



# Verification and Certification Report

of

Sichuan Rural Poor-Household Biogas  
Development Programme

CPA Nb. SCHHBG-2010-001 to CPA  
Nb. SCHHBG-2012-053

**GLC Report No: 385, Rev. 05**

# Verification and Certification Report

GLC Report No: 385, Rev. 05



Organisational Unit Germanischer Lloyd Certification GmbH (GLC), Greenhouse Gas Services	
Client UPM Umwelt-Projekt-Management GmbH	Client reference person Mr. Martin Dilger
Summary:	
<b>UNFCCC Ref.</b>	2898
<b>Title of the PoA:</b>	Sichuan Rural Poor-Household Biogas Development Programme
<b>Title of the CPA:</b>	Sichuan Rural Poor-Household Biogas Development Programme, CPA Nb. SCHHBG-2010-001 CPA Nb. SCHHBG-2012-002; CPA Nb. SCHHBG-2012-003 CPA Nb. SCHHBG-2012-004; CPA Nb. SCHHBG-2012-005 CPA Nb. SCHHBG-2012-006; CPA Nb. SCHHBG-2012-007 CPA Nb. SCHHBG-2012-008; CPA Nb. SCHHBG-2012-009 CPA Nb. SCHHBG-2012-010; CPA Nb. SCHHBG-2012-011 CPA Nb. SCHHBG-2012-012; CPA Nb. SCHHBG-2012-013 CPA Nb. SCHHBG-2012-014; CPA Nb. SCHHBG-2012-015 CPA Nb. SCHHBG-2012-016; CPA Nb. SCHHBG-2012-017 CPA Nb. SCHHBG-2012-018; CPA Nb. SCHHBG-2012-019 CPA Nb. SCHHBG-2012-020; CPA Nb. SCHHBG-2012-021 CPA Nb. SCHHBG-2012-022; CPA Nb. SCHHBG-2012-023 CPA Nb. SCHHBG-2012-024; CPA Nb. SCHHBG-2012-025 CPA Nb. SCHHBG-2012-026; CPA Nb. SCHHBG-2012-027 CPA Nb. SCHHBG-2012-028; CPA Nb. SCHHBG-2012-029 CPA Nb. SCHHBG-2012-030; CPA Nb. SCHHBG-2012-031 CPA Nb. SCHHBG-2012-032; CPA Nb. SCHHBG-2012-033 CPA Nb. SCHHBG-2012-034; CPA Nb. SCHHBG-2012-035 CPA Nb. SCHHBG-2012-036; CPA Nb. SCHHBG-2012-037 CPA Nb. SCHHBG-2012-038; CPA Nb. SCHHBG-2012-039 CPA Nb. SCHHBG-2012-040; CPA Nb. SCHHBG-2012-041 CPA Nb. SCHHBG-2012-042; CPA Nb. SCHHBG-2012-043 CPA Nb. SCHHBG-2012-044; CPA Nb. SCHHBG-2012-045 CPA Nb. SCHHBG-2012-046; CPA Nb. SCHHBG-2012-047 CPA Nb. SCHHBG-2012-048; CPA Nb. SCHHBG-2012-049 CPA Nb. SCHHBG-2012-050; CPA Nb. SCHHBG-2012-051 CPA Nb. SCHHBG-2012-052; CPA Nb. SCHHBG-2012-053
<b>Project Country:</b>	China
<b>Sectoral Scope, Technical Area</b>	CDM Sectoral Scope 1, Technical Area 1.1 CDM Sectoral Scope 15, Technical Area 15.2
<b>Methodology(ies) / Version(s):</b>	AMS-I.C version 19 AMS-III.R version 02
<b>Project Size:</b>	<input type="checkbox"/> Large Scale <input checked="" type="checkbox"/> Small Scale

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<b>Number of verification:</b>	2 <sup>nd</sup>	
<b>Dates of monitoring period (incl. both days)</b>	2013-06-06 to 2014-02-28	
<b>Verified emission reductions</b>	389,006 tCO <sub>2</sub> e	
<b>Included post registration changes</b>	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
<b>Project Assessment Team:</b>	<b>Technical Review Team:</b>	<b>Approval by:</b>
Hang Zhou Ruifeng Li Maorong Xu	Sithisakdi Apichatthanapath Benedikt Maibaum	Markus Weber
<b>Date of this revision:</b>	<b>Revision No.</b>	<b>Number of pages</b>
2014-06-17	05	53
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## History of report revisions:

Rev.	Date	Person (short sign or name)	Function	Action
01	2014-05-28	Hang Zhou	Assessment team leader	Reporting
02	2014-05-30	Benedikt Maibaum Sithisakdi Apichatthanapath	Technical Expert (Review Team) Technical reviewer	Review with comments
03	2014-06-05	Hang Zhou	Assessment team leader	Revision
04	2014-06-13	Sithisakdi Apichatthanapath	Technical Reviewer	Closing TR comments
05	2014-06-17	Markus Weber	Final Reviewer and Approver	Final reviewed and approved

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## Abbreviations

AQL	Acceptable Quality Level
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CDM-EB	CDM Executive Board (the board)
CER	Certified Emission Reduction
CH <sub>4</sub>	Methane
CL	Clarification request
C/ME	Coordinating/Managing Entity
CMP	Meeting of the Parties to the Kyoto Protocol
CO <sub>2</sub>	Carbon dioxide
CO <sub>2eq</sub>	Carbon dioxide equivalent
COP/MOP	The Conference of the Parties to the United Nations Framework Convention on Climate Change serving as the Meeting of the Parties to the Kyoto Protocol
CPA	Component Project Activity
CPA-DD	CPA Design Document
DNA	Designated National Authority
DOE	Designated Operation Entity
ER	Emission Reduction
FAR	Forward Action Request
GHG	Greenhouse gas(es)
GLC	Germanischer Lloyd Certification GmbH
MP	Monitoring Plan
MR	Monitoring Report
NDRC	National Development and Reform Commission
PDD	Project Design Document
PoA	Programme of Activities
PoA-DD	PoA Design Document
PP	Project Participant
QA/QC	Quality Assurance / Quality Control
SREO	Sichuan Rural Energy Office
UNFCCC	United Nations Framework Convention on Climate Change
UQL	Unacceptable Quality Level
VVS	Validation and Verification Standard

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## 1 INTRODUCTION

UPM Umwelt-Projekt-Management GmbH has commissioned the Germanischer Lloyd Certification GmbH (GLC) to carry out the 2nd verification of the CPAs, Sichuan Rural Poor-Household Biogas Development Programme, CPA Nb. SCHHBG-2010-001 to CPA Nb. SCHHBG-2012-053, included under the PoA “Sichuan Rural Poor-Household Biogas Development Programme” (hereafter referred to as “the PoA”) registered by the UNFCCC with reference No. 2898 with regard to the relevant requirements for CDM PoA. The verifiers have reviewed the implementation of the monitoring plan (MP) as described in the registered PoA-DD<sup>/2/</sup>, CPA-DDs<sup>/3//4/</sup> and the Monitoring Report<sup>/7/</sup>, version 02.1, dated 2014-04-28.

GHG data for the monitoring period was verified in detailed manner applying the set of requirements, audit practices and principles as required under the Validation and Verification Standard<sup>/1/</sup> of the UNFCCC. This report summarizes the findings and conclusions of the 2nd verification of the above mentioned UNFCCC registered project activity.

### 1.1 Objective

The objective of the verification is the review and ex-post determination by an independent entity of the GHG emission reductions. It includes the verification

- that the CPAs have been implemented and operated as per the registered CPA-DDs<sup>/3//4/</sup> and that all physical features (technology, project equipment, and monitoring and metering equipment) of the project are in place;
- that the monitoring report<sup>/7/</sup> and other supporting documents provided are complete and verifiable and in accordance with applicable CDM requirements;
- that actual monitoring systems and procedures comply with the monitoring systems and procedures described in the monitoring plan<sup>/2//3//4/</sup> and the approved methodologies<sup>/8/</sup>;
- that the data is recorded and stored as per the monitoring methodologies.

### 1.2 Scope

The verification of this registered CPAs is based on the registered PoA-DD<sup>/2/</sup>, validated / included CPA-DDs<sup>/3//4/</sup>, the monitoring report<sup>/7/</sup>, emission reduction calculation spread sheet<sup>/13/</sup>, supporting documents made available to the verifier and information collected through performing interviews and during the on-site assessment. Furthermore publicly available information was considered as far as available and required.

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

- Article 12 of the Kyoto Protocol <sup>/11/</sup>,

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- guidelines for the implementation of Article 12 of the Kyoto Protocol as presented in the Marrakech Accords under decision 3/CMP.1<sup>12/</sup> and subsequent decisions made by the Executive Board and COP/MOP,
- other relevant rules, including the host country legislation,
- Clean Development Mechanism Validation and Verification Standard (version 06.0 and 07.0)<sup>1/</sup>,
- Clean development mechanism project standard, version 06.0 and 07.0<sup>15/</sup>;
- Guidelines for completing the monitoring report form, version 04.0, EB75 annex 7<sup>14/</sup>;
- Clean development mechanism project cycle procedure, version 06.0 and 07.0<sup>16/</sup>;
- monitoring plan as given in the registered or included CPA-DDs<sup>3/4/</sup>;
- Approved CDM Methodologies "AMS-I.C - Thermal energy production with or without electricity (version 19)", "AMS-III.R- Methane recovery in agricultural activities at household/small farm level (version 02)"<sup>18/</sup>;
- Germanischer Lloyd Certification GmbH CDM GHG Services Manual (incl. procedures and forms)<sup>9/</sup>;



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## 2 VERIFICATION TEAM

### 2.1 Assessment Team

A competent team with relevant knowledge and experience in the specific sectoral scopes and project activity was appointed by GLC. Furthermore the appointment of the team takes into account the required knowledge of the host country and general project activity knowledge requirements for verifying the project activity design and the achieved CERs. The assessment team can be composed of an Assessment Team Leader (ATL), auditors (A) and host country or technical expert (E). Table 1 below shows the composition of the assessment team, the qualification of the team members and their functions.

Table 1: Verification team

Name	Function <sup>1)</sup>	Sectoral scope specific knowledge	Technical area specific knowledge	Local knowledge	Type of involvement				
					Desk review	On-site visit / interviews	Reporting	Supervision of work	Expert input
<input checked="" type="checkbox"/> Mr. Hang Zhou <input type="checkbox"/> Ms.	ATL			X	X	X	X	X	
<input checked="" type="checkbox"/> Mr. Ruifeng Li <input type="checkbox"/> Ms.	A			X	X	X	X		
<input type="checkbox"/> Mr. Maorong Xu <input checked="" type="checkbox"/> Ms.	TE	X	X	X		X			X

A Auditor  
ATL Assessment team leader

FE Financial expert  
LE Local expert

T-ATL Trainee ATL  
T-A Trainee auditor  
TE Technical expert

### 2.2 Technical Review Team and Approval

Before submission of the final verification report to the CDM EB of the UNFCCC, a technical review of the whole verification and the draft report was carried out by an appointed technical review (TR) team. The TR team is composed of persons competent to the technical area and project activity this CPA falls under. Each person involved in the reviewer is independent to the verification assessment.

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The complete assessment prepared by the verification team is checked, if required adjusted and finally confirmed by the TR process.

The TR team and the person responsible for approval of the report are found in the table below:

Table 2: Technical review team and approval

Name	Function <sup>2)</sup>	Technical area specific knowledge	Sectoral scope specific knowledge	Supervision of work
Sithisakdi Apichatthanapath	R		X	X
Benedikt Maibaum	TE	X	X	
Markus Weber	FR/AP		X	

AP Approver  
FR Final reviewer

TE Technical expert  
T-R Trainee reviewer  
R Reviewer

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## 3 METHODOLOGY

### 3.1 Verification Process

The verification process is based on the guidelines described in the Validation and Verification Standard<sup>1/</sup>. In addition to that standard auditing techniques have been applied. The verification team performs first a desk review, followed by an on-site visit to review the project realisation. The findings are collected and described in a questionnaire. In case of lack of clarity or inconsistencies related findings are raised. The next step is to close out the findings through direct communication with the PPs and finally prepare the final verification report. This verification report and other supporting documents then undergo a technical review by the "GLC GmbH" prior to the submission to the CDM-EB.

### 3.2 Desk review

From 2014-03-15 to 2014-03-17, GLC has conducted a desk review of all documents initially provided by the client and publicly available documents relevant for the verification. The main reviewed documents are listed below:

- The registered PoA-DD<sup>2/</sup> and the corresponding validation report<sup>5/</sup>;
- The registered or included CPA-DDs<sup>4/</sup>, including the monitoring plan and the corresponding validation reports and inclusion forms<sup>6/</sup>;
- The applied monitoring methodologies<sup>8/</sup>;
- Previous monitoring report and verification report<sup>33/</sup>;
- Relevant decisions, clarifications and guidance from the CMP and the CDM Executive Board;
- Any other information and references relevant to the project activity's resulting emission reductions (e.g., IPCC reports<sup>10/</sup> etc).

### 3.3 On-site assessment

From 2014-04-03 to 2014-04-10, Mr. Hang Zhou, Mr. Ruifeng Li and Ms. Maorong Xu of GLC's verification team carried out an on-site visit.

The main tasks covered during the on-site visit include, but are not limited to:

- Verifying whether the PoA implementation is in line with the description in the registered PoA-DD<sup>2/</sup>;
- Verifying whether all the included CPAs were implemented as described in the registered PoA-DD<sup>2/</sup> and the CPA-DDs<sup>3//4/</sup> and is in operation as anticipated
- Physical inspection to the household digesters in order to verify the monitoring information presented in the monitoring report<sup>7/</sup>;

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- The survey staff was interviewed and observed in order to check the risks of inappropriate operation and data collection procedures;
- Training material, photos and training records<sup>/23/</sup> of the survey staff were reviewed.
- The households were interviewed and observed in order to check the risks of inappropriate operation and data collection procedures<sup>/17/</sup>;
- Information processes for generating, aggregating and reporting the selected monitored parameters were reviewed to check the consistency with registered monitoring plan<sup>/2//3//4/</sup>;
- Check whether the C/ME is consistent with the registered PoA-DD<sup>/2/</sup> and CPA-DDs<sup>/3//4/</sup>;
- The monitoring processes, routines and documentations were audited to check their proper application.
- The monitoring data were checked completely.
- The data aggregation trails were checked;
- Verifying QA/QC procedures of C/ME

The main topics of the interviews and interviewed persons are summarized in the Table 3. The main topics of the interviews were:

- General aspects of the PoA and the CPA
- Technical equipment and operation
- Changes since validation
- Monitoring and measurement equipment
- Remaining issues from validation
- Quality management system
- Involved personnel and responsibilities
- Training and practice of the operational personnel
- Implementation of the monitoring plan
- Monitoring data management
- Data uncertainty and residual risks
- GHG calculation
- Procedural aspects of the verification

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- Maintenance
- Environmental aspects

Table 3: Interviewed persons

Name	Organization/Function
Yumin Song	Sichuan Rural Energy Office, Engineer
Jiong YANG	Sichuan Rural Energy Office, Engineer
Yinyin FU	Chengdu Oasis Science & Technology Co., Ltd, project manager
Marie Reysset	UPM Umwelt-Projekt-Management GmbH, Market manager
Shihua Zhang	Yibin Rural Energy Office, survey staff
Jie Wang	Zigong Rural Energy Office, survey staff
Minghui Chen	Leshan Rural Energy Office, survey staff
Huiqun Wang	Meishan Rural Energy Office, survey staff
Wanling Su	Mianyang Rural Energy Office, survey staff
Gangju Zhou	Guangan Rural Energy Office, survey staff
Guanghua Yang	Suining Rural Energy Office, survey staff
Xiaogang Zhao	Ziyang Rural Energy Office, survey staff

Apart from the above mentioned interviewed persons, 70 users of the household digesters were visited and interviewed during the onsite assessment. List of interviewed persons along with their signatures and the information collected in the form of questionnaires are available in original with GLC. Scanned copies of the interviewed list can be provided upon request.

### 3.4 Resolution of Findings and Reporting

On the basis of the desk review, the on-site visit, follow-up interviews and further background investigation the verification questionnaire is completed. In case any inconsistencies or lack of clarity were identified during the verification the team has raised a

Corrective Action Request (CAR), if:

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- the project participants have made mistakes that will influence the ability of the CPA to achieve real, measurable additional emission reductions;
- the CDM requirements have not been met;
- there is a risk that emission reductions cannot be monitored or calculated.

Clarification Request (CL), if:

- information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met.

In case the team has identified essential risks for further verifications or if the monitoring and reporting require attention and/or adjustment for the next verification period, a Forward Action Request (FAR) is raised.

All CARs, CLs and FARs raised are sent to the client with the request to address the findings. After the findings are answered by the client in an appropriate manner, the CARs, CLs and FARs are closed out.

For a detailed list of all CARs, CLs and FARs raised in the course of the verification please refer to ANNEX A. It is highlighted that this is the 2nd CDM verification of the PoA and there were no pending issues (FAR) from the validation/inclusion as stated in the validation reports <sup>15/</sup> <sup>16/</sup> and previous verification report<sup>33/</sup>.

The questionnaire together with a general project and procedural description of the verification and a detailed list of the verification findings will form the draft verification report.

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## 4 VERIFICATION REPORTING

### 4.1 Verification of Compliance

#### 4.1.1 Compliance of the Project implementation in Accordance with the CPA-DD included in the Registered PoA

The PoA aims to reduce a large amount of greenhouse gases (GHG) by facilitating the installation of a large number of household biogas digesters for the low income households located in Sichuan province, China. During last monitoring period from 10/05/2012 to 05/06/2013, 53 CPAs were included and 240,252 households were equipped with the biogas digesters in Yibin, Neijiang, Suining, Ziyang, Zigong, Luzhou, Leshan, Meishan, Mianyang, Guang'An, Ganzi, Aba and Dazhou, all of which are located in Sichuan. In this monitoring period quantities of the included CPAs and households are not changed.

Prior to the project activity, households in the area which are now covered by PoA stored animal manure produced by micro-scale animal husbandries in deep pits for several months before applying it to their farmland. In the meantime, coal was used as source of energy for cooking in daily life. Through the project activity, each household is equipped with a household biogas digester that treats the manure anaerobically and recovers the generated methane as energy supply, which will avoid methane emission and reduce coal consumption. The Sichuan Rural Energy Office (SREO) is the local authority while Chengdu Oasis Science & Technology Co., Ltd. is the coordinating/managing entity(C/ME), who will take the entire task regarding the monitoring issues. During the 1st verification and on-site inspection, GLC's verification team checked the Table of checked and accepted documents<sup>28/</sup> and statement on the household number and operation date<sup>19/</sup> issued by the SREO and is able to confirm that the local authority is SREO, C/ME is the Chengdu Oasis Science & Technology Co., Ltd, taking care of all investigation and monitoring data review work.

During this monitoring period a new statement on the existing total household number as well as the number included in each CPA<sup>34/</sup> were issued by the SREO. In the statement, SREO confirmed that in this monitoring period the number of included CPAs and included households was not changed (same as the previous monitoring period). Moreover, during the 1st verification a full list<sup>24/</sup> of the households equipped with biogas digesters were verified by GLC, on which name, digester ID, digester location, and construction date were clearly indicated. Table of checked and accepted documents<sup>28/</sup> for all constructed biogas digesters were also randomly checked and GLC is able to confirm it is accepted by the local authority. Through checking above mentioned documents GLC is able to confirm that the total number of household equipped with biogas digester is 240,252 and the households included in each CPA are not changed, which is consistent with the monitoring report<sup>7/</sup>.

The verification team also checked construction time of all the digesters on the Household list<sup>24/</sup> that included in each CPA (from CPA Nb. SCHHBG-2010-001 to CPA Nb. SCHHBG-2012-053)<sup>24/</sup> and confirmed that the earliest construction date of CPA Nb. SCHHBG-2010-001 is 2010-12-10, which is consistent with the registered CPA-DD<sup>4/</sup>. The verification team also checked the Household list<sup>24/</sup> of CPA Nb. SCHHBG-2012-002 to CPA Nb. SCHHBG-2012-053, which were included during the 1st monitoring period and confirmed that the earliest construction date of biogas digester is no earlier than 2010-10-28. It is consistent with the CPA-DDs<sup>4/</sup> of CPA Nb. SCHHBG-2012-002 to CPA Nb. SCHHBG-2012-053. Construction of all CPAs (from CPA Nb. SCHHBG-2010-001 to CPA Nb. SCHHBG-2012-053) finished before 2012-12-27. For the detailed information on construction of each CPA, please refer to

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section A.1 of monitoring report<sup>7/</sup>. Verification team checked the Household list that included in each CPA<sup>24/</sup> and able to confirm the information on construction date given in the MR<sup>7/</sup> is correct.

During on-site visit, the verification team checked the biogas digesters equipped in each household. Each biogas digester system consists of components such as inlet, inlet pipe, fermentation chamber, gas chamber storage, hydraulic chamber, movable cover and gas tube. Verification team is able to confirm that the systems were equipped in line with the registered PoA-DD<sup>2/</sup> and CPA-DD<sup>14/</sup>. The digesters were designed according to relevant regulations<sup>30/</sup>, checked and accepted by local authority<sup>28/</sup>. Therefore, based on this on-site visit and the reviewed project documentation, the verification team confirms that the realized technology, the project equipment, included CPA and household number, as well as the C/ME are consistent with the description in the registered or included CPA-DDs<sup>3/14/</sup>.

The emission reductions being claimed during this monitoring period are nearly 1.94 % more than the estimated emission reductions in the registered or included CPA-DD, as given in the table below:

Emission Reductions	
As per CPA-DD	381,593
Monitoring report	389,006
% Deviation (+/-)	(+) 1.94%

As presented in the table above, the reported emission reductions during the verification period are 1.94% more than the ex-ante estimated amount of annual emission reductions. The actual emission reductions can be accepted by GLC mainly based on the reason as follows:

New global warming potential value for CH<sub>4</sub> is 25 applied in the actual emission reductions achieved during this monitoring period, while the same is 21 applied in the estimated emission reductions.

## 4.1.2 Compliance of the Monitoring Plan with the Monitoring Methodology Including Applicable Tools

During the document review and furthermore during the on-site visit the verification team has reviewed the registered monitoring plan<sup>2/13/14/</sup> and compared it with the monitoring methodology<sup>8/</sup> to verify their compliance. Based on this review the verification team confirms that the monitoring plan<sup>2/13/14/</sup> of the registered or included CPA-DDs<sup>3/14/</sup> is in compliance with the monitoring methodologies<sup>8/</sup>.

## 4.1.3 Compliance of Monitoring Activities with the Registered Monitoring Plan

### Monitoring System

To make sure the monitoring procedure working properly, a monitoring structure was established. Two organizations were working on the monitoring work of this PoA. SREO is local authority, responsible for the technical responsibilities like the monitoring management of the CPAs. Chengdu Oasis Science &

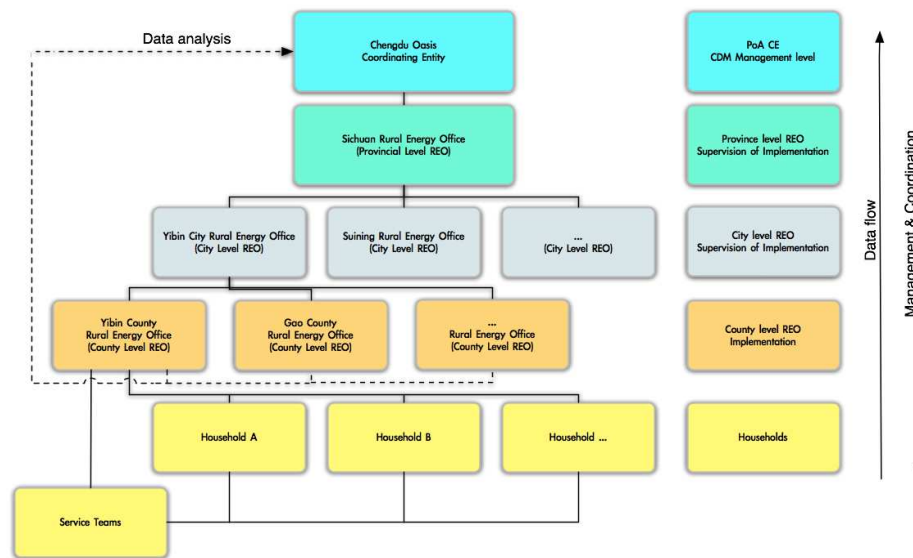


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Technology Co., Ltd is C/ME, is in charge of all tasks related to CDM and PoA, including determining the households to be included in the sampling survey using a simple random approach, submits the household references to the local data collectors, and the whole process of data management. The detail structure of the PoA management is depicted as below:



The data collection and management process is as below:

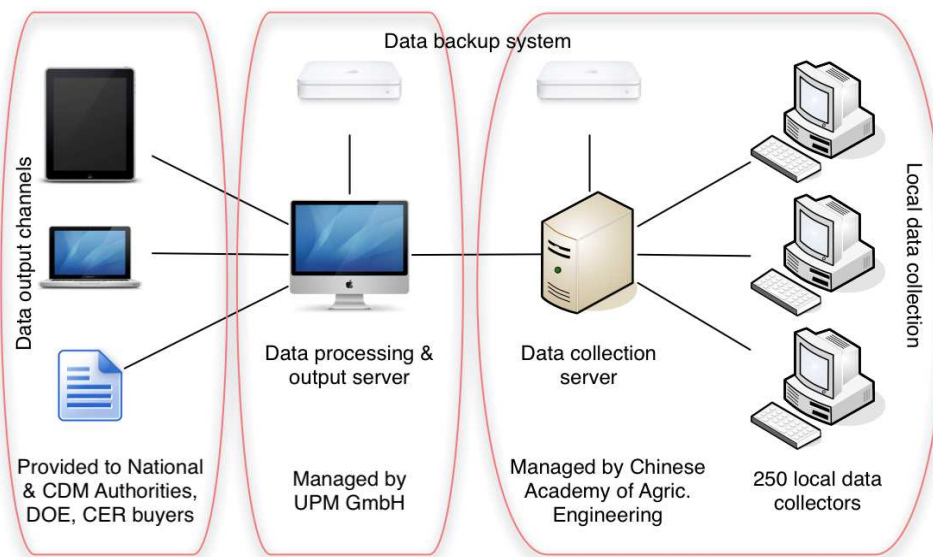
1. A central online platform was established and the C/ME could use the platform to determine the households to be included in the sampling using a simple random approach and submits the household references to the local data collectors.
2. Well trained<sup>/23/</sup> local officers of SREO visited the households which was selected and collected the required data. Data collected could be uploaded to the platform after the site visit. Using this platform, data could be transferred back to the C/ME for the calculation of the emission reduction.
3. Data collected would be then analyzed by an automatic database system, and outcome of the sampling survey would be used to calculate the emission reduction of each CPA during a certain monitoring period. Monitoring report could be prepared base on the data acquired.

During on-site inspection, data management system was checked by the verification team. Operation manual of the data management system<sup>/32/</sup> was supplied to the verification team, on which the operation instructions of the system were clearly listed. Furthermore, C/ME demonstrated the operation and working process of the system during on-site inspection<sup>/17/</sup>, which showed the proper operation condition of the data management system. Therefore, GLC is able to confirm that the data management system were properly designed and operated, and operation manual was well followed.

Both platforms, the web-interface for the local data collectors as well as the emission reduction calculation software are saved in a backup system regularly. The schematic diagram of the IT system is as below:

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## Sampling Approach

In this monitoring period (2013-06-06 to 2014-02-28), there are 53 CPAs including 240,252 households in this PoA. According to the methodologies applied<sup>8/</sup>, sampling approach will be applied for the monitoring parameters: Number of systems operating in each CPA ( $N_k$ ); Mean annual operation hours of the digesters ( $t$ ); Annual average number of animals of type LT in year  $y$  ( $N_{LT,y}$ ); Land application of digestate from biogas digesters to avoid anaerobic digestion (proper sludge application ratio).

All the households are located in Sichuan province, which is a limited area. Simple random sampling approach was selected for this PoA due to relatively homogenous population being studied, given the similar average ambient temperature and similar living habit of residents in Sichuan<sup>21/</sup>. Therefore simple random sampling approach was followed by the PP to determine the sample size, and GLC is able to confirm the selection of sampling approach is appropriate as per our local knowledge. Target population is defined as all the households included in the PoA, i.e., 240,252 households in all included CPAs.

A single sample was drawn by the PP from the monitoring database in line with the Guidelines for Sampling and Surveys for CDM Project Activities and Programme of Activities (version 03)<sup>22/</sup> (hereafter can be referred to as the "sampling guideline"). According to the applied methodologies<sup>8/</sup>, confidence/precision of 90/10 is acceptable for sampling. According to the Standard for Sampling and Surveys for CDM Project Activities and Programme of Activities<sup>25/</sup>, confidence/precision of 95/10 should be applied when the sampling plan covered a group of CPAs. For this PoA, confidence/precision is 95/10. Therefore, GLC is able to confirm that the selection of confidence/precision is appropriate.

## Sampling Size Calculation

Sample size calculation is based on the formulas below as defined in Guidelines for Sampling and Surveys for CDM Project Activities and Programme of Activities<sup>22/</sup> for the simple random sampling approach adopted.

**For mean value**, equation below should be followed according to the Guidelines for Sampling and Surveys for CDM Project Activities and Programme of Activities<sup>22/</sup>:

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$$n \geq \frac{t^2 NV}{(N-1) \times 0.1^2 + t^2 V}$$

Where:  $V = \left( \frac{SD}{mean} \right)^2$  (1)

SD	Standard deviation of the parameter that is expected in the total population
mean	Average value of the parameter that is expected in the total population

However, when the population is large enough ( $N > 5000$ ), approximate calculation as below is allowed to be used. The calculation result is no difference between the sample size derived from the exact and approximate equations under such situation<sup>[22]</sup>.

$$n \geq \frac{t^2 V}{0.1^2} = \frac{t^2 SD^2}{0.1^2 mean^2}$$
 (2)

In the monitoring report<sup>[7]</sup>, C/ME used different symbols to stand for the same parameter as in Guidelines for Sampling and Surveys for CDM Project Actives and Programme of Actives<sup>[22]</sup>. “S” was used to stand for “SD”, “r” was used to stand for required precision, while  $\bar{Y}$  was used to stand for “mean”. Then the equation used in the monitoring report<sup>[7]</sup> is changed to be:

$$n \geq \frac{t^2 S^2}{r^2 \bar{Y}^2}$$
 (3)

GLC checked the equation and is able to confirm that, the equation in the monitoring report<sup>[7]</sup> is same as that in the sampling guideline<sup>[22]</sup>, i.e., the equation adopted is in line with the sampling guideline<sup>[22]</sup>. To determine population parameter  $S^2$  and  $\bar{Y}^2$ , the following options can be taken: (a) taking a small scale pre-survey small scale SRS pre-survey, or (b) reference of similar survey, or (c) double sampling scheme. Mean annual operation hours of the digesters (t) and annual average number of animals of type LT in year y ( $N_{LT,y}$ ) are calculated with mean value. In the monitoring report<sup>[7]</sup>, estimation was made for the 2 parameters:

Annual average number of pigs in year y ( $N_{LT,y}$ )	Mean: 5 pigs	Standard Deviation: 3 pigs
Mean annual operation hours of the digesters (t)	Mean: 8,400 h	Standard Deviation: 1,200 h

Therefore, the sample size could be calculated as:

Annual average number of pigs in year y ( $N_{LT,y}$ ):  $n \geq \frac{t^2 SD^2}{0.1^2 mean^2} = \frac{1.96^2 \times 3^2}{0.1^2 \times 5^2} = 138.3$

Mean annual operation hours of the digesters (t):  $n \geq \frac{t^2 SD^2}{0.1^2 mean^2} = \frac{1.96^2 \times 1200^2}{0.1^2 \times 8400^2} = 7.84$

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Therefore, sample size for the mean annual operation hours of the digesters (t) should be 8, while the same for the Annual average number of pigs in year y (N<sub>LT,y</sub>) should be 139.

**For proportional parameters** (sludge application rate and rate of digesters still in operation), equation below should be followed according to the Guidelines for Sampling and Surveys for CDM Project Activities and Programme of Activities<sup>/22/</sup>:

$$n \geq \frac{t^2 N \times P(1 - P)}{(N - 1) \times 0.1^2 \times P^2 + t^2 P(1 - P)} \quad (4)$$

Where:

n	Sample size
N	Total number of households (240,252)
P	Expected proportion of the sample (in this PoA, C/ME assumed the proportion as 0.8)
0.1	Required precision (the value is 0.1 for this PoA)
t	Constant referring to the level of confidence (for this PoA, the value should be 1.96 since the confidence is 95%)

As the population is large enough (N>5000), approximate calculation as below is allowed to be used. The calculation result is no difference between the sample size derived from the exact and approximate equations under such situation<sup>/22/</sup>:

$$n \geq \frac{t^2(1 - p)}{0.1^2 P} = \frac{t^2 Q}{r^2 P} \quad (5)$$

Where: Q=1-P

Therefore, the equation applied for the sample size calculation in the monitoring report<sup>/7/</sup> is reasonable and in line with the latest guideline from EB<sup>/22/25/</sup>. After applying the value of each parameter in the equation, the sample size is calculated as:

$$n \geq \frac{t^2(1 - p)}{0.1^2 P} = \frac{1.96^2 \times (1 - 0.8)}{0.1^2 \times 0.8} = 96.04$$

Land application of digestate from biogas digesters to avoid anaerobic digestion (proper sludge application ratio and Number of systems operating in each CPA (N<sub>k</sub>) were calculated with proportion. Therefore, sample size for the 2 parameters should be greater than 97.

The verification team checked the adoption of sampling size calculation equations and parameter calculation process of the 4 parameters that applied with sampling approach. GLC is able to confirm that the sampling approach was consistent with the latest EB requirements<sup>/22/25/</sup>. Sampling type was properly selected, the required confidence/precision has been met, and the sampling size was corrected calculated, so that the selected samples were representative of the population.

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## Reliability Analysis

As a conservative approach, a sample size of 200 was chosen by the C/ME. In the monitoring report<sup>7/</sup> and relevant parameters were monitored and recorded<sup>26/</sup>. Reliability of the sample size was calculated by the C/ME<sup>26/</sup>. For the operation hours (t), standard error is calculated as 0.31%. For the annual average number of pigs ( $N_{LT,y}$ ), standard error is calculated as 6.83%. Both of them are below 10%. As the percentage of sludge application rate and rate of digesters still in operation ( $N_k$ ) is 100% during sampling survey, standard error is zero<sup>26/</sup>. Therefore, the sample size is reliable.

A Survey list of the 200 samples<sup>26/</sup> was supplied by the C/ME, which was compiled base on the Table of checked and accepted documents<sup>28/</sup> done by the survey staff. In the Survey list<sup>26/</sup>, name of user, location, operation status of each biogas digester, operation hour of each biogas digester, and sludge application etc. were monitored and recorded.

## Acceptance of Sampling

Using own professional judgement, we assume that the Acceptable Quality Level (AQL) is 1% and the Unacceptable Quality Level (UQL) is 10% for this PoA<sup>1</sup>. The maximum error of producer's risk and consumer's risk is assumed at 5%, in compliance with the Standard for Sampling and Surveys for CDM Project Activities and Programme of Activities (hereafter referred to as the "sampling standard")<sup>25/</sup>. Based on these assumptions, GLC refers to the sampling standard<sup>25/</sup> and sampling guideline<sup>22/</sup> and found that sample size should be not less than 61 and acceptance number is 2. During on-site visit, 70 households (total sample size) were chosen by the verification team randomly to check the correctness of sampling size and data that need to be monitored. This is considered to be a good practice.

parameter	number of samples by C/ME	number of samples by GLC	acceptance number	discrepant records	acceptable or not
Number of systems operating in each CPA ( $N_k$ )	200	70	2	0	yes
Mean annual operation hours of the digesters (t)	200	70	2	0	yes
Annual average number of animals of type LT in year y ( $N_{LT,y}$ )	200	70	2	2	yes
Proper sludge application ratio	200	70	2	0	yes

As per the above table, for the parameter "number of systems operating in each CPA ( $N_k$ )", "proper sludge application ratio" and "Mean annual operation hours of the digesters (t)", result of C/ME's is totally identical as the samples verified (cross-checked) by GLC. For the parameter "Annual average number of animals of type LT in year y ( $N_{LT,y}$ )", 2 minor discrepancies are found as below:

parameter	Serial No. of Household	Result from C/ME	Result from GLC
Annual average number of animals of type LT in year y ( $N_{LT,y}$ )	T2010-007	5.58	6.16
	2010TG-434	3.75	3.5

<sup>1</sup> As a side note, this assumption is same as that given in 'Best practice examples – acceptance sampling' Appendix C of EB69 Annex 5.

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In all, GLC observed that the number of discrepant records is less than or equal to the acceptance number. Therefore, in accordance with paragraph 28 of the sampling standard<sup>/25/</sup>, GLC is able to confirm that the sample size and sampling result is acceptable.

To make sure the data would be well collected during on-site sampling, survey staffs were well trained<sup>/23/</sup> before they start the collecting work. A copy of training material and training records<sup>/23/</sup> were reviewed and verified by the verification team. Photos of the training courses were also supplied and GLC is able to confirm that the survey staffs were well trained before start working. When the survey staffs went to the households, questionnaire papers were supplied to the households and users are required to answer the questions on the questionnaire papers<sup>/27/</sup>. After the questionnaire papers were filled, both survey staff and the user signed on the questionnaire papers. After all the users filled in such questionnaire papers, survey staff were required to fill a table, on which general information of each household are clearly included. Then the table were checked and confirmed by the SREO<sup>/28/</sup>. The questionnaire papers<sup>/27/</sup> and Table of checked and accepted documents<sup>/28/</sup> were well preserved and supplied to the verification team during on-site verification. Questions in the questionnaire paper are as below:

- 1) Digester ID
- 2) Name of household user
- 3) Address of the household
- 4) Operation status
- 5) Number of days/hours that the digester temporarily stop running
- 6) Number of pigs in every month
- 7) Sludge utilization
- 8) Quantity of smoke while cooking
- 9) Frequency of illness
- 10) Floor, shelter and roof status of the toilet
- 11) Do you have any animal barn?
- 12) Floor, shelter and roof status of the barn
- 13) Is there any manure going to river outside the barn?
- 14) Can people enter home without going through animal barns?
- 15) Did you get training from technicians on the usage of biogas digester?
- 16) Any change on the coal/firewood/electricity consumption after digester installed?
- 17) Any change on household's expense for coal purchase after installation of digester?

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GLC has checked the questionnaire papers<sup>27/</sup> filled by the household users, Table of checked and accepted documents<sup>28/</sup>, Survey list of the 200 samples<sup>26/</sup> summarized by the C/ME. GLC is able to confirm that the sampling process is reliable.

To ensure the data used in the calculation are correct, a QA/QC procedure was established by the C/ME.

## Step 1: Supervisor Check

When the monitoring data was collected, the supervisor of the county reviewed all the questionnaires collected from each interviewer. Data on the questionnaires need to be subject to five kinds of checks: range checks (outlier data), checks against reference data, skip checks, consistency checks and typographic checks.

## Step 2: Data Entry

A data entry program should be used with suspect range and logical consistency triggers. One simple solution is to set up a spreadsheet data entry template with validity check triggers.

## Step 3: Data Check Algorithms

Project data management software was used to check for the inconsistencies, missing values, identification numbers, double data entry. One simple solution is to use sort and filter function of spreadsheet.

## Step 4: Analytical Checks:

By basic descriptive statistics, the outliers could be easily figured out. Further statistical analysis can work more characteristics of the data by professional analysis tools.

The monitoring sampling data, both hard and soft copy, are stored carefully by C/ME within the whole crediting period. Two hardcopies of monitoring questionnaires need to be stored in C/ME offices in Beijing and Chengdu separately to avoid information missing. The GLC's verification team is able to confirm that the QA/QC procedure is in place and working properly.

The application of the monitoring plan<sup>2/3/4/</sup> for the verification period is summarized in this section. The information flow and the values in the monitoring report were verified as follows:

	Assessment activities
<b>Data / Parameter (as per monitoring plan in the CPA-DD):</b>	<b>N<sub>k</sub></b> , Number of systems operating in each CPA.
Type of monitoring equipment:	Not applicable. The parameter has been determined by a sample survey.
Verification of data generation:	In order to determine the number of systems operating in each CPA, C/ME have followed sampling approach as described above and randomly selected 200 households

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	<p>for interview<sup>/26//27//28/</sup>. The information obtained from household interviews has been recorded in the form of questionnaire papers<sup>/27/</sup>. Well trained survey staff<sup>/23/</sup> were in charge of collecting and recording the information from the questionnaire papers<sup>/27/</sup>. The information collected by the survey staffs has been supplied to Chengdu Oasis Science &amp; Technology Co., Ltd. (the C/ME) and data was transferred to automatic database system to determine the value of this parameter.</p> <p>GLC's verification team was provided with the Survey list of the 200 samples<sup>/26/</sup>, the questionnaire papers filled by the households<sup>/27/</sup>, and Table of checked and accepted documents <sup>/28/</sup>. The verification team has also visited 70 of these households on a random sampling basis and interviewed the users. A calculation on the reliability of the sample size was done by the verification team and confirmed that the sample size selected by the C/ME is reliable and conservative. Based on the result of acceptance sampling, the monitoring records are deemed acceptable by GLC in accordance with paragraph 28 of the sampling standard<sup>/25/</sup>.</p> <p>Therefore, based on the document review and onsite verification, GLC's verification team is of the opinion that the data generation is reliable and the procedures applied by the C/ME are appropriate.</p>
Measuring frequency:	Annually.
Is measuring frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. According to the applied methodologies <sup>/8/</sup> , this parameter should be monitored annually. Therefore, monitoring frequency of this PoA <sup>/2/</sup> during this monitoring period is consistent with the applied methodologies <sup>/8/</sup> . The frequency is considered to be appropriate.
Is accuracy of the monitoring equipment as stated in the CPA-DD? If the CPA-DD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	No equipment is used to monitor the parameter. Therefore, this section is not applicable.
Verification of data aggregation:	The parameter was calculated by sampling approach. A sampling plan was established in the monitoring report <sup>/7/</sup> . Simple random sampling approach <sup>/22/</sup> was selected and confidence/precision was defined as



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	<p>95/10<sup>/25/</sup>. Sample size calculation equations of simple random sampling approach defined in the Guidelines for Sampling and Surveys for CDM Project Activities and Programme of Activities<sup>/22/</sup> was followed and sample size were correctly calculated.</p> <p>The households selected as samples were interviewed and questionnaire papers<sup>/27/</sup> were filled. Well trained<sup>/23/</sup> survey staffs collected and reported<sup>/28/</sup> the key information and supplied to the C/ME, and then the data were analyzed and accumulated in a database system. The data and calculations provided were checked by the verification team during desk review and site visit. The verification team confirms that the data aggregation performed by the C/ME is correct.</p>
<p>Verification of data recording:</p>	<p>The data were collected by well trained survey staffs<sup>/23/</sup>. GLC checked the training material, training course photo and training records<sup>/23/</sup> and able to confirm that the staff on-duty are clearly aware of their job duties. The questionnaire papers<sup>/27/</sup> and Table of checked and accepted documents<sup>/28/</sup> were also checked by the verification team, on which annual operation period on daily basis were clearly indicated. Based on the result of acceptance sampling, the monitoring records are deemed acceptable by GLC in accordance with paragraph 28 of the sampling standard<sup>/25/</sup>. Therefore, GLC is able to confirm that the data recording process is correct and reliable.</p>
<p>Verification of data calculation and reporting</p>	<p>Please refer to “Verification of data recording”.</p>
<p>Reporting frequency:</p>	<p>Annually</p>
<p>Is reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)</p>	<p>Yes. Reporting frequency has not been specified either in the applied methodologies<sup>/8/</sup> or the monitoring plan<sup>/2/3/4/</sup>. Reporting frequency is consistent with the monitoring frequency, and it's deemed acceptable by GLC.</p>
<p>If applicable, has the reported data been cross-checked with other available data?</p>	<p>The parameter has been crosschecked during onsite interviews. According to the Survey list of the 200 samples<sup>/26/</sup> supplied by the C/ME, all 200 biogas digesters were under operation. During on-site inspection, all 70 households that randomly selected by the verification team were also under operation (see explanation above with regards to acceptance sampling). The verification team cross checked the</p>

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	<p>results and confirm the value obtained is reliable.</p> <p>The number of systems operating in CPA SCHHBG-2010-001 is 1000; The number of systems operating in CPA SCHHBG-2012-002 to CPA SCHHBG-2012-053 is 4601 in each CPA;</p>
How were the values in the monitoring report verified?	Please see "If applicable, has the reported data been cross-checked with other available data?"
Does the data management (from monitoring equipment to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	<p>Yes. This monitoring parameter has been determined through a comprehensive monitoring survey that follows the latest guidelines of the EB.</p> <p>A QA/QC procedure was established in the monitoring report<sup>2/3/4/</sup>. Data collected by the survey staff were reviewed by supervisor. Data Entry Program was used with suspect range and logical consistency triggers to avoid invalid data. Project data management software was used to check for inconsistencies, missing value, identification numbers, double data entry.</p>

	Assessment activities
<b>Data / Parameter (as per monitoring plan in the CPA-DD):</b>	t, Mean annual operation hours of the digesters.
Type of monitoring equipment:	Not applicable. The parameter has been determined by a sample survey.
Verification of data generation:	<p>In order to determine the mean annual operation hours of the digesters, C/ME have followed sampling approach as described above and randomly selected 200 households for interview<sup>26/27/28/</sup>. The information obtained from household interviews has been recorded in the form of questionnaire paper. Well trained survey staff<sup>23/</sup> were in charge of collecting and recording the information from the questionnaire papers<sup>27/</sup>. The information collected by the survey staffs has been supplied to Chengdu Oasis Science &amp; Technology Co., Ltd. (the C/ME) and data was transferred to automatic database system to determine the value of this parameter.</p> <p>GLC's verification team was provided with the Survey list of the 200 samples<sup>26/</sup>, the questionnaire papers filled by the households<sup>27/</sup>, and Table of checked and accepted documents <sup>28/</sup>. The verification team has also visited 70</p>

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	<p>of these households on a random sampling basis and interviewed the users. A calculation on the reliability of the sample size was done by the verification team and confirmed that the sample size selected by the C/ME is reliable and conservative. Based on the result of acceptance sampling, the monitoring records are deemed acceptable by GLC in accordance with paragraph 28 of the sampling standard<sup>/25/</sup>.</p> <p>Therefore, based on the document review and onsite verification, GLC's verification team is of the opinion that the data generation is reliable and the procedures applied by the C/ME are appropriate.</p>
Measuring frequency:	Annually
Is measuring frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. According to the monitoring plan in the registered PoA-DD <sup>/2/</sup> , this parameter should be monitored annually. Therefore, monitoring frequency of this PoA <sup>/2/</sup> during this monitoring period is consistent with the registered monitoring plan <sup>/2/</sup> . The frequency is considered to be appropriate.
Is accuracy of the monitoring equipment as stated in the CPA-DD? If the CPA-DD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	No equipment is used to monitor the parameter. Therefore, this section is not applicable.
Verification of data aggregation:	<p>The parameter was calculated by sampling approach. A sampling plan was established in the monitoring report<sup>/7/</sup>. Simple random sampling approach<sup>/22/</sup> was selected and confidence/precision was defined as 95/10<sup>/25/</sup>. Sample size calculation equations of simple random sampling approach defined in the Guidelines for Sampling and Surveys for CDM Project Activities and Programme of Activities<sup>/22/</sup> was followed and sample size were correctly calculated.</p> <p>The households that selected as samples were interviewed and questionnaire papers<sup>/27/</sup> were filled. Well trained<sup>/23/</sup> survey staffs collected and reported<sup>/28/</sup> the key information and supplied to the C/ME, and then the data were analyzed and accumulated in a database system. The data and calculations provided were checked by the verification team during desk review and on-site visit. The verification team confirms that the data aggregation</p>

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	performed by the C/ME is correct.
Verification of data recording:	The data were collected by well trained survey staffs. GLC checked the training material, training course photo and training records <sup>/23/</sup> and able to confirm that the staff on-duty are clearly aware of their job duties. The questionnaire papers <sup>/27/</sup> and Table of checked and accepted documents <sup>/28/</sup> were also checked by the verification team, on which all information needed were clearly indicated. Based on the result of acceptance sampling, the monitoring records are deemed acceptable by GLC in accordance with paragraph 28 of the sampling standard. Therefore, GLC is able to confirm that the data recording process is correct and reliable.
Verification of data calculation and reporting	Please refer to "Verification of data recording".
Reporting frequency:	Annually
Is reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. Reporting frequency has not been specified either in the applied methodologies <sup>/8/</sup> or the monitoring plan <sup>/21/3//4/</sup> . Reporting frequency is consistent with the monitoring frequency, and it's considered to be appropriate.
If applicable, has the reported data been cross-checked with other available data?	The parameter was collected by the survey staff during their on-site survey. C/ME collected value of all the 200 sample questionnaires and calculated the mean annual operation hours of the digesters as 8,628 hours.  During on-site inspection, 70 households were randomly selected by the verification team for the purpose of acceptance sampling. Annual operation hours of selected households are same as the result presented by the C/ME. Therefore, the sampling result is concluded as acceptable.  The verification team cross checked the results and confirm the value obtained is reliable.
How were the values in the monitoring report verified?	Please see "If applicable, has the reported data been cross-checked with other available data?"
Does the data management (from monitoring equipment to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary	Yes. This monitoring parameter has been determined through a comprehensive monitoring survey that follows the latest guidelines of the EB. A QA/QC procedure was established in the monitoring

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QA/QC processes in place?	report <sup>2/3/4/</sup> . Data collected by the survey staff were reviewed by supervisor. Data Entry Program was used with suspect range and logical consistency triggers to avoid invalid data. Project data management software was used to check for inconsistencies, missing value, identification numbers, double data entry.
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	Assessment activities
<b>Data / Parameter (as per monitoring plan in the CPA-DD):</b>	T, Mean annual temperature in city k. This parameter determines the emission factors of the existing manure management systems.
Type of monitoring equipment:	Not applicable. The parameter is from official publication.
Verification of data generation:	According to the registered PoA-DD <sup>2/</sup> and CPA-DDs <sup>3/4/</sup> , latest available official publication should be used. When the monitoring report <sup>7/</sup> is published on the UNFCCC website, Sichuan Statistical Yearbook 2013 <sup>21/</sup> which provided the annual average temperature for the year 2012 is the latest available source. Therefore, Mean annual temperature in the Sichuan Statistical Yearbook 2013 <sup>21/</sup> is applied.
Measuring frequency:	Annually
Is measuring frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	The measuring frequency is annually, which is consistent with the monitoring plan in registered PoA-DD <sup>2/</sup> . Therefore the frequency is deemed to be acceptable.
Is accuracy of the monitoring equipment as stated in the CPA-DD? If the CPA-DD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	No equipment is used to monitor the parameter. Therefore, this section is not applicable.
Verification of data aggregation:	The parameter is from the latest available official publication <sup>21/</sup> , therefore data aggregation is not applicable.
Verification of data recording:	The parameter is from the latest available official publication <sup>21/</sup> , therefore data recording is not applicable.

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<p>Verification of data calculation and reporting</p>	<p>The verification team has checked the mean annual temperature in each city in the monitoring report<sup>7/</sup> and compare the value in Sichuan Statistical Yearbook 2013<sup>21/</sup>. GLC is able to confirm that the value in the monitoring report<sup>7/</sup> is consistent with the source<sup>21/</sup>, which is the latest available official publication. Mean annual temperature of each city is list as below:</p> <table border="1" data-bbox="767 622 1436 1111"> <thead> <tr> <th>City</th> <th>Temperature (°C)</th> <th>City</th> <th>Temperature (°C)</th> </tr> </thead> <tbody> <tr> <td>Bazhong</td> <td>16.7</td> <td>Meishan</td> <td>17.1</td> </tr> <tr> <td>Chengdu</td> <td>15.9</td> <td>Mianyang</td> <td>16.5</td> </tr> <tr> <td>Dazhou</td> <td>17.4</td> <td>Nanchong</td> <td>17.7</td> </tr> <tr> <td>Deyang</td> <td>16</td> <td>Neijiang</td> <td>17.1</td> </tr> <tr> <td>Guang'an</td> <td>17.5</td> <td>Panzhihua</td> <td>22.1</td> </tr> <tr> <td>Guangyuan</td> <td>16.3</td> <td>Suining</td> <td>16.8</td> </tr> <tr> <td>Kangding</td> <td>7.1</td> <td>Xichang</td> <td>17.9</td> </tr> <tr> <td>Leshan</td> <td>17.2</td> <td>Yaan</td> <td>15.9</td> </tr> <tr> <td>Luzhou</td> <td>17.2</td> <td>Yibin</td> <td>17.8</td> </tr> <tr> <td>Maerkang</td> <td>9.0</td> <td>Zigong</td> <td>17.8</td> </tr> <tr> <td>Ziyang</td> <td>17.0</td> <td>-</td> <td>-</td> </tr> </tbody> </table>	City	Temperature (°C)	City	Temperature (°C)	Bazhong	16.7	Meishan	17.1	Chengdu	15.9	Mianyang	16.5	Dazhou	17.4	Nanchong	17.7	Deyang	16	Neijiang	17.1	Guang'an	17.5	Panzhihua	22.1	Guangyuan	16.3	Suining	16.8	Kangding	7.1	Xichang	17.9	Leshan	17.2	Yaan	15.9	Luzhou	17.2	Yibin	17.8	Maerkang	9.0	Zigong	17.8	Ziyang	17.0	-	-
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Guangyuan	16.3	Suining	16.8																																														
Kangding	7.1	Xichang	17.9																																														
Leshan	17.2	Yaan	15.9																																														
Luzhou	17.2	Yibin	17.8																																														
Maerkang	9.0	Zigong	17.8																																														
Ziyang	17.0	-	-																																														
<p>Reporting frequency:</p>	<p>Once for the monitoring period.</p>																																																
<p>Is reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)</p>	<p>The reporting frequency has not been specified either in the applied methodology<sup>8/</sup> or the monitoring plan<sup>2/3/4/</sup>. However, the value should be adopted from the latest available official publication<sup>21/</sup>, while the requirement has been fulfilled.</p>																																																
<p>If applicable, has the reported data been cross-checked with other available data?</p>	<p>N/A. This is not required as per the defined monitoring plan.</p>																																																
<p>How were the values in the monitoring report verified?</p>	<p>The value is from the latest available official publication<sup>21/</sup>, as and approved by official agencies. GLC has verified the same against original data source and can confirm on correctness.</p>																																																
<p>Does the data management (from monitoring equipment to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?</p>	<p>Yes. Data were from the latest available official publication<sup>21/</sup>, which was confirmed and acceptable by local government. Therefore the data is able to ensure the correctness of emission reduction calculation.</p>																																																

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	Assessment activities
<b>Data / Parameter (as per monitoring plan in the CPA-DD):</b>	<b>MCF<sub>j,k</sub></b> , Methane conversion factors for each manure management system j in climate region k.
Type of monitoring equipment:	Not applicable. The parameter is from official publication.
Verification of data generation:	The value is the methane conversion factor under different temperature. As the 240,252 households are distributed in 21 different cities, the methane conversion factor is different from each other due to different temperature. The value is available in the IPCC 2006 Guidelines for National Greenhouse Gas Inventories, Volume 4, Chapter 10, Table 10.17 <sup>/10/</sup> , in which, different temperature is corresponding different MCF <sub>j,k</sub> value.
Measuring frequency:	Annually
Is measuring frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	The measuring frequency is annually, which is consistent with the monitoring plan in registered PoA-DD <sup>/2/</sup> . Therefore the frequency is deemed to be acceptable by GLC.
Is accuracy of the monitoring equipment as stated in the CPA-DD? If the CPA-DD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	No equipment is used to monitor the parameter. Therefore, this section is not applicable.
Verification of data aggregation:	The parameter is from IPCC 2006 Guidelines <sup>/10/</sup> related with T (Mean annual temperature in city k), which is the latest available official publication <sup>/21/</sup> . Therefore data aggregation is not applicable.
Verification of data recording:	The parameter is from IPCC 2006 Guidelines <sup>/10/</sup> related with T (Mean annual temperature in city k), which is the latest available official publication <sup>/21/</sup> . Therefore data recording is not applicable.
Verification of data calculation and reporting	The verification team has checked the mean annual temperature in each city in the monitoring report <sup>/7/</sup> , mean annual temperature in Sichuan Statistical Yearbook 2013 <sup>/21/</sup> , and IPCC 2006 Guidelines for National Greenhouse Gas Inventories, Volume 4, Chapter 10, Table 10.17 <sup>/10/</sup> . GLC is able to confirm that the MCF <sub>j,k</sub> value adopted in the monitoring report <sup>/7/</sup> is consistent

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	<p>with the value in IPCC report<sup>/10/</sup>. MCF<sub>j,k</sub> value in each city is as below:</p> <table border="1"> <thead> <tr> <th>City</th> <th>MCF<sub>j,k</sub> (%)</th> <th>City</th> <th>MCF<sub>j,k</sub> (%)</th> </tr> </thead> <tbody> <tr> <td>Bazhong</td> <td>32</td> <td>Meishan</td> <td>32</td> </tr> <tr> <td>Chengdu</td> <td>29</td> <td>Mianyang</td> <td>32</td> </tr> <tr> <td>Dazhou</td> <td>32</td> <td>Nanchong</td> <td>35</td> </tr> <tr> <td>Deyang</td> <td>29</td> <td>Neijiang</td> <td>32</td> </tr> <tr> <td>Guang'an</td> <td>35</td> <td>Panzhuhua</td> <td>50</td> </tr> <tr> <td>Guangyuan</td> <td>29</td> <td>Suining</td> <td>32</td> </tr> <tr> <td>Kangding</td> <td>17</td> <td>Xichang</td> <td>35</td> </tr> <tr> <td>Leshan</td> <td>32</td> <td>Yaan</td> <td>29</td> </tr> <tr> <td>Luzhou</td> <td>32</td> <td>Yibin</td> <td>35</td> </tr> <tr> <td>Maerkang</td> <td>17</td> <td>Zigong</td> <td>35</td> </tr> <tr> <td>Ziyang</td> <td>32</td> <td>-</td> <td>-</td> </tr> </tbody> </table>	City	MCF <sub>j,k</sub> (%)	City	MCF <sub>j,k</sub> (%)	Bazhong	32	Meishan	32	Chengdu	29	Mianyang	32	Dazhou	32	Nanchong	35	Deyang	29	Neijiang	32	Guang'an	35	Panzhuhua	50	Guangyuan	29	Suining	32	Kangding	17	Xichang	35	Leshan	32	Yaan	29	Luzhou	32	Yibin	35	Maerkang	17	Zigong	35	Ziyang	32	-	-
City	MCF <sub>j,k</sub> (%)	City	MCF <sub>j,k</sub> (%)																																														
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Dazhou	32	Nanchong	35																																														
Deyang	29	Neijiang	32																																														
Guang'an	35	Panzhuhua	50																																														
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Luzhou	32	Yibin	35																																														
Maerkang	17	Zigong	35																																														
Ziyang	32	-	-																																														
Reporting frequency:	Once for the monitoring period.																																																
Is reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	The reporting frequency has not been specified either in the applied methodology <sup>/8/</sup> or the monitoring plan <sup>/2//3//4/</sup> . Therefore the frequency is deemed to be acceptable.																																																
If applicable, has the reported data been cross-checked with other available data?	N/A. This is not required as per the defined monitoring plan.																																																
How were the values in the monitoring report verified?	The values are from IPCC report <sup>/10/</sup> corresponding to the applied ambient temperature of each city based on the latest available official publication <sup>/21/</sup> . GLC has verified the same against original data sources and can confirm on correctness.																																																
Does the data management (from monitoring equipment to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes. The parameter is from IPCC 2006 Guidelines <sup>/10/</sup> related with T (Mean annual temperature in city k), which is the latest available official publication <sup>/21/</sup> , and confirmed and acceptable by local government. Therefore the data is able to ensure the correctness of emission reduction calculation.																																																

	Assessment activities
<b>Data / Parameter (as per monitoring plan in the CPA-DD):</b>	N <sub>LT,y</sub> , Annual average number of animals of type LT in year y (numbers).
Type of monitoring equipment:	Not applicable. The parameter has been determined by a sample survey.



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<p>Verification of data generation:</p>	<p>In order to determine the average number of pigs in each household during this monitoring period, C/ME have followed sampling approach as described above and randomly selected 200 households for interview<sup>/26//27//28/</sup>.</p> <p>The information obtained from household interviews has been recorded in the form of questionnaire papers<sup>/27/</sup>. Well trained survey staff<sup>/23/</sup> were in charge of collecting and recording the information from the questionnaire papers<sup>/27/</sup>. The information collected by the survey staffs has been supplied to Chengdu Oasis Science &amp; Technology Co., Ltd. (the C/ME) and data was transferred to automatic database system to determine the value of this parameter.</p> <p>GLC's verification team was provided with the Survey list of the 200 samples<sup>/26/</sup>, the questionnaire papers filled by the households<sup>/27/</sup>, and Table of checked and accepted documents <sup>/28/</sup>. The verification team has also visited 70 of these households on a random sampling basis, interviewed the users, and checked the number of pigs on monthly basis of each household. A calculation on the reliability of the sample size was done by GLC verification team and confirmed that the sample size selected by the C/ME is reliable and conservative. Based on the result of acceptance sampling, the monitoring records are deemed acceptable by GLC in accordance with paragraph 28 of the sampling standard.</p> <p>Therefore, based on the document review and onsite verification, GLC's verification team is of the opinion that the data generation is reliable and the procedures applied by the C/ME are appropriate.</p>
<p>Measuring frequency:</p>	<p>Annually</p>
<p>Is measuring frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)</p>	<p>Yes. According to the monitoring plan in registered PoA-DD<sup>/2/</sup>, this parameter should be monitored annually. Therefore, monitoring frequency of this PoA<sup>/2/</sup> during this monitoring period is consistent with the monitoring plan<sup>/2/</sup>. The frequency is considered to be appropriate</p>
<p>Is accuracy of the monitoring equipment as stated in the CPA-DD? If the CPA-DD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good</p>	<p>No equipment is used to monitor the parameter. Therefore, this section is not applicable.</p>

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monitoring practise?	
Verification of data aggregation:	<p>The parameter was calculated by sampling approach. A sampling plan was established in the monitoring report<sup>7/</sup>. Simple random sampling approach<sup>22/</sup> was selected and confidence/precision was defined as 95/10<sup>25/</sup>. Sample size calculation equations of simple random sampling approach defined in the Guidelines for Sampling and Surveys for CDM Project Activities and Programme of Activities<sup>22/</sup> was followed and sample size were correctly calculated.</p> <p>The households that selected as samples were interviewed and the number of pigs on monthly basis of each household were filled in the questionnaire papers<sup>27/</sup>. Well trained<sup>23/</sup> survey staffs collected and reported<sup>28/</sup> the key information and supplied to the C/ME, and then the data were analyzed and accumulated in a database system. The data and calculations provided were checked by the verification team during desk review and site visit. The verification team confirms that the data aggregation performed by the C/ME is correct.</p>
Verification of data recording:	<p>The data were collected by well trained survey staffs<sup>23/</sup>. GLC checked the training material, training course photo and training records<sup>23/</sup> and able to confirm that the staff on-duty are clearly aware of their job duties. The questionnaire papers<sup>27/</sup> and Table of checked and accepted documents<sup>28/</sup> were also checked by the verification team, on which the number of pigs on monthly basis of each household were clearly indicated. Based on the result of acceptance sampling, the monitoring records are deemed acceptable by GLC in accordance with paragraph 28 of the sampling standard. Therefore, GLC is able to confirm that the data recording process is correct and reliable.</p>
Verification of data calculation and reporting	Please refer to "Verification of data aggregation" and "Verification of data recording".
Reporting frequency:	Annually
Is reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. Reporting frequency has not been specified either in the applied methodologies <sup>8/</sup> or the monitoring plan <sup>2/3/4/</sup> . Reporting frequency is consistent with the monitoring frequency, and it's deemed acceptable by GLC.

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<p>If applicable, has the reported data been cross-checked with other available data?</p>	<p>The parameter has been crosschecked during onsite interviews. According to the Survey list of the 200 samples<sup>/26/</sup> supplied by the C/ME, average number of pigs during this monitoring period is 4.42. During on-site inspection, 70 households randomly selected by the verification team were interviewed. Number of pigs in 2 households in the result of C/ME's is different from GLC's independent check. The verification team cross checked the results and confirm the value obtained is reliable and acceptable (since the number of discrepant records being equal to the acceptance number).</p>
<p>How were the values in the monitoring report verified?</p>	<p>Please see "If applicable, has the reported data been cross-checked with other available data?"</p>
<p>Does the data management (from monitoring equipment to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?</p>	<p>Yes. This monitoring parameter has been determined through a comprehensive monitoring survey that follows the latest guidelines of the EB. A QA/QC procedure was established in the monitoring report<sup>/21/3/4/</sup>. Data collected by the survey staff were reviewed by supervisor. Data Entry Program was used with suspect range and logical consistency triggers to avoid invalid data. Project data management software was used to check for inconsistencies, missing value, identification numbers, double data entry.</p>

	Assessment activities
<p><b>Data / Parameter (as per monitoring plan in the CPA-DD):</b></p>	<p><b>Proper sludge application ratio</b>, Land application of digestate from biogas digesters to avoid anaerobic digestion.</p>
<p>Type of monitoring equipment:</p>	<p>Not applicable. The parameter has been determined by a sample survey.</p>
<p>Verification of data generation:</p>	<p>In order to determine the proper sludge application ratio, C/ME have followed sampling approach as described above and randomly selected 200 households for interview<sup>/26/27/28/</sup>. The information obtained from household interviews has been recorded in the form of questionnaire papers<sup>/27/</sup>. Well trained survey staff<sup>/23/</sup> were in charge of collecting and recording the information from the questionnaire papers<sup>/27/</sup>. The information collected by the survey staffs has been supplied to Chengdu Oasis Science &amp; Technology Co., Ltd. (the C/ME) and data was transferred to automatic</p>

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	<p>database system to determine the value of this parameter.</p> <p>GLC's verification team was provided with the Survey list of the 200 samples<sup>/26/</sup>, the questionnaire papers filled by the households<sup>/27/</sup>, and Table of checked and accepted documents filled by the survey staffs<sup>/28/</sup>. The verification team has also visited 70 of these households on a random sampling basis and interviewed the users. A calculation on the reliability of the sample size was done by the verification team and confirmed that the sample size selected by the C/ME is reliable and conservative. Based on the result of acceptance sampling, the monitoring records are deemed acceptable by GLC in accordance with paragraph 28 of the sampling standard.</p> <p>Therefore, based on the document review and onsite verification, GLC's verification team is of the opinion that the data generation is reliable and the procedures applied by the C/ME are appropriate.</p>
Measuring frequency:	Annually
Is measuring frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. In this PoA, this parameter was measured annually in accordance with that defined in the monitoring plan <sup>/4/</sup> . The frequency is considered to be appropriate.
Is accuracy of the monitoring equipment as stated in the CPA-DD? If the CPA-DD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	No equipment is used to monitor the parameter. Therefore, this section is not applicable.
Verification of data aggregation:	<p>The parameter was calculated by sampling approach. A sampling plan was established in the monitoring report<sup>/7/</sup>. Simple random sampling approach<sup>/22/</sup> was selected and confidence/precision was defined as 95/10<sup>/25/</sup>. Sample size calculation equations of simple random sampling approach defined in the Guidelines for Sampling and Surveys for CDM Project Activities and Programme of Activities<sup>/22/</sup> was followed and sample size were correctly calculated.</p> <p>The households that selected as samples were interviewed and questionnaire papers<sup>/27/</sup> were filled. Well trained<sup>/23/</sup> survey staffs collected and reported<sup>/28/</sup> the key information and supplied to the C/ME, and then the data</p>

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	were analyzed and accumulated in a database system. The data and calculations provided were checked by the verification team during desk review and site visit. The verification team confirms that the data aggregation performed by the C/ME is correct.
Verification of data recording:	The data were collected by well trained survey staffs <sup>/23/</sup> . GLC checked the training material, training course photo and training records <sup>/23/</sup> and able to confirm that the staff on-duty are clearly aware of their job duties. The questionnaire papers <sup>/27/</sup> and Table of checked and accepted documents <sup>/28/</sup> were also checked by the verification team, on which sludge application status were clearly indicated. Based on the result of acceptance sampling, the monitoring records are deemed acceptable by GLC in accordance with paragraph 28 of the sampling standard. Therefore, GLC is able to confirm that the data recording process is correct and reliable.
Verification of data calculation and reporting	Please refer to "Verification of data recording".
Reporting frequency:	Annually
Is reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. Reporting frequency has not been specified either in the applied methodologies <sup>/8/</sup> or the monitoring plan <sup>/2/3/4/</sup> . Reporting frequency is consistent with the monitoring frequency, and it's deemed acceptable by GLC.
If applicable, has the reported data been cross-checked with other available data?	The parameter has been crosschecked during onsite interviews. According to the Survey list of the 200 samples <sup>/26/</sup> supplied by the C/ME, sludge of all the 200 biogas digesters were properly managed. During on-site inspection, all 70 households randomly selected by the verification team were also interviewed about the application of sludge, and it was confirmed that 100% of all the surveyed households have properly managed the sludge (see explanation above with regards to acceptance sampling). The verification team cross checked the results and confirm the value obtained is reliable.
How were the values in the monitoring report verified?	Please see "If applicable, has the reported data been cross-checked with other available data?"
Does the data management (from monitoring equipment to emission reduction calculation)	Yes. This monitoring parameter has been determined through a comprehensive monitoring survey that follows

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<p>ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?</p>	<p>the latest guidelines of the EB. A QA/QC procedure was established in the monitoring report<sup>2/3/4/</sup>. Data collected by the survey staff were reviewed by supervisor. Data Entry Program was used with suspect range and logical consistency triggers to avoid invalid data. Project data management software was used to check for inconsistencies, missing value, identification numbers, double data entry.</p>
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	Assessment activities
<p><b>Data / Parameter (as per monitoring plan in the CPA-DD):</b></p>	<p>EF<sub>CO2,i,y</sub>, Emission Factor of raw coal</p>
<p>Type of monitoring equipment:</p>	<p>Not applicable. The parameter is from official publication.</p>
<p>Verification of data generation:</p>	<p>According to the registered PoA-DD<sup>2/</sup> and CPA-DDs<sup>3/4/</sup>, latest available official publication should be used. When the monitoring report<sup>7/</sup> is published on the UNFCCC website, latest data available is the official data from Chinese DNA<sup>29/</sup>. Therefore, Emission Factor of raw coal of Chinese DNA's Guideline of emission factors of Chinese grids 2013<sup>29/</sup> is applied.</p>
<p>Measuring frequency:</p>	<p>Annually</p>
<p>Is measuring frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)</p>	<p>Yes. Monitoring frequency of this PoA<sup>2/</sup> during this monitoring period is consistent with the PoA-DD<sup>2/</sup>. The frequency is considered to be appropriate.</p>
<p>Is accuracy of the monitoring equipment as stated in the CPA-DD? If the CPA-DD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?</p>	<p>No equipment is used to monitor the parameter. Therefore, this section is not applicable.</p>
<p>Verification of data aggregation:</p>	<p>This parameter is from latest available official publication<sup>29/</sup>, therefore data aggregation is not applicable.</p>
<p>Verification of data recording:</p>	<p>This parameter is from latest available official publication<sup>29/</sup>, therefore data recording is not applicable.</p>

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Verification of data calculation and reporting	The verification team has checked the Chinese DNA's Guideline of emission factors of Chinese grids 2013 <sup>/29/</sup> , which is the latest official publication available, and confirm that the data applied in the monitoring report <sup>/7/</sup> is correct.
Reporting frequency:	Once for the monitoring period.
Is reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	The reporting frequency has not been specified either in the applied methodologies <sup>/8/</sup> or the monitoring plan <sup>/2//3//4/</sup> . However, the value should be adopted from the latest available official publication <sup>/29/</sup> , while the requirement has been fulfilled.
If applicable, has the reported data been cross-checked with other available data?	N/A. This is not required as per the defined monitoring plan.
How were the values in the monitoring report verified?	The value is from the latest available official publication <sup>/29/</sup> , which was verified and approved by official agencies.
Does the data management (from monitoring equipment to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes. The parameter is from latest available official publication <sup>/29/</sup> , which is confirmed and accepted by local government. Therefore the data is able to ensure the correctness of emission reduction calculation

	Assessment activities
<b>Data / Parameter (as per monitoring plan in the CPA-DD):</b>	<b>NCV<sub>i,y</sub></b> , Net Calorific Value of raw coal
Type of monitoring equipment:	Not applicable. The parameter is from official publication.
Verification of data generation:	According to the registered PoA-DD <sup>/2/</sup> and CPA-DDs <sup>/3//4/</sup> , latest available official publication should be used. When the monitoring report <sup>/7/</sup> is published on the UNFCCC website, latest data available is the official data from Chinese DNA <sup>/29/</sup> . Therefore, Net Calorific Value of raw coal of Chinese DNA's Guideline of emission factors of Chinese grids 2013 <sup>/29/</sup> is applied.
Measuring frequency:	Once for the monitoring period.
Is measuring frequency in accordance with the monitoring plan and monitoring methodology?	The reporting frequency has not been specified either in the applied methodologies <sup>/8/</sup> or the monitoring plan <sup>/2//3//4/</sup> .

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methodology? (Yes / No)	Therefore the frequency is deemed to be acceptable.
Is accuracy of the monitoring equipment as stated in the CPA-DD? If the CPA-DD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	No equipment is used to monitor the parameter. Therefore, accuracy is not applicable.
Verification of data aggregation:	This parameter is from latest available official publication <sup>/29/</sup> , therefore data aggregation is not applicable.
Verification of data recording:	This parameter is from latest available official publication <sup>/29/</sup> , therefore data recording is not applicable.
Verification of data calculation and reporting	The verification team has checked the Chinese DNA's Guideline of emission factors of Chinese grids 2013 <sup>/29/</sup> , which is the latest official publication available, and confirm that the data applied in the monitoring report <sup>/7/</sup> is correct.
Reporting frequency:	Once for the monitoring period.
Is reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	The reporting frequency has not been specified either in the applied methodologies <sup>/8/</sup> or the monitoring plan <sup>/2//3//4/</sup> . However, the value should be adopted from the latest available official publication <sup>/29/</sup> , while the requirement has been fulfilled.
If applicable, has the reported data been cross-checked with other available data?	Yes. The data has been cross checked with latest official publication <sup>/29/</sup> to make sure latest data is applied to the ER calculation <sup>/13/</sup> . It was also cross checked with the IPCC default values <sup>/10/</sup> and the value falls into the appropriate range.
How were the values in the monitoring report verified?	The value is from the latest available official publication <sup>/29/</sup> , which was verified and approved by official agencies.
Does the data management (from monitoring equipment to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes. The parameter is from latest available official publication <sup>/29/</sup> , which is confirmed and accepted by local government. Therefore the data is able to ensure the correctness of emission reduction calculation

Thus GLC confirms that



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- the monitoring activities comply with the monitoring plan of the registered PoA-DD and the CPA-DD;
- all parameters that are baseline, project and leakage emission parameters are monitored as described in the registered monitoring plan;
- the frequency of monitoring and recording are in line with the registered monitoring plan;

Based on the document review and on-site visit interviews, GLC verifies that the registered monitoring plan<sup>/2//3//4/</sup> is implemented as planned and confirms that the operational and management system is implemented as per the registered monitoring plan<sup>/2//3//4/</sup>.

During the on-site visit the verification team was able to verify that monitoring organization structure and data collection procedure is in line with monitoring plan<sup>/3//4/</sup> of the registered/included CPA-DDs and monitoring report<sup>/7/</sup>. Moreover, the verification team has interviewed the 8 personnel who are working on the data collection and management, and 70 household users that were randomly selected during on-site inspection. The verification team verified certain documents, like Questionnaire papers that filled by the investigated households<sup>/27/</sup>, Table of checked and accepted documents for all constructed biogas digesters signed by local authority<sup>/28/</sup>, Survey list of the 200 samples<sup>/26/</sup>, Household list that included in each CPA (from CPA Nb. SCHHBG-2010-001 to CPA Nb. SCHHBG-2012-053)<sup>/24/</sup>, and Statement on the number of household equipped with biogas digester in this PoA (from CPA Nb. SCHHBG-2010-001 to CPA Nb. SCHHBG-2012-053)<sup>/19/</sup>. A monitoring mechanism which was established by the C/ME was found to be in place and working properly. Survey staffs were well trained<sup>/23/</sup> before start working and a data management system were established for data management. QA/QC procedure was established to avoid misuse of invalid data.

GLC was able to verify that authorities and responsibilities for monitoring and reporting of all data related to the emission reductions were clearly defined for this monitoring period. Moreover, the biogas digesters in all the CPAs included in the PoA during this monitoring period were properly installed with the help of technicians. Operation data were collected by well trained survey staff. The frequency of monitoring, measurement, as well as reporting details were conducted as outlined in the monitoring plan available in the latest version of the CPA-DDs<sup>/4/</sup>.

## 4.1.4 Compliance with the Calibration Frequency Requirements for Measuring Instruments

There is no monitoring equipment applied in the programme. Therefore, no calibration of equipment is needed.

## 4.1.5 Assessment of Data and Calculation of Emission Reductions

The document review and the site visit revealed that a complete set of data for the specified monitoring period is available. The correctness of information provided in the monitoring report has been verified by cross checks with Survey list of the 200 samples<sup>/26/</sup>, Questionnaire paper that filled by the investigated households<sup>/27/</sup>, Table of checked and accepted documents for all constructed biogas digesters signed by local authority<sup>/28/</sup>, Sichuan Statistical Yearbook 2013<sup>/21/</sup>, IPCC default value<sup>/10/</sup>, and Chinese DNA's

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Guideline of emission factors of Chinese grids 2013<sup>29/</sup>. Thus the verification team is convinced that the data adopted for ER calculation in this monitoring period is reliable.

The following ex-ante parameters have also been used for the emission reduction calculation:

Parameter	Value
<b>FC<sub>BL,y</sub></b> , Average annual coal consumption before the installation of the digesters (Tonnes of coal)	The value is calculated as the number of households times the average coal consumption per household before and after the completion of each CPA. There are 1,000 households in CPA Nb. SCHHBG-2010-001, while 4,601 households in Nb. SCHHBG-2012-002 to CPA Nb. SCHHBG-2012-053 each.  For CPA Nb. SCHHBG-2010-001: 1,006 (=1.006×1000)  For CPA Nb. SCHHBG-2012-002 to 053: 4,456.48 (=0.9686×4601)
<b>FC<sub>PE,y</sub></b> , Average annual coal consumption after the installation of the digesters (Tonnes of coal)	The value is calculated as the number of households times the average coal consumption per household before and after the completion of each CPA. There're 1,000 households in CPA Nb. SCHHBG-2010-001, while 4601 in Nb. SCHHBG-2012-002 to CPA Nb. SCHHBG-2012-053 each.  For CPA Nb. SCHHBG-2010-001: 47 (=0.047×1000)  For CPA Nb. SCHHBG-2012-002 to 053: 125.7 (=0.027×4601)
<b>VS<sub>LT,y</sub></b> , Daily volatile solid excreted per animal (kg dry matter animal <sup>-1</sup> year <sup>-1</sup> )	109.5
<b>B<sub>0,LT</sub></b> , Maximum methane producing capacity for manure produced by livestock of VS excreted (m <sup>3</sup> CH <sub>4</sub> kg <sup>-1</sup> )	0.29
<b>GWP<sub>CH4</sub></b> , Global warming potential for CH <sub>4</sub> .	Twenty one as stated in the registered PoA and CPA DD and applied in the 1 <sup>st</sup> monitoring period. In this monitoring period global warming potential for CH <sub>4</sub> is changed to 25 according to para. 66 of EB69 meeting report " <i>the Board agreed that the second commitment period global warming potentials (GWPs) shall apply to all calculations of emissions reductions or removals achieved from 1 January 2013</i> ".
<b>D<sub>CH4</sub></b> , Conversion factor of m <sup>3</sup> CH <sub>4</sub> to kilogram CH <sub>4</sub> .	0.67
<b>UF<sub>b</sub></b> , Model correction factor to account for model uncertainties	0.94

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GLC's verification team confirms that all the ex-ante parameters have been correctly mentioned/justified in section D.1 of the MR<sup>7/</sup> and applied in the ER calculation process.

GHG emissions reductions were correctly calculated in the latest version of the monitoring report<sup>7/</sup> for the monitoring period from 2013-06-06 to 2014-02-28. The total emission reductions are 389,006 tCO<sub>2e</sub> for the reported period.

It was verified in the course of this verification that the methodologies<sup>8/</sup> has been correctly and accurately applied in calculating the total emission reductions and the emission reduction calculation is deemed accurate. All calculations in the monitoring report and Emission Reduction calculation sheet<sup>13/</sup> are in line with the methodologies applied<sup>8/</sup>. Following formulae have been correctly applied to calculate the emission reduction in each CPA included in the PoA during this monitoring period:

## 1) Baseline emission

$$BE_{CH_4,y} = GWP_{CH_4} \cdot D_{CH_4} \cdot UF_b \cdot \sum_{j,LT} MCF_j \cdot B_{0,LT} \cdot N_{LT,y} \cdot VS_{LT,y} \cdot MS\%_{Bl,j}$$

$$BE_{CO_2,y} = FC_{BE,y} \cdot NCV_{coal,y} \cdot EF_{CO_2,coal,y}$$

## 2) Project emission

$$PE_{CH_4,y} = 0.10 \cdot GWP_{CH_4} \cdot D_{CH_4} \cdot \sum_{i,LT} B_{0,LT} \cdot N_{LT,y} \cdot VS_{LT,y} \cdot MS\%_{i,y}$$

$$PE_{CO_2,y} = FC_{PE,y} \cdot NCV_{coal,y} \cdot EF_{CO_2,coal,y}$$

## 3) Leakage

According to the PoA-DD and registered/included CPA-DDs, leakage emissions are assumed as zero.

## 4) Emission reduction

$$ER_{CH_4,y} = BE_{CH_4,y} - PE_{CH_4,y} - Leakage$$

$$ER_{CO_2,y} = BE_{CO_2,y} - PE_{CO_2,y} - Leakage$$

$$ER_y = ER_{CH_4,y} + ER_{CO_2,y}$$

The verification checked and recalculated the ER calculation spreadsheet<sup>13/</sup> and confirm that the spreadsheet<sup>13/</sup> is reproducible and calculation was correctly applied.

Therefore, amount of emission reduction of each CPA achieve during this monitoring period is:

CPA No.	Baseline emission (tCO <sub>2e</sub> )	Project emission (tCO <sub>2e</sub> )	Leakage (tCO <sub>2e</sub> )	Emission reduction (tCO <sub>2e</sub> )
SCHHBG-2010-001	1,917	236	0	1,681
SCHHBG-2012-002	8,588	963	0	7,625

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SCHHBG-2012-003	8,588	963	0	7,625
SCHHBG-2012-004	8,588	963	0	7,625
SCHHBG-2012-005	8,588	963	0	7,625
SCHHBG-2012-006	8,588	963	0	7,625
SCHHBG-2012-007	8,588	963	0	7,625
SCHHBG-2012-008	8,588	963	0	7,625
SCHHBG-2012-009	8,588	963	0	7,625
SCHHBG-2012-010	8,588	963	0	7,625
SCHHBG-2012-011	8,364	963	0	7,401
SCHHBG-2012-012	8,364	963	0	7,401
SCHHBG-2012-013	8,364	963	0	7,401
SCHHBG-2012-014	8,364	963	0	7,401
SCHHBG-2012-015	8,364	963	0	7,401
SCHHBG-2012-016	8,364	963	0	7,401
SCHHBG-2012-017	8,364	963	0	7,401
SCHHBG-2012-018	8,364	963	0	7,401
SCHHBG-2012-019	8,364	963	0	7,401
SCHHBG-2012-020	8,364	963	0	7,401
SCHHBG-2012-021	8,364	963	0	7,401
SCHHBG-2012-022	8,364	963	0	7,401
SCHHBG-2012-023	8,364	963	0	7,401
SCHHBG-2012-024	8,364	963	0	7,401
SCHHBG-2012-025	8,364	963	0	7,401
SCHHBG-2012-026	8,364	963	0	7,401
SCHHBG-2012-027	8,364	963	0	7,401
SCHHBG-2012-028	8,588	963	0	7,625
SCHHBG-2012-029	8,588	963	0	7,625
SCHHBG-2012-030	8,588	963	0	7,625
SCHHBG-2012-031	8,588	963	0	7,625
SCHHBG-2012-032	8,364	963	0	7,401
SCHHBG-2012-033	8,364	963	0	7,401
SCHHBG-2012-034	8,364	963	0	7,401
SCHHBG-2012-035	8,364	963	0	7,401
SCHHBG-2012-036	8,364	963	0	7,401
SCHHBG-2012-037	8,364	963	0	7,401
SCHHBG-2012-038	8,364	963	0	7,401
SCHHBG-2012-039	8,364	963	0	7,401
SCHHBG-2012-040	8,364	963	0	7,401
SCHHBG-2012-041	8,364	963	0	7,401
SCHHBG-2012-042	8,364	963	0	7,401
SCHHBG-2012-043	8,364	963	0	7,401
SCHHBG-2012-044	8,364	963	0	7,401
SCHHBG-2012-045	8,364	963	0	7,401
SCHHBG-2012-046	8,364	963	0	7,401
SCHHBG-2012-047	8,364	963	0	7,401

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SCHHBG-2012-048	8,364	963	0	7,401
SCHHBG-2012-049	8,588	963	0	7,625
SCHHBG-2012-050	8,364	963	0	7,401
SCHHBG-2012-051	8,364	963	0	7,401
SCHHBG-2012-052	7,569	963	0	6,606
SCHHBG-2012-053	8,496	963	0	7,533
Total (tCO <sub>2</sub> e)	439,318	50,312	-	389,006

The calculation has been thoroughly checked and is confirmed to be correct by reproducing the same. As a conclusion, GLC thus confirms that the reported emission reductions for verification period from 2013-06-06 to 2014-02-28 were determined in a transparent, correct and consistent manner, and in accordance with all measurement, reporting and calculation requirements of the monitoring plan of the CPA-DDs<sup>4/</sup>, monitoring methodologies<sup>8/</sup> and of all applicable tools, guidelines and standards. GLC thus confirms that, as presented in the latest versions of the summarized emission reduction spreadsheet and monitoring report, the project has achieved GHG emission reductions as follows:

Emission reductions for the verification period from 2013-06-06 to 2014-02-28 :	389,006 tCO <sub>2</sub> e
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## 4.2 Post Registration Changes

This assessment:

- Does not include any post registration changes and therefore this section is not applicable to this project activity.
- Includes changes as part of the request for issuance. The assessment of the changes is done in a separated document.
- Includes changes that required prior approval of the Board. The assessment of the changes was done in a separated document.

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## 5 VERIFICATION STATEMENT

Germanischer Lloyd Certification GmbH (GLC) has performed the 2nd verification of the project: Sichuan Rural Poor-Household Biogas Development Programme, with regard to the relevant requirements for Programme of Activities and their Component Project Activities. The project reduces GHG emissions due to by facilitating the installation of a large number of household biogas digesters. During the project activity, each household is equipped with a household biogas digester that will treat the manure anaerobically and recover the generated methane to be used for domestic cooking. After installation of the biogas systems, both sources of emissions will be reduced: No methane is emitted from the existing manure management systems, as the manure will be treated within the biogas digesters and furthermore, all recovered methane will be utilized for cooking to reduce the coal consumption of each household. This verification covers the period from 2013-06-06 to 2014-02-28 (including both days).

It is GLC's responsibility to express an independent verification statement on the reported GHG emission reductions from the PoA. GLC does not express any opinion on the selected baseline scenario or on the validated and included CPA-DDs<sup>4/</sup>. GLC conducted the verification on the basis of the monitoring methodologies<sup>8/</sup>, the monitoring plan<sup>2/1/3/4/</sup> included in the PoA-DD and CPA-DDs and the monitoring report<sup>7/</sup> of version 02.1, dated 2014-04-28. The verification included:

- (i) checking whether the design of the PoA and its CPAs is implemented and installed as planned and described in the registered/included design documents;
- (ii) checking whether the provisions of the monitoring methodologies and the monitoring plan in the CPA-DDs were consistently and appropriately applied
- (iii) the collection of evidence supporting the reported data.

GLC's verification approach draws on an understanding of the risks associated with reporting of GHG emission data and the controls in place to mitigate these. GLC planned and performed the verification by obtaining evidence and other information and explanations that GLC considers necessary to give reasonable assurance that reported GHG emission reductions are fairly stated.

In GLC's opinion, the GHG emissions reduction for the Sichuan Rural Poor-Household Biogas Development Programme as reported in the final Monitoring Report are calculated without considerable misstatements in a conservative and appropriate manner. The GHG emission reductions were correctly calculated on the basis of the approved monitoring methodologies mentioned above and the monitoring plan contained in the validated Design Documents for the PoA and its CPAs.

Germanischer Lloyd Certification GmbH herewith confirms that the project has achieved emission reductions in the above mentioned reporting period as follows:

Emission reductions (from 2013-06-06 to 2014-02-28):

389,006 tCO<sub>2</sub>e

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2014-06-17

Markus Weber

Germanischer Lloyd  
Certification

# Verification and Certification Report

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## 6 REFERENCES

Reference	Document List
/1/	CDM-EB: Clean Development Mechanism Validation and Verification Standard, version 06.0, dated 2014-04-11 and version 07.0, dated 2014-06-01
/2/	Chengdu Oasis Science & Technology Co., Ltd.: PoA-DD: Sichuan Rural Poor-Household Biogas Development Programme version 1.6, dated 2012-04-03;
/3/	Chengdu Oasis Science & Technology Co., Ltd.: CPA-DD Generic: Sichuan Rural Poor-Household Biogas Development Programme, CPA Nb. SCHHBG-20XX-XX, version 1.4, dated 2012-04-03;
/4/	<p>Chengdu Oasis Science &amp; Technology Co., Ltd.: CPA-DD specific: Sichuan Rural Poor-Household Biogas Development Programme, CPA Nb. SCHHBG-2010-001, version 1.4, dated 2012-04-03;</p> <p>Chengdu Oasis Science &amp; Technology Co., Ltd.: CPA-DD specific: CPA Nb. SCHHBG-2012-002 to CPA Nb. SCHHBG-2012-053, version 1.1, dated 2013-04-09.</p> <p>Chengdu Oasis Science &amp; Technology Co., Ltd.: Revised CPA-DD specific (post-registration change): CPA Nb. SCHHBG-2012-002 to CPA Nb. SCHHBG-2012-053, version 1.2, dated 2013-07-14.</p>
/5/	TÜV NORD JI/CDM Certification Program (CP): Validation Report for CDM PoA Sichuan Rural Poor-Household Biogas Development Programme, version 01, dated 2012-04-05.
/6/	<p>TÜV NORD JI/CDM Certification Program (CP): Validation Report for CPA inclusion Sichuan Rural Poor-Household Biogas Development Programme, CPA Nb. SCHHBG-2010-001, version 01, dated 2012-04-05.</p> <p>TÜV NORD JI/CDM Certification Program (CP): CPA inclusion forms for CPA inclusion CPA Nb. SCHHBG-2012-002 to CPA Nb. SCHHBG-2012-053, dated 2013-04-11.</p> <p>TÜV NORD JI/CDM Certification Program (CP): Validation Reports for CPA inclusion Sichuan Rural Poor-Household Biogas Development Programme, CPA Nb. SCHHBG-2012-002 to CPA Nb. SCHHBG-2012-053, version 0, dated 2013-04-10.</p>
/7/	Chengdu Oasis Science & Technology Co., Ltd.: Monitoring Report for POA Sichuan Rural Poor-Household Biogas Development Programme (the 2 <sup>nd</sup> monitoring period), including CPA Nb. SCHHBG-2010-001 to CPA Nb. SCHHBG-2012-053, version 02.1, dated 2014-04-28.



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/8/	CDM-EB: Approved CDM Methodology AMS-I.C - Thermal energy production with or without electricity (version 19); CDM-EB: Approved CDM Methodology AMS-III.R- Methane recovery in agricultural activities at household/small farm level (version 02).
/9/	Germanischer Lloyd Certification GmbH CDM GHG Services Manual (incl. procedures and forms)
/10/	IPCC: 2006 IPCC Guidelines for National Greenhouse Gas Inventories: work book
/11/	UNFCCC: Kyoto Protocol to the United Nations Framework Convention on Climate Change (1998)
/12/	UNFCCC: Decision 3/CMP. 1 (Marrakesh – Accords)
/13/	Chengdu Oasis Science & Technology Co., Ltd.: Emission reduction calculation spreadsheet>” version 1.1, dated 2014-06-15.
/14/	Guidelines for completing the monitoring report form, version 04.0, EB75 annex 7.
/15/	Clean development mechanism project standard, version 06.0, dated 2014-04-11 and version 07.0, dated 2014-06-01
/16/	Clean development mechanism project cycle procedure, version 06.0, dated 2014-04-11 and version 07.0, dated 2014-06-01 .
/17/	On-site picture: pigpens, biogas digesters, living condition of each household etc
/18/	Chengdu Oasis Science & Technology Co., Ltd.: Sample size calculation spreadsheet, version 01, 2014-03-08.
/19/	Chengdu Oasis Science & Technology Co., Ltd.: Statement on the number of household equipped with biogas digester in this PoA (from CPA Nb. SCHHBG-2010-001 to CPA Nb. SCHHBG-2012-053), issued by Sichuan Rural Energy Office, 2013-03-02.
/20/	Chengdu Oasis Science & Technology Co., Ltd.: sample of manual check and acceptance records of the included CPAs.
/21/	Chengdu Oasis Science & Technology Co., Ltd.: Sichuan Statistical Yearbook 2013
/22/	Guidelines for Sampling and Surveys for CDM Project Actives and Programme of Actives, version 03, EB 75 annex 8.
/23/	Chengdu Oasis Science & Technology Co., Ltd.: Training material copy and training records of the survey staff of this PoA.

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/24/	Chengdu Oasis Science & Technology Co., Ltd.: Household list that included in each CPA (from CPA Nb. SCHHBG-2010-001 to CPA Nb. SCHHBG-2012-053), issued by Sichuan Rural Energy Office.
/25/	Standard for Sampling and Surveys for CDM Project Activities and Programme of Activities, version 04, EB 74 annex 6
/26/	Chengdu Oasis Science & Technology Co., Ltd.: Survey list of the 200 samples, version 1.0, March 2014.
/27/	Chengdu Oasis Science & Technology Co., Ltd.: Questionnaire paper that filled by the investigated households.
/28/	Chengdu Oasis Science & Technology Co., Ltd.: Table of checked and accepted documents for all constructed biogas digesters .
/29/	NDRC: Chinese DNA's Guideline of emission factors of Chinese grids 2013, <a href="http://www.ccchina.gov.cn/archiver/cdmcn/UpFile/Files/Default/201309181742.pdf">http://www.ccchina.gov.cn/archiver/cdmcn/UpFile/Files/Default/201309181742.pdf</a>
/30/	Standard list relevant for household biogas digesters in Sichuan province, e.g.: GB/T 3606-2001: Domestic Biogas Stove GB/T 4570-2002: Collections of Standard Design Drawings of Household Anaerobic Digesters Etc....
/31/	Germanischer Lloyd Certification GmbH: Validation Opinion on Post-Registration Changes of Registered CDM PoA: Sichuan Rural Poor-Household Biogas Development Programme version 05, dated 2013-08-26
/32/	Chengdu Oasis Science & Technology Co., Ltd.: Operation manual of data management system.
/33/	Monitoring Report for POA Sichuan Rural Poor-Household Biogas Development Programme (1st monitoring period), including CPA Nb. SCHHBG-2010-001 to CPA Nb. SCHHBG-2012-053, version 1.4.1, . Verification Report for the 1 <sup>st</sup> monitoring period, version 06.
/34/	Chengdu Oasis Science & Technology Co., Ltd.: Statement on the existing number of household equipped with biogas digester and the number of household included in each CPA, issued by Sichuan Rural Energy Office, 2014-05-23.

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## ANNEX A: RESOLUTION OF CORRECTIVE ACTION AND CLARIFICATION REQUESTS (LIST OF FINDINGS)

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## Resolution of Corrective Action and Clarification Requests including list of Forward Action Requests

<b>Description of Finding (CAR, CL, FAR)</b> <i>Describe the finding in a transparent manner i.e. state clearly what is required and why; address the context (e.g. section)</i>	<b>Project Participants Response</b> <i>This section shall be filled by the PP. The finding shall be addressed with suitable arguments and evidence</i>	<b>GLC's Assessment</b> <i>The assessment shall include how the finding is closed i.e. how it is found that the response is assessed to be appropriate and meeting the specific requirement of the finding. In case the response is not satisfactory, additional response and DOE assessments (#2, #3, etc.) shall be sought.</i>	<b>Final Conclusion (OK or OPEN)</b>
<b>CAR 1</b> The latest available data source for the mean temperature for all included cities should be given.	2014-04-13 (1 <sup>st</sup> round):  Data source (Sichuan Statistic yearbook 2013) is provided.	2014-04-28 (1 <sup>st</sup> round):  OK. The latest available data source for the mean temperature for all included cities has been given and verified by verifier.	OK
<b>CAR 2</b> To ensure a comprehensive verification of data flow and data management procedure as indicated in section C of MR, the original monitoring questionnaires filled by household user and local survey staff should be submitted to GLC.	2014-04-13 (1 <sup>st</sup> round):  The original monitoring questionnaires have been provided to DOE for review.	2014-04-28 (1 <sup>st</sup> round):  OK, The original monitoring questionnaires have been given and verified by verifier.	OK
<b>CL 1</b> It should be further demonstrated that the new global warming potential for CH4 is applicable for the current monitoring period.	2014-04-13 (1 <sup>st</sup> round):  As per EB69 Annex 3, <i>All monitoring, verifications and requests for issuance of certified emission reductions (CERs) in respect of emission reductions and removals achieved by CDM</i>	2014-04-28 (1 <sup>st</sup> round):  OK. GLC checked the relevant EB rules and confirmed that the new GWP value is applicable for the current monitoring period.	OK

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	<p><i>project activities and PoAs in the second commitment period (from 1 January 2013) shall be calculated using the GWPs as applied by decision 4/CMP.7.</i></p> <p><i>In para. 66 of EB69 meeting report, the Board agreed that the second commitment period global warming potentials (GWPs) shall apply to all calculations of emissions reductions or removals achieved from 1 January 2013.</i></p> <p>So the new GWP of CH<sub>4</sub> (25) from 2013 onwards are applicable to this verification</p>		
<p><b>CL 2</b></p> <p>It is not clear how the values estimated in ex-ante calculation of registered PDD covering the monitoring period were achieved (section E.5. of MR). Therefore, detailed calculation should be given in the MR</p>	<p>2014-04-13 (1<sup>st</sup> round):</p> <p>The detailed calculation of the ex-ante ER as per the registered CPA-DDs for this monitoring period has been provided in the revised MR (v2). See section E.5 of MR (v2)</p>	<p>2014-04-28 (1<sup>st</sup> round):</p> <p>OK. GLC check the calculation and confirm the value is correct.</p>	<p>OK</p>