



VALIDATION REPORT

SICHUAN WUHAI ENVIRONMENTAL PROTECTION & BIOENGINEERING Co., LTD.

VALIDATION OF THE RURAL HOUSEHOLD BIOGAS DIGESTER PROGRAMME IN SEVEN REGIONS OF SICHUAN PROVINCE

BUREAU VERITAS CERTIFICATION

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VALIDATION REPORT



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Client: Sichuan Wuhai Environmental Protection & Bioengineering Co., LTD.	Client ref.: Mr. Yang Qi
<p>Summary:</p> <p>Bureau Veritas Certification has made the validation of the Rural Household Biogas Digester Programme in Seven Regions of Sichuan Province located in seven regions of Deyang City, Guangyuan City, Nanchong City, Bazhong City, Yaan City, Liangshan Prefecture and Panzhihua City in Sichuan Province, P.R.China on the basis of UNFCCC criteria for the CDM, as well as criteria given to provide for consistent project operations, monitoring and reporting. UNFCCC criteria refer to Article 12 of the Kyoto Protocol, the CDM rules and modalities and the subsequent decisions by the CDM Executive Board, as well as the host country criteria.</p> <p>The validation scope is defined as an independent and objective review of the PoA-DD, generic CPA-DD, the baseline study, monitoring plan and other relevant documents, and consisted of the following three phases: i) desk review of the PoA design and the baseline and monitoring plan; ii) follow-up interviews with stakeholders; iii) resolution of outstanding issues and the issuance of the final validation report and opinion. The overall validation, from Contract Review to Validation Report & Opinion, was conducted using Bureau Veritas Certification internal procedures.</p> <p>The first output of the validation process is a list of Clarification and Corrective Actions Requests (CL and CAR), presented in Appendix A. Taking into account this output, the Coordinating/Managing Entity revised its PoA design documents.</p> <p>In summary, it is Bureau Veritas Certification's opinion that the PoA correctly applies the baseline and monitoring methodologies AMS-III.R (version 02) and AMS-I.I (version 03) and meets the relevant UNFCCC requirements for the CDM and the relevant host country criteria.</p>	

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Project title: Rural Household Biogas Digester Programme in Seven Regions of Sichuan Province	
Work carried out by: Mr. Liao Ling, Team Leader Ms. Coco Geng Yan, Team member Ms. Zhang Chen, Trainee Mr. David Wang Zhenning, Technical Specialist	
Internal Technical Review carried out by: Ms. Jasmine Tang Xuemei, Internal Technical Reviewer Mr. Wang Zhifeng, Technical Specialist	
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Flavio Gomes

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1 INTRODUCTION

Sichuan Wuhai Environmental Protection & Bioengineering Co., LTD. (the CME, hereafter called "the Wuhai") has commissioned Bureau Veritas Certification to validate its CDM project Rural Household Biogas Digester Programme in Seven Regions of Sichuan Province (hereafter called "the PoA") in Sichuan Province, P. R. China.

This report summarizes the findings of the validation of the programme, performed on the basis of UNFCCC criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.

1.1 Objective

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

UNFCCC criteria refer to Article 12 of the Kyoto Protocol, the CDM rules and modalities and the subsequent decisions by the CDM Executive Board, as well as the host country criteria.

1.2 Scope

The validation scope is defined as an independent and objective review of the programme design documents, the PoA's baseline study and monitoring plan and other relevant documents. The information in these documents is reviewed against Kyoto Protocol requirements, UNFCCC rules and associated interpretations.

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

1.3 Validation team

The validation team and internal technical reviewer consist of the following personnel:

FUNCTION	NAME	CODE HOLDER		TASK PERFORMED*
		TA 1.1	TA15.2	
Team Leader	Mr. Liao Ling	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input checked="" type="checkbox"/> DR <input checked="" type="checkbox"/> SV <input checked="" type="checkbox"/> RI
Team Member	Ms. Coco Geng Yan	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input checked="" type="checkbox"/> DR <input checked="" type="checkbox"/> SV <input type="checkbox"/> RI
Trainee	Ms. Zhang Chen	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input checked="" type="checkbox"/> DR <input checked="" type="checkbox"/> SV <input type="checkbox"/> RI
Technical Specialist	Mr. David Wang Zhenning	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> DR <input checked="" type="checkbox"/> SV <input type="checkbox"/> RI
Internal Technical Reviewer	Ms. Jasmine Tang Xuemei	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input checked="" type="checkbox"/> DR <input type="checkbox"/> SV <input type="checkbox"/> RI



(ITR)				
Specialist supporting ITR	Mr. Wang Zhifeng	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> DR <input type="checkbox"/> SV <input type="checkbox"/> RI

*DR = Document Review; SV = Site Visit; RI = Report issuance

2 Methodology

The overall validation, from Contract Review to Validation Report & Opinion, was conducted using Bureau Veritas Certification internal procedures.

In order to ensure transparency, a validation protocol was customized for the project, according to the version 01.2 of the Clean Development Mechanism Validation and Verification Manual issued by the Executive Board at its 55th meeting on 30/07/2010 /Ref-1/, version 04.1 of Procedures for registration of a programme of activities as a single CDM project activity and issuance of certified emission reductions for a programme of activities dated 02/08/2010 (EB55 Annex38) /Ref-2/ and version 01.0 of Stand for demonstration of additionality, development of eligibility criteria and application of multiple methodologies for programme of activities (EB65 Annex3) /Ref-3/. The protocol shows, in a transparent manner, criteria (requirements), means of validation and the results from validating the identified criteria. The validation protocol serves the following purposes:

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

The completed validation protocol is enclosed in Appendix A to this report.

2.1 Review of Documents

The PoA-DD /1/ and generic CPA-DD /2/ submitted by Sichuan Wuhai Environmental Protection & Bioengineering CO., LTD. and additional background documents related to the project design and baseline, i.e. country Law, PoA-DD form, CPA-DD form, Approved methodology, Kyoto Protocol, Clarifications on Validation Requirements to be Checked by a Designated Operational Entity were reviewed.

To address Bureau Veritas Certification corrective action and clarification requests, Sichuan Wuhai Environmental Protection & Bioengineering CO., LTD. revised the PoA-DD and generic CPA-DD and resubmitted it on 28/11/2012.

The validation findings presented in this report relate to the project as described in the PoA-DD Version 04 /3/ dated 28/11/2012 and generic CPA-DD Version 04 /4/ dated 28/11/2012.

2.2 Follow-up Interviews

During the period 07/11/2011-10/11/2011, Bureau Veritas Certification performed interviews with stakeholders to confirm selected information and to resolve issues identified in the document review. Representatives of name of the company were interviewed (see References). The main topics of the interviews are summarized in Table 1.

Table 1 Interview topics

Interviewed organization	Interview topics
Sichuan Wuhai Environmental Protection & Bioengineering CO., LTD.	<ul style="list-style-type: none"> ➤ Programme background information and CDM consideration ➤ PoA technology, general operating and implementation framework, maintenance and monitoring capability ➤ Government policies related to biogas projects ➤ Confirmation that the proposed PoA is a voluntary action ➤ Operation and management arrangement of the PoA (incl. recording, CPA operation, avoiding double accounting) ➤ PoA/CPA monitoring and management plan ➤ Stakeholder consultation process ➤ PoA environment impact ➤ Biogas projects development in the area
Stakeholders	<ul style="list-style-type: none"> ➤ Project background in details ➤ Stakeholder comments ➤ Social and environmental impact of the Programme ➤ Baseline information in Sichuan Province
Bunge Emissions Holdings S.A.R.L.	<ul style="list-style-type: none"> ➤ Applicability of selected methodology ➤ Baseline determination ➤ Eligibility criteria for CPA inclusion ➤ Emission reductions calculation ➤ Monitoring plan

2.3 Resolution of Clarification and Corrective Action Requests

The objective of this phase of the validation is to raise the requests for corrective actions and clarification and any other outstanding issues that needed to be clarified for Bureau Veritas Certification positive conclusion on the programme design.

Corrective Action Requests (CAR) is issued, where:

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

The validation team may also use the term Clarification Request (CL), if information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met.

The validation team may also raise a forward action request (FAR) during validation to identify issues related to programme implementation that require review during the first verification of the CPA under the PoA.

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

2.4 Internal Technical Review

The validation report underwent an Internal Technical Review (ITR) before requesting registration of the programme.



The ITR is an independent process performed to examine thoroughly that the process of validation has been carried out in conformance with the requirements of the validation scheme as well as internal Bureau Veritas Certification procedures.

The Team Leader provides a copy of the validation report to the reviewer, including any necessary validation documentation. The reviewer reviews the submitted documentation for conformance with the validation scheme. This will be a comprehensive review of all documentation generated during the validation process.

When performing an Internal Technical Review, the reviewer ensures that:

The validation activity has been performed by the team by exercising utmost diligence and complete adherence to the CDM rules and requirements.

The review encompasses all aspects related to the project which includes PoA design, baseline, additionality, monitoring plans and emission reduction calculations, internal quality assurance systems of the CME as well as the PoA, review of the stakeholder comments and responses, closure of CARs, CLs and FARs during the validation exercise, review of sample documents.

The reviewer compiles clarification questions for the Team Leader and Validation Team and discusses these matters with Team Leader.

After the agreement of the responses on the 'Clarification Request' from the Team Leader as well as the PP(s) the finalized validation report is accepted for further processing such as uploading on the UNFCCC webpage.

3 Validation conclusions

In the following sections, the conclusions of the validation are stated.

The findings from the desk review of the original programme design documents and the findings from interviews during the follow up visit are described in the Validation Protocol in Appendix A.

The Clarification and Corrective Action Requests are stated, where applicable, in the following sections and are further documented in the Validation Protocol in Appendix A. The validation of the Project resulted in **6** Corrective Action Requests (CARs) and **11** Clarification Requests (CLs).

The CARs and CLs were closed based on adequate responses from the Project Participant(s) which meet the applicable requirements. They have been reassessed before their formal acceptance and closure.

The number between brackets at the end of each section correspond to the VVS paragraph

3.1 Approval

The letters of approval have been provided by CME and the following support documentation has been verified by Bureau Veritas Certification.

- ✎ The Designated National Authority (DNA) of China has issued a Letter of Approval (No.3786) in Mar.2012 /5/, authorizing Sichuan Wuhai Environmental Protection & Bioengineering CO., LTD. as the CME who voluntarily participates in the PoA of Rural Household Biogas Digester Programme in Seven Regions of Sichuan Province and confirms the contribution to China's Sustainable development.
- ✎ The Designated National Authority (DNA) of Switzerland has issued a Letter of Approval (Ref. G514-3487) on 23/11/2012 /6/ authorizing Bunge Emissions Holdings S.A.R.L. as the



Project Participant of the PoA of Rural Household Biogas Digester Programme in Seven Regions of Sichuan Province.

Bureau Veritas Certification received the letter of approval from the project participants and does not doubt the letter's authenticity.

The letter of approval does not contain a specific version of both the design documents and the validation report.

The title and contents of the letters of approval refer to the precise proposed PoA title and 1st CPA in the design documents being submitted for registration.

✎ Bureau Veritas Certification considers the letters of approval are in accordance with **Para. 45 - 48 /VVM** and **Para.10 of EB55 Annex38**.

3.2 Participation

The participation for the coordinating/managing entity has been approved by a Party of the Kyoto Protocol.

✎ Complying with **Para.54/VVM**, Bureau Veritas Certification hereby confirms that by referring to the information on UNFCCC website i.e.

<http://maindb.unfccc.int/public/country.pl?country=CN>

<http://maindb.unfccc.int/public/country.pl?country=CH>

3.3 Program design document

✎ Bureau Veritas Certification hereby confirms that the PoA design documents comply with the valid Small-Scale Programme of Activities Design Document Form (CDM SSC-PoA-DD) version01/Ref-5/ and Small-scale CDM Programme Activity Design Document Form (CDM-SSC-CPA-DD) version01/Ref-6/.

3.4 Changes in the Programme of Activity

There is no physical difference between the Project and DDs description, the difference between the GSC version DDs and the final version are as followed:

Item	Webhosted DDs	Final Version DDs	Validation Opinion
Replaced fossil type	Coal and Liquefied Petroleum Gas	Only coal	The aimed replaced fossil of the programme changed from two types to only one type, the ERs of CPa-01 decrease as the number of the household involved decrease, detailed pls. refer to CAR-1 in CPA validation report.

3.5 PoA description

The geographical boundary of the PoA is located in seven regions of Deyang City, Guangyuan City, Nanchong City, Bazhong City, Yaan City, Liangshan Prefecture and Panzhihua City in Sichuan Province, P. R. China with the detailed geographic coordinates for the seven regions as below:

Region	Central Coordinates	
	Latitude	Longitude
Deyang	31.1269° (31°7'37")	104.3980° (104°23'57")
Guangyuan	32.4354° (32°26'7")	105.8434° (105°50'36")
Bazhong	31.8679° (31°52'4")	106.7475° (106°44'51")
Nanchong	30.8378° (30°50'16")	106.1107° (106°6'39")
Yaan	29.9805° (29°58'50")	103.0133° (103°0'48")
Liangshan	27.8816° (27°52'54")	102.2673° (102°16'2")
Panzhihua	26.5823° (26°34'56")	101.7186° (101°43'7")

The PoA involves a series of small scale methane recovery and utilization project activities to mitigate GHG emissions by installing approximate 800,000 household biogas digesters in seven regions from anaerobic open lagoons to biogas digesters and utilizing the generated biogas to provide thermal energy to the households for cooking. CPAs included in this PoA are consisted of installation of biogas digester system to capture biogas, utilization of biogas to provide heat for cooking, which will be applied in one or multiple rural households within the boundary of the PoA.

This programme is purely a voluntary initiative undertaken by Sichuan Wuhai Environmental Protection & Bioengineering CO., LTD., which is the CME of this PoA. There are no mandatory requirements in China enforcing the use of biogas digesters to treat animal manure produced in rural households or the use of biogas digesters to provide thermal energy for cooking.

The length of the PoA is 28 years.

The validation team hereby confirms that the programme description in PoA-DD Version 04 is accurate and complete in all respects.

3.6 Operational and management arrangements

A clear and transparent description of the operational and management arrangements have been established by the management/coordinating entity and stated in the PoA-DD. The CME has been interviewed by validation team during the on-site visit. The internal management documents /7/ of the PoA have been provided by the CME, which includes sample plan, monitoring plan, training plan, PoA management and PoA implementation plan. Please refer to Section 6.4.5 of Table in Appendix A for details.

Complying with **para.166/VVM** and **EB65 Annex 3 /Ref-3/**, Bureau Veritas Certification hereby concludes that the operational and management arrangements have been established by the



coordinating/managing entity and are suitable for the PoA being validated. Bureau Veritas Certification considers that the arrangements are sufficient to ensure that the coordinating/managing entity will have control of all records and information related to the implementation of individual CPAs.

3.7 Eligibility criteria for inclusion a CPA in the PoA

Validation team has assessed the eligibility criteria for inclusion a CPA in the PoA in accordance with "Standard for demonstration of additionality, development of eligibility criteria and application of multiple methodologies for programme of activities" /Ref-3/ and "Guidelines on the demonstration of additionality of small-scale projects activities" /Ref-4/. Please refer to Section 12 of table 1 in Appendix A for details. Bureau Veritas Certification is able to conclude that the eligibility criteria below are reasonable and sufficient for CPA inclusion.

a	The proposed CPA must be located within the geographical boundary set in the PoA i.e. the CPA shall lie within the following seven regions territory in Sichuan province: Deyang, Guangyuan, Bazhong, Nanchong, Yaan, Liangshan and Panzhuhua.
b	Unique identifications of biogas digester subsystems included in a CPA that can indicate the programme shall be set for avoiding double counting of emission reductions
c	The technology and process adopted by each biogas subsystem shall meet the <i>Technical Requirements for Sichuan Provincial Rural Biogas Construction Government Loan Project adopted by SREO</i> .
d	The start date of SSC-CPA should not be prior to 07/09/2011, e.g. the date that the PoA began to go through global stakeholder comment on UNFCCC website, and the CPA crediting period should not exceed the end date of PoA crediting period
e	<p>The CPA shall meet all the applicable requirements as per the applied methodologies AMS-I.I and AMS.III.R.</p> <ul style="list-style-type: none"> Generates renewable thermal energy using biogas for use in residential applications Comprises recovery and destruction of methane from manure and wastes from agricultural activities that would be decaying anaerobically emitting methane to the atmosphere in the absence of the project activity Is limited to measures at individual households or small farms (e.g. installation of a domestic biogas digester). Methane recovery systems that achieve an annual emission reduction of less than or equal to five tonnes of CO₂e per system Have the habit of pig breeding and the animal manure generated is currently stored under anaerobic conditions in deep pits. The households currently use coal (including coal briquette) as fossil fuel source of energy for cooking purpose . Equip cook stoves with a rated capacity equal to or less than 150 kW thermal per household. The sludge must be handled aerobically Measures shall be used to ensure that all the methane collected by the recovery system is destroyed.



f	The SSC-CPA shall remain within the threshold of small-scale project throughout the crediting period of the CPA, e.g. for small-scale CPA, the aggregated installed/rated thermal energy generation capacity of all biogas systems included in the CPA is equal to or less than 45 MW thermal for AMS-I.I and the annual emission reduction shall not exceed 60kt CO ₂ e for AMS-III.R.
g	<p>The SSC-CPA shall meet the requirements pertaining to the demonstration of additionality, that is:</p> <ul style="list-style-type: none"> • The users of the technology/measure are isolated units (e.g. farmer households); and • The installed capacity of each biogas cooking stove in household is no larger than 2250kW thermal, and the emission reductions from avoiding methane emission of each household are no more than 3000 tonnes per year
h	The biogas digesters included in a SSC-CPA shall be constructed and operated at rural households level.
i	The parameters deemed to be determined by sampling and survey shall meet the confidence/precision of at least 90/10 for annual measurement and 95/10 for biennial measurement.
j	<p>The SREO and its local subsidiaries confirms that:</p> <ul style="list-style-type: none"> • All biogas system to be newly installed under the CPA are not and will not be part of another CDM project or programme activity and that no CERs will be claimed for the biogas system other than those to be claimed by the CME on behalf of the participating households; and • That the SREO and its local subsidiaries are aware and agree with the inclusion of the CPA to the proposed PoA.
k	All SSC-CPAs will be exempted from performing de-bundling check. That's to say, each of the independent subsystems (the digester and biogas stove) is no larger than 1% of the small-scale thresholds defined by the methodologies applied (600 tCO ₂ e emission reductions from methane avoidance, 450 kW thermal installed capacity of the stove)
l	No funding from Annex I parties is provided for the SSC-CPAs.

☞ Complying with **Para.14,15** and **16** of "Standard for demonstration of additionality, development of eligibility criteria and application of multiple methodologies for programme of activities"/Ref-3/ and "Guidelines on the demonstration of additionality of small-scale projects activities" /Ref-4/, Bureau Veritas Certification confirms that the eligibility criteria are verifiable and the eligibility criteria are sufficiently objective and comprehensive to permit the assessment of the inclusion of CPAs in the PoA.

Complying with **Para.167/VVM**, Bureau Veritas Certification hereby confirms that the specified eligibility criteria in the PoA-DD are sufficient to ensure that all CPAs would comply with the CDM requirement applicable to the PoA, which includes the means of demonstrating the additionality of the CPA and the applicability of the applied methodology.

3.8 Baseline and monitoring methodology

3.8.1 Applicability of the selected baseline and monitoring methodology

The PoA uses the approved simplified baseline and monitoring methodologies AMS-I.I (version 03) and AMS-III.R (version 02). The combination of AMS-I.I and AMS III.R. has been approved at EB59 meeting by CDM EB. According to the description in the AMS III.R, the baseline emission calculation refers to the para. 10 of AMS-III.D.

Methodology	Applicable criteria	The CPA
AMS-I.I.	This category comprises activities for generation of renewable thermal energy using renewable biomass or biogas for use in residential, commercial, institutional applications (e.g. for supply to households, small farms or for use in built environment of institutions such as schools). Examples of these technologies that displace or avoid fossil fuel use include but are not limited to biogas cook stoves, biomass briquette cook stoves, small scale baking and drying systems, water heating, or space heating systems.	The CPA comprises the households located in rural area who used the biogas for cooking use, displaces the coal used in the absence of the SSC-CPA.
	The total installed/rated thermal energy generation capacity of the project equipment is equal to or less than 45 MW thermal.	For each CPA, the total installed/rated thermal energy generation capacity of the project equipment shall also be identified to ensure that it is equal to or less than 45 MW thermal.
	Each unit (e.g. cook stove, heater) shall have a rated capacity equal to or less than 150 kW thermal	According to Chinese national standard of GB/T 3606-2001 "Domestic biogas stove", there may be three specifications of a stove with the installed capacity of 2.33kW, 2.79kW and 3.26kW and $\pm 10\%$ fluctuation limits are permitted to the capacity, which means the capacity of any biogas stove shall not exceed 3.59kW.
	For the specific case of biomass residues processed as a fuel (e.g. briquettes, wood chips), it shall be demonstrated that: (a) It is produced using solely renewable	N/A



	<p>biomass4 (more than one type of biomass may be used). Energy use for renewable biomass processing (e.g. shredding and compacting in the case of briquetting) may be considered as equivalent to the upstream emissions associated with the processing of the displaced fossil fuel and hence disregarded;</p> <p>(b) The .General guidance on leakage in biomass project activities . (attachment C to Appendix B of 4/CMP.1 Annex II) shall be followed;</p> <p>(c) The project participant can monitor the mass, moisture content and NCV of the resulting biomass fuel, through sampling that meets the confidence/precision level of 90/10;</p> <p>(d) Where the project participant is not the producer of the renewable fuel, the project participant and the producer are bound by a contract that shall enable the project participant to monitor the source of renewable biomass to account for any emissions associated with biomass production (as per 4 (b) above). Such a contract shall also ensure that there is no double counting of emission reductions</p>	
AMS-III.R.	<p>This project category comprises recovery and destruction of methane from manure and wastes from agricultural activities that would be decaying anaerobically emitting methane to the atmosphere in the absence of the project activity. Methane emissions are prevented by:</p> <ol style="list-style-type: none"> 1. Installing methane recovery and combustion system to an existing source of methane emissions; or 2. Changing the management practice of a biogenic waste or raw material in order to achieve the controlled anaerobic digestion equipped with methane recovery and combustion system. 	<p>In the absence of the project activity, the manure would be decaying anaerobically emitting methane to the atmosphere; While the project activity will change the management practice of a biogenic waste by installing a household biogas digester equipped with methane recovery and combustion system instead of existing deep pit in order to prevent methane emissions.</p>
	<p>The category is limited to measures at individual households or small farms (e.g. installation of a domestic biogas digester). Methane recovery systems that achieve an annual emission reduction of less than or</p>	<p>It is obvious that biogas digester installed in one rural household will generate less than 5 tCO₂e per year, thus the five</p>



	equal to five tonnes of CO ₂ e per system are included in this category.	tonnes is impossible.
	This project category is only applicable in combination with AMS-I.C .Thermal energy production with or without electricity. and/or AMS-I.I .Biogas/biomass thermal applications for households/small users. and/or AMS-I.E .Switch from non-renewable biomass for thermal applications by the user.	The proposed PoA and the involved CPAs combine methodologies AMS-I.I and AMS-III.R.
	<p>The project activity shall satisfy the following conditions:</p> <ol style="list-style-type: none"> 1. The sludge must be handled aerobically. In case of soil application of the final sludge the proper conditions and procedures that ensure that there are no methane emissions must be ensured; 2. Measures shall be used (e.g. combusted or burnt in a biogas burner for cooking needs) to ensure that all the methane collected by the recovery system is destroyed. 	<p>The digester effluent (sludge) will be handled aerobically by using it on farm land as organic fertilizer; the biogas will be combusted through the biogas stove for cooking purpose by the farmer household.</p> <p>In case that the biogas collected is enough for cooking purpose and cannot be used out, the remaining biogas must be combusted by the biogas stove for avoidance of methane emission to the atmosphere directly.</p>
	Aggregated annual emission reductions of all systems included shall be less than or equal to 60 kt CO ₂ equivalent.	For each CPA, the total annual emission reduction shall also be than or equal to 60 kt CO ₂ equivalent.

By reviewing the relevant documentation and interviewing the CME and stakeholders, Bureau Veritas Certification the CPAs to be included in the PoA will comply with the applicability conditions of combination of methodologies of AMS-I.I. Version 03 /Ref-7/ and AMS-III.R Version 02 /Ref-8/, and refer to the baseline emission calculation of the para. 10 of AMS-III.D. Version 18 /Ref-9/. Please refer to Section 10.2 of Table 1 in Appendix A for details.

3.8.2 PoA boundary

Boundary for the PoA in terms of geographical area is defined as seven regions (Deyang, Guangyuan, Bazhong, Nanchong, Yaan, Liangshan, Panzhihua) located in Sichuan Province, P.R. China, which is the physical, geographical site of the methane recovery and combustion systems according to AMS-III.R Version 02, and is the physical, geographical sites of the equipment producing thermal energy during the crediting period according to AMS-I.I. Version 03.



Bureau Veritas Certification confirms that in establishing the boundary of the PoA, the project participants have taken into consideration all applicable national and/or sectoral policies and regulations within that chosen boundary.

The project boundary of the typical CPA under the PoA includes:

- The household in rural area of the seven regions listed above;
- Animal manure management systems;
- Facilities which generate, recover and flare/combust or use biogas to generate heat located at the project site.
- The spatial extent of the project boundary includes facilities consuming energy generated by the system.

Validation team here confirms that the defined project boundary of the typical CPA under the PoA is fully consistent with the applied methodologies AMS-I.I. Version 03 /Ref-7/ and AMS-III.R Version 02 /Ref-8/.

3.8.3 Baseline identification

According to methodologies AMS-I.I. Version 03 /Ref-7/ and AMS-III.R Version 02 /Ref-8/, the baseline scenario is identified at PoA level properly as:

Project Scenario	Identified baseline scenario	Validation team's assessment
Using the biogas digester to avoid the methane emission	Manure from agricultural activities in rural household is collected in the deep pit to decay anaerobically within the project boundary and methane is emitted to the atmosphere	It is consistent with AMS-III.R Version 02
Using the biogas generated from digester for cooking	Consumption of the coal for cooking purpose	It is consistent with AMS-I.I. Version 03

Thus the baseline is methane emission from open anaerobic lagoon, heat generated from the fossil fuel fossil fuel use for there are no mandatory requirements in China enforcing the use of biogas digesters to treat animal manure produced in household or the use of biogas digesters to provide thermal energy.

☞ Complying with **Para. 87 and 88/VVM**, Bureau Veritas Certification hereby confirms that:

- (a) All the assumptions and data used by the project participants are listed in the design documents, including their references and sources;
- (b) All documentation used is relevant for establishing the baseline scenario and correctly quoted and interpreted in the design documents;
- (c) Assumptions and data used in the identification of the baseline scenario are justified appropriately, supported by evidence and can be deemed reasonable;
- (d) Relevant national and/or sector policies and circumstances are considered and listed in the design documents;
- (e) The approved baseline methodology has been correctly applied to identify the most reasonable baseline scenario and the identified baseline scenario reasonably represents

what would occur in the absence of the proposed CDM project activity.

3.8.4 Algorithms and/or formulae used to determine emission reductions

The steps taken to assess the requirements outlined in para.90-91/VVM are described below:

As per baseline methodologies AMS-I.I. Version 03 /Ref-7/, AMS-III.R Version 02 /Ref-8/ and referred AMS-III.D. Version 18 /Ref-9/, the emission reductions ER_y during the crediting period involves two parts related to the two methodology. . To distinguish the emission reductions from the methane emissions (which are covered under AMS-III.R.), an additional index FF is applied to ER_y calculated according to AMS-I.I. Version 03 and an additional index CH_4 is applied to ER_y calculated according to AMS-III.R Version 02. Thus the total emission reduction is calculated as: $ER_y = ER_{FF, y} + ER_{CH_4, y}$, and the details are listed below:

1. AMS-I.I - Biogas/biomass thermal applications for households/small users (version 03)

According to the applied methodology, the Option 2: Based on thermal energy generated was chosen for the ER calculation.

$$ER_{FF, y} = \sum_k N_{k,0} * n_{k,y} * BS_{k,y} * EF * \eta_{PJ/BL} * NCV_{biomass} - LE_y$$

$$EF = \sum_j x_j * EF_{FF, j}$$

Where:

k	Index for the type of thermal applications introduced by the project activity (e.g. cook stove, water heater)
j	Index for the type of baseline fossil fuel consumed
$N_{k,0}$	Number of thermal applications k commissioned
$n_{k,y}$	Proportion of $N_{k,0}$ that remain operating in year y (fraction)
EF	CO ₂ emission factor (tCO ₂ /GJ)
x_j	is a fraction representing fuel type j used by the baseline thermal applications displaced by biogas
$BS_{k,y}$	The net quantity of renewable biomass or biogas consumed by the thermal application k in year y (mass or volume units, dry basis)
$\eta_{PJ/BL}$	Ratio of efficiencies of project equipment and baseline equipment (e.g. cook stove using coal) measured once prior to validation applying the same test procedure (e.g. lab test), as per a national or an international standard. Official data or scientific literature can be used for cross-check purposes
NCV_{biogas}	Net calorific value of the biogas, use default value: 0.0215 GJ/m ³ (assuming NCV of the methane: 0.0359 GJ/m ³ , default methane content in biogas: 60%)

As there is no equipment transferred in/out of the project boundary, thus the LE_y is 0 according to applied AMS-I.I. Version 03.

Validation team has validated the equations for emissions reduction calculation as above and is able to conclude that all equations are consistent with the methodologies.

- ✚ The net quantity of renewable biomass or biogas consumed by the thermal application k in year y ($BS_{k,y}$) will be used actual values in the monitoring practice and there will be meters assigned for the different type of cook stove in accordance with AMS I.I. Version 03.
- ✚ Ratio of efficiencies of project equipment and baseline equipment ($\eta_{PJ/BL}$) is calculated based on the values of the baseline equipment (coal stove) and project equipment (biogas stove) in accordance with AMS I.I. Version 03. The methodology requires the efficiency of baseline equipment (cooking stove using coal) should be once prior to validation applying the same test procedure (e.g. lab test). The measured efficiency of coal stove is 16.87% and conservative value sourced from the literature 20% was chosen for calculation /14/. The measured efficiency of biogas stove is 59.3% and conservative value sourced from the national standard 55% was chosen for calculation /15/.

Besides, Validation team has validated the values of parameters ex ante determined at PoA level and confirms that the ex ante determined values of the parameters are fully consistent with the applied methodology AMS I.I. Version 03.

2. AMS III.R-Methane recovery in agricultural activities at household/small farm level (version 02)

The ERs is calculated as $ER_y = BE_y - PE_y - Leakage$ according to the applied methodology, where the BEy is the baseline emission, PEy is the project emission.

2.1 Baseline emissions

As to the referred paragraph 10 of AMS-III.D, in case option in paragraph 9(a) is chosen, baseline emissions are determined as follows:

$$BE_{CH4,k,y} = GWP_{CH4} * D_{CH4} * UF_b * \sum_{j,LT} MCF_j * B_{0,LT} * N_{LT,y} * VS_{LT,y} * MS\%_{BL,j}$$

Where:

$BE_{CH4,k,y}$	Baseline emissions due to avoid of methane emission in city k in year y (tCO ₂ e)
GWP_{CH4}	Global Warming Potential (GWP) of CH ₄ (21)
D_{CH4}	CH ₄ density (0.00067 t/m ³ at room temperature (20 °C) and 1 atm pressure)
LT	Index for all types of livestock
j	Index for animal manure management system
MCF_j	Annual methane conversion factor (MCF) for the baseline animal manure management system j
$B_{0,LT}$	Maximum methane producing potential of the volatile solid generated for animal type LT (m ³ CH ₄ /kg dm)
$N_{LT,y}$	Annual average number of animals of type LT in year y (numbers)
$VS_{LT,y}$	Volatile solids for livestock LT entering the animal manure management system in year y (on a dry matter weight basis, kg dm/animal/year)
$MS\%_{BL,j}$	Fraction of manure handled in baseline animal manure management system j

UF_b Model correction factor to account for model uncertainties (0.94)

Validation team has validated the equations for baseline emissions calculation as above and is able to conclude that all equations are consistent with the methodologies.

✚ Baseline CH₄ emission from the open anaerobic lagoon ($BE_{CH_4,y}$) is calculated in accordance with Para.10 of AMS III.D. Version18

✚ Baseline CO₂ emission from displaced fossil fuel ($BE_{thermal,y}$) is calculated in accordance with Para.18 of AMS I.C.

Besides, Validation team has validated the values of parameters ex ante determined at PoA level, i.e. D_{CH_4} of 0.00067t/m³, GWP_{CH_4} of 21 UF_b of 0.94 and confirms that the ex ante determined values of the parameters are fully consistent with the applied methodology AMS III.D.

2.2 Project emissions

Project emissions due to physical leakage of biogas from the animal manure management systems used to produce, collect and transport the biogas to the point of flaring or gainful use is estimated as per referred paragraph 13 of AMS-III.D,

(a) 10%of the maximum methane producing potential of the manure fed into the management systems implemented by the project activity:

(i) In case option in paragraph 9(a)is chosen, it is determined as:

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

Where:

$MS \%_{i,y}$ Fraction of manure handled in system i in year y

The adopted methodology AMS-III.R does not give a detailed formula to determine the parameter of $VS_{LT,y}$, however according to its meaning, its value can be calculated with the following formulae:

$$VS_{LT,y} = VS_{(T)} * D_y$$

Where:

$VS_{(T)}$ Daily volatile solid excreted for livestock category T, kg dry matter/animal/day

D_y Basis for calculating annual VS production, days/yr (the value is 365)

Validation team has validated the equations for project emissions calculation as above and is able to conclude that:

✚ Daily volatile solid excreted for livestock category T ($VS_{(T)}$) is used the conservative default value in accordance with 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Volume 4, and Chapter 10, Table 10A-7(market swine) and will be used the actual value in the monitoring practice.



Maximum methane producing capacity for manure produced by livestock ($B_{0,LT}$) is source from the IPCC 2006 Guidelines for National Greenhouse Gas Inventories, Volume 4, and Chapter 10, Table 10A-7 (swine) and will be used the actual value in the monitoring practice.

Validation team has also validated the values of parameters ex ante determined in the equations and confirms that they are fully consistent with the requirements of the applied methodologies and reasonably applied.

2.3 Leakage

As there is no methane recovery and combustion equipment transfer in and/or out will occur, therefore, leakage need not be considered, the leakage need not be considered in the CPAs, so **Leakage = 0**.

3. Total emission reductions

$$ER_y = ER_{FF,y} + ER_{CH4,y}$$

Where:

$ER_{FF,y}$ is the emission reduction calculated according to AMS-I.I Version 03

$ER_{CH4,y}$ is the emission reduction calculated according to AMS-III.R Version 02

Complying with **para.92-93/VVM**, based on the above assessment, Bureau Veritas Certification hereby confirms that:

- (a) All assumptions and data used by the project participants are listed in the PoA-DD, including their references and sources;
- (b) All documentation used by project participants as the basis for assumptions and source of data is correctly quoted and interpreted in the PoA-DD;
- (c) All values used in the PoA-DD are considered reasonable in the context of the proposed CDM project activity;
- (d) The baseline methodology has been applied correctly to calculate project emissions, baseline emissions, leakage and emission reductions;
- (e) All estimates of the baseline emissions can be replicated using the data and parameter values provided in the PoA-DD.

3.9 Additionality of PoA

3.9.1 Start date of the PoA/CPA

The eligibility criteria of the start date has been set as "the start date of the CPA is not before 07/09/2011".

Bureau Veritas Certification confirms that the start date of any CPA is not prior to the commencement of the validation of the PoA, which is the date of the CDM-PoA-DD is first published for global stakeholder consultation.

3.9.2 Demonstration of additionality of the PoA as a whole

As per the Guidelines on the demonstration of additionality of small-scale projects activities /Ref-4/, *Documentation of barriers is not required for the positive list of technologies and project activity types that are defined as automatically additional for project sizes up to and including the small-scale CDM thresholds. The positive list comprises of:*

(c) Project activities solely composed of isolated units where the users of the technology/measure are households or communities or Small and Medium Enterprises (SMEs) and where the size of each unit is no larger than 5% of the small-scale CDM thresholds, that is the size of each unit under 750 kW (or 2,250kW thermal installed capacity or under 3,000 MWh of energy savings per year or 3,000 tonnes of emission reductions per year;

The maximum installed capacity of a stove will not exceed 3.59kW of the PoA according to the Chinese national standard of *Domestic Biogas Stove* /Ref-4/ and the equivalent maximum thermal capacity is 3.59kW, therefore the single household of the Programme will be no larger than 5% of the category I small-scale CDM thresholds (2,250kW thermal).

It is obviously that each household of the Programme cannot reach the 3,000 tonnes (5% of the category I small-scale CDM thresholds in views of i) the applicable condition of AMS-III.R. for the programme require the household with annual emission reductions less than 5 tonnes CO₂; ii) No one single household in this Programme can reach the 3,000 tCO₂ with an exemplary calculation of the maximum number of pigs for which the emission reduction due to methane avoidance. Because the volume of a new biogas digester for each household is deemed to be 6 to 10 cube meters, it is obviously that one single rural household cannot reach 3,000 tonnes of emission reductions per year at all.

Validation team has assessed the additionality of a PoA in accordance with Standard for demonstration of additionality, development of eligibility criteria and application of multiple methodologies for programme of activities and confirms that none of the implemented CPA would occur in the absence of CDM.

3.10 Monitoring plan

The CME has opted for verification of each CPA by DOE. Monitoring plan for each CPA will be developed according to the applied baseline and monitoring methodologies. The transparent system will be developed for monitoring, data collection and storage at PoA level.

Monitoring consists of checking the following parameters:

Parameter	Data source and measurement methods	Assessment
$N_{k,0}$	Sampling surveys in line with "General guidelines for sampling and surveys for small-scale CDM project activities"	The monitoring of the parameters complies with the requirements of AMS-I.I.Version03.
$n_{k,y}$	Sampling surveys in line with "General guidelines for sampling and surveys for small-scale CDM project activities"	
$BS_{k,y}$	Sampling surveys in line with "General guidelines for sampling and surveys for small-scale CDM project activities"	
NCV_{Biogas}	The default value sourced from the applied methodology AMS-I.I	
T	This value is determined by the annual average temperature of the city from the latest Sichuan Statistical Yearbook.	The monitoring of the parameters complies with the requirements of AMS-III.D. Version 18. and AMS-III.R.
$N_{LT,y}$	Sampling monitoring survey annually with a sampling size determined following the	



	applied methodologies or the latest sampling standard.	Version 02
$MS\%_{i,y}$	A annual sampling monitoring survey during monitoring a period with a sampling size determined following the applied methodologies or the latest sampling standard.	
Sludge application	It shall be verified once during a monitoring period on a sampling basis.	

Bureau Veritas Certification hereby confirms that the followed monitoring plan complies with the requirements of the methodologies.

The PP will establish a organizational setup for management and the data to be monitored and the methods and procedures for monitoring are described in the monitoring parameters, a sample plan was developed by CME and will be studied before each monitoring sample.

The sample plan includes Objectives and Reliability Requirements, Target Population, Sampling Method, Sample Size identification, Sampling Frame, implementation plan and data collection, analysis procedure. There are two types of parameters of interests: mean value or proportion

- 1) In case of there is only one type of biogas digester installed in the CPA(s), the PP will conduct the simple random sampling in the monitoring practice.

Pertaining to proportion parameters, the equation used to calculate sample size is as the following:

$$n \geq \frac{1.645^2 N \times p(1-p)}{(N-1) \times 0.1^2 \times p^2 + 1.645^2 p(1-p)}$$

Where:

n Sample size

N Total number of households

p Our expected proportion (0.50) *

1.645 Represents the 90% confidence required

0.1 Represents the 10% relative precision ($0.1 \times 0.5 = 0.05 = 5\%$ points either side of p)

Pertaining to mean value parameter i.e. $N_{LT,y}$, the equation used to calculate sample size is:

$$n \geq \frac{1.645^2 NV}{(N-1) \times 0.1^2 + 1.645^2 V}$$

* This assumes that 50% of the biogas digester subsystems would be operating. If we changed our prior belief of the underlying true percentage of working stoves p , this sample size would need recalculating.

Where:

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

n Sample size

N Total number of households

Mean Our expected mean*)

SD Our expected standard deviation*

1.645 Represents the 90% confidence required

0.1 Represents the 10% relative precision

- 2) In case of there are more than one type of biogas digester installed in the CPA(s), stratified random sampling will be conducted according to the volumes of the biogas digesters which are the same in CPA(s), and then the simple random sampling in each strata.

Pertaining to proportion parameters, the equation used to calculate sample size is as the following:

$$n \geq \frac{1.645^2 NV}{(N-1) \times 0.1^2 + 1.645^2 V}$$

Where:

n Sample size

N Total number of households

$$V = \frac{SD^2}{\bar{p}^2} = \frac{\text{overall variance}}{\bar{p}^2}$$

\bar{p} The overall proportion

To then decide on the number of households in the sample that come from each type of digester volume, we could use proportional allocation, where the proportions of units from the different volumes in the sample are the same as the proportions in the population. This gives

$$n_i = \frac{g_i}{N} \times n$$

* As per paragraph 41 of Guidelines for sampling and surveys for cdm project activities and programme of activities Version02.0(EB69 Annex5), the value can be obtained from these ways:(a) We may refer to the result of previous studies and use these results;(b) In a situation where we do not have any information from previous studies, we could take a preliminary sample as a pilot and use that sample to provide our estimates;(c) We could use “best guesses” based on the researcher’s own experiences.

where $i=1, \dots, k$ and k is the digester types of volume in the CPA.

Where:

g_i Size of the i^{th} group (digester volume) where $i=1, \dots, k$

N Population total

The calculation of the overall variance and proportion are as below:

$$SD^2 = \frac{(g_a \times p_a(1-p_a)) + (g_b \times p_b(1-p_b)) + (g_c \times p_c(1-p_c)) + \dots + (g_k \times p_k(1-p_k))}{N}$$

$$\bar{p} = \frac{(g_a \times p_a) + (g_b \times p_b) + (g_c \times p_c) + \dots + (g_k \times p_k)}{N}$$

Pertaining to mean value parameters, the equation used to calculate sample size is:

$$n \geq \frac{1.645^2 \times NV}{(N-1) \times 0.1^2 + 1.645^2 V}$$

Where:

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

SD Is the overall standard deviation, and

$Mean$ Is the overall mean.

The calculation of Overall Standard Deviation is according to the following:

$$SD = \sqrt{\frac{(g_a \times SD_a^2) + (g_b \times SD_b^2) + (g_c \times SD_c^2) + \dots + (g_k \times SD_k^2)}{N}}$$

Where:

SD Weighted overall standard deviation

SD_i Standard deviation of the i^{th} group where $i=1, \dots, k$, (note that these are all squared – so the group size is actually being multiplied by the group variance)

g_i Size of the i^{th} group where $i=1, \dots, k$

N Population total

$$mean = \frac{(g_a \times m_a) + (g_b \times m_b) + (g_c \times m_c) + \dots + (g_k \times m_k)}{N}$$



Where:

Mean Weighted overall mean

mi Mean of the i^{th} group where $i=1, \dots, k$

Bureau Veritas Certification checked the applied methodologies AMS-I.I version 03 and AMS-III.R. and found the monitoring plan is reasonable.

Bureau Veritas Certification confirms the steps taken to assess sampling approach, important assumptions, and justification for the monitoring plan are feasible within the project design.

The steps taken to assess whether the monitoring arrangements described in the monitoring plan are feasible within the programme design.

All the records will be kept electronically during the crediting period plus 2 years. Validation team is of the opinion that the monitoring plan complies with the requirements of the methodologies.

Operational management for the project activity is comprehensively detailed in PoA-DD and it includes description of the responsibility, procedure reference, calibration frequency, maintenance needs, QA/QC procedure and data management system.

3.11 Environmental impacts

It is not required to conduct the environment analysis for the rural household digester installation according to the national regulation "Categorization of construction project and the requirement for environmental impact assessment issued by Ministry of Environmental Protection of P.R. China" /8/.

Furthermore, for a responsible attitude, the local government carried out a basic evaluation of the environmental impacts on the PoA level and confirms this kind of project is environment-friendly.

3.12 Local stakeholder consultation

The CME has undertaken the local stakeholder consultation at PoA level.

The program stakeholder consultations have been conducted by the CME with the assistant of Sichuan Wuhai Environmental Protection & Bioengineering CO., LTD. through issuing holding consultation meeting Ref-9 and collecting questionnaires /10/.

A consultant meeting was held by Sichuan Wuhai Environmental Protection & Bioengineering CO., LTD. on 18/12/2010. Total the city and county levels of Rural Energy Offices of the initial targeted seven regions attended the meeting. During this meeting, the principle of carbon trading, the Clean Development Mechanism and the impacts to the work of the Rural Energy Offices have been presented.

Total 76 questionnaires, in which 42 questionnaires towards rural energy offices and 34 questionnaires towards famer households separately have been provided by the CME and validated by validation team. Furthermore, Bureau Veritas Certification has conducted an interview with local stakeholders (random multiple-sites) and confirms that the stakeholders affected had been invited in a transparent manner. Bureau Veritas Certification hereby confirms that the process of local stakeholder consultation is observed to be adequate.

☞ Complying with **Para.130VVM**, Bureau Veritas Certification hereby confirms that the local stakeholder consultation was performed and the process of local stakeholder consultation is



observed to be adequate. The Project will be beneficial to the local sustainable development without negative effect on the local stakeholders.

4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS

The PoA-DD using methodologies AMS-I.I. Version 03 /Ref-7/, AMS-III.R Version 02 /Ref-8/ and referred AMS-III.D. Version 18 /Ref-9/ was webhosted on the UNFCCC for global stakeholders comments as per CDM requirements. The programme was webhosted from 07/09/2011 to 06/10/2011.

DOE received one comment via mail, but no comments received in EB website during the GSC period. As the comment has unrelated description with the PoA, Bureau Veritas Certification sent mails for further clarification (the mail is attached as independent appendix of the Project), however, none response received till the date of validation process finished, thus the comment can be ignored as it is unrelated with the Project and it seems the comments keeper doesn't care about the response for the comment.



5 Validation opinion

Bureau Veritas Certification has performed a validation of the PoA Rural Household Biogas Digester Programme in Seven Regions of Sichuan Province. The validation was performed on the basis of UNFCCC criteria and host country criteria and also on the criteria given to provide for consistent project operations, monitoring and reporting.

The validation consisted of the following three phases: i) a desk review of the design and the baseline and monitoring plan; ii) follow-up interviews with stakeholders; iii) the resolution of outstanding issues and the issuance of the final validation report and opinion.

By reviewing VVM, Procedures for registration of a programme of activities as a single CDM project activity and issuance of certified emission reductions for a programme of activities, Standard for demonstration of additionality, development of eligibility criteria and application of multiple methodologies for programme of activities etc, Bureau Veritas Certification confirm that management system of CME is robust and efficient to ensure eligibility and quality of CPAs. Eligibility criteria are sufficient so that the inclusion of CPAs could fulfill all requirements of EB rules. Emission reductions attributable to the CPA under the PoA are additional to any that would occur in the absence of the PoA, and hence are likely to be achieved.

The review of the PoA-DD (Version 04) and the subsequent follow-up interviews have provided Bureau Veritas Certification with sufficient evidence to determine the fulfillment of stated criteria. In our opinion, the PoA correctly applies and meets the relevant UNFCCC requirements for the CDM and the relevant host country criteria. Bureau Veritas Certification concludes Rural Household Biogas Digester Programme in Seven Regions of Sichuan Province meets all stated criteria and thus requests registration of Rural Household Biogas Digester Programme in Seven Regions of Sichuan Province as PoA.



6 references

Category 1 Documents:

Documents provided by Sichuan Wuhai Environmental Protection & Bioengineering CO., LTD. that relate directly to the GHG components of the PoA.

- /1/ PoA DD Version 01 dated 31/07/2011 for GSP from 07/09/2011 to 06/10/2011
- /2/ Generic CPA DD Version 01 dated 31/07/2011 for GSP
- /3/ PoA DD Version 04 dated 28/11/2012
- /4/ Generic CPA DD dated 28/11/2012
- /5/ Letter of approval(LoA) issued by China's DNA in Mar.2012(No.3786)
- /6/ Letter of approval(LoA) issued by Switzerland' DNA on 23/11/2012
- /7/ Internal Management Documents of the PoA provided by the CME
- /8/ Categorization of construction project and the requirement for environmental impact assessment issued by Ministry of Environmental Protection of P.R. China
- /9/ Consultation meeting records
- /10/ Questionnaires
- /11/ Evidence of average temperature in all counties of Sichuan Province
- /12/ MoC signed by participants from China and Switzerland dated 08/11/2012
- /13/ The test reports of the household coal stove and household biogas stove
- /14/ *Edwards R, et al., 2004, Improved Household Stoves in China: An Assessment of the National Improved Stove Program (NISP) and article in Energy Policy 32 (2004)395–411; Implications of changes in household stoves and fuel use in China.*
- /15/ *Chinese national standard of Domestic Biogas Stove (GB/T3606-2001)*
- /16/ 2006 IPCC Guidelines,

Category 2 Documents:

Background documents related to the design and/or methodologies employed in the design or other reference documents.

- Ref-1 VVM Version01.2 dated 30/07/2010(EB55 Annex02)
- Ref-2 Procedures for registration of a programme of activities as a single CDM project activity and issuance of certified emission reductions for a programme of activities dated 02/08/2010(EB55 Annex38)
- Ref-3 Standard for demonstration of additionality, development of eligibility criteria and application of multiple methodologies for programme of activities(EB65 Annex03)
- Ref-4 Guidelines on the demonstration of additionality of small-scale projects activities (EB 68, Annex 27)
- Ref-5 CDM-SSC-PoA-DD form(EB33 Annex43)
- Ref-6 CDM-SSC-CPA-DD form(EB33 Annex44)
- Ref-7 *AMS-I.I Biogas/biomass thermal applications for households/small users (Version 03)*
- Ref-8 *AMS-III.R. Methane recovery in agricultural activities at household/small farm level (Version 02)*
- Ref-9 *AMS-III.D. Methane recovery in animal manure management systems (Version 18.0)*
- Ref-10 Guidelines on the Assessment of Investment Analysis(EB62 Annex5)
- Ref-11 Guidelines on assessment of de-bundling for SSC Project activities(EB54 Annex13)
- Ref-12 General Guidelines to SSC CDM methodologies(EB69 Annex 27)
- Ref-13 Standard for sampling and surveys for CDM project activities and programme of activities

**Persons interviewed:**

List persons interviewed during the validation or persons that contributed with other information that are not included in the documents listed above.

/1/ Mr. Yang Qi	Bunge Emissions Holdings
/2/ Mr. Sun Gaofeng	Chair of the CME
/3/ Mr. Wang Yong	Project Manager of CME
/4/ Mr. Liu Chaoyang	Project Manager of CME
/5/ Mr. Rao Zhiyong	Nanjiang Rural Energy Office
/6/ Mr. Song Yumin	Nanjiang Rural Energy Office
/7/ Mr. Yin Xianzhi	Sichuan Rural Energy Office
/8/ Mr. Guo Xinchong	Sichuan Rural Energy Office
/9/ Mr. Jiang Guangming	Nanjiang Agriculture Bureau
/10/ Mr. He Shengping	Nanjiang Rural Energy Office
/11/ Mr. Yang Qingyi	Nanjiang Agriculture Bureau
/12/ Ms. Cheng Chunnan	Nanjiang Rural Energy Office
/13/ Mr. Fei Yao	Nanjiang Agriculture Bureau
/14/ Mr. Yue Tao	Nanjiang Rural Energy Office
/15/ Ms. Zhao Juhua	Nanjiang Agriculture Bureau
/16/ Mr. Yang Shaoyu	Nanjiang Agriculture Bureau
/17/ Mr. Mei Liangfu	Villager
/18/ Mr. Rao Bangming	Villager
/19/ Mr. Liu zhengbao	Villager
/20/ Mr. Zhang Yunming	Villager
/21/ Mr. Wang Jian	Villager
/22/ Ms. Chen Ying	Villager
/23/ Mr. Ran Guhua	Villager
/24/ Mr. Li Jun	Villager
/25/ Mr. He Bing	Villager
/26/ Ms. Zhao Fen	Villager
/27/ Ms. Yue Xiaoying	Villager
/28/ Mr. Jiang Fubang	Villager
/29/ Mr. Hu Demin	Villager
/30/ Ms. Jiang Qiong	Villager
/31/ Mr. He Dasheng	Villager
/32/ Mr. Zhao Zijie	Villager
/33/ Mr. Zhao Zide	Villager
/34/ Mr. Zhao Zishou	Villager
/35/ Mr. Zhao Ziyong	Villager

VALIDATION REPORT



/36/	Mr. Zhao Wenxue	Villager
/37/	Mr. Qin Haiping	Villager
/38/	Mr. Zhou Zhifu	Villager
/39/	Mr. Yue Guoyong	Villager
/40/	Mr. Zhou Zhiming	Villager
/41/	Mr. Zhang Tianyong	Villager
/42/	Mr. Lin Jinxian	Villager
/43/	Mr. Zhou Zhike	Villager
/44/	Mr. Yang Qingwu	Villager
/45/	Mr. Lin Yetai	Villager
/46/	MR. Wu Shaobin	Villager
/47/	Mr. Gan Guocai	Villager
/48/	Ms. Xu Cuilan	Villager
/49/	Mr. Li Zungui	Villager
/50/	Mr. Yang Shaojin	Villager
/51/	Mr. Ye Rongchang	Villager
/52/	Mr. Wu Songjia	Villager
/53/	Mr. Wu Dengyuan	Villager
/54/	Mr. Wang Wencai	Villager
/55/	Ms. Yang Shaoyu	Villager
/56/	Mr. Li Guoding	Villager
/57/	Mr. Guo Guangwu	Villager
/58/	MR. Guo Guangqing	Villager
/59/	Mr. Guo Youzhong	Villager
/60/	Mr. Han Yuping	Villager
/61/	Mr. Xu Shijun	Villager
/62/	Mr. Xu Shijun	Villager
/63/	Mr. Zhang Yingping	Villager
/64/	Mr. Tan Yong	Villager
/65/	Mr. Zhao Peiju	Villager
/66/	Mr. Cheng Yongwu	Villager
/67/	Mr. Cheng Zhengming	Villager



/68/	Mr. Zhang Yuanqing	Villager
/69/	Mr. Han Minglong	Villager
/70/	Mr. Cheng Qilong	Villager
/71/	Mr. Jiang Zuoxiong	Villager
/72/	Mr. Jiang Zuoyong	Villager
/73/	Mr. Chen Youfu	Villager
/74/	Mr. Tang Xianqin	Villager
/75/	Mr. Jiang Zhiqi	Villager
/76/	Mr. Li Mengcheng	Villager
/77/	Mr. Kang Dingyi	Villager

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VALIDATION REPORT

7 curricula vitae of the DOE's validation team members

Mr. Liao Ling	Bureau Veritas Certification, China	<p>Team Leader, Climate Change Lead Verifier.</p> <p>He holds a Master Degree in Environmental Science. Before joining BV in Feb.2009, he gained 4 and a half years of working experience in engineering and EIA for manufacturing enterprise in P.R. China. He obtained the certificates of CDM Lead Verifier and ISO14001 Lead Auditor in Bureau Veritas and received training in ISO 14064.</p>
Ms. Coco Geng Yan	Bureau Veritas Certification, China	<p>Team Member, Climate Change Verifier</p> <p>She holds a Master Degree in Ecology and a bachelor degree in Forestry. She has 2 years of experience in CDM in P.R China. She obtained the certificate of CDM Verifier in 2010, Lead Auditor for ISO 14001 and has successfully completed the course assessment for ISO 14064.</p>
Mr. David Wang Zhenning	Technical Specialist	<p>Technical Specialist</p> <p>He holds an MSc Degree in Environmental Technology and Bachelor Degree in Environmental Engineering. Before joining BV in 2010, he gained 4 years of technical experiences in the CDM industry in P.R China. He obtained the certificate of CDM Verifier in Nov 2010.</p>
Ms. Zhang Chen	Bureau Veritas Certification, China	<p>Trainee, , Climate Change Verifier</p> <p>She holds Master Degree in Environmental Economics and Environmental Engineering. Before joining BV in 2010, she has gained experiences in project financing evaluation, policy cost-benefit analysis and environmental management. She obtained the certificate of CDM Verifier and ISO 14001 Lead Auditor, and received training in ISO 14064.</p>
Ms. Jasmine Tang Xuemei	Bureau Veritas Certification, China	<p>Technical Reviewer, Climate Change Lead Verifier.</p> <p>She holds a Master Degree in Environmental Engineering. Before joining BV in 2008, she gained two years of CDM technical working experience in P.R China. She obtained the certificate of CDM Lead Verifier, Lead Auditor for ISO 14001 and ISO 14064.</p>
Mr. Wang Zhifeng	Technical Specialist	<p>Technical Specialist</p> <p>He was engaged in study on forage cultivation and grassland ecology for more than 20 years. He has lead or participated in more than 20 research projects including 12 nation level research projects, and received 7 awards for his research achievements.</p>



VALIDATION REPORT

APPENDIX A: COMPANY CDM PROGRAMME VALIDATION PROTOCOL

Table 1 Validation requirements of PoA

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
1. Global Stakeholder Consultation					
1.1. Is there any comment on the SSC-PoA-DD of the proposed project activity received during Global Stakeholder Consultation process?	VVM	43	Yes.	OK	OK
1.2. If yes, have all comments been taken into account during the validation of the proposed project activity?	VVM	43	Yes.	OK	OK
1.3. If comments indicate that the proposed project activity does not comply with the CDM requirements and are not substantiated, is there any further clarification from the entity providing the comment?	VVM	42	No.	OK	OK
1.3.1. If yes, how comments received have been taken due account?	VVM	42	N/A	OK	OK
1.3.2. If no, are the comments as originally provided proceeded to assess?	VVM	42	As the comment has unrelated description with the PoA, Bureau Veritas Certification sent mails for further clarification, but there are no response received until the validation report completed, thus the comment can be ignored as it is unrelated with the Project	OK	OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
			and it seems the comments keeper doesn't care about the response for the comment.		
2. Approval					
2.1. Have the letters of approval obtained from each host Party and Annex I Party which wishes to be involved in the PoA?	VVM EB55 Ann38	45 9	<p>CAR-1. LoA from China has not been provided.</p> <p>The LoA from China was provided with the No. 3786 approved in March 2012. CAR-1 was hence closed.</p>	<p>CAR-2. LoA from Annex I party has not been provided.</p> <p>The LoA from Switzerland was provided with the DNA Ref. G514-3487. CAR-2 was hence closed.</p>	<p>CAR-1 CAR-2</p> <p>OK</p>
2.2. Are letters of approval issued in accordance with the guidance provided by the Board (EB 16 report, Annex 6)?	VVM EB55 Ann38	45 9	<p>Pending on CAR-1</p> <p>Yes.</p> <p>China is a party of the Kyoto Protocol and the participation is voluntary.</p> <p>The proposed CDM programme contributes to the sustainable development of the</p>	<p>Pending on CAR-2</p> <p>Yes.</p> <p>Switzerland is a party of the Kyoto Protocol and the participation is voluntary.</p>	<p>Pending</p> <p>OK</p>
<ul style="list-style-type: none"> - The Party is a Party of the Kyoto Protocol - The participation is voluntary - In the case of the host Party, the proposed CDM programme contributes to the sustainable development of the country - Refers to the precise proposed CDM project activity title in the SSC-PoA-DD being submitted for registration 	EB16 Ann6	1			



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS		Draft Concl	Final Concl
			host country.			
2.3. Is(are) the letter(s) of approval unconditional with respect to (b) above?	VVM	46	Pending on CAR-1 Yes.	Pending on CAR-2 Yes.	Pending	OK
2.4. Has(ve) the letter(s) of approval been issued by the respective Party's designated national authority (DNA) and is valid for the CDM project activity under validation?	VVM	47	Pending on CAR-1 Yes.	Pending on CAR-2 Yes.	Pending	OK
2.5. Is there doubt with respect to the authenticity of the letter of approval?	VVM	48	Pending on CAR-1 No.	Pending on CAR-2 No.	Pending	OK
2.6. If yes, was verified with the DNA that the letter of approval is authentic?	VVM	48	Pending on CAR-1 N/A.	Pending on CAR-2 N/A.	Pending	OK
3. Authorization						
3.1. Is CDM project participation recorded only at the PoA level while the operators of individual CPAs are not considered as project participants?	EB55 Ann38	8	Yes. CDM project participant is only recorded at the PoA level while the operators of individual CPAs are not considered as project participants.		OK	OK
3.2. Has the coordinating/managing entity obtained letters of authorization of its coordination of the PoA	EB55 Ann38	10	Pending on CAR-1 & CAR-2		Pending	OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
from each host Party?			Yes.		
3.3. Has the approval of participation issued from the relevant DNA?	VVM	53	Pending on CAR-1 & CAR-2 Yes.	Pending	OK
3.4. Is there doubt with respect to (g) above?	VVM	53	Pending on CAR-1 & CAR-2 No.	Pending	OK
3.5. If yes, was verified with the DNA that the approval of participation is valid for the proposed project participant?	VVM	53	Pending on CAR-1 & CAR-2 N/A.	Pending	OK
4. Modalities of Communications (MoC)					
4.1. Is the CME the sole or a joint focal point for each scope of authority?	EB55 Ann38	11	CAR-3. MoC has not been provided. The MoC was provided, and the CME is joint focal point. CAR-3 is hence closed.	CAR-3	OK
4.2. Is the number of joint focal points limited to five, or equal to the number of host parties if greater than five?	EB55 Ann38	11	Pending on CAR-3 Yes. The number of joint focal is limited to five.	Pending	OK
5. PoA design					
5.1. Is the SSC-PoA-DD completed using valid version of the CDM SSC-PoA-DD form appropriate to the	VVM	55	Yes, Programme of Activities Design Document Form (CDM-SSC-PoA-DD)	OK	OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
type of project activity?			version 01 (EB33 Ann 43) was used.		
6. General description of PoA (corresponding to section A of CDM SSC-PoA-DD s)					
6.1. In Section A.1 of CDM-SSC-PoA-DD, is a title for the PoA provided?	EB33	Ann43	Yes. Rural Household Biogas Digester Programme in Seven Regions of Sichuan Province.	OK	OK
6.2. Description of programme of activities(Section A.2 of CDM-SSC-PoA-DD)	EB33	Ann43			
6.2.1. Is a framework developed for the implementation of the proposed CDM PoA and inclusion of CPAs under the PoA?	EB33 EB55 Ann38	Ann43 6	Yes. Approximate 800,000 household biogas digesters would be installed to change the management practice of a biogenic waste in rural households (manure collected in the deep pit which are decayed anaerobically and emits methane to the atmosphere) in order to achieve the controlled anaerobic digestion and the generated biogas would be utilized to provide thermal energy for cooking, aiming at mitigate the GHG emissions. Sichuan Wuhai Environmental Protection & Bioengineering CO., LTD. will coordinate the	GAR-4	OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
			<p>Small-Scale Programme of Activities (SSC-PoA) and will support the project implementer(s) in implementing the CDM Programme Activities (CPAs) in Sichuan Province in assistance with local governments.</p> <p>CAR-4. Thousand separator signals should be applied in the DDs.</p> <p>Thousand separator signals are used in DD, Bureau Veritas Certification checked the documents and confirm the CAR is closed.</p>		
6.2.2. Is Policy/measure or stated goal that the proposed PoA provided?	EB33 EB55 Ann38	Ann43 6(c)	<p>Yes.</p> <p>The program aims to change the management practice of a biogenic waste in rural households that would significantly improve rural environment and reduce greenhouse gas emissions, through the use of a programmatic approach for biogas digester activities.</p>	OK	OK
6.2.3. Is it confirmed that the proposed PoA is a voluntary action by the coordinating/managing entity?	EB33 EB55 Ann38	Ann43 6(d)	<p>Yes.</p> <p>It has been confirmed that the PoA is a voluntary action by Sichuan Wuhai Environmental Protection & Bioengineering CO., LTD.</p>	OK	OK
6.3. Coordinating/managing entity and participants of	EB33	Ann43			



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
PoA(Section A.3 of CDM-SSC-PoA-DD)					
6.3.1. Coordinating or managing entity	EB33 EB55 Ann38	Ann43 6(a)	Yes. Sichuan Wuhai Environmental Protection & Bioengineering CO., LTD.	OK	OK
6.3.2. Host Party(ies)	EB33 EB55 Ann38	Ann43 6(a)	Yes. P.R.China.	OK	OK
6.3.3. PoA participants	EB33 EB55 Ann38	Ann43 6(a)	Yes. Sichuan Wuhai Environmental Protection & Bioengineering CO., LTD. Bunge Emissions Holdings S.A.R.L.	OK	OK
6.4. Technical description of the programme of activities(Section A.4 of CDM-SSC-PoA-DD)	EB33	Ann43			
6.4.1. In Section A.4.1 of CDM-SSC-PoA-DD, is location of the programme of activities defined?	EB33	Ann43	Yes. The PoA-DD includes a definition of the geographical area of the PoA as "Seven regions such as Deyang City, Guangyuan City, Nanchong City, Bazhong City, Yaan City, Liangshan Prefecture and Panzhihua City in Sichuan Province, P.R.China", within which all CPAs included in the PoA will be	OK	OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
			implemented.		
1.1. Host Party(ies)	EB33	Ann43	Yes. P.R.China	OK	OK
1.2. Definition of the boundary for the PoA in terms of a geographical area(e.g., municipality, region within a country, country or several countries) within which all CPAs included in the PoA will be implemented, taking into consideration the requirement that all applicable national and/or sectoral policies and regulations of each host country within that chosen boundary.	EB33 EB55 Ann38	Ann43 6(b)	<p>Seven regions such as Deyang City, Guangyuan City, Nanchong City, Bazhong City, Yaan City, Liangshan Prefecture and Panzhihua City in Sichuan Province, P.R.China.</p> <p>CL-1. The geographical coordinates of the boundary of the PoA has not been specified in the PoA DD</p> <p>Yes. The detailed geographical coordinates are listed in the A.4.1.2 of the PoA-DD, thus the CL is closed.</p>	CL-1	OK
6.4.2. In Section A.4.2.1 of CDM-SSC-PoA-DD, is(are) technology or measures to be employed by the CPA provided?	EB33 EB55 Ann38	Ann43 6(f)	<p>CL-2. Clarification is required on the detailed technology/measures to be employed by the SSC-CPA.</p> <p>Yes. The detailed technology/measures to be employed by the SSC-CPA are specified in the updated DDs and they shall comply with the Chinese national standard of GB/T4750-2002 Household Biogas Digester Standard and/or the Technical</p>	CL-2	OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
			Requirements for Sichuan Provincial Rural Biogas Construction Government Loan Project. Bureau Veritas Certification checked the description and the related standards and confirm the CL is closed.		
6.4.3. In Section A.4.2.2 of CDM-SSC-PoA-DD, is eligibility criteria for inclusion of a CPA in the PoA provided?	EB33 EB55 Ann38	Ann43 6(g)	<p>CL-3. The eligibility criteria for inclusion of a CPA in the PoA should be enlarged in Section A.4.2.2 of PoA-DD.</p> <p>Yes. The eligibility criteria for inclusion of a CPA in the PoA has been updated according to the PoA standard issued by EB65. The conditions of additionality demonstration and sampling requirements for CPAs were updated in the A.4.2.2 PoA-DD. Bureau Veritas Certification checked the description and confirm the CL is closed.</p> <p>CL-4. Clarification and evidences are required for the thermal installed capacity of the Project.</p> <p>According to Chinese national standard of Domestic Biogas Stove, the three specifications of installed capacity of a stove are 2.33kW, 2.79kW and 3.26kW with fluctuation range of $\pm 10\%$, e.g. the maximum of a stove will not exceed 3.59kW, any stove that cannot satisfy this standard</p>	CL-3 CL-4	OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
			shall not be permitted to be installed for a newly built digester. Thus the maximum installed capacity of biogas cooking stove in each household 3.59kW and far less than 2250kW household thermal capacity threshold defined in the EB68 annex 27. Bureau Veritas Certification checked the Chinese national standard of Domestic Biogas Stove and the EB 68 Annex 26, confirmed the definition of the maximum of the thermal capacity of the Project is reasonable and the CL is closed.		
6.4.4. In Section A.4.3 of CDM-SSC-PoA-DD, is additionality assessed and demonstrated as following?	EB33	Ann43			
6.4.4.1. Is the proposed PoA a voluntary coordinated action?	EB33 EB55 Ann38	Ann43 6(e)	Yes.	OK	OK
6.4.4.2. If the PoA is implementing a voluntary coordinated action, would it be implemented in the absence of the PoA?	EB33 EB55 Ann38	Ann43 6(e)	It has been demonstrated that in the absence of the CDM, the proposed voluntary coordination and management would not be implemented.	OK	OK
6.4.4.3. If the PoA is implementing a mandatory policy/regulation, is this enforced?	EB33 EB55	Ann43	N.A. As no mandatory policy/regulation is	OK	OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
	Ann38	6(e)	implemented for the rural household biogas.		
6.4.4.4. If mandatory a policy/regulation is enforced, will the PoA lead to a greater level of enforcement of the existing mandatory?	EB33 EB55 Ann38	Ann43 6(e)	N.A.	OK	OK
6.4.5. In Section A.4.4.1 of CDM-SSC-PoA-DD, is the following description of the operational and management arrangement established by the coordinating/managing entity for the implementation of the PoA included?	EB33	Ann43			
6.4.5.1. A record keeping system for each CPA under the PoA	EB33	Ann43	<p>Yes.</p> <p>A record keeping system for each CPA under the CPA has been designed in Section 4.4.1 of PoA DD</p> <p>CL-5. — The record keeping system about the household information should be specified.</p> <p>Basic information collected of the households in CPAs has been listed in the table of household database in section A.4.4.1 of the PoA-DD. Bureau Veritas Certification checked the description of record keeping system about the household information of each CPA listed in the PoA</p>	CL-5	OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
			and confirm the CL is closed.		
6.4.5.2. A system/procedure to avoid double accounting e.g. to avoid the case of including a new CPA that has been already registered either as a CDM project or as a CPA of another PoA	EB33 EB65 Ann3	Ann43 17	<p>CL-6. The system/procedure to avoid double accounting need further clarification as it is not clear enough.</p> <p>The households will be strictly examined by the local rural energy office to ensure that they can satisfy all requirements of being involved into the PoA and the households that meet the criteria shall be indentified with a unique ID number and be recorded in the household database to distinguish the CPA digester with one already implemented digester that is not deemed to be included into the CPA. Bureau Veritas Certification confirmed the CL is closed.</p>	CL-6	OK
6.4.5.3. The SSC-CPA included in the PoA is not a de-bundled component of another CDM programme activity (CPA) or CDM project activity	EB33 EB65 Ann3	Ann43 17	<p>CL-7. Further clarification is required on how to assure that the SSC-CPA included in the PoA would not a de-bundled component of another CPA or CDM project activity.</p> <p>For a household, the design volume of a digester is six, eight or ten cube meters, and according to estimation, the emission reduction from avoiding methane emission</p>	CL-7	OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
			is no larger than 5 tCO ₂ e. Another side, according to Chinese national standard of Domestic Biogas Stove, the three specifications of installed capacity of a stove are 2.33kW, 2.79kW and 3.26kW with fluctuation range of $\pm 10\%$, e.g. the maximum of a stove will not exceed 3.59kW, any stove that cannot satisfy this standard shall not be permitted to be installed for a newly built digester, therefore none of them reaches 450kW thermal. Therefore, the CPAs will be exempted from performing de-bundling. Veritas Certification checked the designed volumes of the CPAs and the national standards provided, confirmed the CL is closed.		
6.4.5.4. The provisions to ensure that those operating the CPA are aware of and have agreed that their activity is being subscribed to the PoA	EB33	Ann43	Yes. CME will sign agreement with households that is willing to participate in the PoA.	OK	OK
6.4.5.5. A clear definition of roles and responsibilities of personnel involved in the process of inclusion of CPAs, including a review of their competencies	EB65 Ann3	17	CL-8. Please specify the roles and responsibilities of the PoA, especially the data management procedure, data archiving information, QA/QC of the tentative operating structure.	CL-8	OK



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CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
			<p>A record keeping system for the data archiving information was developed to a CPA, and the household database was set up for each CPA.</p> <p>The roles and responsibilities of different parties involved in the PoA for the data management procedure, data archiving information and QA/AC were described in table 4 in the PoA-DD. Bureau Veritas Certification checked the description and table in the PoA for the roles and responsibilities and confirm the CL is closed.</p>		
6.4.5.6. Records of arrangements for training and capacity development for personnel	EB65 Ann3	17	Pending on CL-8 Yes.	Pending	OK
6.4.5.7. Procedures for technical review of inclusion of CPAs	EB65 Ann3	17	Pending on CL-8 Yes.	Pending	OK
6.4.5.8. Records and documentation control process for each CPA under the PoA	EB65 Ann3	17	Pending on CL-8 Yes.	Pending	OK
6.4.5.9. Measures for continuous improvements of the PoA management system	EB65 Ann3	17	Pending on CL-8 Yes-	Pending	OK
6.4.5.10. Any other relevant elements	EB65	17	N.A.	OK	



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CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
	Ann3				
6.4.6. In Section A.4.4.2 of CDM-SSC-PoA-DD, is the following information regarding monitoring plan provided?	EB33	Ann43			
6.4.6.1. Description of the proposed statistically sound sampling method/procedure to be used by DOEs for verification of the amount of reductions of anthropogenic emissions by sources or removals by sinks of greenhouse gases achieved by CPAs under the PoA	EB33 EB55 Ann38	Ann43 6(k)	Yes. The CME intends that a verification of one CPA or more is carried out at the same time.	OK	OK
6.4.6.2. In case the coordinating/managing entity opts for a verification method that does not use sampling but verifies each CPA(whether in groups or not, with different or identical verification periods), a transparent system is to be defined and described that ensures that no double accounting occurs and that the status of verification can be determined anytime for each CPA	EB33 EB55 Ann38	Ann43 6(k)	Yes. A transparent system is defined and described in Section A.4.4.1. of PoA-DD	OK	OK
6.4.7. In Section A.4.5 is information regarding public funding of the programme activities provided?	EB33 EB55 Ann38	Ann43 6(n)	No public funding from Annex I countries is provided for the proposed programme of activities (PoA).	OK	OK



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CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
7. Duration of the programme of activities(Section B of CDM-SSC-PoA-DD)	EB33	Ann43			
7.1. In Section B.1 of CDM-SSC-PoA-DD, is starting date of the PoA defined?	EB33	Ann43	Yes. 07/09/2011, on which the PoA-DD is published for GSC.	OK	OK
7.2. In Section B.2 of CDM-SSC-PoA-DD, is length of the PoA defined with a maximum total length of 28 years?	EB33 EB55 Ann38	Ann43 6(h)	Yes. 28 years	OK	OK
8. Environmental Analysis(Section C of CDM-SSC-PoA-DD)	EB33	Ann43			
8.1. In Section C.1 of CDM-SSC-PoA-DD, is environmental analysis conducted at PoA level or CPA level?	EB33 EB55 Ann38	Ann43 6(l)	Yes. The environmental analysis for household biogas digester is not required by the national regulations of the host country, however the a basic evaluation of the environmental impact is undertaken at SSC-PoA level. CL-9. The environmental impact analysis carried out at SSC-PoA level should be provided. <i>According to the Notice to Adjustment of Application Work on Rural Household</i>	CL-9	OK



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CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
			<i>Biogas CDM Project</i> joint issued by China NDRC and Minister of Agriculture, no EIA is required by the State and no EIA approval is conducted in real operation for this kind of project, the statement of avoiding EIA from local Environmental Department can be used instead the EIA approval. Furthermore, the environmental impact analysis carried out at SSC-PoA level has been provided. Bureau Veritas Certification checked the national regulation and found there is no EIA required for the rural biogas digesters installation, and the EIA analysis conduct additionally by local government showed this kind of project is environment-friendly, thus the CL is closed.		
8.2. If environmental analysis is conducted at PoA level, is the documentation on the analysis of the environmental impacts, including transboundary impacts provided in Section C.2 of CDM-SSC-PoA-DD	EB33	Ann43	Pending on CL-9 N/A	Pending	OK
8.3. In Section C.3 of CDM-SSC-PoA-DD, is it stated that whether in accordance with the host Party laws/regulations, an environmental impact assessment is required for a typical CPA included in the PoA?	EB33	Ann43	No. The environmental analysis for household biogas digester is not required according to host country laws/regulations. The "Categorization of construction project and	OK	OK



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CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
			the requirement for environmental impact assessment issued by Ministry of Environmental Protection of P. R. China" doesn't involve the household biogas digester construction.		
9. Stakeholders' comments(Section D of CDM-SSC-PoA-DD)					
9.1. In Section D.1 of CDM-SSC-PoA-DD, is the local stakeholder consultation process done at PoA level or CPA level?	EB33 EB55 Ann38	Ann43 6(m)	Yes. Local stakeholder comments are invited at PoA level.	OK	OK
9.2. If local stakeholders comments were invited at the PoA level,					
9.2.1. In Section D.2 of CDM-SSC-PoA-DD, how these comments were invited and compiled?	EB33 EB55 Ann38	Ann43 6(m)	Yes. A consultation meeting was organized by the CME (Sichuan Wuhai Environmental Protection & Bioengineering CO., LTD.) on 18/12/2010. Including the City and County level Rural Energy Offices of the initial targeted seven regions are invited to the meetings. Besides that, 76 questionnaires were collected for comments in which 42 questionnaires towards rural energy offices and 34 questionnaires towards famer	OK	OK



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CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
			households separately, in an attempt to make the survey as comprehensive as possible.		
9.2.2. In Section D.3 of CDM-SSC-PoA-DD, is the summary of the comments received provided?	EB33 EB55 Ann38	Ann43 6(m)	Yes.	OK	OK
9.2.3. In Section D.4 of CDM-SSC-PoA-DD, how due account was taken of all comments received?	EB33 EB55 Ann38	Ann43 6(m)	Yes. No negative comments have been received on the Project. There has therefore been no need to modify the project due to comments received.	OK	OK
10. Application of a baseline and monitoring methodology (Section E of CDM-SSC-PoA-DD)					
10.1. In Section E.1 of CDM-SSC-PoA-DD, are title and reference of the approved methodology (including any other methodologies or tools) applied to each CPA included in the PoA provided?	EB33	Ann43	Yes. AMS-I.I: <i>Biogas/biomass thermal applications for households/small users</i> (Version 03) AMS-III.R: <i>Methane recovery in agricultural activities at household/small farm level</i> (Version 02) The applied AMS-III.R refer to the	OK	OK

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CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
			methodology of AMS-III. D.		
10.2. Justification of the choice of the methodology and why it is applicable to each CPA (E.2 of CDM-SSC-PoA-DD)					
10.2.1. Is choice of an approved baseline and monitoring methodology (or combination of approved methodologies) justified?	EB33 EB55 Ann38	Ann43 6(f)	Yes. The combination of AMS-I.I and AMS III.R. has been approved by CDM EB.	OK	OK
10.2.2. For PoA applying large scale CDM methodologies or combination of multiple large scale and small-scale CDM methodologies in a PoA, are combinations explicitly permitted in the methodologies?	EB65 Ann3	32&33	N.A.	OK	OK
10.2.3. If not, has a clarification for the eligibility of the proposed combination sought by following the latest version of the "Procedure for the submission and consideration of queries regarding the application of approved methodologies and methodological tools by designated operational entities to the Meth Panel" ?	EB65 Ann3	32&33	N.A.	OK	OK
10.2.4. Is each of the applicability conditions of the approved methodology or other methodology component referred to therein met?	EB33 EB55	Ann43 6(f)			

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CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
	Ann38				
10.2.4.1. This category comprises activities for generation of renewable thermal energy using renewable biomass or biogas for use in residential, commercial, institutional applications (e.g. for supply to households, small farms or for use in built environment of institutions such as schools). Examples of these technologies that displace or avoid fossil fuel use include but are not limited to biogas cook stoves, biomass briquette cook stoves, small scale baking and drying systems, water heating, or space heating systems.	AMS-I.I. Ver.03	1	The CPAs included in the programme generate renewable thermal energy from biogas for cooking use in households, replace the coal use for cooking in the absence of the programme.	OK	OK
10.2.4.2. The total installed/rated thermal energy generation capacity of the project equipment is equal to or less than 45 MW thermal.	AMS-I.I. Ver.03	2	The eligibility criteria for CPAs inclusions in section A.4.2.2 states that, the total installed/rated thermal energy generation capacity each CPA involved in this programme will be less than 45 MW thermal, thus the methodology is applicable.	OK	OK
10.2.4.3. Each unit (e.g. cook stove, heater) shall have a rated capacity equal to or less than 150 kW thermal. Projects that include units with rated capacity greater than 150 kW thermal may explore AMS I.C "Thermal energy production with or without electricity"	AMS-I.I. Ver.03	3	According to the national standard (GB/T 3606-2001 "Domestic biogas stove"), the biogas stove to be installed to each household has three values of rated thermal capacity which are 2.33kW, 2.79kW and 3.26kW, therefore, the installed capacity of	OK	OK



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CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
			each unit will be less than 150 kW thermal.		
<p>10.2.4.4. For the specific case of biomass residues processed as a fuel (e.g. briquettes, wood chips), it shall be demonstrated that:</p> <p>a) It is produced using solely renewable biomass (more than one type of biomass may be used). Energy use for renewable biomass processing (e.g. shredding and compacting in the case of briquetting) may be considered as equivalent to the upstream emissions associated with the processing of the displaced fossil fuel and hence disregarded;</p> <p>b) The .General guidance on leakage in biomass project activities. (attachment C to Appendix B of 4/CMP.1 Annex II) shall be followed;</p> <p>c) The project participant can monitor the mass, moisture content and NCV of the resulting biomass fuel, through sampling that meets the confidence/precision level of 90/10;</p> <p>d) Where the project participant is not the producer of the renewable fuel, the project participant and the producer are bound by a contract that shall enable the project participant to monitor the source of renewable biomass to account for any emissions associated with</p>	AMS-I.I. Ver.03	4	<p>N.A.</p> <p>The programme is the case of biogas processed as a fuel.</p>	OK	OK

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CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
biomass production (as per 4 (b) above). Such a contract shall also ensure that there is no double counting of emission reductions.					
10.2.4.5. This category comprises recovery and destruction of methane from manure and wastes from agricultural activities that would be decaying anaerobically emitting methane to the atmosphere in the absence of the project activity. Methane emissions are prevented by: (a) Installing methane recovery and combustion system to an existing source of methane emissions; or (b) Changing the management practice of a biogenic waste or raw material in order to achieve the controlled anaerobic digestion equipped with methane recovery and combustion system;	AMS III.R. Ver 02	1	Yes. The PoA comprises biogas digesters that change the management practice of a biogenic waste by installing a household biogas digester equipped with methane recovery and combustion system instead of existing deep pit in order to prevent methane emissions.	OK	OK
10.2.4.6. The category is limited to measures at individual households or small farms (e.g. installation of a domestic biogas digester). Methane recovery systems that achieve an annual emission reduction of less than or equal to five tonnes of CO ₂ e per system are included in this category. Systems with annual emission reduction higher than five tonnes of CO ₂ e are eligible under AMS-III.D .Methane recovery in	AMS III.R. Ver 02	2	Yes. The installation of each biogas digester in the CPA under the proposed PoA is at individual households, as per the eligibility criteria for CPAs inclusions in section A.4.2.2, the individual devices will achieve emission reductions of less than 5 tCO ₂ e.	OK	OK



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CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
animal manure management systems..					
10.2.4.7. This project category is only applicable in combination with AMS-I.C .Thermal energy production with or without electricity. and/or AMS-I.I .Biogas/biomass thermal applications for households/small users. and/or AMS-I.E .Switch from non-renewable biomass for thermal applications by the user.	AMS III.R. Ver 02	3	Yes. The proposed PoA and the involved CPAs combine methodologies AMS-I.I and AMS-III.R.	OK	OK
10.2.4.8. The project activity shall satisfy the following conditions: a) The sludge must be handled aerobically. In case of soil application of the final sludge the proper conditions and procedures that ensure that there are no methane emissions must be ensured; b) Measures shall be used (e.g. combusted or burnt in a biogas burner for cooking needs) to ensure that all the methane collected by the recovery system is destroyed;	AMS III.R. Ver 02	4	Yes. The digester effluent (sludge) will be handled aerobically by using it on farm land as organic fertilizer; the biogas will be combusted through the biogas stove for cooking purpose by the farmer household.	OK	OK
10.2.4.9. Aggregated annual emission reductions of all systems included shall be less than or equal to 60 kt CO2 equivalent.	AMS III.R. Ver 02	5	Yes. As per the eligibility criteria for CPAs inclusion in section A.4.2.2 it will be safeguarded that annual emission reduction of all systems included in one CPA will be less than or equal to 60 ktCO ₂ e.	OK	OK



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CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
10.3. Description of the sources and gases included in the CPA boundary(Section E.3 of CDM-SSC-PoA-DD)	EB33	Ann43			
10.3.1. Is the boundary of the PoA including the physical delineation of the project activity defined?	VVM	79	Yes.	OK	OK
10.3.2. Are sources and GHGs included in CPA boundary in accordance with the selected methodology(ies)?	EB33 VVM	Ann43 79	Yes.	OK	OK
10.3.3. In cases where the selected methodology(ies) allows project participants to choose whether a source or gas is to be included in the project or CPA boundary, is the choice explained and justified?	VVM	79	N.A. as no alternatives need be chosen as per the applied methodologies.	OK	OK
10.4. Description of how the baseline scenario is identified and description of the identified baseline scenario(Section E.4 of CDM-SSC-PoA-DD)	EB33	Ann43			
10.4.1. Is description of how the baseline scenario is identified provided?	EB33	Ann43	Yes. The small scale methodologies defined the baseline scenario.	OK	OK
10.4.2. Does the selected methodology require use of tools (such as the “Tool for the demonstration and assessment of additionality” or the “Combined tool to identify the baseline scenario and demonstrate	VVM	82	No.	OK	OK

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CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
additionality”) to establish the baseline scenario?					
10.4.3. Is the description of the identified baseline scenario provided and consistent with the applied methodology?	EB33 VVM	Ann43 86	<p>Yes.</p> <p>The baseline scenario for CPAs under the PoA was correctly identified and described as per the applied methodologies.</p> <p>The baseline of the PoA is methane emission from open anaerobic lagoon, heat generated from the fossil fuel fossil fuel use for there are no mandatory requirements in China enforcing the use of biogas digesters to treat animal manure produced in household or the use of biogas digesters to provide thermal energy</p>	OK	OK
10.5. Assessment and demonstration of additionality for a typical CPA(Section E.5 of CDM-SSC-PoA-DD)	EB33 EB68	Ann 43 Ann27			
10.5.1. In Section E.5.1 of CDM-SSC-PoA-DD, have the PPs demonstrated additionality of a typical CPA using the procedure provided in the baseline and monitoring methodology applied?	EB68	Ann27	<p>CL-10. Further clarification is required on why the programme not need to demonstrate its additionality according to the EB68 annex 27.</p> <p>As per the Guidelines on the demonstration of additionality of small-scale project</p>	CL-10	OK



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CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
			activities approved by EB 68 annex 27, the proposed PoA is demonstrated as a positive list of the latest Guidelines on the demonstration of additionality of small-scale project activities. As the maximum thermal capacity is 3.59kW which far less than 2250kW for type I category and emission reductions of each household will be no more than 3000 tonnes per year, therefore, the CPAs under the PoA should be defined as automatically additional. Bureau Veritas Certification checked the EB 68 Ann27 and the national regulation for the maximum installed capacity for this Programme, and confirmed the CL is closed		
10.6. In Section E.5.2 of CDM-SSC-PoA-DD, have the PPs provided the key criteria for assessing additionality of a CPA when proposed to be included in the registered PoA?	EB33	Ann43	<p>Pending on CL 10</p> <p>Yes.</p> <p>According to EB68 Annex 27, the key criteria for assessing additionality of a SSC-CPA are listed in PoA as:</p> <ul style="list-style-type: none"> (1) The users of the technology/measure are isolated units (e.g. farmer households); and (2) The installed capacity of biogas cooking stove in each household is no larger than 2,250kW thermal, and 	Pending	OK



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CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
			the emission reductions from avoiding methane emission of each household are no more than 3,000 tonnes per year.		
10.6.1. Have the PPs justified the choice of criteria based on the analysis in Section E.5.1 of CDM-SSC-PoA-DD?	EB33	Ann43	Yes.	OK	OK
10.6.2. Is it demonstrated how these criteria would be applied to the additionality of a typical CPA at the time of inclusion.	EB33	Ann43	Yes.	OK	OK
10.7. Are the eligibility criteria for inclusion of a CPA in the PoA in accordance with the "Standard for demonstration of additionality, development of eligibility criteria and application of multiple methodologies for programme of activities?"	EB65	Ann3			
10.7.1. Is eligibility criteria derived from all the relevant requirements of attachment A of Appendix B of the "Simplified modalities and procedures for small-scale CDM project activities"?	EB65 Ann3	10	Yes.	OK	OK
10.7.2. Has the CME demonstrated that compliance with the additionality-related eligibility criteria set in the PoA design document will ensure that all the relevant additionality-related guidelines, tools or	EB65 Ann3	11	Yes.	OK	OK



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CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
any requirements embedded in the methodologies are met?					
10.7.3. For PoA involving combinations of technologies/ measures and/ or methodologies, are the eligibility criteria relative to each of them proposed to demonstrate additionality.	EB65 Ann3	12	Yes.	OK	OK
10.8. Estimation of Emission reductions of a CPA (Section E.6 of CDM-SSC-PoA-DD)					
10.8.1. In Section E.6.1 of CDM-SSC-PoA-DD, are methodological choices provided in the approved baseline and monitoring methodology applied, selected for a typical CPA explained and justified?	EB33 VVM	Ann43 90	Yes. The methodological choices provided in the approved baseline and monitoring methodology applied selected for a typical CPA are explained and justified.	OK	OK
10.8.2. In Section E.6.2 of CDM-SSC-PoA-DD, are equations including fixed/default parametric values to be used for calculations of emission reductions of a CPA provided and justified?	EB33 VVM	Ann43 90			
10.8.2.1. Emission reduction of the Project according to the applied AMS-I.I. version 03.	EB 61	Annex 15	CAR-5. The parameter of $\eta_{PJ/BL}$ should be specified according to the applied methodology AMS-I.I. According to the Option 2 for calculating ER in AMS-I.I, determination of the parameter $\eta_{PJ/BL}$ is described as: Ratio of efficiencies of	CAR-5	OK



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CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
			project equipment and baseline equipment (e.g. cook stove using coal) measured once prior to validation applying the same test procedure (e.g. lab test) as per a national or an international standard. Based on the measured results and identify the value against industry literature in a conservative way, the value of $\eta_{PJ/BL}$ is determined as 2.75 which will be used in PoA. Bureau Veritas Certification checked the measuring reports for the coal stoves and the biogas stove and found the results of the efficiency are consistent with the values listed in the DDs, and the final $\eta_{PJ/BL}$ identification process is conservative as the higher efficiency value for coal stove is chosen. Thus the CL is closed.		
10.8.2.2. Leakage according to the applied AMS-I.I. version 03.	EB 61	Annex 15	No. As there is no energy generating equipment introduced by the project activity is transferred from outside the boundary to the project activity, and the biogas digesters are part of a Type III CDM project activity, so leakage need not be considered in the CPAs according to the applied AMS-I.I. version 03.	OK	OK

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CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
10.8.2.3. Baseline emissions according to the applied AMS-III.R. (ver. 02) and AMS-III.D (ver. 18)?	VVM EB 59	89 Ann 4			
10.8.2.3.1. According to AMS-III.R. (ver. 02), which para. of AMS-III.D (ver. 18) was adopted for the Programme?	VVM EB 59	89 Ann 4	Option in paragraph 9 (a) is chosen for the baseline emission calculation according to AMS-III.R. (ver. 02).	OK	OK
10.8.2.3.2. Does the values of the parameters be chosen in a reasonable way?	VVM EB 59	89 Ann 4	Yes. The values of parameters ex ante determined at PoA level, i.e. D_{CH_4} of 0.00067t/m ³ , GWP_{CH_4} of 21 UF_b of 0.94 and confirms that the ex ante determined values of the parameters are fully consistent with the applied methodology AMS III.D. $B_{0,LT}$ used the default value from IPCC.	OK	OK
10.8.2.4. Project emissions according to the applied AMS-III.R. (ver. 02) and AMS-III.D (ver. 18)?	VVM EB 59	89 Ann 4	Yes. As there is no specific equation for the $VS_{LT,y}$ identification based on the default value of IPCC 2006, PP use the $VS_{LT,y} = VS_{(T)} * D_y$ to calculate the total volatile solids for livestock LT entering the animal manure management system in year y.	OK	OK



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CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
10.8.2.5. Leakage according to the applied AMS-III.R. (ver. 02) and AMS-III.D (ver. 18)?	VVM EB 59	89 Ann 4	As there is no transfer in and/or out will occur, so leakage need not be considered in the CPAs according to the applied AMS-I.I. version 03.	OK	OK
10.8.2.6. Emission reductions?	VVM	89	Yes. The emission reduction included two parts according to the two methodologies applied. It can be calculated as: $ER_y = ER_{FF, y} + ER_{CH4, y}$	OK	OK
10.8.3. In Section E.6.3 of CDM-SSC-PoA-DD, are data and parameters that are to be reported in CDM-CPA-DD provided?	EB33 VVM	Ann43 91	CAR-6. The parameters in E.6.3 should be listed reasonably as some are monitored parameters. Some wrong parameters like the annual temperature is removed from E.6.3 to the section E.7.1 as monitoring parameters. Bureau Veritas Certification checked the listed parameters in the updated DDs, and confirmed the CAR is closed.	CAR-6	OK
10.8.4. In cases where the selected methodology(ies) allows the use of sampling for the determination of parameter values for calculating GHG emission reductions, do project participants develop and describe the sampling plan in accordance with	EB65	Ann2	CL-11. The sampling plan should be specified in accordance with "Standard for sampling and surveys for CDM project activities and programme of activities".	CL-11	OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
"Standard for sampling and surveys for CDM project activities and programme of activities"?			The sampling plan has been developed by the CME in accordance with the Standard for sampling and surveys for CDM project activities and programme of activities and listed in the PoA-DD. Bureau Veritas Certification checked the evidences provided and the description in PoA-DD, found the sampling approach, important assumptions, and justification for the selection of the chosen approach is specified, thus the CL is closed.		
10.9. Application of the monitoring methodology and description of the monitoring plan					
10.9.1. In Section E.7.1 of CDM-SSC-PoA-DD, are data and parameters to be monitored by each CPA provided in accordance with the CDM-SSC-PoA-DD form?	EB33	Ann43	Yes.	OK	OK
10.9.2. In Section E.7.2 of CDM-SSC-PoA-DD, is a detailed description of the monitoring plan provided?	EB33	Ann43	Yes.	OK	OK
10.9.3. Is the monitoring plan for a CPA in accordance with the approved monitoring methodology, including applicable tool(s)?	EB55 Ann38	6(j)	Yes.	OK	OK



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CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
10.10. In Section E.8 of CDM-SSC-PoA-DD, is the following provided?	EB33	Ann43			
10.10.1. Date of completion of the application of the baseline study and monitoring methodology	EB33	Ann43	Yes. The baseline study and monitoring methodology has been determined on 28/11/2012.	OK	OK
10.10.2. The name of responsible person(s)/entity(ies)	EB33	Ann43	Yes. Mr. Yong Wang CDM Project Manager Sichuan Wuhai Environmental Protection & Bioengineering CO., LTD.	OK	OK
11. Other information(Annex of CDM-SSC-PoA-DD)					
11.1. In Annex 1 of CDM-SSC-PoA-DD, is contact information on coordinating /managing entity and participants in the Programme of Activities provided as following?	EB33	Ann43	Yes.	OK	OK
11.1.1. Contact information on CME and participants in the PoA provided?	EB33	Ann43	Yes.	OK	OK
11.1.2. For each organization listed in section A.3, the following mandatory fields: Organization, Name of	EB33	Ann43	Yes.	OK	OK



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CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
contact person, Street, City, Postfix/ZIP, Country, Telephone and Fax or e-mail					
11.2. In Annex 2 of CDM-SSC-PoA-DD, is the background information regarding public funding provided?	EB33	Ann43	N.A.	OK	OK
11.3. In Annex 3 of CDM-SSC-PoA-DD, is the background information used in the application of the baseline methodology provided	EB33	Ann43	N.A.	OK	OK
11.4. In Annex 4 of CDM-SSC-PoA-DD, is the background information used in the application of the monitoring methodology provided	EB33	Ann43	N.A.	OK	OK
12. Eligibility criteria for inclusion of a CPA in the PoA					
12.1. Do the eligibility criteria cover as a minimum the following?	EB65 Ann3	14			
12.1.1. The geographical boundary of the CPA including any time-induced boundary consistent with the geographical boundary set in the PoA	EB65 Ann3	14(a)	Yes. The project boundary has to be within the geographical territory of seven cities in Sichuan Province of the PoA, which is the physical, geographical site of the methane recovery and combustion systems according to AMS-III.R Version 02, and is the physical,	OK	OK

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CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
			geographical sites of the equipment producing thermal energy during the crediting period according to AMS-I.I. Version 03.		
12.1.2. Conditions that avoid double counting of emission reductions like unique identifications of product and end-user locations (e.g. programme logo)	EB65 Ann3	14(b)	Pending on CL-3 Yes. All CPAs will be exempted from performing de-bundling check. That's to say, each of the independent subsystems (the digester and biogas stove) is no larger than 1% of the small-scale thresholds defined by the methodologies applied (600 tCO ₂ e emission reductions from methane avoidance, 450 kW thermal installed capacity of the stove)	Pending	OK
12.1.3. The specifications of technology/measure including the level and type of service, performance specifications including compliance with testing/certifications	EB65 Ann3	14(c)	Pending on CL-3 Yes. Every biogas digester has a unique identifications.	Pending	OK
12.1.4. Conditions to check the start date of the CPA through documentary evidence	EB65 Ann3	14(d)	Pending on CL-3 Yes. The start date of CPA should not be prior to 07/09/2011, e.g. the date that the PoA	Pending	OK

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CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
			began to go through global stakeholder comment on UNFCCC website, and the CPA crediting period should not exceed the end date of PoA crediting period.		
12.1.5. Conditions that ensure compliance with applicability and other requirements of single or multiple methodologies applied by CPAs	EB65 Ann3	14(e)	Pending on CL-3 Yes. The CPA should meet the applicable conditions of the applied methodologies.	Pending	OK
12.1.6. The conditions that ensure that CPAs meet the requirements pertaining to the demonstration of additionality as specified in 10.6 in table 1 above.	EB65 Ann3 EB68 Ann 27	14(f)	The CPA of this PoA belongs to positive list which <i>is defined as automatically additional</i> if it can proving below: 1) The users of the technology/measure are isolated units (e.g. farmer households); and; 2) <i>The installed capacity of biogas cooking stove in each household is no larger than 2250kW thermal, and the emission reductions from avoiding methane emission of each household are no more than 3000 tonnes per year</i>	OK	OK
12.1.7. The PoA-specific requirements stipulated by the CME including any conditions related to	EB65	14(g)	Yes. The household biogas digester in rural area	OK	OK



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CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
undertaking local stakeholder consultations and environmental impact analysis	Ann3		of China doesn't need a environmental analysis.		
12.1.8. Conditions to provide an affirmation that funding from Annex I parties, if any, does not result in a diversion of official development assistance	EB65 Ann3	14(h)	Yes. There is no funding from Annex I parties for this PoA.	OK	OK
12.1.9. Where applicable, target group (e.g. domestic/commercial/industrial, rural/urban, grid connected/ off-grid) and distribution mechanisms (e.g. direct installation);	EB65 Ann3	14(i)	Pending on CL-3 Yes.	Pending	OK
12.1.10. Where applicable, the conditions related to sampling requirements for a PoA in accordance with the approved guidelines/standard from the Board pertaining to sampling and surveys	EB65 Ann3	14(j)	Pending on CL-3 Yes.	Pending	OK
12.1.11. Where applicable, the conditions that ensure that every CPA in aggregate meets the small-scale or micro-scale threshold criteria and remains within those thresholds throughout the crediting period of the CPA	EB65 Ann3	14(k)	Pending on CL-3 Yes.	Pending	OK
12.1.12. Where applicable, the requirements for the de-bundling check, in case CPAs belong to small-scale (SSC) or micro-scale project categories	EB65 Ann3	14(l)	Pending on CL-3 Yes.	Pending	OK



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CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
12.1.13. Other criteria	EB65 Ann3	14	Pending on CL-3 Yes.	Pending	OK
12.2. Are the eligibility criteria verifiable?	EB65 Ann3	15	Pending on CL-3 Yes.	Pending	OK
12.3. Are the eligibility criteria sufficiently objective and comprehensive to permit the assessment of the inclusion of CPAs in the PoA?	EB65 Ann3	16	Pending on CL-3 Yes.	Pending	OK

**Table 2 Resolution of Corrective Action and Clarification Requests**

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 1	Summary of project owner response	Validation team conclusion
CAR-1: LoA from China has not been provided.	2.1	LoA was issued by China DNA in March 2012 and its copy has been provided to the DOE for validation.	The LoA from China was provided with the No. 3786 approved in March 2012. Bureau Veritas Certification checked the documents and confirm the CAR is closed.
CAR-2: LoA from Annex I party has not been provided.	2.1	LoA from Switzerland has been provided to the DOE for validation.	The LoA from Switzerland was provided with the DNA Ref. G514-3487 Bureau Veritas Certification checked the documents and confirm the CAR is closed.
CAR-3 MoC has not been provided.	4.1	The MoC was provided.	Bureau Veritas Certification checked the documents and confirm the CAR is closed.
CAR-4 Thousand separator signals should be applied in the DDs.	6.2.1	Thousand separator signals are used in DDs.	Thousand separator signals are used in DD, Bureau Veritas Certification checked the documents and confirm the CAR is closed.



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<p>CAR-5</p> <p>The parameter of $\eta_{PJ/BL}$ should be specified according to the applied methodology AMS-I.I.</p>	10.8.2.1	<p>According to the Option 2 for calculating ER in AMS-I.I, determination of the parameter $\eta_{PJ/BL}$ is described as: Ratio of efficiencies of project equipment and baseline equipment (e.g. cook stove using coal) measured once prior to validation applying the same test procedure (e.g. lab test) as per a national or an international standard. Based on the measured results and identify the value against industry literature in a conservative way, the value of $\eta_{PJ/BL}$ is determined as 2.75 which will be used in PoA.</p>	<p>Bureau Veritas Certification checked the measuring reports for the coal stoves and the biogas stove and found the results of the efficiency are consistent with the values listed in the DDs, and the final $\eta_{PJ/BL}$ identification process is conservative as the higher efficiency value for coal stove is chosen. Thus the CL is closed.</p>
<p>CAR-6</p> <p>The parameters in E.6.3 should be listed reasonably as some are monitored parameters</p>	10.8.3	<p>Some wrong parameters like the annual temperature is removed from E.6.3 to the section E.7.1 as monitoring parameters.</p>	<p>Bureau Veritas Certification checked the listed parameters in the updated DDs, and confirmed the CAR is closed.</p>
<p>CL-1</p> <p>The geographical coordinates of the boundary of the PoA has not been specified in the PoA DD</p>	6.4.1.2	<p>The coordinates of the seven regions involved in the PoA have been identified in the table in section A.4.1.2 of the PoA-DD.</p>	<p>Yes. The detailed geographical coordinates are listed in the A.4.1.2 of the PoA-DD, thus the CL is closed.</p>



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CL-2 Clarification is required on the detailed technology/measures to be employed by the SSC-CPA.	6.4.2	The detailed technology/measures to be employed by the SSC-CPA are specified in the updated DDs and they shall comply with the Chinese national standard of GB/T4750-2002 Household Biogas Digester Standard and/or the Technical Requirements for Sichuan Provincial Rural Biogas Construction Government Loan Project.	Bureau Veritas Certification checked the description and the related standards and confirm the CL is closed.
CL-3 The eligibility criteria for inclusion of a CPA in the PoA should be enlarged in Section A.4.2.2 of PoA-DD.	6.4.3	The eligibility criteria for inclusion of a CPA in the PoA has been updated according to the PoA standard issued by EB65. The conditions of additionality demonstration and sampling requirements for CPAs were updated in the A.4.2.2 PoA-DD.	Bureau Veritas Certification checked the description and confirm the CL is closed.
CL-4 Clarification and evidences are required for the thermal installed capacity of the Project.	6.4.3	According to Chinese national standard of Domestic Biogas Stove, the three specifications of installed capacity of a stove are 2.33kW, 2.79kW and 3.26kW with fluctuation range of $\pm 10\%$, e.g. the maximum of a stove will not exceed 3.59kW, any stove that cannot satisfy this standard shall not be permitted to be installed for a newly built digester. The maximum thermal capacity for the biogas stove in this programme is 3.59kW and far less than 2250kW household thermal capacity threshold defined in the EB68 annex 27.	Bureau Veritas Certification checked the Chinese national standard of Domestic Biogas Stove and the EB 68 Annex 26, confirmed the definition of the maximum of the thermal capacity of the Programme is reasonable and the CL is closed.



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CL-5 The record keeping system about the household information should be specified.	6.4.5.1	Basic information collected of the households in CPAs has been listed in the table of household database in section A.4.4.1 of the PoA-DD.	Bureau Veritas Certification checked the description of record keeping system about the household information of each CPA listed in the PoA and confirm the CL is closed.
CL-6 The system/procedure to avoid double accounting need further clarification as it is not clear enough.	6.4.5.2	The households will be strictly examined by the local rural energy office to ensure that they can satisfy all requirements of being involved into the PoA and the households that meet the criteria shall be identified with a unique ID number and be recorded in the household database to distinguish the CPA digester with one already implemented digester that is not deemed to be included into the CPA.	As there will be one unique ID number for each biogas and issued by local government (rural energy office) to distinguish the CPA digester with one already implemented digester for avoiding double-counting, thus Bureau Veritas Certification confirm the CL is closed.



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<p>CL-7</p> <p>Further clarification is required on how to assure that the SSC-CPA included in the PoA would not a de-bundled component of another CPA or CDM project activity.</p>	6.4.5.3	<p>For a household, the design volume of a digester is six, eight or ten cube meters, and according to estimation, the emission reduction from avoiding methane emission is no larger than 5 tCO₂e. Another side, according to Chinese national standard of Domestic Biogas Stove, the three specifications of installed capacity of a stove are 2.33kW, 2.79kW and 3.26kW with fluctuation range of $\pm 10\%$, e.g. the maximum of a stove will not exceed 3.59kW, any stove that cannot satisfy this standard shall not be permitted to be installed for a newly built digester, therefore none of them reaches 450kW thermal. Therefore, the CPAs will be exempted from performing de-bundling.</p>	<p>According to Guidelines on Assessment of De-bundling for SSC Project Activities, version 03(EB54, Annex 13), the CPA of a PoA is exempted from performing de-bundling check if each of the independent subsystems/measures (e.g., biogas digester, solar home system) included in the CPA is no larger than 1% of the small-scale thresholds defined by the methodology applied. Bureau Veritas Certification checked the designed volumes of the CPAs and the national standards provided, confirmed the CL is closed.</p>
<p>CL-8</p> <p>Please specify the roles and responsibilities of the PoA, especially the data management procedure, data archiving information, QA/QC of the tentative operating structure.</p>	6.4.5.5	<p>A record keeping system for the data archiving information was developed to a CPA, and the household database was set up for each CPA.</p> <p>The roles and responsibilities of different parties involved in the PoA for the data management procedure, data archiving information and QA/AC were described in table 4 in the PoA-DD.</p>	<p>Bureau Veritas Certification checked the description and table in the PoA for the roles and responsibilities and confirm the CL is closed.</p>



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CL-9 The environmental impact analysis carried out at SSC-PoA level should be provided.	8.1	According to the Notice to <i>Adjustment of Application Work on Rural Household Biogas CDM Project</i> joint issued by China NDRC and Minister of Agriculture, no EIA is required by the State and no EIA approval is conducted in real operation for this kind of project, the statement of avoiding EIA from local Environmental Department can be used instead the EIA approval. Furthermore, the environmental impact analysis carried out at SSC-PoA level has been provided.	Bureau Veritas Certification checked the national regulation and found there is no EIA required for the rural biogas digesters installation, and the EIA analysis conduct additionally by local government showed this kind of project is environment-friendly, thus the CL is closed.
CL-10 Further clarification is required on why the programme not need to demonstrate its additionality according to the EB68 annex 27.	10.5.1	As per the Guidelines on the demonstration of additionality of small-scale project activities approved by EB 68 annex 27, the proposed PoA is demonstrated as a positive list of the latest Guidelines on the demonstration of additionality of small-scale project activities. As the maximum thermal capacity is 3.59kW which far less than 2250kW for type I category and emission reductions of each household will be no more than 5 tonnes per year, therefore, the CPAs under the PoA should be defined as automatically additional.	Bureau Veritas Certification checked the EB 68 Ann27 and the national regulation for the maximum installed capacity for this Programme, and confirmed the CL is closed.
CL-11 The sampling plan should be specified in accordance with "Standard for sampling and surveys for CDM project activities and programme of activities".	10.8.4	The sampling plan has been developed by the CME in accordance with the Standard for sampling and surveys for CDM project activities and programme of activities and listed in the PoA-DD.	Bureau Veritas Certification checked the evidences provided and the description in PoA-DD, found the sampling approach, important assumptions, and justification for the selection of the chosen approach is specified, thus the CL is closed.