nor transports the thermal power to other regions.	OK	OK
5.3.2 Does the PDD correctly indicate and describe the emission sources and sinks of GHG gases that are included in the project boundary?	/1/, /2/, /3/, /4/	DR	Yes. The PDD correctly indicate and describe the emission sources and sinks of GHG gases, in which it mainly comes from coal burning in the project boundary.	OK	OK
5.3.3 In cases where the methodology allows project participants to choose whether a source or gas is to be included in the project	/1/, /2/, /3/, /4/	DR	Idem.	OK	OK

Table 1: Validation requirements

(based on § 37 of the CDM Modalities and Procedures and on CDM Validation and Verification Manual)

Checklist question	Ref.	MoV ⁹	Findings, comments, references, data sources	Draft conclusion	Final conclusion
boundary, is the choice explained and justified by PPs?					
5.4 Baseline identification					
5.4.1 Has the procedure contained in the selected methodology to identify the most reasonable baseline scenario been applied correctly and documented in the PDD?	/1/, /2/, /3/, /4/, /27/	DR	Yes. As per AMS-I.C./Version 18, the baseline is applied correctly and documented in the PDD. Please refer to Section 3.4.3 for details.	OK	OK
5.4.1.1 Is the identified baseline scenario plausible?	/1/, /2/, /3/, /4/, /27/	DR	Yes. As per AMS-I.C./Version 18, the identified baseline is plausible. Please refer to Section 3.4.3 for details.	OK	OK
5.4.1.2 Are all assumptions stated in a transparent and conservative manner?	/1/, /2/, /3/, /4/, /27/	DR	Yes. As per AMS-I.C./Version 18, all assumptions stated are in a transparent and conservative manner. Please refer to Section 3.4.3 for details.	OK	OK
5.4.2 Does the selected methodology require the use of tools <u>and</u> does PDD reflects that correctly?	/1/, /2/, /3/, /4/, /27/	DR	N/A. The selected methodology does not require the use of tool, but the PDD correctly reflect the additionality of the project by applying the information on additionality (attachment A to appendix B).	OK	OK
5.4.2.1 Were all the tools applied correctly?	/1/, /2/, /3/, /4/, /27/	DR	Idem	OK	OK
5.4.3 In case the methodology requires several alternative scenarios to be considered in the	/1/, /2/, /3/, /4/, /27/	DR	The methodology does not require alternatives scenarios to be considered	OK	OK

Table 1: Validation requirements

(based on § 37 of the CDM Modalities and Procedures and on CDM Validation and Verification Manual)

Checklist question	Ref.	MoV ⁹	Findings, comments, references, data sources	Draft conclusion	Final conclusion
identification of the most reasonable baseline scenario, have all scenarios been considered <u>and</u> have no reasonable alternative scenario been excluded?			in the identification of the most reasonable baseline scenarios.		
5.4.3.1 Has the choice of the baseline scenario been done using conservative assumptions?	/1/, /2/, /3/, /4/, /27/	DR	Yes. As per AMS-I.C./Version 18, the baseline is prescribed. Please refer to Section 3.4.3 for details.	OK	OK
5.4.4 Is the identified baseline scenario reasonable according to the assumptions, calculations and rationales used in the PDD and other reference sources?	/1/, /2/, /3/, /4/, /27/	DR	Yes. As per AMS-I.C./Version 18, the baseline is prescribed and identified reasonably according to the assumptions, calculations and rationales in reference sources. Please refer to Section 3.4.3 for details.	OK	OK
5.4.6 Does the PDD describe how the national and sectoral policies relevant to the baseline scenario have been identified and considered in the PDD?	/1/, /2/, /3/, /4/, /27/	DR	Yes. As per AMS-I.C./Version 18, the baseline is prescribed and identified as the fuel consumption of the technologies that would have been used in the absence of the project activity multiplied by an emission coefficient for the fossil fuel displaced. No national and sectoral policies are required to be identified.	OK	OK
5.4.7 Does the PDD provide a verifiable description of the identified baseline scenario, including a description of the technology that would be employed and/or the activities that would take place in the absence of the project activity?	/1/, /2/, /3/, /4/, /27/	DR	Yes. As per AMS-I.C./Version 18, the PDD provides a verifiable description of the identified baseline scenario. Please refer to Section 3.4.3 for details.	OK	OK

5.5 Algorithm and/or formulae used to determine emission reductions

Table 1: Validation requirements

(based on § 37 of the CDM Modalities and Procedures and on CDM Validation and Verification Manual)

Checklist question	Ref.	MoV ⁹	Findings, comments, references, data sources	Draft conclusion	Final conclusion
5.5.1a) Are all calculations applied and documented according to the selected methodology and in a complete and transparent manner? 5.5.1b) Are correct units applied and consistency between parameter dimensions and parameter value ensured? See also Question 4.1.b) with respect to consistency of parameter values between calculation spreadsheets and PDD.	/1/, /3/, /4/, /10/, /17/, /26/, /28/	DR	Yes. The calculations applied and documented are in accordance with the selected methodology and in a complete and transparent manner. CL08 Please follow the annotations in the equations of the AMS-I.C as applied in the PDD. CL09 Please clarify how the thermal efficiency tests are conducted following the guidance provided in relevant national/international standards. CL10 Please provide supporting information for how the solar cookers' thermal efficiency can be maintained throughout 10 years of operational lifetime.	CL08 CL09 CL10	OK (Refer to Table 2)
5.5.2 In case the methodology allows a selection between different options for equations or parameters, has adequate justification been given and have the correct equations and parameters been used, in accordance with the methodology selected?	/1/, /3/, /4/, /10/, /17/, /26/, /28/	DR	Yes. Idem.	OK	OK

Table 1: Validation requirements

(based on § 37 of the CDM Modalities and Procedures and on CDM Validation and Verification Manual)

Checklist question	Ref.	MoV ⁹	Findings, comments, references, data sources	Draft conclusion	Final conclusion
5.5.3 In case some data and parameters will not be monitored throughout the crediting period, but have already been determined and fixed, are all data sources, assumptions and calculations correct, applicable to the proposed CDM project activity and conservative?	/1/, /3/, /4/, /10/, /17/, /26/, /28/	DR	Yes. Idem.	OK	OK
5.5.4 In case data and parameters will be monitored on implementation and hence become available only after validation of the project activity, are the estimates provided in the PDD for these data and parameters reasonable?	/1/, /3/, /4/, /10/, /17/, /26/, /28/	DR	Yes. Idem.	OK	OK
5.5.5 Have the major risks and uncertainties, which can influence the emission reduction estimates, been identified and addressed in the PDD?	/1/, /3/, /4/, /10/, /17/, /26/, /28/	DR	Yes. Idem.	OK	OK
5.6 Leakage					
5.6.1 Has the leakage been identified and calculated according to the approved methodology?	/1/, /2/, /3/, /4/	DR, I	Yes. It is noted during OSV that no auxiliary fuel will be used for the project activity. As per AMS-I.C./Version 18, leakage is identified as not required to be considered and is assumed as zero.	OK	OK
5.6.2 Have the leakage been addressed in complete, conservative and substantiated manner?	/1/, /2/, /3/, /4/	DR, I	Yes. Idem.	OK	OK
5.6.3 Are uncertainties in the leakage emission estimates properly addressed?	/1/, /2/, /3/, /4/	DR, I	Yes. Idem.	OK	OK

Table 1: Validation requirements

(based on § 37 of the CDM Modalities and Procedures and on CDM Validation and Verification Manual)

Checklist question	Ref.	MoV ⁹	Findings, comments, references, data sources	Draft conclusion	Final conclusion
6. Methodology-related issues for afforestation or reforestation CDM project activities					
Add specific A/R requirements – if applicable!	N/A	N/A	Not applicable for this CDM project activity	OK	OK
7. Additionality					
7.1 Prior consideration of the CDM (VVM E.6.III.a)					
7.1.1 Is there documented evidence provided by the project participants on how and when the decision to proceed with the project activity was taken?	/1/, /2/, /22/, /23/, /37/	DR, I	Yes. The validation team has checked the shareholder meeting minutes provided by the PP on how and when the decision of CDM development to proceed with the project activity. Please refer to Section 3.5.1 for details.	OK	OK
7.1.2 Is the starting date of the project activity, reported in the PDD, in accordance with the “Glossary of CDM terms” <u>and</u> CDM VVM (§97)? Note: Confirm the starting date indicated in C.1. is consistent within the PDD, in particular with respect to the project implementation history.	/1/, /2/, /3/, /22/, /23/, /37/	DR, I	Yes. The PP has reported a start date for the project activity as “planned tender bidding process start date” in the PDD. During the OSV, the project owner informed that the project will only be started after the proposed project is registered as a CDM project. The validation team agrees with the project implementation status for the selection of the starting date, and confirms that no implementation or real actions of the proposed project (such as purchase of solar cookers) have been carried out at this moment. It is confirmed that the starting date in Section C.1. is consistent within the	OK	OK

Table 1: Validation requirements

(based on § 37 of the CDM Modalities and Procedures and on CDM Validation and Verification Manual)

Checklist question	Ref.	MoV ⁹	Findings, comments, references, data sources	Draft conclusion	Final conclusion
			PDD with respect to the future project implementation schedule.		
7.1.3 Is the date stated in the provided evidence consistent with other available evidence (e.g. dates of construction, purchase orders for equipment)?	/1/, /2/, /3/, /22/, /23/, /37/	DR, I	Idem.	OK	OK
7.1.4 If the project was not published and the starting date is on or after 2 nd August 2008, was it possible to receive from UNFCCC secretariat and DNA a written confirmation that PPs previously informed the above entities on commencement of the project activity and of their intention to seek CDM status?	/1/, /2/, /3/	DR	N/A. The project was published in August 2010, and the project activity would be tentatively started when a complete request for registration has been submitted.	OK	OK
7.1.5 For the project activities with a starting date before 2 nd August 2008 and before the actual publication, was there enough evidence presented to prove that PPs were previously aware of CDM?	/1/, /2/, /3/, /22/, /23/, /37/	DR, I	N/A. The project was published in August 2010, and the project activity would be tentatively started when a complete request for registration has been submitted.	OK	OK
7.1.6 For the project activities with a starting date before 2 nd August 2008 and before the actual publication, was there enough evidence presented to prove that CDM benefits have been a decisive factor in the decision to proceed with the project activity?	/1/, /2/, /3/, /22/, /23/, /37/	DR, I	N/A. The project was published in August 2010, and the project activity would be tentatively started when a complete request for registration has been submitted.	OK	OK
7.1.7 Does the individual or body that took the decision to proceed with the project activity	/1/, /2/, /3/	DR, I	Yes. During the on-site interview, the representative from local Agricultural	OK	OK

Table 1: Validation requirements

(based on § 37 of the CDM Modalities and Procedures and on CDM Validation and Verification Manual)

Checklist question	Ref.	MoV ⁹	Findings, comments, references, data sources	Draft conclusion	Final conclusion
have/had the authority to do so?			Bureau stated that the project owner had authority to proceed with the project activity, and there is no need for any approval document for the project activity.		
7.1.8 For the project activities with a starting date before 2 nd August 2008 and before the actual publication, was there enough evidence presented to prove that PPs were taking continuing and real actions to secure CDM status for the project in parallel with its implementation?	/1/, /2/, /3/, /22/, /23/, /37/	DR, I	N/A. The project was published in August 2010, and the project activity would be tentatively started when a complete request for registration has been submitted.	OK	OK
7.1.9 In case there is a significant gap between the start date of the project activity and the commencement of validation, how was it possible for the project participant to commit funds to the project in advance of receiving a positive validation opinion?	/1/, /2/, /3/, /22/	DR, I	N/A. The upfront investment will be only raised by the PP. The project activity would be tentatively started when a complete request for registration has been submitted, in order to overcome the financial barrier with CDM revenue. CL01 Please substantiate whether the BHED involves with any foreign investment capital, and clarify with supporting information for the financial arrangement of sources of capital of the project activity.	CL01	OK (Refer to Table 2)

7.2 Identification of alternatives

Table 1: Validation requirements

(based on § 37 of the CDM Modalities and Procedures and on CDM Validation and Verification Manual)

Checklist question	Ref.	MoV ⁹	Findings, comments, references, data sources	Draft conclusion	Final conclusion
7.2.1 Does the PDD identify and list credible alternatives to the CDM project activity in order to determine the most realistic baseline scenario, unless selected approved methodology prescribes/identifies the baseline scenario and no further analysis is required?	/1/, /2/, /3/, /4/, /5/	DR	The PP correctly applies the approved methodology which prescribes the baseline scenario and no further analysis of alternatives is required.	OK	OK
7.2.2 Does the list of alternatives include as one of the options that the project activity is undertaken without being registered as a CDM project activity?	/1/, /2/, /3/, /4/, /5/	DR	The PP correctly applies the approved methodology which prescribes the baseline scenario and no further analysis of alternatives is required.	OK	OK
7.2.3 Does the list contain all realistic/credible alternatives that the DOE, on the basis of its local and sectoral knowledge, considers to be viable means of supplying the outputs or services that are to be supplied by the project activity? <i>Note: All alternatives listed in the selected methodology should be included, as well as those not covered by the methodology.</i>	/1/, /2/, /3/, /4/, /5/	DR	The PP correctly applies the approved methodology which prescribes the baseline scenario and no further analysis of alternatives is required.	OK	OK
7.2.4 Is the exclusion of the alternatives for legal reasons justified? <i>Note: Some alternatives might be illegal, according to the local regulations, but still widely practiced due to lack of enforcement. It should be verified.</i>	/1/, /2/, /3/, /4/, /5/	DR	The PP correctly applies the approved methodology which prescribes the baseline scenario and no further analysis of alternatives is required.	OK	OK
7.3 Investment Analysis					
7.3.1 Are all sources of revenues (including	/1/, /2/, /3/,	DR, I	Yes. All sources of revenues have	GL11	OK

Table 1: Validation requirements

(based on § 37 of the CDM Modalities and Procedures and on CDM Validation and Verification Manual)

Checklist question	Ref.	MoV ⁹	Findings, comments, references, data sources	Draft conclusion	Final conclusion
savings) have been considered in the PDD and all calculations?	/4/, /5/, /20/		been considered in the PDD, in which it includes the project administrative fee. CL11 Please confirm all the revenues in the project activity and provide the calculation of investment analysis accordingly.		(Refer to Table 2)
7.3.2 Is the type of investment analysis selected correctly in the PDD?	/1/, /5/	DR, I	Yes. The PP applies NPV calculation in the investment analysis for the project activity without CDM revenues.	OK	OK
7.3.3 Is the selected financial indicator chosen and applied correctly?	/1/, /5/	DR, I	Yes. The PP applies NPV calculation in the investment analysis for the project activity without CDM revenues. A negative value of NPV represents that the project is not financially feasible.	OK	OK
7.3.4 Is the guidance on IRR calculation and assessment correctly applied? <i>Note: Means of validation should be recorded.</i>	/1/, /5/	DR, I	N/A. The PP applies NPV calculation in the investment analysis for the project activity without CDM revenues. A negative value of NPV represents that the project is not financially feasible.	OK	OK
7.3.5 In case project participants use values from Feasibility Study Reports (FSR) is it possible to verify that the period between the FSR date and investment decision was reasonably short and FSR values did not change materially?	/1/, /5/	DR, I	N/A. The PP applies the own estimated values from the project proposal in the NPV calculation, in which a negative value is resulted to illustrate that project is not financially feasible. Since	OK	OK

Table 1: Validation requirements

(based on § 37 of the CDM Modalities and Procedures and on CDM Validation and Verification Manual)

Checklist question	Ref.	MoV ⁹	Findings, comments, references, data sources	Draft conclusion	Final conclusion
			the only profitable income of the project comes from the CDM revenue, the time between the finalization of project proposal and investment decision would not be a critical factor in this project activity.		
7.3.6 Are all the values consistent between FSR and PDD <u>and</u> are inconsistencies properly justified?	/1/, /5/	DR, I	The PP applied values from the estimation of the project owner. These values are checked by the validation team, and confirmed to be valid for the financial analysis.	OK	OK
7.3.7 Were all the values from FSR applicable and valid at the time of the investment decision?	/1/, /5/	DR, I	The PP applied values from the estimation of the project owner. These values are checked by the validation team, and confirmed to be valid for the financial analysis. CL12 Please provide supporting information for the estimation of total equipment cost and maintenance cost of the project activity. CL13 Please confirm the source of inflation rate and clarify how the inflation rate is estimated for the subsequent years	CL12 CL13	OK (Refer to Table 2)

Table 1: Validation requirements

(based on § 37 of the CDM Modalities and Procedures and on CDM Validation and Verification Manual)

Checklist question	Ref.	MoV ⁹	Findings, comments, references, data sources	Draft conclusion	Final conclusion
			after the project implementation.		
7.3.8 Is it reasonable to assume that no investment would be made at a rate of return lower than the benchmark by, for example, assessing previous investment decisions by the project participants or some verifiable circumstances that have lead to a change in the benchmark?	/1/, /5/	DR, I	The project activity is the one of the first two projects developed by the project developer in the Gansu Province. The two projects are currently under validation, and also encountered with same financial problems, and will be started only when the projects are registered as CDM projects. Thus it is reasonable to assume that no investment would be made since the NPV is negative. The major source of income is the CDM revenue, and the project will not generate other profitable income.	OK	OK
7.3.9 Is the Investment Analysis prepared in compliance with the latest version of the “Guidance on the Assessment of Investment Analysis” as provided by the CDM EB?	/1/, /2/, /3/, /5/	DR, I	Yes. The investment analysis prepared in compliance with the latest version of the “Guidance on the Assessment of Investment Analysis” as provided by the CDM EB.	OK	OK
7.4 Barrier analysis					
7.4.1 Are there any issues addressed in the barrier analysis that have a clear impact on the financial viability of the project activity and that shall be assessed by an investment analysis?	/1/, /2/, /3/, /4/, /5/	DR	There is no barrier analysis for the proposed project. The project participant has provided an explanation to show the project activity would not have occurred anyway due to the investment barrier only. This fulfils the requirement of “Attachment A to	OK	OK

Table 1: Validation requirements

(based on § 37 of the CDM Modalities and Procedures and on CDM Validation and Verification Manual)

Checklist question	Ref.	MoV ⁹	Findings, comments, references, data sources	Draft conclusion	Final conclusion
			Appendix B of the simplified modalities and procedures for small-scale CDM project activities.		
7.4.2 Do the listed barriers exist <u>and</u> is their existence substantiated? Note: (a) by independent sources of data such as relevant national legislation, surveys of local conditions and national or international statistics and/or (b) by interviews with relevant individuals: including members of industry associations, government officials or local experts if necessary?	/1/, /2/, /3/, /4/, /5/	DR	Not applicable. Idem.	OK	OK
7.4.3 Would any of the identified barriers prevent the implementation of the project activity but not equally prevent the implementation of the possible alternatives, in particular the implementation of the identified baseline scenario?	/1/, /2/, /3/, /4/, /5/	DR	Not applicable. Idem.	OK	OK
7.5 Common practice analysis					
7.5.1 If the PPs claim in the PDD that CDM project activity is the “first of its kind”, is it justified?	/1/, /2/, /3/, /4/, /5/	DR	Not applicable. As per AMS-I.C./Version 18, no common practice analysis is required.	OK	OK
7.5.2 Are the geographical boundaries of the project activity identified correctly?	/1/, /2/, /3/, /4/, /5/	DR	Not applicable. Idem.	OK	OK
7.5.3 Does the PDD provide an explanation why this	/1/, /2/, /3/	DR	Not applicable. Idem.	OK	OK

Table 1: Validation requirements

(based on § 37 of the CDM Modalities and Procedures and on CDM Validation and Verification Manual)

Checklist question	Ref.	MoV ⁹	Findings, comments, references, data sources	Draft conclusion	Final conclusion
region was selected and deemed more appropriate <u>and</u> is this explanation traceable and reliable?	/4/, /5/				
7.5.4 Are there similar operational project activities, other than CDM activities, “widely observed and commonly carried out” in the defined region? <i>Note: Use official sources and local and industry expertise.</i>	/1/, /2/, /3/, /4/, /5/	DR	Not applicable. Idem.	OK	OK
7.5.5 In case there are similar commercially operated project activities, other than CDM activities, already “widely observed and commonly carried out” in the defined region, are there essential distinctions between the CDM project activity and the other similar activities?	/1/, /2/, /3/, /4/, /5/	DR	Not applicable. Idem.	OK	OK
8. Monitoring plan					
8.1 Are all parameters required by the selected approved methodology or tool identified <u>and</u> listed in the PDD? Note: not all methodologies indicate monitoring parameters in tabular form or by reference to the variables used in formulae; Nonetheless, all parameters indicated in the methodology and applicable to the project must be listed in the PDD, omissions due to non-applicability be justified.	/1/, /2/, /3/, /4/, /5/	DR	Yes. All parameters required by the selected approved methodology or tool identified and listed in the PDD. All parameters indicated in the methodology (Table 1, no. 1) and applicable to the project are listed in the PDD. Please refer to Section 3.6 for details.	OK	OK
8.2 Is the measurement method clearly stated for each value to be monitored and deemed	/1/, /2/, /3/, /4/, /5/	DR, I	Yes. All parameters required by the selected approved methodology or tool	OK	OK

Table 1: Validation requirements

(based on § 37 of the CDM Modalities and Procedures and on CDM Validation and Verification Manual)

Checklist question	Ref.	MoV ⁹	Findings, comments, references, data sources	Draft conclusion	Final conclusion
appropriate? Does the monitoring plan record data in the original form as generated, providing QA/QC procedures to be used on the measurement method?			identified and listed in the PDD. The monitoring plan record data in the original form as generated, and the QA/QC procedures will be used on the measurement method in order to ensure the recorded data is accurate. Please refer to Section 3.6 for details.		
8.3 Are values of the ex-ante parameters / monitoring parameters selected correctly and conservative in accordance to methodology or tools? See the NOTE in section 3.6.1 above.	/1/, /2/, /3/, /4/	DR, I	The project adopts the ex-ante parameters for calculation of emission factor as detailed in PDD Annex 3.	OK	OK
8.4 Is the measurement equipment for each parameter described and deemed appropriate?	/1/, /2/, /3/, /4/	DR, I	Yes. The measurement equipment is simple paper records for all parameters but managed by the local government, and is deemed appropriate.	OK	OK
8.5 Is the measurement accuracy addressed and deemed appropriate?	/1/, /2/, /3/, /4/	DR, I	Yes. The measurement equipment is simple paper records for all parameters but managed by the local government, and is deemed appropriate.	OK	OK
8.6 Are procedures in place on how to deal with erroneous measurements <u>and</u> are the corrective actions identified?	/1/, /2/, /3/, /4/	DR, I	Yes. As reported in PDD and advised from PP, there are QC/QA procedures to deal with erroneous measurements and the corrective actions are also identified.	OK	OK
8.7 Is the frequency of measurement identified and deemed appropriate?	/1/, /2/, /3/, /4/	DR, I	Yes. The measurement recording frequency for number and operational hours of solar cookers are identified as	OK	OK

Table 1: Validation requirements

(based on § 37 of the CDM Modalities and Procedures and on CDM Validation and Verification Manual)

Checklist question	Ref.	MoV ⁹	Findings, comments, references, data sources	Draft conclusion	Final conclusion
			“annually recorded” in PDD, in which this fulfils the requirement in AMS-I.C./Version 18. Thus the measurement frequency is deemed as appropriate.		
8.8 Is the monitoring plan documented according to the approved methodology and in a complete and transparent manner?	/1/, /2/, /3/, /4/	DR, I	Yes. The monitoring plan is documented in PDD Section B.7, according to AMS-I.C./Version 18 in a complete and transparent manner. CL14 Please provide in the sampling plan for how the sampling practices can be ensured according to clause 32 of General Guidelines for Sampling and Surveys for Small-Scale CDM Project Activities version 01. CL15 Please discuss whether the thermal efficiency of solar cooker should be monitored according to the General Guidelines to SSC CDM methodologies. CL16 The project participant should clarify how the actual number of systems operating can be ensured during the	CL14 CL15 CL16	OK (Refer to Table 2)

Table 1: Validation requirements

(based on § 37 of the CDM Modalities and Procedures and on CDM Validation and Verification Manual)

Checklist question	Ref.	MoV ⁹	Findings, comments, references, data sources	Draft conclusion	Final conclusion
			project implementation. In addition, please also discuss in the PDD for any identification system to ensure that the real and measureable emission reductions of each operating system can be traced transparently.		
8.9 Are the sampling, measurement methods and procedures defined?	/1/, /2/, /3/, /4/	DR, I	Yes. The sampling, measurement methods are defined and documented in PDD Section B.7, according to AMS-I.C./Version 18 in a complete and transparent manner.	OK	OK
8.10 Are procedures identified for maintenance of monitoring equipment and installations?	/1/, /2/, /3/, /4/	DR, I	N/A. The measurement equipment is simple paper records for all parameters but managed by the local government, and is deemed appropriate.	OK	OK
8.11 Are the equipment calibration intervals identified and justified?	/1/, /2/, /3/, /4/	DR, I	N/A. The measurement equipment is simple paper records for all parameters but managed by the local government, and is deemed appropriate.	OK	OK
8.12 Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation)?	/1/, /2/, /3/, /4/	DR, I	Yes. There is a "Data Management System" identified in PDD for collection, handling, and storage of monitoring records.	OK	OK
8.13 Are the monitoring arrangements described in the monitoring plan feasible within the project design?	/1/, /2/, /3/, /4/	DR, I	Yes. The validation team has checked the monitoring plan in PDD and considered that the monitoring	OK	OK

Table 1: Validation requirements

(based on § 37 of the CDM Modalities and Procedures and on CDM Validation and Verification Manual)

Checklist question	Ref.	MoV ⁹	Findings, comments, references, data sources	Draft conclusion	Final conclusion
			arrangements including the sampling plan are feasible provided that sufficient training can be arranged to the monitoring team.		
8.14 Are the means of implementation of the monitoring plan, including the data management and quality assurance and quality control procedures, sufficient to ensure that the emission reductions achieved by / resulting from the project activity can be reported ex post and verified?	/1/, /2/, /3/, /4/	DR, I	Yes. Through the implementation of monitoring plan, it is sufficient to ensure that the emission reductions resulting from the activity can be reported ex post and verified.	OK	OK
8.15 Do the PPs make provisions for personnel training needs?	/1/, /2/, /3/, /4/	DR, I	During the OSV with PP, it was understood that the project owner will be responsible for organizing the necessary technical training for the operation, maintenance and monitoring of project activity. The training will be provided to the monitoring team, which will be managed by the local Rural Energy Office, within one month after the project registration.	OK	OK
8.16 Is the authority and responsibility of overall project management clearly described?	/1/, /2/, /3/, /4/	DR, I	Yes. The management structure for monitoring is clearly described in the PDD with the responsibility of overall project management. In addition, the monitoring will be also managed by the local government authority.	OK	OK
8.17 Are procedures identified for emergency	/1/, /2/, /3/,	DR, I	Not applicable. According to the project	OK	OK

Table 1: Validation requirements

(based on § 37 of the CDM Modalities and Procedures and on CDM Validation and Verification Manual)

Checklist question	Ref.	MoV ⁹	Findings, comments, references, data sources	Draft conclusion	Final conclusion
preparedness for cases where emergencies can cause unintended emissions?	/4/		design, such emissions are not expected to occur.		
8.18 Are procedures identified for review of reported results/data?	/1/, /2/, /3/, /4/	DR, I	Yes. The quality assurance and quality control procedure is identified in the PDD for review of reported results/data.	OK	OK
8.19 Is the data archiving period for this project activity stated in the PDD and appropriate? <i>Note: All archived monitoring data, required for verification and issuance, should be kept for at least two years after the end of the crediting period or the last issuance of CER.</i>	/1/, /2/, /3/, /4/	DR, I	Yes. The “Data Management System” in monitoring plan of PDD describes the data archiving period for this project activity for two years after the end of the last crediting period.	OK	OK
8.2 Monitoring of the leakage					
8.2.1 Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining leakage?	/1/, /2/, /3/, /4/	DR, I	No leakages have to be considered according to AMS-I.C./Version 18. No monitoring shall therefore be required.	OK	OK
8.2.2 Is the choice of project leakage indicators made according to selected methodology in a reasonable and conservative manner? <i>Note: local knowledge and sectoral expertise shall also be considered.</i>	/1/, /2/, /3/, /4/	DR, I	Yes. Idem.	OK	OK
8.2.3 Is the measurement method clearly stated and deemed appropriate for each leakage value?	/1/, /2/, /3/, /4/	DR, I	Yes. Idem.	OK	OK
9. Sustainable development					

Table 1: Validation requirements

(based on § 37 of the CDM Modalities and Procedures and on CDM Validation and Verification Manual)

Checklist question	Ref.	MoV ⁹	Findings, comments, references, data sources	Draft conclusion	Final conclusion
9.1 Does the LoA from the Host country DNA contain the confirmation that the proposed CDM project activity contributes to the sustainable development of the host Party?	/2/, /6/	DR, I	Yes. The LoA from P.R. China contains the confirmation that the proposed CDM project activity contributes to the sustainable development of the host Party is validated. CL17 Please provide the relevant document from the DNA of the P.R. China for the confirmation of project contribution to sustainable development.	CL17	OK (Refer to Table 2)
9.2 If PDD indicates any additional environmental benefits of the project, other than GHG emission reductions, were those benefits properly substantiated?	/1/, /2/, /3/, /4/, /6/	DR, I	Yes. Apart from environmental benefits, the project can contribute to social and economic benefits by providing job opportunities and tax revenue to local society.	OK	OK
10. Stakeholders' consultation and comments					
10.1 Were the stakeholders identified in appropriate and complete manner?	/1/, /2/, /3/, /4/	DR, I	The stakeholders included representatives from different gender, age groups and education background. From the background of the stakeholders, it is reasonably believed that the survey have reflected the general attitudes towards the project from the local villagers who are possibly affected by the project. Thus the stakeholders were identified in	OK	OK

Table 1: Validation requirements

(based on § 37 of the CDM Modalities and Procedures and on CDM Validation and Verification Manual)

Checklist question	Ref.	MoV ⁹	Findings, comments, references, data sources	Draft conclusion	Final conclusion
			appropriate and complete manner.		
10.2 Are the identified stakeholders plausible?	/1/, /2/, /3/, /4/	DR, I	Yes. Idem.	OK	OK
10.3 Does PDD describe the means being used to invite local stakeholder's comments?	/1/, /2/, /3/, /4/	DR, I	Yes. According to PDD, the local stakeholder's comments were invited through distribution of questionnaires to the local residents with all pieces of reply received.	OK	OK
10.4 Were those means appropriate?	/1/, /2/, /3/, /4/	DR, I	Yes. A stakeholder consultation process is not mandatory in China. The PP invited stakeholder's comment through questionnaire and the details are described in Section E of PDD. The validation team considered those means were appropriate.	OK	OK
10.5 Was the project presented to the stakeholders in unbiased manner?	/1/, /2/, /3/, /4/	DR, I	Yes. Please refer to 10.1 of Table 1 for details.	OK	OK
10.6 If a stakeholder consultation process is required by regulations/laws in the host country, has the stakeholder consultation process been carried out in accordance with such regulations/laws?	/1/, /2/, /3/, /4/	DR, I	Yes. A stakeholder consultation process is not mandatory in China. The PP invited stakeholder's comment through questionnaire and the details are described in Section E of PDD.	OK	OK
10.7 Is a summary of the stakeholder comments provided in the PDD?	/1/, /2/, /3/, /4/	DR, I	Yes. A summary of the stakeholder comments is provided in Section E of PDD.	OK	OK
10.8 Has due account of any stakeholder	/1/, /2/, /3/,	DR, I	Through the questionnaire and on-site	OK	OK

Table 1: Validation requirements

(based on § 37 of the CDM Modalities and Procedures and on CDM Validation and Verification Manual)

Checklist question	Ref.	MoV ⁹	Findings, comments, references, data sources	Draft conclusion	Final conclusion
comments been taken by PPs and reflected in the PDD?	/4/		interview with local stakeholder, the interviewees considered that there is no adverse impact for the project activity.		
11. Environmental impacts					
11.1 Is the documentation supplied by the PPs regarding environmental impacts relevant and accurately reflected in the PDD?	/1/, /2/, /3/, /4/, /9/	DR, I	It is confirmed with the official from Agricultural Bureau, in which the project does not create any adverse environmental impact. In addition, it is not necessary to carry environmental assessment for the project since there is no construction activity. CL18 Please clarify whether an analysis of environmental impacts is required for the project activity.	CL18	OK (Refer to Table 2)
11.2 Is an environmental impact assessment (EIA) required for the CDM project activity? <i>Note: determine by using a review of relevant legislation and local expertise.</i>	/1/, /2/, /3/, /4/, /9/	DR, I	Yes. Idem.	OK	OK
11.3 In case an EIA is required, has the EIA has been approved by local authorities and is the outcome accurately reflected in the PDD?	/1/, /2/, /3/, /4/, /9/	DR, I	Yes. Idem.	OK	OK
11.4 Does the PDD include a brief description of the environmental effects of the project,	/1/, /2/, /3/, /4/, /9/	DR, I	Yes. The Section D of PDD includes a brief description of the environmental	OK	OK

Table 1: Validation requirements

(based on § 37 of the CDM Modalities and Procedures and on CDM Validation and Verification Manual)

Checklist question	Ref.	MoV ⁹	Findings, comments, references, data sources	Draft conclusion	Final conclusion
including transboundary?			effects of the project.		
11.5 Are those effects properly addressed in the design of the project activity?	/1/, /2/, /3/, /4/, /9/	DR, I	Yes. Please refer to 11.1 of Table 1 for detail.	OK	OK
11.6 Does the project comply with environmental legislation in the host country?	/1/, /2/, /3/, /4/, /9/	DR, I	Yes. This is confirmed by the interview with the official from the local Agricultural Bureau and Rural Energy Station. The project activity complies with environmental legislation.	OK	OK

Table 2: List of Requests for Corrective Action (CAR) and Clarification (CL)**Validation / Verification Manual**

(35) The DOE shall raise a corrective action request (CAR) if one of the following occurs:

- (a) The project participants have made mistakes that will influence the ability of the project activity to achieve real, measurable additional emission reductions;
- (b) The CDM requirements have not been met;
- (c) There is a risk that emission reductions cannot be monitored or calculated.

(36) The DOE shall raise a clarification request (CL) if information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met.

No.	CAR/CL	Observation (CAR/CL)	Reference	Summary of project owner response	Validation team conclusion
1.	✓✓	<u>CAR01</u> Please provide the relevant LoAs from the DNA of P.R. China and Annex I party for validation.	1.1	The Chinese LoA and Annex I LoA are provided.	OK. The LoA issued from the DNA of Netherlands was checked and confirmed as valid through the cross-checking from information in the webpage of Dutch DNA. The LoA issued from the Chinese DNA was also validated and confirmed from the announcement in the NDRC's CDM webpage. Therefore the CAR is resolved and closed.
2.	✓	<u>CAR02</u> Please update all the relevant methodology, tools and guidance applied in the project to the updated valid versions at the time of PDD finalization.	3.2	The relevant methodology, tools and guidance applied in the project were updated to valid versions in the PDD.	OK. The validation team checked the revised PDD, and the relevant methodology, tools and guidance applied in the

						project were updated to valid versions. Therefore the CAR is resolved and closed.
3.	✓		CAR03 Please update all the relevant information of the PDD due to the project implementation progress, such as parameters related to emission reductions, project starting date and crediting period etc.	3.2	The relevant information due to the project implementation progress, such as parameters related to emission reductions, project starting date and crediting period etc. have been updated in the revised PDD.	OK. The validation team checked the revised PDD, the relevant information due to the project implementation progress, such as parameters related to emission reductions, project starting date and crediting period etc. have been updated. Therefore the CAR is resolved and closed.
4.		✓✓	CL01 Please substantiate whether the BHED involves with any foreign investment capital, and clarify with supporting information for the financial arrangement of sources of capital of the project activity.	1.8 7.1.7	BHED is a Chinese company and it does not have foreign investment capital. The financial source of the project activity will be arranged by the BHED. The document with the official seal of the project owner has confirmed that there is no ODA involved in the project.	OK. The validation team checked a self-explanatory document from the PP for the declaration of no ODA in the project activity. As stated from the representatives from the local Agricultural Bureau, Rural Energy Office during the OSV, there is no ODA and financial support from the State and local government for the project activity. The PP also stated that all the capital will be raised by internal accrual only.

						Therefore the CL is resolved and closed.
5.		✓	CL02 Please provide more detailed information for the range of the project location for transparent presentation.	4.1	The locations of the townships where the project will be implemented have been listed. All the townships are in Ganzhou district. The geographic coordinates are the approximate location of the township center	OK. The validation team checked the supplementary information for the geographical coordinates of the centers of 18 townships involved, and confirmed that these are all located in the Ganzhou district of Zhangye city through the public map, Google map. Therefore the CL is resolved and closed.
6.		✓✓	CL03 Please provide the supporting information for the general conditions in Ganzhou District, such as population, average income and solar irradiance etc.	4.1	The supporting information for population, income, and Solar Irradiance data of Zhangye has been provided. The annual income in the rural area of Ganzhou district. The latest data is for 2007 in which the income is RMB 4342.	OK. The validation team checked the “Gansu Province Highway Booklet” as one of the public map for the Gansu Province. It is stated that the population in Ganzhou District is 500,000. The validation team also checked the “Economic Index of Zhangye City” issued by Gansu Statistical Bureau in January 2009, in which it indicates that the average annual income for the rural households was RMB 4,342 in 2007. The validation team

						reviewed the official document issued by Gansu Meteorological Information and Technical Equipment Security Centre dated 30 August 2010, in which it indicates the average solar irradiance data in Zhangye from 1993-2008. The reference is confirmed to be valid and applicable in the calculation of project emission reductions. Therefore the CL is resolved and closed.
7.		✓✓	CL04 Please provide the relevant documents for CER purchase to the validation team for validation.	4.1	The excerpt of signed term sheet between buyer and seller is attached.	OK. The validation team checked the term sheet was signed between the project owner and the CER buyer for the purchase of CER dated 30 April 2010, and confirmed to be valid. Therefore the CL is resolved and closed.
8.		✓	CL05 Please provide supporting information for whether relevant government officials have been notified for the project design.	4.1	The project has been registered with Zhangye DRC. The project registration letter is attached	OK. The validation team checked the official document issued by the Zhangye City Development and Reform Commission, in which it is indicated that the local government has been notified for the project development of Heqing Solar

						Cooker Project I. In addition, the Zhangye DRC also considers that the project complies with the local project registration requirements, and approves the project to be developed. Therefore the CL is resolved and closed.
9.		✓✓	CL06 Please provide supporting information about the arrangement of CDM training to the end users and the project monitoring team.	4.1	The user training and monitoring plan are attached.	OK. The validation team checked the solar cooker user training plan, the training include the operation and maintenance theories and procedures before the distribution of solar cookers to the users. In addition, the monitoring procedures prepared by the project owner are reviewed, in which the monitoring team will be training according to the monitoring procedures. The monitoring includes the regular inspection of solar cooker condition, recording the usage time, abnormal or damage situations, replacement procedures etc. Therefore the CL is resolved and closed.
10.		✓✓	CL07 Please provide supporting information about	5.2.1.1	The official document from Zhangye Rural Energy Work Office is	OK. The validation team checked the official

			the boundary of the project activity, and clarify that whether the project activity will be implemented within 1 km of the project boundary of another project under validation.	attached. The document confirms that there is no project activity within 1km of the project boundary between Heqing Solar Cooker Project I and II. Moreover, according to EB 54 Annex 13, paragraph 7, if each of the independent subsystems/measures (e.g., biogas digesters, residential solar energy systems, kerosene or incandescent lighting replacements) included in one or more CDM project activities is no greater than 1% of the small scale thresholds defined by the applied methodology and the subsystems/measures are indicated in the PDDs to be each implemented at or in multiple locations (e.g., installed at or in multiple homes) then these CDM project activities are exempted from performing a de-bundling check, i.e., considered as being not a de-bundled component of a large scale activity. 45MW thermal is the threshold for AMS-I.C, and 1% of 45MW thermal is 450,000W thermal. The capacity of a single solar cooker in the project is just 910 W, far less than 450,000W, and the solar cookers will be installed in multiple homes.	document issued by the Zhangye Rural Energy Work Office dated 12 Oct 2010. It is stated that the boundary of the Heqing solar cooker projects I and II is area of rivers, small valleys and mud lands. There is no population within the 1km of the boundary between two projects as they are actually located in two different counties. This is confirmed with the project owner about the clarification of boarder line of the Heqing solar cooker projects I and II. In addition, the unit capacity of each solar cooker will be 910W thermal, which is less than 1% of the threshold of AMS-I.C. of 45MW thermal, i.e. 450,000W thermal. According to the "Guidelines on Assessment of debundling for SSC project activities" EB 54, "if each of the independent subsystems (e.g., residential solar energy systems) included in one CDM project activity is no greater than 1% of the small scale thresholds defined by the applied methodology and the subsystems are
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					Therefore, the proposed project is exempted from performing a de-bundling check, i.e., the proposed project is not considered as being a de-bundled component of a large scale activity.	indicated in the PDDs to be each implemented in multiple locations (e.g., installed at or in multiple homes), then the CDM project activity is exempted from performing a de-bundling check". Thus the validation team confirms that the project activity can be exempted from debundling check. Therefore the CL is resolved and closed.
11.		✓	CL08 Please follow the annotations in the equations of the AMS-I.C as applied in the PDD.	5.5.1	The new annotations in AMS-IC have been adopted in the revised PDD.	OK. The validation team checked the updated PDD in which the annotations in the equations of the AMS-I.C. are applied in the PDD. Therefore the CL is resolved and closed.
12.		✓✓	CL09 Please clarify how the thermal efficiency tests are conducted following the guidance provided in relevant national/international standards.	5.5.1	The coal stove was tested according to Chinese national standard GB6412-1986. The testing report and the abovementioned national standard are attached.	OK. The validation team checked the testing report for the coal stoves issued by Hexi College of Physics, Mechanical and Electrical Engineering in September 2010. According to the testing report, 100 sets of coal stoves from Zhangye rural areas (including Ganzhou District) were selected. The stove

						efficiency was tested as per Chinese National Standard GB6412-86 "Method for testing household coal and stoves". It concluded that the coal stoves are traditional types with low heat efficiency. The coal stoves ranged from 9.8% to 14.6%, and averaged as 12.6%. The validation team considers that the test was carried out by the local technical university, with a representative sample of units with similar specifications in Zhangye rural areas using baseline fuel. Thus it is considered that the application of highest measured operational efficiency of 14.6% is reasonable and transparent. Therefore the CL is resolved and closed.
13.		✓✓	CL10 Please provide supporting information for how the solar cookers' thermal efficiency can be maintained throughout 10 years of operational lifetime.	5.5.1	The solar cooker user manuals are attached. The manuals confirm that the efficiency can be maintained throughout the 10 year operational lifetime. The key thing to maintain the solar cooker's efficiency is to keep the	OK. The validation team reviewed the product specifications and the operation manuals from 5 local solar cooker manufacturers, in which all manufacturers indicate that the lifetime of the solar cooker can be maintained for

				surface clean. This will be trained before the implementation of the project and also at the distribution of the cookers. Since cleaning the cooker surface is a very simple procedure, it is unnecessary to train again during the operational period. According to statistical principle, the conditions of the 79 samples will sufficiently represent the conditions of all the cookers of the project at the confidence and precision level required by the CDM guideline. If there is any problem that prevents the user from using the cooker properly in the operational period, the user can contact the project owner and get the problem fixed for free.	at least 10 years. Their solar cooker products are all manufactured according to the Chinese National Standard of NY/T219-2003. The validation team also checked the "Solar Cooker User Training Plan", in which it covers the operational and maintenance procedure of the solar cooker. It requires only regular cleaning in order to ensure that the reflective surface of the solar cooker is clean for solar capture. The validation team also considers that this is not difficult for the end-users to follow. In addition, the PP will also provide technology support from the Rural Energy Station, in case there are any operational problems encountered by the solar cooker users. The validation team considers that the thermal efficiency of the solar cookers can be maintained if the solar cookers can be operated according to the training manuals. Therefore the CL is resolved
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						and closed.
14.		✓	CL11 Please confirm all the revenues in the project activity and provide the calculation of investment analysis accordingly.	7.3.1	The financial calculation spreadsheet is attached. All the revenues are included in the spreadsheet. The average quote of the 3 venders $= (395+395+400)/3 = \text{RMB}396.7$ $396.7 \times 49000 = \text{RMB}19.44\text{M}$	OK. The validation team checked the financial calculation worksheet for the project activity. According to the solar cooker quotation from 3 manufactures, the cost of each solar cooker is ranged from RMB395-400. The validation team checked that the unit price of the solar cooker is referenced from the average quotations of solar cooker manufacturers, thus the solar cooker cost is considered as traceable. In addition, the "contribution from user" is included in the PDD and IRR worksheet. The contribution from user will be applied in the investment analysis as the one-off project administration cost. Therefore the CL is resolved and closed.
15.		✓✓	CL12 Please provide supporting information for the estimation of total equipment cost and maintenance cost of the project activity.	7.3.7	The quotes from solar cooker manufacturers are attached. The average price from the quotes was used to estimate the equipment	OK. The validation team checked the quotations of solar cookers from 3 manufacturers with the required specification, and they are ranged from

					cost. The average price of CNY 396.7 per cooker was indicated in the footnote 3 of PDD.	RMB395-400, which include the maintenance cost for the first 3 operational years. The source of equipment cost is included in the updated PDD and IRR worksheet. The maintenance cost is also sourced from the quotations from the vendors. The calculation in the investment analysis also covers the inflation for the future inflation, which is sourced from the interest rate of the recent Chinese inflation rate. The validation team considers that the maintenance cost is reasonable and traceable. Therefore the CL is resolved and closed.
16.		✓✓	CL13 Please confirm the source of inflation rate and clarify how the inflation rate is estimated for the subsequent years after the project implementation.	7.3.7	The inflation rate was estimated using the past average inflation rate of the past 3 years. The estimation is in the "Inflation" Tab of the financial spreadsheet provided for CL11	OK. The validation team checked the financial worksheet for the estimation of inflation rate. The PP applies the information sourced from the international financial entity "Trading Economics" for the records of inflation rate in China from 2007-2009. Then the monthly inflation rate in 2007-2009 is averaged in

					order to estimate an inflation rate value applied in the financial analysis. Then the inflation rate in the subsequent years is assumed to be the same at 3.3% per annum. The validation team considers that the estimation of inflation rate is reasonable and traceable. Therefore the CL is resolved and closed.
17.		✓	CL14 Please provide in the sampling plan for how the sampling practices can be ensured according to clause 32 of General Guidelines for Sampling and Surveys for Small-Scale CDM Project Activities version 01.	8.8 On page 20~22 of the PDD, the points of clause 32, 33 of “General Guidelines for Sampling and Surveys for Small-Scale CDM Project Activities (version 01)” are covered in detail. Particularly, the points in clause 32 are addressed in the following way • Defining precisely the sampling objectives and target population and the measurements to be taken and/or data collected. Please see the table in sampling plan in PDD • Developing the sampling frame. Please see the table in sampling plan in PDD	OK. The validation team checked the updated PDD in which the sampling plan is included as per clause 33 of General Guidelines for Sampling and Surveys for Small-Scale CDM Project Activities version 01. This is also in line with the sampling practice in the clause 32 of the same Guideline. Therefore the CL is resolved and closed.

					• Randomizing cases and drawing sample. Please see the table in sampling plan in PDD • Selecting the most effective information gathering method. Please see the footnote 16 and 17 in PDD • Conducting surveys/measurements. Please see the table in sampling plan in PDD • Minimizing non-response and adjusting for its effects. Since there is a dedicated monitoring team to collect the data, the chance of non-response is virtually zero. If non-response occurs, then the data will be recorded as zero value to ensure the conservative principle is followed.	
18.		✓✓	CL15 Please discuss whether the thermal efficiency of solar cooker should be monitored according to the General Guidelines to SSC CDM methodologies.	8.8	According to the CDM EB's clarification document F-CDM-SSCwg ver 01 SSC_536 dated 24 June 2011, "the SSC WG agreed to clarify that use of literature value (e.g. value from a national standard) is in principle acceptable to	OK. The validation team checked the recommendation from CDM EB "F-CDM-SSCwg ver 01 SSC_536" dated 24 June 2011, in which the SSC WG agreed to clarify that use of

					determine the efficiency of project equipment." Thus literature values are applied for the thermal efficiency of solar cookers in the ER calculation, and monitoring of thermal efficiency is therefore not required.	literature value (e.g. value from a national standard) is in principle acceptable to determine the efficiency of project equipment. Thus the PP just applies the literature values for the thermal efficiency of solar cookers in the ER calculation. The validation team considers that this is applicable and traceable as per EB's recommendation. Therefore the validation team considers that it is acceptable for the PP to exclude the monitoring of solar cooker thermal efficiency. Therefore the CL is resolved and closed.
19.		✓✓	CL16 The project participant should clarify how the actual number of systems operating can be ensured during the project implementation. In addition, please also discuss in the PDD for any identification system to ensure that the real and measureable emission reductions of each operating system can be traced transparently.	8.8	The actual number of systems operating will be checked by the end of each monitoring period by the monitoring team. The name of the user will be written on each cooker using marker pen to ensure that each operating system can be traced transparently. If there is any cognominal case, the name of the user's spouse, child, or parent will be used	OK. According to the monitoring plan, the actual number of systems operating will be measured by the end of each monitoring period. This also complies with the requirements in the methodology. According to the PDD, the solar cooker will be marked with the Heqing Project I

					logo uniquely. In order to trace the user for the operation of solar cooker, the users name will be marked onto the solar cooker, together with family's name if it is necessary. The owners of the solar cookers are thus recorded by the PP, so that the unique identification of solar cooker can be traced from the monitoring record. Although this is not marked as a serial number in form of digits, however, the identification is now applied in terms of solar cooker owners' names and family names by marking this information onto the solar cooker. The validation team considers that this can be also used to identify the specific owner for each solar cooker distributed. In addition, through checking the names of solar cookers' owners and their family names, double-counting can be avoided during the monitoring of system operating.
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						Therefore the CL is resolved and closed.
20.		✓	CL17 Please provide the relevant document from the DNA of the P.R. China for the confirmation of project contribution to sustainable development.	9.1	Currently Chinese LoA is being applied for. The Chinese LoA will confirm the project's contribution to sustainable development.	OK. The Chinese LoA for the confirmation of project contribution to sustainable development has been validated by the validation team. Therefore the CL is resolved and closed.
21.		✓✓	CL18 Please clarify whether an analysis of environmental impacts is required for the project activity.	11.1	The project does not cause any pollution to air, water, or the ecological environment. Therefore, the analysis of environmental impact is not required.	OK. During the on-site interview with the representative from local Agricultural Bureau, the official stated that this solar cooker project is a clean energy project and would not cause any adverse impacts to the local environment, and no pollution will be induced from the project implementation. The Agricultural Bureau has been notified for the project development, and claimed that there is no special requirement for the project to conduct any analysis of environmental impacts for the solar cooker projects as the solar cooker is not in the list of monitoring projects from the local environmental protection regulations.

						In addition, the PP has notified the Zhangye Environmental Protection Bureau (EPB) for the project implementation, and the Zhangye EPB also issued a letter to the PP for the encouragement of the project activity /49/. Therefore the CL is resolved and closed.
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Table 3: List of forward action requests (FARs)**Validation / Verification Manual**

(37) The DOE shall raise a forward action request (FAR) during validation to highlight issues related to project implementation that require review during the first verification of the project activity. FARs shall not relate to the CDM requirements for registration.

FAR number	Reference	Summary of project owner response	Validation team conclusion
There is no FAR raised in the validation report.			

Appendix B

CERTIFICATES OF COMPETENCE

Qualification

Hai, Harold /

Emission Trading

United Nations Framework Convention on Climate Change

Auditor No.:

(AuditorenRegNr)

Appointed:

(Zugelassen)

☒ ja

Qualification Level: Auditor

(Qualifikationsstufe)

External:

(Externer)

☐ ja

Add. reviewer:

(Zus-tzlicher Prüfer)

☐ yes

EAC Scopes:

(EAC Branchen)

CDM 13 - Waste handling and disposal

CDM 01 - Energy industries (renewable - / non-renewable sources)

Add. qualification:

(zus. Qualifikation)

First Appointment:

(Erstberufung)

2007-12-19

Valid to:

(Gültig bis)

2012-09-25

Remarks:

2010-10: revised to meet Accreditation Standard Ver.02:

- CDM 01 limited to TA1.2 - Renewable Energies

- CDM 13 limited to TA 13.1- Waste handling & disposal

Languages:

Chinese

English

Mandarin

Chinese simplified

Chinese traditional

Experience Exchange

Date

Location

Remarks

Accreditation(s)

Monitoring

Latest Monitoring:

Next

(letzte Beurteilung)

Monitoring:
(n-chste
Beurteilung)

Remarks:

History of scope allocation

Date: 2010-04-15
Change: CDM 01 Energy Industries added
By: Manfred Brinkmann
Reason: Scope 1: limited to renewable energies except biomass power generation / geothermal

Date: 2007-12-20
Change: EAC CDM added
By: Manfred Brinkmann
Reason:

History

Created:	2007-12-19 02:32:34 PM	Harold Hai/Hk/Chn/TUV
Modified:	2011-01-31 09:25:37 AM	Cuiping Deng/Bj/Chn/TUV
	2011-01-04 03:16:31 PM	Manfred Brinkmann/Jpn/TUV
	ZE9	Manfred Brinkmann/Jpn/TUV
	2011-01-04 03:16:11 PM	Manfred Brinkmann/Jpn/TUV
	ZE9	Manfred Brinkmann/Jpn/TUV
	2011-01-04 03:15:12 PM	
	ZE9	
	2010-09-13 02:53:26 PM	
	ZE9	

Qualification

Lo, Tommy /

Emission Trading

United Nations Framework Convention on Climate Change

Auditor No.:
(AuditorenRegNr)

Appointed:
(Zugelassen)

☒ ja

Qualification Level: Auditor
(Qualifikationsstufe)

External:
(Externer)

☐ ja

Add. reviewer: ☐ yes
(Zus-tzlicher Prüfer)

EAC Scopes:
(EAC Branchen)

CDM 13 - Waste handling and disposal
CDM 01 - Energy industries (renewable - / non-renewable sources)

Add. qualification:
(zus. Qualifikation)

First Appointment:
(Erstberufung)

2008-04-28

Valid to:
(Gültig bis)

2012-10-12

Remarks:

CDM 01 limited to TA1.2 - Renewable Energies
CDM 13 limited to TA13.1 - Waste handling and disposal

(as GHG auditor from 2009-10-14)

Languages:

Chinese
English
Mandarin
Chinese simplified
Chinese traditional

Experience Exchange

Date

Location

Remarks

Accreditation(s)

Monitoring

Latest Monitoring:
(letzte Beurteilung)

Next
Monitoring:
(n-chste
Beurteilung)

Remarks:

[View / Edit Monitoring](#)

History of scope allocation

Date: 2008-04-29
Change: EAC CDM, CDM added
By: Manfred Brinkmann
Reason:

History

Created:	2008-04-27 03:19:00 PM ZE9	Manfred Brinkmann/Jpn/TUV
Modified:	2011-01-13 03:13:56 PM ZE9	Manfred Brinkmann/Jpn/TUV
	2011-01-13 03:12:34 PM ZE9	Manfred Brinkmann/Jpn/TUV
	2011-01-13 03:12:05 PM ZE9	Manfred Brinkmann/Jpn/TUV
	2010-09-13 11:37:26 PM ZE9	

Qualification

Huang, Minglong /

Emission Trading

United Nations Framework Convention on Climate Change

Auditor No.:
(AuditorenRegNr)

Appointed:
(Zugelassen)

☒ ja

Qualification Level:
(Qualifikationsstufe)

External:
(Externer)

☐ ja

Add. reviewer:
(Zus-tzlicher Prüfer)

☐ yes

EAC Scopes:
(EAC Branchen)

CDM 01 - Energy industries (renewable - / non-renewable sources)
CDM 05 - Chemical industry
CDM 11 - Fugitive emissions from production and consumption of halocarbons and sulphur hexafluoride
CDM 12 - Solvents use

Add. qualification:
(zus. Qualifikation)

First Appointment:
(Erstberufung)

2009-12-28

Valid to:
(Gültig bis)

2012-12-27

Remarks:

CDM 01 valid for TA1.2 - Renewable Energies
CDM 5.1 / 11.1 / 12.1 - Chemical process industries

Languages:

Chinese
Chinese simplified
English
Cantonese
French

Experience Exchange

Date

Location

Remarks

Accreditation(s)

Monitoring

Latest Monitoring:
(letzte Beurteilung)

Next
Monitoring:
(n-chste
Beurteilung)

Remarks:

History of scope allocation

Date:
Change:
By:
Reason:

Date: 2010-03-30
Change: EAC CDM, CDM, CDM added
By: Manfred Brinkmann
Reason: Scope 1 / renewable energies (except biomass)

History

Created:	2010-01-13 02:23:26 PM	Minglong Huang/Sz/Chn/TUV
Modified:	2011-01-13 03:46:27 PM	Manfred Brinkmann/Jpn/TUV
	ZE9	Manfred Brinkmann/Jpn/TUV
	2011-01-13 03:45:40 PM	Manfred Brinkmann/Jpn/TUV
	ZE9	Manfred Brinkmann/Jpn/TUV
	2011-01-04 03:27:57 PM	Manfred Brinkmann/Jpn/TUV
	ZE9	Manfred Brinkmann/Jpn/TUV
	2011-01-04 03:27:42 PM	Manfred Brinkmann/Jpn/TUV
	ZE9	Manfred Brinkmann/Jpn/TUV
	2011-01-04 03:26:53 PM	
	ZE9	
	2011-01-04 03:25:18 PM	
	ZE9	
	2011-01-04 03:24:11 PM	
	ZE9	
	2010-03-30 01:45:18 AM	
	ZE9	

Qualification

Deng, Cuiping /

Emission Trading

United Nations Framework Convention on Climate Change

Auditor No.:
(AuditorenRegNr)

Appointed:
(Zugelassen)

☒ ja

Qualification Level:
(Qualifikationsstufe)

External:
(Externer)

☐ ja

Add. reviewer:
(Zus-tzlicher Prüfer)

☒ yes

EAC Scopes:
(EAC Branchen)

CDM 01 - Energy industries (renewable - / non-renewable sources)
CDM 05 - Chemical industry
CDM 11 - Fugitive emissions from production and consumption of halocarbons and sulphur hexafluoride
CDM 12 - Solvents use

Add. qualification:
(zus. Qualifikation)

First Appointment:
(Erstberufung)

2010-10-09

Valid to:
(Gültig bis)

2013-10-08

Remarks:

Appointed as Technical Reviewer for
TA 1.2
TA 5.1, 11.1, 12.1

Languages:

Experience Exchange

Date

Location

Remarks

Accreditation(s)

Monitoring

Latest Monitoring:
(letzte Beurteilung)

Next
Monitoring:

(n-chste
Beurteilung)

Remarks:

History of scope allocation

Date: 2010-11-11
Change: EAC CDM, CDM, CDM, CDM added
By: Manfred Brinkmann
Reason: Appointed as Technical Reviewer for
TA 1.2
TA 5.1, 11.1, 12.1

History

Created:	2010-08-13 11:19:43 AM	Cuiping Deng/Bj/Chn/TUV
Modified:	2010-11-11 12:00:44 PM	Manfred Brinkmann/Jpn/TUV
	ZE9	Manfred Brinkmann/Jpn/TUV
	2010-11-11 11:59:20 AM	Manfred Brinkmann/Jpn/TUV
	ZE9	Cuiping Deng/Bj/Chn/TUV
	2010-11-11 11:58:18 AM	
	ZE9	
	2010-08-13 11:21:37 AM	