VALIDATION REPORT

HuaQi Environmental Clean Technologies Co., Ltd.

HuaQi Livestock Farms Methane Engineering Programme of Activities

Report Number: 1201/151262

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China Environmental United Certification Center Co., Ltd.

No. 1 Yuhuinanlu, Chaoyang District, Beijing 100029, China

www.mepcec.com

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China Environmental United Certification Center Co., Ltd. (CEC)	HuaQi Environmental Clean Technologies Co., Ltd.
Project Title:	**Country:**
HuaQi Livestock Farms Methane Engineering Programme of Activities	People's Republic of China
Methodology	**Sectoral Scope:**
AMS-III.D (version 18.0), AMS-I.C (version 19.0), AMS-I.F (version 2.0).	1, 15
PoA-DD for GSP	**Final PoA-DD**
Date of Finalization: 23/04/2012 Version:01 Starting Date of GSP: 28/04/2012	Date of Finalization:11/10/2012 Version:02
GHG Reducing Measure/Technology	**Annual ER Estimate:**
Energy generation from anaerobic animal manure management systems	5,345 tCO_2e per year during the first crediting period

Summary:

China Environmental United Certification Center Co., Ltd (CEC) has performed the validation of the "HuaQi Livestock Farms Methane Engineering Programme of Activities" on the basis of all applicable CDM requirements. The CDM requirements include the CDM modalities and procedures and subsequent decisions by the CMP and documents released by the CDM Executive Board and available on the UNFCCC CDM website. The validation scope is defined as an independent and objective review of PoA-DD, generic CPA-DD (hereafter referred to as "the PoA") and specific CPA-DD (the CPA-001, hereafter referred to as "the CPA"), 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, the demonstration of additionality of the CPAs and the eligibility criteria designed for the inclusion of CPAs, etc; ii) follow-up interviews with project 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 CEC's internal procedures.

The first output of the validation process is a list of Clarification and Corrective Actions Requests (CLs and CARs), presented in Appendix A. Taking into account this output, the project participant took corrections and revised the PoA-DD, generic CPA-DD and specific CPA-DD.

In summary, it is CEC's opinion that the "HuaQi Livestock Farms Methane Engineering Programme of Activities" meets all relevant UNFCCC requirements for the CDM and all relevant Host Parties criteria, correctly applies the baseline and monitoring methodology AMS-III.D (version 18.0), AMS-I.C (version 19.0), AMS-I.F (version 2.0), and also meets the stated validation criteria. CEC thus requests the registration of the Project as a CDM Programme of activities.

Work Carried out by:	**Date of this version**	**Version**	**Pages:**
LIU Qingzhi, LIU Yaotian, TAO Xiuping, BAI Xuetao	25/10/2012	2	135
Work Reviewed by:	□Draft Validation Report		
DING Ling, QIN Boya	■Final Validation Report		
Approved by:	■No Distribution (without permission from the client responsible organizational unit)		
TANG Dingding Chair of Board	□ Limited Distribution □ Unrestricted Distribution		

Abbreviations

AMS	Approved Methodology of Small-scale Project
BM	Build Margin
CAR	Corrective Action Request
CER	Certified Emission Reduction
CL	Clarification Request
CME	Coordinating and/or managing entity
DNA	Designated National Authority
DOE	Designated Operational Entity
DR	Document Review
EB	Executive Board
EIA	Environmental Impact Assessment
ER	Emission Reduction
FAR	Forward Action Request
FSR	Feasibility Study Report
GHG	Greenhouse Gas
GSP	Global Stakeholders Process
IPCC	Intergovernmental Panel on Climate Change
IRR	Internal Rate of Return
LoA	Letter of Approval
MoV	Means of Verification
MW	Mega Watt
MWh	Mega Watt Hours
N/A	Not Applicable
CCPG	Central China Power Grid
CSPG	China Southern Power Grid
NGO	Non Government Organization
PoA-DD	Project Design Document for Programme of Activities
CPA-DD	Project Design Document for Component Project Activity
PoA Standard	Standard for Demonstration of Additionality, Development of Eligibility Criteria and Application of Multiple Methodologies for Programme of Activities
UNFCCC	United Nations Framework Convention on Climate Change
VVM	Validation and Verification Manual

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1. INTRODUCTION

HuaQi Environmental Clean Technologies Co., Ltd. (PP, also the coordinating/management entity) has commissioned CEC to perform the validation of the small scale CDM Programme of Activities “HuaQi Livestock Farms Methane Engineering Programme of Activities” (hereafter called “the PoA”) with regard to the relevant requirements for CDM project activities. This report summarizes the findings of the validation of the project, performed on the basis of UNFCCC criteria for the CDM, as well as criteria given to provide for consistent project operations, monitoring and reporting.

1.1 Objective

The purpose of validation is to ensure a thorough, independent assessment of proposed small-scale Programme of activities (PoA) and the CDM Programme Activity (CPA) template with generic information applicable to all CPAs under that PoA submitted for registration as proposed CDM PoA, small scale CPA-DD against the applicable CDM requirements. In particular, the project's baseline, the monitoring plan (MP), and the project’s compliance with relevant UNFCCC and host country issues and criteria are validated in order to confirm that the project design as documented is sound and reasonable and meets the stated requirements and identified criteria. Validation is part of the CDM project cycle and will finally result in a conclusion by CEC whether the PoA is valid and should be submitted for registration of a proposed programme of activities rests at the CDM Executive Board and the Parties involved.

The programme of activities discussed by this validation report has been submitted under the project title: HuaQi Livestock Farms Methane Engineering Programme of Activities.

1.2 Scope

The validation scope is defined as an independent and objective review of the project design document, the project’s baseline study and monitoring plan and other relevant documents. The information in these documents is reviewed against all applicable CDM requirements.

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

2. VALIDATION METHODS

The overall validation, from contract review to validation report and opinion, was conducted using CEC’s internal procedures.

In order to ensure transparency, a validation protocol was customized for the project in accordance with Validation and Verification Manual (VVM) version 01.2/1/, The latest requirements by the CDM-EB were also considered, such as Standard for Demonstration of Additionality, Development of Eligibility Criteria and Application of Multiple Methodologies for Programme of Activities (PoA Standard) /2/ and Standard for Sampling and Surveys for CDM Project Activities and Programme of Activities /3/. The protocol shows in a transparent manner, criteria (requirements), means of verification and the results from validating the identified criteria. The validation protocol serves the following purposes:

- It organizes, details and clarifies the requirements that 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 results of the validation.

The validation protocol consists of 2 tables. The columns in these tables are described below. The findings are the essential part of this validation report and the completed validation protocol is enclosed in Appendix A to this report.

Table 1: Requirements checklist

Checklist Question	**Reference**	**Means of Validation (MoV)**	**Comment**	**Draft and/or Final Conclusion**
The various requirements in Table 1 are linked to checklist questions that the project should meet. The checklist is organized in several sections. Each section is then further sub-divided. The lowest level constitutes a checklist question.	Give reference to documents where the answer to the checklist question or item is found.	Explain how conformance with the checklist question is investigated. Examples of means of verification are document review (DR), interview (I) or observation (O), N/A means not applicable.	The section is used to elaborate and discuss the checklist question and /or the conformance to the question. It is further used to explain the conclusions reached. N/A means not applicable.	This is either acceptable based on evidence provided (**OK**), or a Corrective Action Request (**CAR**) due to non-compliance with the checklist question.(See below). Clarification Request (**CL**) is used when the validation team has identified a need for further clarification. A request for forward action request (**FAR**) is used for a need for review during the first verification.

To guarantee the transparency of the validation process, the CARs, CLs and FARs raised and responses that have been given are documented in more detail in table 2 of Appendix A.

Table 2: Resolution of Corrective Action and Clarification Requests

CARs/CLs/FARs	**Ref. to Table 1**	**Summary of PP's Response**	**Validation Conclusion**

If the conclusions from the draft conclusion are CARs, CLs or FARs, these requests should be listed in this section.	Reference to the checklist question number in Table 1 where the CARs, CLs or FARs are explained.	The responses given by the project participants during the communications with the validation team should be summarized in this section.	This section summaries validation conclusion. The conclusion should also be reflected in "Final conclusion" section of Table 1.

2.1 Validation Personnel

According to the designation requirements on the validation team in the CDM accreditation standards of Executive Board, and following requirements from the technical scopes and professional characters in the sectoral scopes, CEC designated a project assessment team.

It is required that the assessment team collectively has the required competencies in the technical, methodological and sectoral aspects of specific CDM project activities.

The assessment team consists of the following members, the detailed personal information see Appendix B.

Table 3: List of Assessment Team

Validation Team	Role	Qualification	Specific scope	Participated in the on-site visit
LIU Qingzhi	Team Leader	Auditor	1	√
LIU Yaotian	Team Member	Auditor	1	√
BAI Xuetao	Team Member	Auditor Trainee	--	√
TAO Xiuping	Team Member	Technical Expert	15	√

Technical Review	Role	Specific Scope	Participated in the on-site visit
QIN Boya	Technical reviewer	1	––

DING Ling	Technical reviewer	15	--

Brief background information of assessment team:

Liu Qingzhi is a lead Greenhouse Gas(GHG) assessor. She is a qualified EMS Auditor and environmental Labeling auditor, who has also completed various CEC CDM training courses and GHG accounting related courses. She has participated in over 40 validation/verification CDM project activities and programme of activities (PoAs) in the areas of hydropower, wind power, coal mine methane recovery and utilization as well as animal waste recovery PoA, CFL distribution PoA etc. Most of the projects are in sectoral scope 1 and 8/10, which gives her rich experience in renewable energy and mining sector. Besides CDM auditing, Ms.LIU has participated in the assessment of hydroelectric projects against the criteria set by the World Commission on Dams and energy saving auditing.

Liu Yaotian is a Greenhouse Gas(GHG) assessor. She has attended extensive internal and external training courses on EMS, CDM and CDM related knowledge since 2006. She has participated in and finished over 20 validation/verification CDM/VCS projects in the areas of hydropower and wind power. Most of the projects are in sectoral scope 1 (energy industries), which gives her abundant experience in renewable energy sector.

Bai Xuetao, is a trainee Greenhouse Gas (GHG) assessor. Ms. Bai has participated in several validation/verification CDM projects in the areas of hydropower, wind power, waste handling and disposal and mining/mineral production, and has attended various CDM training courses, technology related trainings as well as ISO14064 training courses.

Tao Xiuping is a technical expert in technical area 13.2 and 15.2. She a PHD in Agriculture field who has researched in the area of agricultural waste management for over 20 years. Dr. Tao has participated in the research of the in-vessel composting technology, aerated static composting system and other rural domestic wastes treatment technologies of animal wastes. She also involved in the work for inventory compilation of GHG from animal production. She has involved in several CDM training courses since 2011, and participated in validation/verification projects in TA 13.2 &15.2 （animal waste management) as validation team member and technical expert.

Qin Boya is a lead Greenhouse Gas(GHG) assessor. She has attended various internal and external training courses on EMS, CDM related knowledge and low carbon development training since 2008. She has participated in and finished over 20 validation/verification CDM/VCS/GS project activities and programme of activities(PoAs) both in China and abroad in the areas of hydropower, wind power, biomass power generation as well as CFL distribution PoAs. Most of the projects are in sectoral scope 1 (energy industries), which gives her abundant experience in renewable energy sector. Besides CDM auditing, Ms.QIN has participated in the assessment of hydroelectric projects against the criteria set by the World Commission on Dams.

Ding Ling is a Greenhouse Gas(GHG) assessor. She worked on environment and organic food pollution protection in a municipal Environmental Protection Bureau for 10 years before come to CEC. She is a senior engineer and senior EMS auditor for over 10 years. The projects she has audited include agriculture, forestry, planting, energy sources, natural protection area etc. She has involved in various CDM training courses since 2005.

2.2 Document Review

The PoA-DD, generic CPA-DD and specific CPA-DD (the CPA-001, hereafter referred to as “the CPA”) version 01 dated 23/04/2012 /4/ were submitted by the PP, they were made publicly available on the UNFCCC CDM web pages for a 30 days global stakeholder consultation process (GSP) from 28/04/2012 to 27/05/2012.

Additional background documents related to the project design, baseline and financial analysis were also made available before and during the on-site visit.

To address the validation team’s corrective action and clarification requests, the PP revised the PoA-DDs and resubmitted it to the validation team and the validation findings presented in this report related to the project are described in the PoA-DD version 02 dated 11/10/2012 /5/. The information on the POA-DDs version is presented on Page 1.

The document review involves:

1) A review of data and information

2) Cross checks between information provided in the PoA-DD and information from sources other than those used, if available, CEC's sectoral and local expertise and if necessary, independent background investigations.

2.3 Follow-up Interviews

The validation team performed on-site interviews with representatives of the PP and local stakeholders from 13/06/2012 to 15/06/2012 (See Section 7: People Interviewed). Main topics of the interview are summarized in Table 4.

Table 4: Interview Topics and Organizations

Interview topics	Interview Organization
✓ Project background information and CDM consideration. ✓ PoA technology, operation, maintenance and monitoring capability. ✓ Project implementation, monitoring and management plan. ✓ Stakeholder consultation process and sustainable development. ✓ Applicability of selected methodology. ✓ Baseline determination. ✓ Eligibility criteria for CPA inclusion ✓ Emission reductions calculation. ✓ Emission reduction monitoring plan.	Innovative Carbon Investment Co., Ltd. (the consultant) HuaQi Environmental Clean Technologies Co., Ltd. (the PP and also the CME)
✓ Government policies related to anaerobic animal manure management systems projects. ✓ Realistic and credible baseline scenario alternatives. ✓ Anaerobic animal manure management systems application situation in the area. ✓ Environmental and social impacts. ✓ Stakeholder comments.	Local Stakeholders (local officials and households) Hunan New Wellful Co., Ltd (CPA-001 Livestock owner)

2.4 Resolution of CARs, CLs and FARs

During the validation of the proposed programme of activities, issues that need to be further elaborated upon, researched or added are identified in order to confirm that the programme of activities meets the CDM requirements and can achieve credible emission reductions, the issues are correctly identified, discussed and concluded in the validation report.

Corrective Action Requests (CARs) are raised, where:

- The project participants have made mistakes that will influence the ability of the programme of activities to achieve real, measurable additional emission reductions;

- The CDM requirements have not been met;

- There is a risk that emission reductions cannot be monitored or calculated.

Clarification Requests (CLs) are raised, where information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met.

Forward action requests (FARs) are raised to highlight issues related to project implementation that require review during the first verification of the programme of activities. FARs shall not be related to the CDM requirements for registration.

To guarantee the transparency of the validation process, the concerns raised and responses that have been given are documented in more detail in the validation protocol in Appendix A.

2.5 Internal Quality Control

This final validation report including the initial findings underwent a technical review before being submitted to PP and requesting registration of the project activity according to CEC internal procedure. The technical reviewers were not part of the validation team, and the technical review was independently of the validation team. The complete QA/QC procedure applied to this validation report was as follows:

The initial draft validation report (DVR) after on-site visit was issued by CEC on 21/06/2012. After all CARs and CLs were closed, a draft final validation report (draft FVR) was issued. Then draft FVR was sent to technical review performed by two technical reviewers according to CEC internal procedure. After review and confirmation by two(2) TRers, the draft FVR was then finalized and sent for completeness check carried out by Quality Assurance Management Division (QAD). After correction and confirmed by QAD, the report will be verified by the Director and finally the report will be approved by the Chair of Board.

After confirmation of the PP, the validation opinion and relevant documents are submitted to the EB through the UNFCCC web-platform.

3. VALIDATION SUMMARY

The findings from the desk review of the original project design documents and the findings from interviews during the on-site visit are described in the Validation Protocol 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 and 6 Clarification Requests.

3.1 Approval and Participation

The project participant is HuaQi Environmental Clean Technologies Co., Ltd, authorized by China. The Letter of Approval (LoA) of the host Party was issued by the DNA of China in 07/09/2012/6/ with doc. no.4603 in English version, confirming the project participant is HuaQi Environmental Clean Technologies Co., Ltd.. The LoA also confirmed that the PoA is in compliance with permission requirements and assisting China in achieving sustainable development. The LoA of the DNA of china was provided by the project participant. The validation team confirmed its authenticity by checking List of Approved projects by China DNA (NDRC) on its website/6/. The information in the LoA is consistent with the PoA-DD/4/ /5/, Business License /8/, and MoC/9/.

The host party China meets the requirement to participate in the CDM. China is a non Annex I party to the Kyoto Protocol. China has established a DNA (National Development and Reform Committee, NDRC) as per the participating requirements for CDM under the Kyoto Protocol. The China has ratified the Kyoto Protocol on 30/08/2002. The host Party China (also the project participant meets the requirements to participate in the CDM.

Non-Annex 1 Country: http://maindb.unfccc.int/public/country.pl?country=CN

CAR01 was raised as LoAs from DNA of host Party has not been provided. The LoA was provided later and checked to be valid by the DOE. Detailed validation process is elaborated in the above paragraphs. CAR01 was closed.

The LoA does not refer to any specific version of the PoA-DD, CPA-DD validation report or any other conditions with regard to any CDM requirement. The LoA is valid for HuaQi Livestock Farms Methane Engineering Programme of Activities. The LoA confirms that:

- HuaQi Environmental Clean Technologies Co., Ltd. is authorized as a project participant and also the CME of the proposed PoA by the P.R. China to voluntarily participate in the project activity;
- HuaQi Livestock Farms Methane Engineering Programme of Activities and 1st CPA complies with the permission requirements provided for in the Measures for operation and management of CDM projects in P.R. China, and assists China in achieving sustainable development;
- The LoA references the precise project title “HuaQi Livestock Farms Methane Engineering Programme of Activities”. This is consistent with the project title in the SSC PoA-DD, MoC and other related documents.

All key players under the programme including coordinating/managing entity, participating implementer(s) and households are voluntarily taking part in the programme. The LoA confirms that the voluntary participation of this PoA by the coordinating/managing entity (HuaQi Environmental Clean Technologies Co., Ltd.) is a voluntary action, in this case, the company is also the Project Participant. The CME will sign a contract with the owner of the project included in the proposed CPA to confirm that the owner are aware of and have agreed that their activity is being subscribed to the PoA and they have neither already been registered as a CDM project, nor as a CPA of another PoA.

At present, there is no mandatory law to enforce animal raising entity to install animal manure treatment and biogas recovery system in Hunan Province, Henan Province and Guangxi Province. Therefore, the proposed PoA is a voluntary coordinated action of the CME.

Complying with Para. 45-54 of VVM version 01.2, the validation team concludes that the participation and approval are in fully complying with the requirements of the CDM.

Complying with Para. 127 of VVM version 01.2, the validation team confirms that the host Party's DNA formally confirms the contribution of the project to the sustainable development of China in the issued LoA.

3.2 Programme Design Document

The PoA-DD is compliant with relevant form and guidance as provided by UNFCCC. The most recent version of the PoA-DD form under VVM track was used: Small-scale Programme of Activities Design Document Form (CDM-SSC-PoA-DD) version 01 /10/ and Small-scale Program Activity Design Document Form (CDM-SSC-CPA-DD) version 01 /11/.

All the information in the generic CPA-DD is consistent with the final version of the PoA-DD. The text in square bracket is clearly identified in accordance with related requirements.

Complying with Para. 57 of VVM, the validation team considers that the guidelines for the completion of the PoA-DD in their most recent version have been followed. Relevant information has been provided by the participants in the corresponding sections. By employing the validation protocol checklist included in Appendix A of the validation report, the project description of this PoA is assessed to be accurate and complete.

3.3 Programme Description

The PoA is aimed to install animal manure treatment systems with biogas recovery system and then to utilize the biogas as energy across Hunan, Henan and Guangxi Province. The geographical coordinates of the three provinces are presented as follows:

- Hunan Province: 108°47′ to 114°15′E, 24°38′ to 30°08′N
- Henan Province: 110°21' to 116°39'E, 31°23' to 36°22'N
- Guangxi Province: 104°26' to 112°04'E, 20°54' to 26°24'N

CL04 was raised requesting to provide evidence for the geological coordinates for the PoA boundary. The official websites including the geological coordinates are included in corresponding footnotes of the revised PoA-DD and checked to be complete and correct. CL04 is closed.

The coordinates were confirmed by checking public information from official website of Government of Hunan Province, Henan Province and Guangxi Province respectively /12//13//14/.

All the CPAs under the PoA will introduce anaerobic manure treatment systems with biogas recovery system to treat the manure collected from livestock farms, and then utilize the recovered biogas as energy.

There are three scenarios for energy generation involved in the PoA as follows:

Scenario I: The biogas produced by the project is used for supplying users with thermal energy that displaces fossil fuel use.

Scenario II：The biogas produced by the project is used for generating electricity for captive use that displaces electricity from national or a regional grid.

Scenario III: The biogas produced by the project is used for supplying users with thermal energy that displaces fossil fuel use and for generating electricity for captive use that displaces electricity from national or a regional grid.

The PoA is a voluntary action coordinated and managed by HuaQi Environmental Clean Technologies Co., Ltd., which is also the coordinating/managing entity.

The baseline scenario of the proposed PoA is that, in the absence of the PoA, animal manure would be left to decay anaerobically without methane recovery and destruction, and equivalent amount of thermal energy would be generated based on fossil fuel and/or equivalent electricity would be generated by Central China Power Grid (CCPG) or China Southern Power Grid (CSPG).

The length of the PoA is 28 years. There are no mandatory policies/regulations for the usage of anaerobic manure treatment systems with biogas recovery in China or Hunan Province, Henan Province and Guangxi Province at present.

CPAs under the PoA will be implemented in different areas of Hunan Province, Henan Province and Guangxi Province, P. R. China following the management system established by the CME.

The latest version of CDM small scale methodologies AMS-III.D (version 18.0), AMS-I.C (version 19.0), and AMS-I.F (version 2.0) shall be applied. All the CPAs under the PoA will involve one of three scenarios mentioned above, and should meet the requirement that the emission reductions from type III component of each CPA should be less than or equal to 60,000 tCO_2/year and the total installed capacity for Type I component of each CPA is less than 15MW (equivalent to 45 MW_{ther}).

Detail information of the proposed PoA and the description in the PoA-DD was verified through document review, on-site visit and interview with the project participant, the reference list and interviewee list are available in Section 6 and 7 of the validation report. The validation team confirmed that the description of the proposed PoA as contained in the PoA-DD is accurate and complete that outlines the nature and technical aspects of the programme of activities.

Complying with Para. 64 of VVM, through above mentioned validation methods, it has been validated that the information provided in the updated generic CPA-DD is consistent with the actual situation and planning. The description in generic CPA-DD is complete, sufficient accurate and therefore complies with CDM requirements.

3.4 Operational and Management Arrangement

Transparent operational and management arrangements have been established by the management/coordinating entity of the PoA, i.e., HuaQi Environmental Clean Technologies Co., Ltd.. The CME will be in full charge of the management of the whole PoA to make sure

that the management system could be implemented, and CPA implementers will be responsible for the operation of each CPA. Thus the validation team can conclude that the management system will be carried out, and the CPA implementers are aware of and have agreed that their activity is being subscribed to the PoA. Main responsibilities of CME and CPA implementers are shown in Table 5:

Table 5: Roles and Responsibilities of Organizations

Organization	Role	Responsibilities	Validation Conclusion
HuaQi Environmental Clean Technologies Co., Ltd.	CME	• Select and contract CPA implementers; • Track the PoA and the CPAs included and keep in touch with EB, Chinese DNA and related agencies;– • Technical review of inclusion of CPAs; • Develop a PoA management system and making continuous improvements of the system; • Maintain existing relationship with the CPA implementers (e.g. conduct training for data monitoring); • Supervise the monitoring implementation of each CPA, and make sure the implementation of the CPA, and periodically collect monitoring data and make sure the data's integrity and accuracy; • Prepare monitoring reports for emission reduction verification.	This is in accordance with the requirement of para. 17 of PoA Standard.
Project owner	CPA Implementer	• Implement the CPA project activity (construction, daily operation, and maintenance of the project); • Carry out the monitoring action in accordance with monitoring plan under the guidance of the CME; • Collect the initial information and prepare the monitoring data to CME.	

(1) A record keeping system for each CPA under the PoA

The CME will establish a record keeping system for each CPA under the PoA. The CME will establish a database for records of each livestock farms under the CPAs included in the PoA. The monitoring team of each CPA including a team leader, an assistant, and at least two operators, will be designated by the CPA implementer. The CDM team of the CPA implementer will keep a record of the monitoring data, monthly aggregate and summarize as electronic edition and deliver to the CME's database system.

(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 CMD project activity or as a CPA of another PoA.

All animal manure treatment units registered in one CPA will be uniquely defined and recorded, so that each CPA is uniquely identified. In addition, the CME will compare every new CPA to the already existing records of the PoA and the list of the project activities under-validation or registered at the UNFCCC and relevant CDM database/65/ to ensure that any animal manure treatment unit in a new CPA has neither already been registered as a CDM project, nor as a CPA of another PoA. Furthermore, confirmation letters from the CME and the CPA implementer and cooperation contract between the CME and CPA implementer will be provide to confirm that: a) they are aware of and have agreed that their activity is being subscribed to the PoA. b) they have neither already been registered as a CDM project, nor as a CPA of another PoA.

(3) The SSC-CPA included in the PoA is not a de-bundled component of another CDM programme activity (CPA) or CDM project activity

The procedure is established in accordance with Guidelines on Assessment of Debundling for SSC Project Activities (version 03)/16/. Projects with a size greater than 1% the small-scale thresholds defined by the methodology applied, will perform the de-bundling check.

The CME and the livestock farm owners confirm that, each CPA included into the PoA is not a de-bundled component of a large scale activity if there is already an activity, which has the same activity implementer as the proposed small scale CPA or has coordinating or managing entity, which also manages a large scale PoA of the same technology/measure, and the boundary is within 1 km of the boundary of the proposed small-scale CPA, at the closest point.

Also, the relevant database of under-validation, requesting for registration and registered CDM project activities and PoAs from UNFCCC website, IGES database and CDM pipeline/65/ will be used to perform the de-bundling check. Every new CPA will be compared to the already existing database of the PoA and the list of project activities under-validation or registered at the UNFCCC. Moreover as shown in subsection (4) below, the project implementers will be made aware of the de-bundling rules and will certify that the proposed CPA is not a de-bundled part of another CDM programme activity (CPA) or CDM project activity.

Furthermore, if a proposed CPA is a de-bundled component of another CDM programme activity (CPA) or CDM project activity, it won't be included into the PoA.

(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

Cooperation contracts will be signed between the CME and the owner in each CPA before inclusion of the CPA in the PoA. This is to ensure that all entities involved in the CPA operation agree that their activities are being subscribed to the PoA. In addition, if those entities involved

in a proposed CPA, don't agree their activities being subscribed to the PoA, the entities will be excluded from the proposed CPA or the CPA won't be included in the PoA.

In accordance with the requirement of para.17 (a) of PoA Standard, the definition of roles and responsibilities of personnel involved in the process of inclusion of CPAs participating organizations and personnel is stated in the PoA-DD and validated as demonstrated in the above table 5.

In accordance with the requirement of para.17 (b) of PoA Standard, training and capacity development for personnel have been arranged according to Management manual of HuaQi Livestock Farms Methane Engineering Programme of Activities/15/. Besides, the CME will continuously train the personnel involved during the PoA crediting period.

In accordance with the requirement of para.17 (c) of PoA Standard, the procedure for technical review of inclusion of CPAs has also been established as illustrated in Figure 3-1 in the Management Manual (version 1.0)/15/ and Section A.4.4 of PoA-DD made available to CEC at the time of the validation of the PoA. The procedures are as follows:

- Implement the inclusion check according to the eligibility criteria of a livestock farm
- Agreement signed between the CME and the project owner
- Group into different CPA
- Implement the inclusion check according to the eligibility criteria of CPA
- Develop the project activity as a CPA

In accordance with the requirement of para.17 (d) of PoA Standard, a procedure to avoid double counting has been established as illustrated in section 3.3 in the Management Manual (version 1.0)/15/ made available to CEC at the time of the validation of the PoA:

1. Avoid double-counting for inclusion of a CPA
    1) Confirmation letter provided by CPA implementer and CME is used to confirm that there will not be any double counting between this PoA and any other PoA/CDM project.
    2) Identify the CPA through the geographic location and title of the livestock farm to avoid double-grouping in the process of grouping
    3) They have neither already been registered as a CDM project, nor as a CPA of another PoA.
2. Avoid double-counting for issuance: a transparent data management system will be established; a specific number will be assigned to each CPA, each livestock farm and end-user.

In accordance with the requirement of para.17 (e) of PoA Standard, the CME has also established appropriate records and documentation control process for each CPA under the PoA as illustrated in section 5 in the Management Manual (version 1.0)/15/ made available to CEC at the time of the validation of the PoA.

A comprehensive database including all activities in each CPA will be set up. All the essential activity information mainly including the following variables is required:

- Number and address of the CPAs
- Number, name and address of the livestock farms under the CPAs
- Number, name and address of households who gain the biogas from the CPAs
- The name and contact details of each participating CPA implementer
- The geographical coordinates of each CPA (for example, GPS coordinates)
- The record of technical specification of each CPA
- Monitoring parameters of each CPA.

In accordance with the requirement of para.17 (f) of PoA Standard, the CME also has measures for continuous improvements of the PoA management system.

CAR02 was raised requesting the PP to clarify whether the CME have the competencies to check the features of potential CPAs and ensure that each CPA meets all requirements and eligibility criteria before inclusion in the registered PoA. Relevant clarification has been demonstrated in the section A.4.4 of the PoA-DD. The CME have the competencies to check the features of potential CPAs and ensure that each CPA meets all requirements and eligibility criteria before inclusion in the registered PoA. Hence CAR02 is closed.

CAR04 was raised requesting the PP to further demonstrate operational and management arrangements in section A.4.4.1 of the PoA-DD to ensure that the CME will have control of all records and information related to the implementation of individual CPAs and will be in a position to ensure each CPA is being operated in accordance with the specific requirement of the programme in the following aspects:

1) Respective responsibilities of CME and CPA implementer;
2) The system/procedure to avoid double accounting.
3) De-bundling check as per para 10, page 3 of "Guidelines on assessment of debundling for SSC project activities"/16/

Operational and management arrangements have been specified in section A.4.4.1 of the PoA-DD. Hence CAR04 is closed.

CAR06 was raised requesting to further clarify whether CDM implementer of each CPA is included in the monitoring structure of the PoA. Also the PP was requested to clarify whether there is sampling process involved in the monitoring plan. Clarification was made with relevant revision in section A.4.4.2 of the PoA-DD. CDM implementer of each CPA is included in the monitoring structure of the PoA. Sampling process is not involved in the monitoring plan. Hence CAR06 was closed.

As demonstrated above, the validation team concludes that the operational and management system is established in accordance with the PoA standard and the relevant requirements in SSC PoA-DD template/10/. Also the CME has developed and shall implement a management system to ensure their competencies to check the features of potential CPAs for inclusion in the registered PoA in accordance with the PoA Standard/2/ and the relevant requirements of the applied methodologies.

Complying with Para.166 of VVM, the validation team confirms that the operational and management arrangements have been established by the coordinating/managing entity and

are suitable for the proposed PoA. The validation team 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, and will ensure each CPA is being operated in accordance with the specific requirements of the programme.

Complying with para.17 and 18 of PoA Standard, the validation team confirms that the CME has the competencies to check the features of potential CPAs and ensure that each CPA meets all requirements and eligibility criteria before inclusion in the registered PoA. The elements of the management system have been validated.

3.5 Eligibility criteria for CPA inclusion

The validation team validates the eligibility criteria in accordance with the VVM (version 01.2) para.167, and PoA standard/25/, PP shall define (DOE shall assess) the eligibility criteria for inclusion of a project activity as a CPA under the PoA, which shall include, as appropriate, criteria for demonstration of additionality of the CPA, applicability of applied methodologies, and the type and/ or extent of information that shall be provided by each CPA in order to ensure its eligibility.

The eligibility criteria has been defined and stated in the PoA-DD. The validation team has assessed the defined eligibility criteria as below:

Table 6 Eligibility Criteria Assessment

No.	Eligibility criteria description	Assessment
1	Ref: EB 65, Annex 3 Para.14 (a): A CPA should be located in the boundary of the PoA, i.e. within Hunan, Henan or Guangxi Province.	This criterion ensures that the geographical boundary of the CPAs is within the geographical boundary of the PoA. This is consistent with para 14 (a) of PoA Standard. The location of each CPA will be clearly defined within Hunan, Henan or Guangxi Province, P.R. China. The expected evidence such as FSR/35/ or equivalent and geographical co-ordinates, is deemed appropriate. Hence, the EC is deemed sufficient and appropriate.
2	Ref: EB 65, Annex 3 Para.14 (b): (i) Measures should be taken to avoid double counting of emission reductions for the CPAs, like unique identifications of each CPA and livestock farm; (ii) The potential individual CPA implementer includes in the proposed PoA should sign a contract with the CME to confirm that: • They are aware of and have agreed that their activity is being subscribed to the PoA.	This criterion ensures the avoidance of double counting. It is consistent with para 14 (b) of PoA Standard. The procedure for avoiding double counting of emission reductions of CPA inclusion is deemed appropriate and sufficient, and the expected evidences such as unique geographical co-ordinates, declaration from the CPA implementer, and the database on UNFCCC/Chinese DNA website are feasible to be obtained during the CPA inclusion stage. The expected evidence is deemed sufficient to demonstrate the fulfillment of this eligibility criteria. Hence, the EC is deemed sufficient and appropriate.

	• They have neither already been registered as a CDM project, nor as a CPA of another PoA.	
3	Ref: EB 65, Annex 3 Para.14 (c): All activities under a CPA are to install anaerobic manure management systems in livestock farms to achieve methane recovery, and the recovered biogas will be utilized for thermal and/or electricity energy generation.	This criterion specifies the technology/measure of the PoA. It is consistent with para 14 (c) of PoA Standard. The specifications of technology/measure including the level and type of service are clearly stated. Applicability criterion 1 of AMS-III.D, applicability criterion 1 of AMS-I.C and applicability criterion 1 of AMS-I.F are also met. The FSR/35/ and its approval/36/ or their equivalent, and purchase contract/order of equipment if available will specify the technology/measure used in the CPA as well as the national standard to be complied with. The expected evidence is deemed sufficient to demonstrate the fulfillment of this eligibility criteria. Hence, the EC is deemed sufficient and appropriate.
4	Ref: EB 65, Annex 3 Para.14 (d): The start date of the CPA is “the earliest date at which either the implementation or construction or real action of a project activity begins”, and it cannot be prior to the commencement of validation (GSP date 28/04/2012) of the programme of activities.	This criterion provides the conditions to check the start date of the CPA through documentary evidence. It is consistent with para 14 (d) of PoA Standard. In line with EB 55 Annex 38 §7 (d) the CPA starting date cannot be prior to commencement of validation. The PoA-DD has been made publicly available on 28/04/2012. The start date of each CPA is defined as the earliest commitment to the financial expenditure of the CPA and it will be later than the PoA for GSP start date. The start date of CPA-001 is 09/10/2012, which is the first CPA under the PoA and it is also complies this eligibility criteria. The expected evidence such as purchase contract/order of equipments or the installation/construction contract is deemed sufficient to demonstrate

		the fulfillment of this eligibility criteria. Hence, the EC is deemed sufficient and appropriate.
5	Ref: EB 65, Annex 3 Para.14 (e): The CPA shall meet all the applicability of the methodology AMS-III.D (version 18.0), and the combined methodologies AMS-I.C (version 19.0) and/or AMS-I.F (version 2.0).	This criterion ensures compliance with applicability and other requirements of multiple methodologies applied by CPAs; It is consistent with para 14 (e) of PoA Standard. The compliance with applicability and other requirements of multiple methodologies applied by CPA is given. The applicability criterion of AMS-III.D (Ver.18.0), the combined methodologies AMS-I.C (version 19.0) and/or AMS-I.F (version 2.0) will be checked in detail by each CPA. The definition and assessment details are presented in the following criteria from No.14 to 22.
6	Ref: EB 65, Annex 3 Para.14 (f): The additionality for each CPA can be demonstrated by any one of the following approaches: **Approach 1:** Demonstrating additionality according to “Guidelines for Demonstrating Additonality of Microscale Project Activities” (Version 04.0). In case of Approach 1, the projects included in the CPA should meet relevant requirements in “Guidelines for demonstrating additionality of microscale project activities”, including: 1)The total installed capacity for type I (both electrical units and thermal units) of the CPA is no more than 15MW_{ther};	This criterion ensures that CPAs meet the requirements pertaining to the demonstration of additionality as specified in Section III.A of the PoA Standard; It is consistent with para 14 (f) of PoA Standard. The additionlaity will be sufficiently stated and appropriately shown, in line with PoA standard. The FSR and its approval or their equivalents will specify the total installed capacity of the CPA, and the Emission reduction sheet of the CPA will calculate the actual emission reductions. The additionality of each CPA will be demonstrated by appropriate approaches based on the scale and other characteristics of the Project. The expected evidence is deemed sufficient to demonstrate the fulfillment of this eligibility criteria. Hence, the EC is deemed sufficient and appropriate.

	2)The emission reductions from type III components of the CPA are no more than 20 ktCO_2e per year; 3)The geographic location of the project activity is in a special underdeveloped zone (SUZ) of the host country. OR **Approach 2**: Demonstrating addtionality according to “Guidelines on the demonstration of additionality of small-scale CDM project activities”(Version 09.0). In case of Approach 2, the additionality for each CPA can be demonstrated by any one of the following options: **Option 1**: The CPA can meet the following criteria in the positive list of technologies and project activity types: • The CPA as a whole meets the threshold criteria of a small scale CDM project activity; and • The CPA is solely composed of isolated unites where the users of the technology/measure are households or communities or Small and Medium enterprises (SMEs); and • The installed of each isolated unit capacity from type I component is no more than 2,250 kW_{ther} and the emission reductions of each isolated unit from type III component is no more than 3,000tCO_2e per year.	

	OR **Option 2:** The financial/economic indicator (such as IRR, NPV) of the projects without CER revenues included in the CPA should be worse than the selected benchmark，which is indicated in investment decision document (such as FSR).	
7	Ref: EB 65, Annex 3 Para.14 (g): Local stakeholder consultations and the environmental impact analysis would be done at the CPA level.	This criterion provides the PoA-specific requirements stipulated by the CME including any conditions related to undertaking local stakeholder consultations and environmental impact analysis; It is consistent with para 14 (g) of PoA Standard. Information is clearly given regarding the stakeholder consultation and the EIA. Local stakeholders' consultation will be done at CPA level. Based on the on-site validation investigation, it is confirmed all relevant local stakeholders have been invited to comment on the CPA-001. EIA will be done at CPA inclusion stage. The environmental impact analysis of each CPA will be approved by the government. The expected evidence is deemed sufficient to demonstrate the fulfillment of this eligibility criteria. Hence, the EC is deemed sufficient and appropriate.
8	Ref: EB 65, Annex 3 Para.14 (h): CPA should not result into any funding from Annex I parties and the diversion of official development assistance.	This criterion provides an affirmation that funding from Annex I parties, if any, does not result in a diversion of official development assistance; It is consistent with para 14 (h) of PoA Standard. This criterion is also in line with EB55 Annex 38 §6(n), which says that official development assistance is in

		violation of UNFCCC guidelines. The confirmation letter from the CPA Implementer and confired by CME will indicate the source of financial investment. The expected evidence is deemed sufficient to demonstrate the fulfillment of this eligibility criteria. Hence, the EC is deemed sufficient and appropriate.
9	Ref: EB 65, Annex 3 Para.14 (i): The recovered biogas will be combusted by biogas boilers to generate heat/steam and/or combusted by generator to generate electricity for livestock farms captive use, and/or supplied to households by gas pipelines.	This criterion provides information on target group and distribution mechanisms; It is consistent with para 14 (i) of PoA Standard. The target group is clearly defined and in line with the applied methodologies AMS-III.D and AMS-I.C and AMS-I.F. The FSR and its approval or their equivalents will specify the recovered biogas will be combusted by biogas boilers and/or generator to generate energy for livestock farms themselves and/or supplied to the nearby households. The expected evidence is deemed sufficient to demonstrate the fulfillment of this eligibility criteria. Hence, the EC is deemed sufficient and appropriate
10	Ref: EB 65, Annex 3 Para.14 (j): No sampling method is involved in the PoA.	Sampling is not applied within the PoA. This criterion corresponds to paragraph 14(j) of EB65 Annex 3 and the monitoring requisition of AMS-III.D version 18.0, AMS-I.C version 19.0 and AMS-I.F version 2.0. Each CPA will be monitored and the monitoring plan will be presented in

		each specific CPA-DD. The expected evidence such as specific CPA-DD is deemed sufficient to demonstrate the fulfillment of this eligibility criteria. Hence, the EC is deemed sufficient and appropriate.
11	Ref: EB 65, Annex 3 Para.14 (k): The emission reductions from type III components of the CPA should be less than or equal to 60ktCO_2/yr and the total installed energy generation capacity of type I components of the CPA should be up to 15MW_{ele} (or 45 MW_{ther}).	This criterion ensures that every CPA in aggregate meets the small-scale or microscale threshold criteria and remains within those thresholds throughout the crediting period of the CPA; It is consistent with para 14 (k) of PoA Standard. Each CPA component can satisfy the small-scale threshold criteria as per "Guidelines on the demonstration of additionality of small-scale project activities". The total installed capacity form type I component of each CPA is less than 45 MW_{ther} and the emission reductions from type III component of each CPA are less than 60ktCO_2e The expected evidence such as FSR and its Approval or their equivalents, ER calculation spreadsheet or purchase contract/order of equipment (I f available) is deemed sufficient to demonstrate the fulfillment of this eligibility criteria. Hence, the EC is deemed sufficient and appropriate.
12	Ref: EB 65, Annex 3 Para.14 (l): The CME and implementers confirm that the proposed small-scale CPA is	This criterion specifies the requirements for the debundling check; It is consistent with para 14 (l) of PoA Standard and EB 54 Annex 13 "Guidelines on assessment of de-bundling for SSC project activities". It will

	not a de-bundled component of a large scale activity. The proposed small-scale CPA shall be deemed to be a de-bundled component of a large scale activity if there is already an activity, which satisfies both conditions (a) and (b) below: (a)Has the same activity implementer as the proposed small scale CPA or has coordinating or managing entity, which also manages a large scale PoA of the same technology measure, and; (b)The boundary is within 1 km of the boundary of the proposed small-scale CPA, at the closest point.	be ensured that the CPA will not have the same activity implementer as the proposed small scale CPA or coordinating / managing entity, which also manages a large scale PoA of the same technology measure; AND The boundary is within 1 km of the boundary of the proposed small-scale CPA, at the closest point. The expected evidence such as confirmation letter from CME and the CPA implementer, project list of same activity implementer as CPA implementer applying the same technology/measure or list of CPAs of all PoAs with the same coordinating and managing entity applying the same technology/measure or geographical coordinates of above projects near to the implemented CPA is deemed sufficient to demonstrate the fulfillment of this eligibility criteria. Hence, the EC is deemed sufficient and appropriate.
13	The crediting period of the CPA shall not exceed the length of the PoA (28 years) regardless of the time of inclusion of CPA in the PoA.	This criterion ensures the validity of the crediting period of each CPA. It is consistent with Para.7(c) of EB55 Annex38, i.e. Starting date, type (fixed or renewable) and duration of the crediting period of the CPA taking into account that the starting date of a crediting period of the CPA shall be the date of its inclusion in the registered PoA or any date thereafter and that the duration of the crediting period shall not exceed the end date of the PoA. The expected evidence is specific CPA-DD, which is deemed sufficient to demonstrate the fulfillment of this eligibility criteria. Hence, the EC is

		deemed sufficient and appropriate.
The CPA shall meet the applicability criteria of the methodology AMS-III.D(Version 18.0) as elaborated and assessed below:		
14	The project activity under each CPA shall satisfy the following conditions:	
14.1	The animal population in the farms included in each CPA under the PoA should be managed under confined conditions;	This criterion ensures that the CPA is applicable to the methodology AMS-III.D (Version 18.0). It is consistent with para 1(a) of AMS-III.D (Version 18.0). The expected evidence is FSR or equivalent and physical site check, which is deemed sufficient to demonstrate the fulfillment of this eligibility criteria. Hence, the EC is deemed sufficient and appropriate.
14.2	Manure or the streams obtained after treatment are not discharged into natural water resources;	This criterion ensures that the CPA is applicable to the methodology AMS-III.D (Version 18.0). It is consistent with para 1(b) of AMS-III.D (Version 18.0). The expected evidence is FSR or equivalent and physical site check, which is deemed sufficient to demonstrate the fulfillment of this eligibility criteria. Hence, the EC is deemed sufficient and appropriate.
14.3	The annual average temperature of baseline site where anaerobic manure treatment facility is located is higher than 5°C;	This criterion ensures that the CPA is applicable to the methodology AMS-III.D (Version 18.0). It is consistent with para 1(c) of AMS-III.D (Version 18.0).

		The expected evidence is meteorological data from local weather bureau or official statistics website, which is deemed sufficient to demonstrate the fulfillment of this eligibility criteria. Hence, the EC is deemed sufficient and appropriate.
14.4	In the baseline scenario the retention time of manure waste in the anaerobic treatment system is greater than one month, and in case of anaerobic lagoons in the baseline, their depths are at least 1 m;	This criterion ensures that the CPA is applicable to the methodology AMS-III.D (Version 18.0). It is consistent with para 1(d) of AMS-III.D (Version 18.0). The expected evidence is FSR or equivalent and physical site check, which is deemed sufficient to demonstrate the fulfillment of this eligibility criteria. Hence, the EC is deemed sufficient and appropriate.
14.5	No methane recovery and destruction by flaring, combustion or gainful use takes place in the baseline scenario.	This criterion ensures that the CPA is applicable to the methodology AMS-III.D (Version 18.0). It is consistent with para 1(e) of AMS-III.D (Version 18.0). The expected evidence is FSR or equivalent and physical site check, which is deemed sufficient to demonstrate the fulfillment of this eligibility criteria. Hence, the EC is deemed sufficient and appropriate.
15	The project activity satisfies the following conditions:	
15.1	The residual waste from the animal manure management system shall be handled aerobically;	This criterion ensures that the CPA is applicable to the methodology AMS-III.D (Version 18.0). It is consistent with para 2(a) of AMS-III.D

		(Version 18.0). The expected evidence is FSR or equivalent and physical site check, which is deemed sufficient to demonstrate the fulfillment of this eligibility criteria. Hence, the EC is deemed sufficient and appropriate.
15.2	Technical measures will be used to ensure that all biogas produced by the digester is used or flared;	This criterion ensures that the CPA is applicable to the methodology AMS-III.D (Version 18.0). It is consistent with para 2(b) of AMS-III.D (Version 18.0). The expected evidence is FSR or equivalent, which is deemed sufficient to demonstrate the fulfillment of this eligibility criteria. Hence, the EC is deemed sufficient and appropriate.
15.3	The storage time of the manure after removal from the animal barns, including transportation, should not exceed 45 days before being fed into the anaerobic digester. Or if the project proponent can demonstrate that the dry matter content of the manure when removed from the animal barns is larger than 20%, this time constraint will not apply.	This criterion ensures that the CPA is applicable to the methodology AMS-III.D (Version 18.0). It is consistent with para 2(c) of AMS-III.D (Version 18.0). The expected evidence is FSR or equivalent and physical site check, which is deemed sufficient to demonstrate the fulfillment of this eligibility criteria. Hence, the EC is deemed sufficient and appropriate.
16	Projects that recover methane from landfills shall use AMS-III.G "Landfill methane recovery" and projects for wastewater treatment shall use AMS-III.H. Project for composting of animal manure shall use AMS-III.F	This criterion ensures that the CPA is applicable to the methodology AMS-III.D (Version 18.0). It is consistent with para 3 of AMS-III.D (Version 18.0).

	"Avoidance of methane emissions through composting". Project activities involving co-digestion of animal manure and other organic matters shall use the methodology AMS-III.AO "Methane recovery through controlled anaerobic digestion".	The expected evidence is FSR or equivalent and physical site check, which is deemed sufficient to demonstrate the fulfillment of this eligibility criteria. Hence, the EC is deemed sufficient and appropriate.
17	The recovered biogas from each CPA would be utilized by the animal farms as thermal and/or electrical energy generation, which can meet the option (a) as detailed in paragraph 3 of AMS-III.H.	This criterion ensures that the CPA is applicable to paragraph 3 of AMS-III.H. It is consistent with para 4 of AMS-III.D (Version 18.0). The expected evidence is FSR or equivalent, which is deemed sufficient to demonstrate the fulfillment of this eligibility criteria. Hence, the EC is deemed sufficient and appropriate.
18	New facilities (Greenfield Projects) and project activities involving capacity additions compared to the baseline scenario are only eligible if they comply with the related and relevant requirements in the “General Guidelines to SSC CDM methodologies”.	This criterion ensures that the CPA is applicable to the methodology AMS-III.D (Version 18.0). It is consistent with para 5 of AMS-III.D (Version 18.0). The expected evidence is FSR or equivalent, which is deemed sufficient to demonstrate the fulfillment of this eligibility criteria. Hence, the EC is deemed sufficient and appropriate.
19	The requirements concerning demonstration of the remaining lifetime of the replaced equipment shall be met as described in the “General Guidelines to SSC CDM methodologies”.	This criterion ensures that the requirements concerning demonstration of the remaining lifetime of the replaced equipment shall be met as described in the “General Guidelines to SSC CDM methodologies”. It is consistent with para 6 of AMS-III.D (Version 18.0).

		The expected evidence is FSR or equivalent, which is deemed sufficient to demonstrate the fulfillment of this eligibility criteria. Hence, the EC is deemed sufficient and appropriate.
For a special CPA, it will be also satisfying one of the followed three scenarios with special project type：		
20	Scenario I: The biogas produced by the project is used for supplying users with thermal energy that displaces fossil fuel use.	This criterion provides a possible combination of technologies/measures that will be implemented in the PoA, i.e. scenario I: The biogas produced by the project is used for supplying users with thermal energy that displaces fossil fuel use. The CPA under scenario I will be also satisfying the relevant applicability conditions of Methodology AMS-I.C (Ver.19.0). This is consistent with para 27 of the PoA Standard. The definition and assessment details are presented in the following criteria from No.20.1 to 20.3.
20.1	The CPA will utilize the renewable biogas displaceing fossil fuel to provide thermal energy	This criterion ensures that the CPA is applicable to the methodology AMS-I.C (Version 19.0). It is consistent with para 1 of AMS-I.C (Version 19.0). The expected evidence is FSR or equivalent and other evidence in specific CPA-DD, which is deemed sufficient to demonstrate the fulfillment of this eligibility criteria. Hence, the EC is deemed sufficient and appropriate.
20.2	New facilities (Greenfield Projects) and project activities involving	This criterion ensures that the CPA is applicable to the methodology

	capacity additions compared to the baseline scenario are only eligible if they comply with the related and relevant requirements in the "General Guidelines to SSC CDM methodologies";	AMS-I.C (Version 19.0). It is consistent with para 9 of AMS-I.C (Version 19.0). The expected evidence is FSR or equivalent and Coal purchase invoices, which is deemed sufficient to demonstrate the fulfillment of this eligibility criteria. Hence, the EC is deemed sufficient and appropriate.
20.3	If electricity and/or steam/heat produced by the CPA is delivered to a third party, i.e. another facility or facilities within the project boundary, a contract between the supplier and consumer(s) of the energy will have to be entered that ensures there is no double-counting of emission reductions.	This criterion ensures that the CPA is applicable to the methodology AMS-I.C (Version 19.0). It is consistent with para 12 of AMS-I.C (Version 19.0). The expected evidence is FSR or equivalent and Biogas Supply Agreement, which is deemed sufficient to demonstrate the fulfillment of this eligibility criteria. Hence, the EC is deemed sufficient and appropriate.
21	Scenario II：The biogas produced by the project is used for generating electricity for captive use that displaces electricity from national or a regional grid.	This criterion provides a possible combination of technologies/measures that will be implemented in the PoA, i.e. scenario II: The biogas produced by the project is used for generating electricity for captive use that displaces electricity from national or a regional grid. The CPA under scenario II will be also satisfying the applicability of Methodology AMS-I.F (Ver.2.0). This is consistent with para 27 of the PoA Standard. The definition and assessment details are presented in the following criteria from No.21.1 to 21.3.

21.1	The project activity involved in the CPA is to use the renewable biogas for captive electricity use to displace electricity from regional grid CCPG or CSPG.	This criterion ensures that the CPA is applicable to the methodology AMS-I.F (Version 2.0). It is consistent with para 1 of AMS-I.F (Version 2.0). The expected evidence is FSR or equivalent and electricity purchase invoices, which is deemed sufficient to demonstrate the fulfillment of this eligibility criteria. Hence, the EC is deemed sufficient and appropriate.
21.2	Project activities or project activity components supplying electricity to a grid shall apply AMS-I.D. Project activities for standalone off-the-grid power systems supplying electricity to households/users included in the boundary are eligible under AMS-I.A;	This criterion ensures that the CPA is applicable to the methodology AMS-I.F (Version 2.0). It is consistent with para 3 of AMS-I.F (Version 2.0). The expected evidence such as FSR or equivalent will be provided in specific CPA-DD, which is deemed sufficient to demonstrate the fulfillment of this eligibility criteria. Hence, the EC is deemed sufficient and appropriate.
21.3	The project activity involved in the CPA will install new sets of electricity generation units at a site where there was no renewable energy power plant operating prior to the implementation of the project activity.	This criterion ensures that the CPA is applicable to the methodology AMS-I.F (Version 02). It is consistent with para 6 of AMS-I.F (Version 2.0). The expected evidence is FSR or equivalent and physical site check, which is deemed sufficient to demonstrate the fulfillment of this eligibility criteria. Hence, the EC is deemed sufficient and appropriate.
22	Scenario III: The biogas produced by the project is used for supplying users with thermal energy that displaces fossil fuel use and for generating electricity for captive use that displaces electricity from national or a	This criterion provides a possible combination of technologies/measures that will be implemented in the PoA, i.e. scenario III: The biogas produced by the project is used for supplying users with thermal energy that displaces

	regional grid.	fossil fuel use and for generating electricity for captive use that displaces electricity from national or a regional grid. The CPA under scenario III will be also satisfying the relevant applicability conditions of Methodology AMS-I.C (Ver.19.0) and AMS-I.F (Ver.2.0). As defined in the criteria from No. 20 to 21 of this eligibility criteria description. This is consistent with para 27 of the PoA Standard. The definition and assessment details are presented in the above criteria from No.20 to 21.

CAR02 was raised requesting the PP to clarify whether the CME have the competencies to check the features of potential CPAs and ensure that each CPA meets all requirements and eligibility criteria before inclusion in the registered PoA. Related revision has been finished in section A.4.2.2. The updated description is assessed by the validation team, the revised information is checked to be correct and complete. CAR02 was closed.

Complying with Para.167 of VVM, the validation team 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.

Complying with para. 13-16 of PoA Standard, the validation team confirms that the CME has developed eligibility criteria for inclusion of CPAs under the PoA and these criteria is clearly demonstrated in the PoA design documents for their suitability, all requirements have been covered and validated, the eligibility criteria are sufficiently objective and comprehensive to permit the assessment of the inclusion of CPAs in the PoA.

3.6 Baseline and Monitoring Methodology

3.6.1 Applicability of the Selected Methodology

The project applies approved methodology AMS-III.D version 18.0: “Methane recovery in animal manure management systems” valid from 13/10/2011 onwards/17/, AMS-I.C version 19.0: “Thermal energy production with or without electricity” valid from 17/06/2011 onwards/18/ and AMS-I.F version 2.0: “Renewable electricity generation for captive use and mini-grid” valid from 17/06/2011 onwards/19/. For a special CPA under the PoA, it shall meet the applicability criteria of different methodologies combination of AMS-III.D (version 18.0), AMS-I.C(version 19.0) and/or AMS-I.F(version 2.0). According to the different project scenarios (I, II and III) on energy generation and utilization, multiple combinations of methodologies will be applied by each individual CPA in the PoA. The assessment of the relevant information contained in the project design documents against each applicability condition of the methodology is conducted:

Table 7-1: Applicability of methodology AMS-III.D

No.	AMS-III.D Requirement	Situation of a CPA under the PoA	Validation Method
1	The livestock population in the farm is managed under confined conditions;	The farms involved in each CPA are managed under confined conditions.	The FSR/35/ and its approval/36/ or their equivalents of the CPA inclusion will indicate the livestock management mode in the farms under the CPA, and this will be checked during on-site interviews.
2	The manure or streams obtained after treatment are not discharged into natural water resources (e.g. river or estuaries), otherwise AMS-III.H "Methane recovery in wastewater treatment" shall be applied;	Manure/streams obtained after treatment of the CPA under the PoA are not discharged into natural water resources;	The EIA/51/ and its approval/52/ or their equivalents of the CPA inclusion will prove this applicability criteria, and this will be checked during on-site interviews.
3	The annual average temperature of baseline site where anaerobic manure treatment facility is located is higher than 5°C;	The annual average temperature of Hunan, Henan and Guangxi Province is 15~22°C/29/, higher than 5°C. Specific temperature please refer to CPA-DD. As per eligibility criteria 14.3 for inclusion of a CPA in the PoA in Section A.4.2.2, it can be met;	The FSR/35/, EIA/51/, or other evidence of meteorological data of the CPA inclusion will be used to prove that the annual average temperature of the CPA located is higher than 5°C.

4	In the baseline scenario the retention time of manure waste in the anaerobic treatment system is greater than one month, and in case of anaerobic lagoons in the baseline, their depths are at least 1 m;	As per eligibility criteria 14.4 for inclusion of a CPA in the PoA in Section A.4.2.2, the manure waste is left to decay in the open lagoon, the retention time of manure waste is greater than 1 month and the depths of the lagoon is at least 1m. It can be met;	The FSR/35/ and its approval/36/ or their equivalents of the CPA inclusion will prove this applicability criteria, and this will be checked during on-site survey and interviews.
5	No methane recovery and destruction by flaring, combustion or gainful use takes place in the baseline scenario.	As per eligibility criteria 14.5 for inclusion of a CPA in the PoA in Section A.4.2.2, all the methane was discharged into the atmosphere in the baseline scenario. It can be met;	The FSR/35/ and its approval/36/ or their equivalents of the CPA inclusion will prove this applicability criteria, and this will be checked during on-site interviews.
6	The residual waste from the animal manure management system shall be handled aerobically, otherwise the related emissions shall be taken into account as per relevant procedures of AMS-III.AO “Methane recovery through controlled anaerobic digestion”. In case of soil application, proper conditions and procedures (not resulting in methane emissions) must be ensured;	The residual waste from the animal manure management system will be applied to soil after proper treatment in the livestock farm; details please refer to Section B.2. of specific CPA-DD. As per eligibility criteria 15.1 for inclusion of a CPA in the PoA in Section A.4.2.2, it can be met;	The FSR/35/ and its approval/36/ or their equivalents of the CPA inclusion will prove this applicability criteria, and this will be checked during on-site survey and interviews.
7	Technical measures shall be used (including a flare for exigencies) to ensure that all biogas produced by the	All biogas produced by the digester will be used for energy generation through biogas boiler and/or	The FSR/35/ and its approval/36/ or their equivalents of the CPA inclusion

	digester is used or flared;	stoves and/or electricity generator, and flared if necessary. And the gas tank will temporarily store the biogas in case emergency. As per eligibility criteria 15.2 for inclusion of a CPA in the PoA in Section A.4.2.2, it can be met;	will prove this applicability criteria, and this will be checked during on-site interviews.
8	The storage time of the manure after removal from the animal barns, including transportation, should not exceed 45 days before being fed into the anaerobic digester. If the project proponent can demonstrate that the dry matter content of the manure when removed from the animal barns is larger than 20%, this time constraint will not apply.	As per eligibility criteria 15.3 for inclusion of a CPA in the PoA in Section A.4.2.2, the storage time of the manure after removal from the animal barns, including transportation, will not exceed 45 days. It can be met;	The FSR/35/ and its approval/36/ or their equivalents of the CPA inclusion will prove this applicability criteria, and this will be checked during on-site interviews.
9	Projects that recover methane from landfills shall use AMS-III.G “Landfill methane recovery” and projects for wastewater treatment shall use AMS-III.H. Project for composting of animal manure shall use AMS-III.F “Avoidance of methane emissions through composting”. Project activities involving co-digestion of animal manure and other organic matters shall use the methodology AMS-III.AO “Methane recovery through controlled anaerobic digestion”.	As per eligibility criteria 16 for inclusion of a CPA in the PoA in Section A.4.2.2, each CPA under the PoA will introduce anaerobic manure treatments with biogas recovery to treat only animal manure. It can be met;	The FSR/35/ and its approval/36/ or their equivalents of the CPA inclusion will prove this applicability criteria, and this will be checked during on-site survey and interviews.

10	Different options to utilise the recovered biogas as detailed in paragraph 3 of AMS-III.H are also eligible for use under this methodology. The respective procedures in AMS-III.H shall be followed in this regard.	As per eligibility criteria 17 for inclusion of a CPA in the PoA in Section A.4.2.2, the recovered biogas will be utilized for thermal and/or electricity energy generation directly, which can meet the option (a) of paragraph 3 in AMS-III.H;	The FSR/35/ and its approval/36/ or their equivalents and equipment purchased contract of the CPA inclusion will prove this applicability criteria, and this will be checked during on-site survey and interviews.
11	New facilities (Greenfield projects) and project activities involving capacity additions compared to the baseline scenario are only eligible if they comply with the related and relevant requirements in the “General Guidelines to SSC CDM methodologies”.	As per eligibility criteria 18 for inclusion of a CPA in the PoA in Section A.4.2.2., if CPAs under the PoA are Greenfield Projects or project activities involving capacity additions, they can meet the related and relevant requirements in the "General guidelines to SSC CDM methodologies";	The FSR/35/ and its approval/36/ or their equivalents of the CPA inclusion will prove this applicability criteria, and this will be checked during on-site survey and interviews.
12	The requirements concerning demonstration of the remaining lifetime of the replaced equipment shall be met as described in the “General Guidelines to SSC CDM methodologies”.	As per eligibility criteria 19 for inclusion of a CPA in the PoA in Section A.4.2.2, if replacement of equipment is involved in a CPA under the PoA, demonstration of the remaining lifetime of the replaced equipment will be met as described in the "General guidelines to SSC CDM methodologies";	The FSR/35/ and its approval/36/ or their equivalents and the technical agreement of the replaced equipment if applicable of the CPA inclusion will prove this applicability criteria, and this will be checked during on-site interviews.
13	Measures are limited to those that result in aggregate	As per eligibility criteria 11 for inclusion of a CPA in	The FSR/35/ and its approval/36/ or

	emission reductions of less than or equal to 60 kt CO2 equivalent annually from all Type III components of the project activity.	the PoA in Section A.4.2.2, the emission reduction from Type III components of each CPA under this PoA is less than or equal to 60 kt CO_2e.	their equivalents and ER calculation spreadsheet of the CPA inclusion will prove this applicability criteria, and this will be checked during on-site interviews.

Table 7-2: Applicability of methodology AMS-I.C

No.	AMS-I.C Requirement	Situation of a CPA under the PoA	Validation Method
1	This category comprises renewable energy technologies that supply users with thermal energy that displaces fossil fuel use. These units include technologies such as solar thermal water heaters and dryers, solar cookers, energy derived from renewable biomass and other technologies that provide thermal energy that displaces fossil fuel;	As per eligibility criteria 20.1 for inclusion of a CPA in the PoA in Section A.4.2.2, each CPA will utilize biogas displacing fossil fuel to provide thermal and/or energy;	The FSR/35/ and its approval/36/ or their equivalents of the CPA inclusion will prove this applicability criteria, and this will be checked during on-site survey and interviews.
2	Biomass-based co-generating systems that produce heat and electricity are included in this category. For the purpose of this methodology "Cogeneration" shall mean the simultaneous generation of thermal energy and electrical and/or mechanical energy in one process. Emission reductions from a biomass cogeneration system can accrue from one of the following activities:	Not applicable. Because no co-generating systems are involved in each CPA;	The FSR/35/ and its approval/36/ or their equivalents of the CPA inclusion will prove this applicability criteria, and this will be checked during on-site survey and interviews.

	(a) Electricity to a grid; (b) Electricity and/or thermal energy (steam or heat) for on-site consumption or for consumption by other facilities; (c) Combination of (a) and (b);		
3	The total installed/rated thermal energy generation capacity of the project equipment is equal to or less than 45 MW_{ther};	As per eligibility criteria 11 for inclusion of a CPA in the PoA in Section A.4.2.2, the total installed/rated energy generation capacity of each CPA is no more than 45 MW_{ther};	The FSR/35/ and its approval/36/ or their equivalents and equipment purchased contract of the CPA inclusion will prove this applicability criteria, and this will be checked during on-site interviews.
4	For co-fired systems, the total installed thermal energy generation capacity of the project equipment, when using both fossil and renewable fuel shall not exceed 45 MW thermal;	Not applicable. Because each CPA does not involve in co-fired systems;	The FSR/35/ and its approval/36/ or their equivalents of the CPA inclusion will prove this applicability criteria, and this will be checked during on-site survey and interviews.
5	In the case of project that involve the addition of renewable energy units at an existing renewable energy facility, the total capacity of the units added by the project should be equal to or less than 45 MW_{ther} and should be	Not applicable. All the CPAs do not involve in the addition of renewable energy units at an existing renewable energy facility;	The FSR/35/ and its approval/36/ or their equivalents of the CPA inclusion will prove this applicability criteria, and this will be checked during survey

	physically distinct from the existing units;		and on-site interviews.
6	Project activities that seek to retrofit or modify an existing facility for renewable energy generation are included in this category;	Not applicable. All CPAs under the PoA is not seeking to retrofit or modify an existing facility for renewable energy generation;	The FSR/35/ and its approval/36/ or their equivalents of the CPA inclusion will prove this applicability criteria, and this will be checked during on-site survey and interviews.
7	New facilities (Greenfield Projects) and project activities involving capacity additions compared to the baseline scenario are only eligible if they comply with the related and relevant requirements in the "General Guidelines to SSC CDM methodologies";	As per eligibility criteria 20.2 for inclusion of a CPA in the PoA in Section A.4.2.2., if CPAs under the PoA are Greenfield Project or project activities involving capacity additions, they can meet the related and relevant requirements in the "General guidelines to SSC CDM methodologies";	The FSR/35/ and its approval/36/ or their equivalents of the CPA inclusion will prove this applicability criteria, and this will be checked during on-site survey and interviews.
8	If solid biomass fuel (e.g. briquette) is used, it shall be demonstrated that it has been produced using solely renewable biomass and all project or leakage emissions associated with its production shall be taken into account in the emissions reduction calculation;	Not applicable. Because no solid biomass fuel is used in each CPA;	The FSR/35/ and its approval/36/ or their equivalents of the CPA inclusion will prove this applicability criteria, and this will be checked during on-site survey and interviews.
9	If electricity and/or steam/heat produced by the CPA is delivered to a third party, i.e. another facility or facilities within the project boundary, a contract between the	As per eligibility criteria 20.3 for inclusion of a CPA in the PoA in Section A.4.2.2., if electricity and/or steam/heat produced by the CPA is delivered to a	The FSR/35/ and its approval/36/ or their equivalents or contract between the supplier and consumer(s) of the

	supplier and consumer(s) of the energy will have to be entered that ensures there is no double-counting of emission reductions;	third part, a contract between the supplier and consumer(s) of the energy will be entered to ensure that there is no double-counting of emission reductions.	CPA inclusion will prove this applicability criteria, and this will be checked during on-site survey and interviews.
10	If the project activity recovers and utilizes biogas for power/heat production and applies this methodology on a stand alone basis, any incremental emissions occurring due to the implementation of the project activity shall be taken into account either as project or leakage emissions;	Not applicable. Because the project activity does not apply this methodology on a stand alone basis, and it is combined with the AMS-III.D (Ver.18.0), a type III component of a SSC methodology.	The FSR/35/ and its approval/36/ or their equivalents and CPA-DD of the CPA inclusion will prove this applicability criteria, and this will be checked during on-site survey and interviews.
11	Charcoal based biomass energy generation project activities are eligible to apply the methodology only if the charcoal is produced from renewable biomass sources.	Not applicable. Because each CPA does not involve charcoal based biomass energy generation.	The FSR/35/ and its approval/36/ or their equivalents of the CPA inclusion will prove this applicability criteria, and this will be checked during on-site interviews.

Table 7-3: Applicability of methodology AMS-I.F

No.	AMS-I.F Requirement	**Situation of a CPA under the PoA**	Validation Method
1	This methodology comprises renewable energy generation units, such as photovoltaic, hydro, tidal/wave, wind,	As per eligibility criteria 21.1 for inclusion of a CPA in the PoA in Section A.4.2.2., the project	The FSR/35/ and its approval/36/ or their equivalents and electricity

	geothermal and renewable biomass that supply electricity to user(s). The project activity will displace electricity from an electricity distribution system that is or would have been supplied by at least one fossil fuel fired generating unit i.e. in the absence of the project activity, the users would have been supplied electricity from one or more sources listed below: (a) A national or a regional grid (grid hereafter); (b) Fossil fuel fired captive power plant; (c) A carbon intensive mini-grid.	activity involved in each CPA is to use the renewable biogas for captive electricity use to displace electricity from regional grid CCPG or CSPG;	purchase invoices of the CPA inclusion will prove this applicability criteria, and this will be checked during on-site interviews and based on DNA website.
2	For the purpose of this methodology, a mini-grid is defined as small-scale power system with a total capacity not exceeding 15 MW (i.e. the sum of installed capacities of all generators connected to the mini-grid is equal to or less than 15 MW) which is not connected to a national or a regional grid.	Not applicable. Because mini-grid is not involved in each CPA;	The FSR/35/ and its approval/36/ or their equivalents of the CPA inclusion will prove this applicability criteria, and this will be checked during on-site survey and interviews.
3	Project activities or project activity components supplying electricity to a grid shall apply AMS-I.D. Project activities for standalone off-the-grid power systems supplying electricity to households/users included in the boundary are eligible under AMS-I.A;	As per eligibility criteria 21.2 for inclusion of a CPA in the PoA in Section A.4.2.2., electricity generated from each CPA is for captive use, but not supplied to the grid.	The FSR/35/ and its approval/36/ or their equivalents of the CPA inclusion will prove this applicability criteria, and this will be checked during on-site survey and interviews.

4	Hydro power plants with reservoirs that satisfy at least one of the following conditions are eligible to apply this methodology: • The project activity is implemented in an existing reservoir with no change in the volume of reservoir; • The project activity is implemented in an existing reservoir, where the volume of reservoir is increased and the power density of the project activity, as per definitions given in the project emissions section, is greater than 4 W/m^2; • The project activity results in new reservoirs and the power density of the power plant, as per definitions given in the project emissions section, is greater than 4 W/m^2;	Not applicable. Because each CPA does not involve hydro power plant;	The FSR/35/ and its approval/36/ or their equivalents and equipment technical agreement of the CPA inclusion will prove this applicability criteria, and this will be checked during on-site survey and interviews.
5	For biomass power plants, no other biomass other than renewable biomass are to be used in the project plant.	Not applicable. For each CPA the biogas used is recovered from anaerobic manure treatments, which belongs to renewable biomass, and no other biomass will be used;	The FSR/35/ and its approval/36/ or their equivalents of the CPA inclusion will prove this applicability criteria, and this will be checked during on-site survey and interviews.

6	This methodology is applicable for project activities that (a) install a new power plant at a site where there was no renewable energy power plant operating prior to the implementation of the project activity (Greenfield plant); (b) involve a capacity addition, (c) involve a retrofit of (an) existing plant(s); or (d) involve a replacement of (an) existing plant(s).	As per eligibility criteria 21.3 for inclusion of a CPA in the PoA in Section A.4.2.2., for each CPA will install new sets of electricity generation units at a site where there was no renewable energy power plant operating prior to the implementation of the project activity.	The FSR/35/ and its approval/36/ or their equivalents of the CPA inclusion will prove this applicability criteria, and this will be checked during on-site survey and interviews.
7	In the case of project activities that involve the addition of renewable energy generation units at an existing renewable power generation facility, the added capacity of the units added by the project should be lower than 15 MW and should be physically distinct from the existing units.	Not applicable. There is no existing renewable power generation facility for each CPA.	The FSR/35/ and its approval/36/ or their equivalents of the CPA inclusion will prove this applicability criteria, and this will be checked during on-site survey and interviews.
8	In the case of retrofit or replacement, to qualify as a small-scale project, the total output of the retrofitted or replacement unit shall not exceed the limit of 15 MW；	Not applicable. There is no existing renewable power generation facility for each CPA;	The FSR/35/ and its approval/36/ or their equivalents of the CPA inclusion will prove this applicability criteria, and this will be checked during on-site survey and interviews.
9	If the unit added has both renewable and nonrenewable components (e.g., a wind/diesel unit), the eligibility limit of 15 MW for a small-scale CDM project activity applies only to the	Not applicable. There is only renewable power generation unit will be installed for each CPA;	The FSR/35/ and its approval/36/ or their equivalents and equipment purchased contract of the CPA

	renewable component. If the unit added co-fires fossil fuel, the capacity of the entire unit shall not exceed the limit of 15 MW；		inclusion will prove this applicability criteria, and this will be checked during on-site survey and interviews.
10	Combined heat and power (co-generation) systems are not eligible under this category.	Not applicable. Because each CPA does not install combined heat and power system.	The FSR/35/ and its approval/36/ or their equivalents and equipment purchased contract of the CPA inclusion will prove this applicability criteria, and this will be checked during on-site interviews.
11	In case electricity produced by the project activity is delivered to another facility or facilities within the project boundary, a contract between the supplier and consumer(s) of the electricity will have to be entered into specifying that only the facility generating the electricity can claim emission reductions from the electricity displaced.	Not applicable. Because the electricity generated is for captive use for each CPA.	The FSR/35/ and its approval/36/ or their equivalents of the CPA inclusion will prove this applicability criteria, and this will be checked during on-site survey and interviews.

The PoA-DD for global stakeholder publication started on 28/04/2012, at which time the AMS-III.D Version18.0, AMS-I.C Version 19.0, and AMS-I.F Version 2.0 were the most updated version. The project meets all the applicability conditions and is in line with the requirements and stipulations mentioned in all sections in the approved methodology.

CL03 was raised requesting to clarify whether the approved SSC baseline and monitoring methodology have been approved for use in a PoA by the Board in section E.1 of the PoA-DD. Also, it is requested to clarify whether the combination of the approved methodologies have been approved for application in CPAs of PoA in section E.1 of the PoA-DD. Relevant clarification and revision is made in section E.1 of the PoA-DD. CL03 is closed.

CL05 was raised requesting to further analyze the applicability criteria of the combined methodologies for all CPAs under the PoA. The applicability criteria have been further analyzed in the revised PoA-DD, which has been checked by the validation team to be comprehensive and in accordance with the applied methodologies. CL05 is closed.

Complying with Para. 76 of VVM, the validation team confirms that by checking the requirements of applied methodology and the above mentioned documents and also the on-site visit, it could be confirmed that the selected methodology is applicable to the programme of activities, and has been correctly quoted and applied.

Complying with Para.28 of the PoA Standard and paragraph 11(c) of “General Guidelines For SSC CDM Methodologies” (Version17.0), combinations of AMS-III.D, AMS-I.C and AMS-I.F for a PoA are eligible to be applied in a PoA without further assessment of cross effects. And according to Para.29(c) of the PoA Standard “A principle technology/measure is applied consistently in each CPA using multiple combinations of methodologies.”, the principle technology/measure of the PoA is anaerobic manure management systems with different ways of utilizing recovered biogas (scenario I for thermal generation, scenario II for electricity generator, and scenario III for both), therefore multiple combinations of methodologies applied in the PoA are eligible.

3.6.2 Project Boundary

As per Methodology AMS-III.D. (Version 18.0), AMS-I.C. (Version 19.0), and AMS-I.F. (Version 2.0), the boundary of the CPA includes the physical, geographical site(s) of the livestock, animal manure management systems, facilities which recover and flare/combust or use methane, (AMS-III.D); industrial, commercial or residential facility, or facilities, consuming energy generated by the system and the processes or equipment affected by the project activity (AMS-I.C); and all power plants connected physically to the electricity system that the CDM project power plant is connected to (AMS-I.F).

CH_4 emission from the manure treatment processes, CO_2 emission from the electricity energy generation, CO_2 emission from the thermal energy generation, CH_4 emission from the physical leakage of biogas in the manure management systems, CH_4 emission from the flaring or combustion of the biogas, CO_2 emission from the on-site electricity use, CH_4 emission from the storage of manure before being fed into the anaerobic digester,and CO_2 emission from the incremental transportation distances are correctly identified as the gases included in the project boundary. See details in table below:

	Source	Gas	Included?	Justification/Explanation
Baseline	Direct emissions from the manure treatment processes	CH_4	Included	The major source of emissions in the baseline
		N_2O	Excluded	Excluded for simplification. This is conservative
		CO_2	Excluded	Excluded for simplification. This is conservative
	Emissions from thermal energy generation	CO_2	Included	The major source of emissions(This is suitable for a CPA under Scenario I and III described in eligibility criteria of clause 20 and 22 in section A4.2.2 of PoA-DD)
		CH_4	Excluded	Excluded for simplification. This is conservative
		N_2O	Excluded	Excluded for simplification. This is conservative
	Emissions from electricity energy generation	CO_2	Included	The major source of emissions (This is suitable for a CPA under Scenario II and III described in eligibility criteria of clause 21 and 22 in section A4.2.2 of PoA-DD)
		CH_4	Excluded	Excluded for simplification. This is conservative
		N_2O	Excluded	Excluded for simplification. This is conservative
Project activity	Emissions from physical leakage of biogas in the manure	CH_4	Included	The major source of emissions
		CO_2	Excluded	Excluded for simplification

	management systems	N_2O	Excluded	Excluded for simplification
	Emissions from flaring or combustion of biogas	CO_2	Excluded	Excluded for simplification
		CH_4	In/Excluded	It may be a major source of emissions for some CPAs.
		N_2O	Excluded	Excluded for simplification
	Emissions from on-site electricity use and/or fossil fuel consumption	CO_2	Included	The major source of emissions
		CH_4	Excluded	Excluded for simplification
		N_2O	Excluded	Excluded for simplification
	Emissions from the storage of manure before being fed into the anaerobic digester	CO_2	Excluded	Excluded for simplification.
		CH_4	In/Excluded	It may be a major source of emissions for some CPAs
		N_2O	Excluded	Excluded for simplification.
	Emissions from incremental transportation	CO_2	In/Excluded	It may be a major source of emissions for some CPAs.
		CH_4	Excluded	Excluded for simplification
		N_2O	Excluded	Excluded for simplification

No CARs, CLs or FARs were raised.

Complying with Para. 80 of VVM, the validation team confirms that the identification of project boundary and the selected sources and gases is in compliance with the applied methodology. There are no other emission sources that will be affected by the programme of activities and are not addressed by the applied methodology.

The validation team confirms that no other sources not addressed by the applied methodology contribute more than 1% of the emission reductions is found

3.6.3 Baseline Identification

The procedure to identify the most plausible baseline scenarios are derived from the applied methodologies and have been correctly applied. The information is transparently and sufficiently documented in the PoA-DD.

The baseline is predefined in the corresponding methodologies. The baseline scenario is therefore correctly defined as:

As per AMS-III.D (Ver.18.0), for animal manure management the baseline scenario is the situation where, in the absence of the project activity, animal manure is left to decay anaerobically within the project boundary and methane is emitted to the atmosphere.

According to AMS-I.C (Ver.19.0), for renewable energy technologies that displace technologies using fossil fuels, the simplified baseline is the fuel consumption of the technologies that would have been used in the absence of the project activity times an emission factor for the fossil fuel displaced.

According to AMS-I.F (Ver.2.0), the project activity will displace electricity from an electricity distribution system that is or would have been supplied by at least one fossil fuel fired generating unit i.e. in the absence of the project activity, the users would have been supplied electricity from a national or a regional grid.

With the different methodologies combination of AMS-III.D (Ver.18.0), AMS-I.C (Ver.19.0) and AMS-I.F (Ver.2.0), the baseline scenario for a CPA can be concluded as:

Table 8: baseline scenario under different combination of technologies

Scenario	**Methodologies combination**	**Baseline scenario**
I	AMS-III.D + AMS-I.C	Animal manure is treated anaerobically without methane recovery and destruction, and the equivalent thermal energy is generated by fossil fuel;
II	AMS-III.D + AMS-I.F	Animal manure is treated anaerobically without methane recovery and destruction, and the equivalent electricity is supplied by CCPG or CSPG;
III	AMS-III.D+AMS-I.C+AMS-I.F	Animal manure is treated anaerobically without methane recovery and destruction, the equivalent thermal energy is generated by fossil fuel, and the equivalent electricity is supplied by CCPG or CSPG.

The above information was confirmed during the on-site visit and interviews with local government officials and stakeholders. No other alternatives which supply comparable outputs and / or services are to be taken into consideration. No plausible scenario is omitted.

Complying with Para 87 and 88 of VVM, by validating the assumptions, calculations and rationales used, as described in the PoA-DD, and cross checking with official approvals, the validation team is able to confirm that the baseline scenario identified is reasonable, and that:

- All documents and sources referred to in the PoA-DD are correctly quoted and interpreted;
- All the assumptions and data used by the project participants are listed in the PoA-DD, including their references and sources;
- All documentation used is relevant for establishing the baseline scenario and correctly quoted and interpreted in the PoA-DD;
- Assumptions and data used in the identification of the baseline scenario are justified appropriately, supported by evidence and can be deemed reasonable;
- Relevant national and/or sectoral policies and circumstances are considered and listed in the PoA-DD.

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 programme of activities.

3.7 Additionality demonstration

The validation team assessed the additionality demonstration of the PoA with the following steps as below, and confirmed that the Guidelines for Demonstrating Additionality of Microscale Project Activities (version 04.0) /22/, Guidelines on the Demonstration of Additionality of Small-scale Project Activities (version 09.0)/23/, Tool for the Demonstration and Assessment of Additionality (version 06.0.0)/24/, Guidelines on the assessment of investment analysis (version 05.0) /25/ have been applied.

3.7.1 PoA Starting Date

The starting date of a CDM programme of activities is defined as 28/04/2012 (This is the GSP date of the PoA-DD). According to the requirements, the starting date should be the date on which the implementation or construction or real action of a project activity begins. There is no implementation or construction or real action of any CPA before the GSP of the PoA. Considering that the GSP is a real action for PoA development and it results in a fee payment, the GSP start date is determined as the starting date of the PoA. The determination of starting date is in line with the Glossary of CDM terms version 06.0.0/26/.

CL01 was raised requesting the PP to clarify how the starting date of the PoA is determined. It is clarified that 28/04/2012 is the date on which the CDM-PoA-DD is first published for global stakeholder consultation. The starting date is defined in accordance with relevant EB guidance. Hence CL01 is closed.

3.7.2 Prior consideration and continuing real action taken to secure CDM

According to the definition of starting date in Glossary of CDM terms (version 06.0.0)/26/ and para 7(d) of the Procedures for Registration of a Programme of Activities as a Single CDM Project Activity and Issuance of CERs for a Programme of Activities"/27/, the start date of any CPA is the earliest date at which either the implementation or construction or real action of a project activity begins, and the starting date of the CPA ,will not be prior to the commencement of validation of the programme of activities, i.e. the date on which the CDM-POA-DD is first published for global stakeholder consultation(dated 28/04/2012). Therefore, notification of prior consideration to host party DNA and EB is not necessary for the PoA, which is in accordance with para 101 of VVM and Guidelines on the Demonstration and Assessment of Prior Consideration of CDM. As per the paragraph 3 of EB 60 Annex 26 ("Clarifications regarding the procedures for registration of a programme of activities as a single CDM project acitivity and issuance of certified emission reductions for a programme of activities"), the Board agreed that the "Guidelines for the demonstration and assessment of prior consideration of the CDM" do not apply to PoAs, as at present it is expected that no component of the programme will commence prior to the start date of validation.

Complying with Para. 104 of VVM, the validation team is able to confirm that:

- The definition of starting date is in accordance with the Glossary of CDM terms and VVM;
- The project complies with the requirements of Guidelines on the Demonstration and Assessment of Prior Consideration of the CDM version 04, which is the latest version;
- The information listed in the PoA-DD is checked to be correct.

3.7.3 Additionality of the proposed PoA

The additionality analysis was chosen to be performed for SSC CPAs under the proposed PoA. Basic analysis method was also provided in PoA level. The approach used in the PoA-DD has been assessed initially through the document review followed by on-site discussions. Finally, the data, rationales, assumptions, justifications, and documentation provided have been verified using local knowledge as well as sectoral and financial expertise.

According to the PoA-DD Section A.4.3, the CME has demonstrated the proposed PoA is a voluntary action and would not be implemented in the absence of the PoA in accordance with para 6 (e) of the "Procedures for registration of a Programme of Activities as a Single CDM Project Activity and Issuance of CERs for a Programme of Activities "EB55, Annex 38 /27/ and para 7-11 of the "Standard for demonstration of additionality, development of eligibility criteria and application of multiple methodologies for programme of activities (version 01.0)", EB65 Annex 3 /2/.

The additionality of the programme is demonstrated considering that there is no mandatory law to enforce animal breeding entities to install animal manure treatment system with recovery of biogas and also no law to forbid fossil fuel-based energy used in China. The common practice to treat animal manure in the three provinces (Hunan, Henan and Guangxi Province) is left to decay anaerobically in open lagoons, from which a large amount of methane would be emitted directly to the atmosphere. It has been confirmed on-site interview

and checking the public available information, that anaerobic lagoons for animal manure treatment are common practice in the three provinces, and not restricted by national law.

In the absence of the project activity, equivalent thermal energy would be generated by fossil fuel; electricity would be generated based on CCPG or CSPG. Although the Chinese government is taking steps to develop renewable energy, the thermal energy is still mainly supplied by fossil fuel and the national or regional grid is still a fossil fuel dominated grid.

In addition, the implementation of biogas collection and treatment system needs the action of voluntary coordination of the CME in order to be implemented, and the likely baseline scenario for livestock farms is to continue to discharge the animal manure into the anaerobic lagoon and importing electricity from the grid.

Therefore, it is thus concluded that the PoA is implementing a voluntary coordinated action not required by mandatory policy/legislation and that would not be implemented in the absence of the PoA.

3.7.4 Additionality demonstration of the CPA under the PoA

As per the PoA-DD Section A.4.3, Section E.5 and the generic CPA-DD section B.3, the additionality analysis was chosen to be performed in CPA level; the additionality of a CPA is assessed and demonstrated using one of following approaches for additionality demonstration based on the capacity and location of a CPA under this SSC PoA:

Approach 1: Demonstrating addtionality according to Guidelines for Demonstrating Additonality of Microscale Project Activities, Version 04.0.

The additionality criteria of "Microscale Project Activity" related to the CPA is summarized as follows:

No.	Criteria in the guideline	Real situation of the CPA	Applicable? (Y/N)
1	The total installed capacity from type I component (both electrical units and thermal units) of the CPA is no more than $15MW_{ther}$	The total installed capacity from type I component of the CPA is XXX MW;	
2	The emission reductions from type III component of the project is no more than 20 $ktCO_2e$ per year;	The emission reductions from type III component of the CPA is XXX tCO_2e per year;	
3	The geographic location of the project activity is in one of the Least Developed Countries or the Small	The project activity/ies in the CPA is/are located in XX County, XX City of	

	Island Countries (LDCs/SIDs) or in a special underdeveloped zone (SUZ) of the host country;	Hunan/ Henan/Guangxi Province, which is/isn't a special underdeveloped zone of the P.R. China/30/;	

If the CPA under the PoA can satisfy all the above applicable criteria, it could be deemed as automatically additional. .

Approach 2: Demonstrating addtionality according to "Guidelines on the demonstration of additionality of small-scale project activities" (Version 09.0)/23/

The CPA is additional only if proved to be additional according to either paragraph 2(c) or paragraph 1 (a) of "Guidelines on the demonstration of additionality of small-scale project activities", which is respectively demonstrated as Option 1 and Option 2 followed.

Option 1 Positive list

According to Guidelines on the demonstration of additionality of small-scale project activities paragraph 2 (c), the small scale project activities are defined as automatically additional if the project activities solely composed of isolated unites 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, which can be summarized as follow in accordance with the CPA situation:

(i) The CPA as a whole meets the threshold criteria of a small scale CDM project activity;

(ii) The CPA is solely composed of isolated units where the users of the technology/measure are households or communities or Small and Medium enterprises (SMEs);

(iii) The installed capacity of each isolated unit from type I component is no more than 2,250 kW_{ther} and the emission reductions of each isolated unit from type III component is no more than 3,000tCO_2e per year.

In conclusion, the CPA under the PoA can be deemed to be automatically additional if the three conditions of the above criteria can be met.

Option 2 Investment Barrier

According to the "Guidelines on the demonstration of additionality of small-scale project activities" paragraph 1 (a) investment barrier analysis can be applied for each CPA under the PoA. The steps in the "Tool for the demonstration and assessment of additionality" (Version 06.0.0) will be applied as follow:

Since CPAs under the PoA will earn revenues not only from the CERs sales, the simple cost analysis method (option I) is not appropriate. Investment comparison analysis method (option II) is only applicable to projects whose alternatives are similar investment projects. The continuation of the current situation is not an investment project; the investment comparison analysis is not preferable. Therefore the CME of the PoA selects benchmark analysis method (Option III) for investment analysis, which is appropriate.

The decision-making financial indicator (mainly IRR, NPV) will be used for investment analysis, which is suitable for the CPAs. Accordingly, the decision-making benchmark which is indicated in investment decision document (such as FSR) will be selected as the financial benchmark for the CPA. The CME will demonstrate the selected benchmark (or discount rate when NPV used as financial indicator) to be in compliance with the relevant rules indicated in the “Tool for the demonstration and assessment of additionality” (version 06.0.0). In addition, the CME demonstrates the steps of investment barrier analysis for a CPA one by one clearly. For instance, (i) the reasons of benchmark analysis being selected; (ii) the selection of benchmark ; (iii) Project IRR calculation of a CPA including key financial parameters as an example; and (iv) Sensitivity analysis. All of these will be followed the relevant requirements of “Guidelines on the Assessment of Investment Analysis (Version 05.0)”.

Therefore, the validation team considers that the above two approaches are clearly demonstrated in the PoA-DD and generic CPA-DD for CPA inclusion.

CAR03 was raised: Please further clarify the procedure for assessment and demonstration of additionality based on the scale and location of the project in accordance with the latest version of addtionality guidance. The procedure for additionality demonstration is further clarified in the revised PoA-DD and checked to be consistent with the PoA Standard, Guidelines on the Demonstration of Additionality of small scale Project Activities, Guidelines for Demonstrating Additonality of Micro-scale Project Activities. CAR03 is closed.

3.8 Emission Reductions

The calculations of emission reductions have been checked by the validation team. The parameters and equations presented in the PoA-DD and further documentation have been compared with the information and requirements presented in applied methodology and respective tools. According to the different project scenarios on energy generation and utilization, multiple combinations of methodologies will be applied by individual CPAs in the PoA. The description of the project energy generation and utilization scenario and corresponding methodology combination is summarized as below:

Table 8 Summary of the Project Scenario and corresponding Methodology application

Scenario	Description of project scenario on energy generation	Combinations of methodologies
Scenario I	The biogas produced by the project is used for supplying users with thermal energy that displaces fossil fuel use.	AMS-III.D. and AMS-I.C.
Scenario II	The biogas produced by the project is used for generating electricity for captive use that displaces electricity from national or a regional grid.	AMS-III.D. and AMS-I.F.
Scenario III	The biogas produced by the project is used for supplying users with thermal energy that displaces fossil fuel use	AMS-III.D. , AMS-I.C. and

	and for generating electricity for captive use that displaces electricity from national or a regional grid.	AMS-I.F.

3.8.1 Ex-ante emission reduction calculation

1. Calculate baseline emissions

Baseline emissions of the project include baseline emissions from methane recovery BECH4,y according to AMS-III.D (Ver.18.0) and/or CO2 emissions from thermal energy generation BEthermal,y according to AMS-I.C (Ver.19.0) and/or CO2 emissions from power generation BEEl,y according to AMS-I.F (Ver.2.0) in the absence of the CPA.

The baseline emission is calculated as follows:

$$BE_y = BE_{CH4,y} + BE_{Thermal,y}$$ Only applicable to CPAs under Scenario I

$$BE_y = BE_{CH_4,y} + BE_{El,y}$$ Only applicable to CPAs under Scenario II

$$BE_y = BE_{CH_4,y} + BE_{Thermal,y} + BE_{El,y}$$ Only applicable to CPAs under Scenario III

Where:

BE_y Baseline emissions in year *y* (tCO_2e)

$BE_{CH4,y}$ Baseline emissions due to methane recovery in year *y* (tCO_2e)

$BE_{Thermal,y}$ Baseline emissions from thermal generation in year y (tCO_2e)

$BE_{El,y}$ Baseline emissions from electricity generation in year y (tCO_2e)

1) Calculation of $BE_{CH4,y}$

For the $BE_{CH4,y}$ calculation, Option 9 (a) in the AMS-III.D (Ver 18.0) is adopted in a CPA, and it is calculated as below:

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

Where:

$BE_{CH4,y}$ Baseline emissions due to biogas recovery in year *y* (tCO_2e)

GWP_{CH4}	Global Warming Potential (GWP) of CH_4 (21)
D_{CH4}	CH_4 density (0.00067 t/m^3 at room temperature (20 ºC) 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)

Determination of $B_{0,LT}$

According to AMS-III.D (Ver.18.0), the maximum methane-producing capacity of the manure (B_o) varies by species and diet. The preferred method to obtain (B_o) measurement values is to use data from country-specific published sources. Since the country specific B_o values are not available, default values from tables 10 A-4 to 10 A-9 of 2006 IPCC Guidelines for National Greenhouse Gas Inventories/31/ volume 4 Chapter 10 can be used. There are two options for B_o default values:

(I) B_o default values applicable to developed countries can be used provided the following four conditions are satisfied:

- The genetic source of the livestock originates from an Annex I Party;
- The farm uses formulated feed rations (FFR) which are optimized for the various animal(s), stage of growth, category, weight gain/productivity and/or genetics;

- The use of FFR can be validated (through on-farm record keeping, feed supplier, etc.);
- The project specific animal weights are more similar to developed country IPCC default values.

Otherwise,

(II) B_o default values applicable to developing countries would be used.

When developed country values are used in the CPA, relevant parameters including the genetic source of the livestock and formulated feed rations (FFR) will be monitored, and when the developing country values are used in the CPA, there is no need to monitor the parameters described above.

Determination of $VS_{LT,y}$

Volatile solids (VS) are the organic material in livestock manure and consist of both biodegradable and non-biodegradable fractions. For the calculations the total VS excreted by each animal species is required.

Because the country specific VS values are not available, IPCC default values from 2006 IPCC Guidelines for National Greenhouse Gas Inventories Volume 4 chapter 10 table 10 A-4 to 10 A-9 /31/ can be used provided that the project participants assess the suitability of those data to the specific situation of the treatment site particularly with reference to feed intake levels.

There are two options for VS default values:

(I) VS default values applicable to developed countries can be used provided the following four conditions are satisfied:

- The genetic source of the livestock originates from an Annex I Party;
- The farm uses formulated feed rations (FFR) which are optimized for the various animal(s), stage of growth, category, weight gain/productivity and/or genetics;
- The use of FFR can be validated (through on-farm record keeping, feed supplier, etc.);
- The project specific animal weights are more similar to developed country IPCC default values.

Otherwise,

(II) VS default values applicable to developing countries would be used.

When developed country values are used in the CPA, relevant parameters including the genetic source of the livestock and formulated feed rations (FFR) will be monitored, and when the developing country values are used in the CPA, there is no need to monitor the parameters described above.

In case default IPCC values for VS are adjusted for a site-specific average animal weight, it shall be well explained and documented. The following equation shall be used:

$$VS_{LT,y} = \left(\frac{W_{site}}{W_{default}} \right) * VS_{default} * nd_y$$

Where:

$VS_{LT,y}$	Volatile solids for livestock *LT* entering the animal manure management system in year *y* (on a dry matter weight basis, kg dm/animal/year)
W_{site}	Average animal weight of a defined livestock population at the project site (kg)
$W_{default}$	Default average animal weight of a defined population, this data is sourced from IPCC 2006 (kg)
$VS_{default}$	Default value for the volatile solid excretion rate per day on a dry-matter basis for a defined livestock population (kg dm/animal/day)
nd_y	Number of days in year *y* where the animal manure management system is operational

In case of sequential treatment stages, the reduction of the volatile solids during a treatment stage is estimated based on referenced data for different treatment types. Emissions from the next treatment stage are then calculated following the approach outlined above, but with volatile solids adjusted for the reduction from the previous treatment stages by multiplying by (1-RVS), where RVS is the relative reduction of volatile solids from the previous stage. The relative reduction (RVS) of volatile solids depends on the treatment technology and should be estimated in a conservative manner. Default values for different treatment technologies can be found in the table in annex 1 of AMS-III.D (Ver.18.0).

Determination of MCF_j

Methane Conversion Factors (MCF) values are determined for a specific manure management system and represent the degree to which B_o is achieved. Where available country-specific MCF values that reflect the specific management systems used in particular countries or regions shall be used. Since the country-specific MCF is unavailable, the IPCC default values provided in table 10.17 of 2006 IPCC Guidelines for National Greenhouse Gas Inventories Volume 4 Chapter 10 /31/ will therefore be adopted in a typical SSC-CPA according to the type of the manure management system in baseline scenario and the annual average temperature where the CPA locates. The site annual average temperature is taken from official data at the nearest meteorological station, or from data available from historical on site observations.

Determination of $N_{LT,y}$

According to AMS-III.D (Ver.18.0), the annual average number of animals (NLT,y) are determined as follows:

$$N_{LT,y} = N_{da,y} * \left(\frac{N_{p,y}}{365} \right)$$

Where:

$N_{LT,y}$	Annual average number of animals of type LT in year y (numbers)
$N_{da,y}$	Number of days animal is alive in the farm in the year *y* (numbers)
$N_{p,y}$	Number of animals produced annually of type *LT* for the year *y* (numbers)

2) Calculation of $BE_{Thermal,y}$

According to AMS-I.C (Ver.19.0), baseline emissions from thermal energy generation in the CPA includes $BE_{Thermal,y,1}$ from fossil fuel used in the boiler to generate steam/heat and/or $BE_{Thermal,y,2}$ from fossil fuel used in the equipments whose maximum output capacity are less than 45 kW thermal, e.g. biogas stoves, to generate thermal energy. In each CPA, the project replace fossil fuel with biogas ($BG_{biogas-1,PJ,y}$) as fuel of boiler system for thermal energy generation and/or biogas ($BG_{biogas-2,PJ,y}$) as fuel of equipments whose maximum output capacity are less than 45 kW thermal for thermal energy generation respectively. Therefore, $BE_{Thermal,y}$ can be calculated as follows:

For the $BE_{Thermal,y}$, according to AMS-I.C (Version 19.0), the calculation is as below:

$$BE_{thermal,y,} = BE_{thermal,y,1} + BE_{thermal,y,2}$$

Where:

$BE_{thermal,y}$	Baseline emissions from thermal generation in year y (tCO_2e)
$BE_{thermal,y,1}$	The baseline emissions from steam/heat displaced by the CPA during the year *y* (tCO_2)
$BE_{thermal,y,2}$	The baseline emissions from thermal energy displaced by the project activity using renewable biogas during the year *y* (tCO_2)

According to AMS-I.C (Ver 19.0), for steam/heat produced using fossil fuels the baseline emissions are calculated as follows:

$$BE_{thermal,y,1} = [EG_{theraml,y} / \eta_{BL,1}] * EF_{FF,CO_2}$$

Where:

$BE_{thermal,y,1}$	The baseline emissions from steam/heat displaced by the CPA during the year *y* (tCO_2)
$EG_{thermal,y}$	The net quantity of steam/heat supplied by the project activity during the year *y* (TJ)
$\eta_{BL,1}$	The efficiency of the plant using fossil fuel that would have been used in the absence of the CPA
$EF_{FF,CO2}$	The CO_2 emission factor of the fossil fuel that would have been used in the baseline plant obtained from reliable local or national data if available, alternatively, IPCC default emission factors can be used (tCO_2/TJ)

As per AMS-I.C., Efficiency of the baseline units (excluding cogeneration plants) shall be determined by adopting one of the following criteria (in preferential order):

(a) Highest measured operational efficiency over the full range of operating conditions of a unit with similar specifications, using baseline fuel. The efficiency tests shall be conducted following the guidance provided in relevant national/international standards;

(b) Highest of the efficiency values provided by two or more manufacturers for units with similar specifications, using the baseline fuel;

(c) Default efficiency of 100%.

As the data described in option (a) or (b) is not available, option (c) default efficiency of 100% is adopted in the PoA. This is conservative.

For household or commercial applications, whose maximum output capacity is less than 45 kW thermal and where it can be demonstrated that the metering of thermal energy output is not plausible, as in the case of biomass stoves, gasifiers, driers, water heaters etc, the project output energy shall be estimated based on consumption of the biomass (in terms of energy quantity) times the efficiency of the project equipment. The equation below shall be used:

$$BE_{thermal,y,2} = [HG_{PJ,y} / \eta_{BL,2}] * EF_{FF,CO_2}$$
$$= \{[B_{biogas,PJ,y} * NCV_{biogas} * \eta_{PJ}] / \eta_{BL,2}\} * EF_{FF,CO_2}$$

Where:

$BE_{thermal,y,2}$	The baseline emissions from thermal energy displaced by the project activity using renewable biogas during the year *y* (tCO_2)
$HG_{PJ,y}$	The net quantity of thermal energy supplied by the project activity using biogas during the year *y* (TJ)
$\eta_{BL,2}$	Efficiency of the baseline equipment being replaced (determined as per paragraph 31)
η_{PJ}	Efficiency of the project equipment measured using representative sampling methods or based on referenced literature values. The efficiency tests shall be conducted following the guidance provided in the relevant national/international standards
$EF_{FF,CO2}$	The CO_2 emission factor of the fossil fuel that would have been used in the baseline (tCO_2/TJ)
$B_{biomass,PJ,y}$	The net quantity of the biogas consumed by households in year *y* , i.e. $BG_{biogas-2,PJ,y}$ (m^3)
$NCV_{biomass}$	The net calorific value of the biogas (TJ/ m^3)

The efficiency of the project equipments is determined by equipment specification and/or document value.

According to AMS-I.C., for household or commercial applications/systems, whose maximum output capacity is less than 45 kW thermal and where it can be demonstrated that the metering of thermal energy output is not plausible, as in the case of cooking stoves, gasifiers, driers, water heaters etc., efficiency of the baseline units shall be determined by adopting one of the following criteria:

(a) Highest measured operational efficiency over the full range of operating conditions of a representative sample of units with similar specifications, using baseline fuel. The efficiency tests shall be conducted following the guidance provided in relevant national/international standards;

(b) Highest of the efficiency values provided by two or more manufacturers for units with similar specifications using the baseline fuel;

(c) Highest efficiency from referenced literature values or default efficiency of 100%.

As no data on this value is available, option (c) Highest efficiency from referenced literature values or default efficiency of 100% is adopted in the PoA.

3) Calculation of $BE_{El,y}$

According to AMS-I.F (Ver.2.0), the baseline emissions $BE_{El,y}$ from power generation are the product of amount electricity displaced with the electricity produced by the project using the biogas ($BG_{biogas\text{-}3,PJ,y}$) and an emission factor.

For the $BE_{El,y}$, according to AMS-I.F (Ver. 2.0), should be calculated as below:

$$BE_{El,y} = EG_{BL,y} * EF_{grid,CM,y}$$

Where:

$EG_{BL,y}$	Quantity of the grid electricity displaced as a result of the implementation of the CDM project activity in year *y* (MWh/yr)
$EF_{grid,CM,y}$	CO_2 emission factor of the grid in year y (t CO_2/MWh) calculated using the latest version of the "*Tool to calculate the emission factor for an electricity system*" (version 02.2.1);

The $EF_{grid,CM,y}$ is calculated as per the latest approved version methodology AMS-I.C/18/, which refers to the Tool to calculate the emission factor for an electricity system/59/.

The grid emission factor is determined ex-ante and estimated as a combined margin emission factor ($EF_{grid,CM,y}$) which is a combination of the operating margin emission factor ($EF_{grid,OM,y}$) and built margin emission factor ($EF_{grid,BM,y}$).

The calculation method of the $EF_{grid,OM,y}$ and $EF_{grid,BM,y}$ is derived from the latest notice of OM and BM calculation issued by Chinese DNA.

CL06 was raised: Please clarify whether the ex-ante calculation of emission factor will be performed at PoA level or CPA level. The ex-ante calculation of emission factor will be done at CPA level which is in accordance with relevant CDM requirement. Hence CL06 is closed.

2. Calculate project emissions

The project emission PE_y of the CPA is sum of the AMS-III.D (Ver.18.0) ($PE_{y,D}$) and/or AMS-I.C (Ver.19.0) ($PE_{y,C}$) and/or AMS-I.F (Ver.2.0) ($PE_{y,F}$) component, which can be calculated as follows:.

$$PE_y = PE_{y,D} + PE_{y,C}$$ Only applicable to CPAs under Scenario I

$$PE_y = PE_{y,D} + PE_{y,F}$$ Only applicable to CPAs under Scenario II

$$PE_y = PE_{y,D} + PE_{y,C} + PE_{y,F}$$ Only applicable to CPAs under Scenario III

Where:

PE_y	Project emission in year y (tCO2e)
$PE_{y,D}$	Project emission of AMS-III.D (Ver.18.0) component in year y (tCO2e)
$PE_{y,C}$	Project emission of AMS-I.C (Ver.19.0) component in year y (tCO2e)
$PE_{y,F}$	Project emission of AMS-I.F (Ver.2.0) component in year y (tCO2e)

1) Calculation of $PE_{y,D}$

According to AMS-III.D (Ver 18.0), Project activity emissions consist of:

$$PE_{y,D} = PE_{PL,y} + PE_{flare,y} + PE_{power,y} + PE_{transp,y} + PE_{storage,y}$$

Where:

$PE_{y,D}$	Project emissions in year *y* (tCO_2e)
$PE_{PL,y}$	Emissions due to physical leakage of biogas in year *y* (tCO_2e)
$PE_{flare,y}$	Emissions from flaring or combustion of the biogas stream in the year *y* (tCO_2e)
$PE_{power,y}$	Emissions from the use of fossil fuel or electricity for the operation of the installed facilities in the year *y* (tCO_2e)
$PE_{transp,y}$	Emissions from incremental transportation in the year *y* (tCO_2e), as per relevant paragraph in AMS-III.F
$PE_{storage,y}$	Emissions from the storage of manure (tCO_2e)

Determination of $PE_{PL,y}$

According to AMS-III.D (Ver 18.0), $PE_{PL,y}$ is calculated as follows:

$$PE_{PL,y} = 0.10 * GWP_{CH4} * D_{CH4} * \sum_{i,LT} B_{0,LT} * N_{LT,y} * VS_{LT,y} * MS\%_{i,y}$$

Where:

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

Since paragraph 9(a) of the AMS-III.D is chosen, the above equation of the 13(a)(i) paragraph of the AMS-III.D is chosen to calculate the $PE_{PL,y}$, which is accordance with AMS-III.D.

Determination of $PE_{flare,y}$

In case of flaring/combustion of biogas, project emissions are estimated using the procedures described in the "Tool to determine project emissions from flaring gases containing methane"/60/.

According to the tool above, $PE_{flare,y}$ is calculated as per the formula below:

$$PE_{flare,y} = \sum_{h=1}^{8760} TM_{RG,h} * (1 - \eta_{flare,h}) * \frac{GWP_{CH4}}{1000}$$

Where:

$TM_{RG,h}$ Mass flow rate of methane in the residual gas in the hour *h* (Kg/h)

$\eta_{flare,h}$ Flare efficiency in the hour *h*

$$TM_{RG,h} = FV_{RG,h} * fv_{CH4,RG,h} * \rho_{CH4,n}$$

Where:

$TM_{RG,h}$ Mass flow rate of methane in biogas in the hour h; (kg/h)

$FV_{RG,h}$ Volumetric flow rate of biogas in dry basis at normal conditions in hour

h;(m^3/h) , i.e. $BG_{biogas-4,PJ,y}$

$fv_{CH4,RG,h}$ Volumetric fraction of methane in biogas on dry basis in hour h, i.e. $w_{CH4,y}$. And according to AMS-III.D., 60% will be used.

$\rho_{CH4,n}$ Density of methane at normal conditions (1atm and 0ºC) (0.716) (kg/m^3)

According to "Tool to determine project emissions from flaring gases containing methane"(version 01.0.0)/60/, Option A: Apply a default value for flare efficiency is adopted, i.e.:

In case of **enclosed flares** and use of the default value for the flare efficiency, the flare efficiency in the hour h ($\eta_{flare,h}$) is:

• 0%, if the temperature in the exhaust gas of the flare (T_{flare}) is below 500 °C for more than 20 minutes during the hour h.

• 50%, if the temperature in the exhaust gas of the flare (T_{flare}) is above 500 °C for more than 40 minutes during the hour h, but the manufacturer's specifications on proper operation of the flare are not met at any point in time during the hour h.

• 90%, if the temperature in the exhaust gas of the flare (T_{flare}) is above 500 °C for more than 40 minutes during the hour h and the manufacturer's specifications on proper operation of the flare are met continuously during the hour h.

In case of **open flares**, the flare efficiency in the hour h ($\eta_{flare,h}$) is

• 0%, if the flame is not detected for more than 20 minutes during the hour h.

• 50%, if the flare is detected for more than 20 minutes during the hour h.

If all biogas generated by the CPA is used for energy generation, i.e., no biogas is flared, there will be no need to consider $PE_{flare,y}$ and no need to monitor the relative parameters to calculate the $PE_{flare,y}$

Determination of $PE_{power,y}$

As fossil fuel is not involved in a typical SSC-CPA, $PE_{power,y}$ is equivalent to project emissions from electricity consumption. According to AMS-III.D (Ver 18.0), project emissions from electricity consumption are determined as per the procedures described in AMS-I.D (Ver 17.0), which is calculated as below:

$$PE_{power,y} = EG_{PJ,ele,y} * EF_{grid,CM,y}$$

Where:

$EG_{PJ,ele,y}$ Quantity of electricity consumed by the Project facilities in year *y* (MWh/yr)

$EF_{grid,CM,y}$ Combined margin CO_2 emission factor for grid connected power generation in year y(tCO_2e/MWh) calculated using the latest version of the "*Tool to calculate the emission factor for an electricity system*" (ver.02.2.1);

Determination of $PE_{transp,y}$

According to AMS-III.F/61/, the emissions from incremental transportation are calculated as below:

$$PE_{transp,y} = (Q_y / CT_y) * DAF_w * EF_{CO_2} + (Q_{y,treatment} / CT_{y,treatment}) * DAF_{treatment} * EF_{CO_2}$$

Where:

Q_y Quantity of raw waste/manure treated and/or wastewater co-treated in the year *y* (tonnes)

CT_y Average truck capacity for transportation (tonnes/truck)

DAF_w Average incremental distance for raw solid waste/manure and/or wastewater transportation (km/truck)

EF_{CO2} CO_2 emission factor from fuel use due to transportation ($kgCO_2$/km, IPCC default values or local values may be used)

$Q_{y,treatment}$ Quantity of compost produced in year *y* (tonnes)

$CT_{y,treatment}$ Average truck capacity for compost transportation (tonnes/truck)

$DAF_{treatment}$ Average distance for compost transportation (km/truck)

If compared to the baseline scenario, no incremental transport distance exists in the CPA, there will be no need to consider $PE_{transp,y}$ and no need to monitor the relative parameters to calculate the $PE_{transp,y}$.

Determination of $PE_{storage,y}$

Project emissions on account of storage of manure before being fed into the anaerobic digester shall be accounted for if both condition (a) and condition (b) below are satisfied:

(a) The storage time of the manure after removal from the animal barns, including transportation, exceeds 24 hours before being fed into the anaerobic digester; and

(b) The dry matter content of the manure when removed from the animal barns is less than 20%.

The following method shall be used to calculate project emissions from manure storage:

$$PE_{storage,y} = GWP_{CH_4} * D_{CH_4} * \sum_{LT,l} \left[\frac{365}{AI_l} \sum_{d=1}^{AI} (N_{LT,y} * VS_{LT,d} * MS\%_l * (1 - e^{-k\ (AI_l - d)}) * MCF_l * B_{0_{LT}}) \right]$$

Where:

$PE_{storage,y}$ Project emissions on account of manure storage in year *y* (tCO_2e)

AI_l Annual average interval between manure collection and delivery for treatment at a given storage device *l* (days)

$VS_{LT,d}$ Amount of volatile solid production by type of animal *LT* in a day (kg VS/head/d)

$MS\%_l$ Fraction of volatile solids (%) handled by storage device *l*

k	Degradation rate constant (0.069)
d	Days for which cumulative methane emissions are calculated; d can vary from 1 to 45 and to be run from 1 up to AI_l
MCF_l	Annual methane conversion factor for the project manure storage device l from Table 10.17, Chapter 10, Volume 4

If all manure of the CPA is fed into manure treatment system in 24 hours, there will be no need to consider $PE_{storage,y}$ and no need to monitor the relative parameters to calculate. $PE_{storage,y}$.

2) calculation of $PE_{y,C}$

According to AMS-I.C (Ver.19.0), project activity emissions of AMS-I.C (Ver.19.0). component $PE_{y,C}$ consist of:

(a) CO_2 emissions from on-site consumption of fossil fuels due to the project activity shall be calculated using the latest version of the "Tool to calculate project or leakage CO_2 emissions from fossil fuel combustion";

(b) CO_2 emissions from electricity consumption by the project activity using the latest version of the "Tool to calculate baseline, project and/or leakage emissions from electricity consumption";

(c) Any other significant emissions associated with project activity within the project boundary.

The project emissions from on-site consumption of fossil fuels and electricity due to the project activity are demonstrated as $PE_{power,y}$ above. And there are no other significant emissions associated with project activity within the project boundary. Therefore, the $PE_{y,C}$=0 tCO_2e.

3) calculation of $PE_{y,F}$

According to AMS-I.F (Ver.2.0), for energy generation projects using biogas, the $PE_{y,F}$=0 tCO_2e. In addition, the CO_2 emissions from on-site consumption of fossil fuels due to the project activity has been demonstrated as $PE_{power,y}$ above.

3. Calculate Leakage emissions

No energy generating equipment is transferred from outside the boundary to the PoA. In addition, the collection/processing/transportation of animal manure is inside the project

boundary. As per AMS-III.D. (Version 18.0), AMS-I.C (Version 19.0), and AMS-I.F. (Version 2.0), leakage can be neglected.

4. Calculate Emission Reductions

Ex-ante calculation of emission reduction

According to AMS-I.C., AMS-III.D. and AMS-I.F., ex-ante emission reductions is as below:

For Scenario I,

$$ER_y = ER_{y,D} + ER_{y,C} = BE_{CH_4,y} - PE_{y,D} - LE_{y,D} + BE_{Thermal,y} - PE_{y,C} - LE_{y,C}$$

For Scenario II,

$$ER_y = ER_{y,D} + ER_{y,F} = BE_{CH_4,y} - PE_{y,D} - LE_{y,D} + BE_{El,y} - PE_{y,F} - LE_{y,F}$$

For Scenario III,

$$\begin{aligned} ER_y &= ER_{y,D} + ER_{y,C} + ER_{y,F} \\ &= BE_{CH_4,y} - PE_{y,D} - LE_{y,D} + BE_{Thermal,y} - PE_{y,C} - LE_{y,C} + BE_{El,y} - PE_{y,F} - LE_{y,F} \end{aligned}$$

The ex-ante calculation process of emission reductions have been checked by the validation team. The calculations were carried in accordance with the requirement of the applied methodology, and correct equations and parameters have been used accordingly. The parameters and equations presented in the PoA-DD have been checked with the information and requirements presented in applied methodology and respective tools to be correct. Therefore, the ex-ante GHG emission reduction calculation is assessed to be appropriate.

3.8.2 Ex-post calculation of emission reduction

According to AMS-III.D, the emission reductions achieved by avoiding methane emissions will be determined *ex-post* through direct measurement of the amount of methane fuelled, flared or gainfully used. It is likely that the project activity involves manure treatment steps with higher methane conversion factors (*MCF*) than the *MCF* for the manure treatment systems used in the baseline situation, therefore the emission reductions achieved by the project activity is limited to the *ex-post* calculated baseline emissions minus project emissions using the actual monitored data for the project activity ($N_{LT,y}$, $MS\%_{i,y}$, $MS\%_{l}$, AI_l, and in case adjusted values for animal weight are used as defined in paragraph 10 (c): $VS_{LT,y}$). The emission reductions achieved from methane recovery in any year are the lowest value of the following:

$$ER_{y,D,ex\,post} = \min[(BE_{y,D,ex\,post} - PE_{y,D,ex\,post}),(MD_y - PE_{power,y,ex\,post})]$$

Where:

$ER_{y,D,ex\,post}$	Emission reductions of AMS-III.D (Ver.18.0) component achieved by the project activity based on monitored values for year y (tCO2e)
$BE_{y,D,ex\,post}$	Baseline emissions calculated using equation 1 of AMS-III.D (Ver.18.0) (for projects using option in paragraph 9 (a)) using ex post monitored values of $N_{LT,y}$ and if applicable $VS_{LT,y}$
$PE_{y,D,ex\,post}$	Project emissions calculated using equation 5 of AMS-III.D (Ver.18.0) and relevant equation of AMS-III.F and AMS-I.D using ex post monitored values of $N_{LT,y}$, $MS\%_{i,y}$, $MS\%_{l}$, AI_l and if applicable $VS_{LT,y}$
MD_y	Methane captured and destroyed or used gainfully by the project activity in year *y* (tCO_2e)
$PE_{power,y,ex\,post}$	Emissions from the use of fossil fuel or electricity for the operation of the installed facilities based on monitored values in the year *y* (tCO_2e)

In case of flaring/combustion MDy will be measured using the conditions of the flaring process:

$$MD_y = BG_{burnt,y} * w_{CH4,y} * D_{CH4} * FE * GWP_{CH4}$$

Where:

$BG_{burnt,y}$	Biogas flared or combusted in year y (m^3). According to AMS-III.D (Ver.18.0), the amount of biogas recovered $BG_{biogas,PJ,y}$ and fuelled, flared or used gainfully shall be monitored ex post, using flow meters. When the biogas combusted by the boiler system for thermal energy, the monitored parameter is $BG_{biogas-1,PJ,y}$. When the biogas combusted by the equipments whose maximum output capacity are less than 45 kW thermal, e.g. biogas

stoves, for thermal energy, the monitored parameter is $BG_{biogas-2,PJ,y}$. When the biogas combusted by the power generation system for electricity, the monitored parameter is $BG_{biogas-3,PJ,y}$. When the biogas flared, the monitored parameter is $BG_{biogas-4,PJ,y}$. If the biogas flared ($BG_{biogas-4,PJ,y}$) and fuelled ($BG_{biogas-1,PJ,y}$, $BG_{biogas-2,PJ,y}$, $BG_{biogas-3,PJ,y}$) is continuously monitored separately, the two fractions can be added to determine the biogas recovered ($BG_{biogas,PJ,y}$). In that case, recovered biogas ($BG_{biogas,PJ,y}$) need not be monitored separately. And the $BG_{burnt,y}$ is determined as the monitored parameters $BG_{biogas,PJ,y}$, $BG_{biogas-1,PJ,y}$, $BG_{biogas-2,PJ,y}$, $BG_{biogas-3,PJ,y}$ and/or $BG_{biogas-4,PJ,y}$ accordingly.

$w_{CH4,y}$ Methane content in biogas in the year *y* (volume fraction)

FE Flare efficiency of biogas utilized for energy generation in year (fraction). When the amount of methane that is combusted for energy and that is flared is separately monitored, a destruction efficiency of 100% can be used for the amount that is combusted for energy. When the methane is flared, the FE is equal to the $\eta_{flare,h}$ to determine the $PE_{flare,y}$.

So the emission reductions achieved by the typical CPA will be determined ex post according to the following formula:

Only applicable to CPAs under Scenario I

$$ER_y = ER_{y,D,\exp ost} + ER_{y,C} = ER_{y,D,\exp ost} + BE_{Thermal,y} - PE_{y,C} - LE_{y,C}$$

Only applicable to CPAs under Scenario II

$$ER_y = ER_{y,D,\exp ost} + ER_{y,F} = ER_{y,D,\exp ost} + BE_{El,y} - PE_{y,F} - LE_{y,F}$$

Only applicable to CPAs under Scenario III

$$ER_y = ER_{y,D,\exp ost} + ER_{y,C} + ER_{y,F} = ER_{y,D,\exp ost} + BE_{Thermal,y} - PE_{y,C} - LE_{y,C} + BE_{El,y} - PE_{y,F} - LE_{y,F}$$

The ex-post determination process of emission reductions have been checked by the validation team. The calculations were carried in accordance with the requirement of the applied methodology, correct equations and parameters have been used accordingly. The parameters and equations presented in the PoA-DD have been checked with the information and requirements presented in applied methodology and respective tools to be correct. Therefore, the ex-post GHG emission reduction calculation is assessed to be appropriate.

In summary, the baseline methodologies and the tools have been applied correctly to calculate project emissions, baseline emissions, leakages and emission reductions. .

CEC confirms that all assumptions and data used by the PP are listed in the final PoA-DD, including their references and sources. Furthermore, all documentation used by project participants as the basis for assumptions and source of data is correctly quoted and interpreted in the PoA-DD and all values used in the PoA-DD are considered reasonable in the context of the proposed PoA that result in a conservative estimate of emission reductions. Based on the above assessment, CEC confirms that 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 programme of activities;

(d) The baseline methodology has been applied correctly to calculate 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 Monitoring plan

The monitoring plan includes information of data and parameters monitored, monitoring organization, installation of monitoring meters, equipment management system, data management, disposing process of abnormity, training and verification of monitoring results . No sampling will be conducted for calculating the emission reductions attributable to each project.

Parameters monitored:

***W_{site}*:** kg, Average animal weight of a defined livestock population at the project site, recorded annually.

***nd_y*:** day, Number of days that the animal manure management system was operational in year y, recorded annually, based on daily records and monthly aggregation.

***$N_{da,y}$*:** Number, Number of days animal is alive in the farm in the year *y*, recorded annually, based on monthly records.

***$N_{p,y}$*:** Number, Number of animals produced annually of type LT for the year *y*, recorded annually based on monthly records.

***$MS\%_{i,y}$*:** %, Fraction of manure handled in system "i" in project activity in year y, recorded annually, based on daily measurement and monthly aggregation

Genetic source: Genetic source of the livestock, measured annually

FFR: Formulated feed ratio, measured annually.

***$MS\%_l$*:** %, Fraction of volatile solids (%) handled by storage device *l*, measured monthly.

***Q_y*:** tons, Quantity of raw waste/manure treated and/or wastewater co-treated in the year y, recorded monthly.

***CT_y*:** tons/truck, Average truck capacity for transportation, on site measurement

***DAF_w*:** km/truck, Average incremental distance for raw solid waste/manure and/orwastewater transportation, recorded annually

***$Q_{y,treatment}$*:** tons, Quantity of compost produced in year *y*, recorded monthly.

***$CT_{y,treatment}$*:** tons/truck, Average truck capacity for compost transportation, on-site measurement.

***$DAF_{treatment}$*:** km/truck, Average distance for compost transportation, recorded annually ***AI_l*:** days, Annual average interval between manure collection and delivery for treatment at a given storage device l (days), measured annually, based on monthly records.

***AI_l*:** days, Annual average interval between manure collection and delivery for treatment at a given storage device l (days), measured annually, based on monthly records.

T_{flare}: °C, Temperature in the exhaust gas of the flare, measured by a Type N thermocouple.

Other flare operation parameters: all data and parameters that are required to monitor whether the flare operates within the range of operating conditions according to the manufacturer's specifications including a flame detector in case of open flares, measured continuously

FE: %, The flare efficiency, measured as per the "Tool to determine project emissions from flaring gases containing Methane" and paragraph 22 of AMS-III.D.

***$BG_{biogas,PJ,y}$*:** m^3, The total volume of the biogas generated in year y, recorded annually, based on continuous flow measurement with daily accumulated volume reading.

***$BG_{biogas-1,PJ,y}$*:** m^3, the volume of the biogas supplied to boilers in year y. recorded annually, based on continuous flow measurement with daily accumulated volume reading.

***$BG_{biogas-2,PJ,y}$*:** m^3, the volume of the biogas supplied to the equipments whose maximum output capacity are less than 45 kW thermal, e.g. biogas stoves, in year y, measured annually, based on continuous flow measurement with daily accumulated volume reading.

***$BG_{biogas-3,PJ,y}$*:** m^3, The volume of the biogas supplied to power generator in year y, recorded annually, based on continuous flow measurement with daily accumulated volume reading.

***$BG_{biogas-4,PJ,y}$*:** m^3, The volume of the biogas supplied to flare in year y, recorded annually, based on continuous flow measurement with hourly accumulated volume reading.

***$EG_{thermal,y}$*:** TJ/yr, The net quantity of steam/heat supplied by the project activity during the year, continuous monitoring, monthly recorded.

Continuous operation of the thermal equipment/system: Annual check of all appliances or a representative sample

***$EG_{BL,y}$*:** MWh/yr, Quantity of the grid electricity displaced as a result of the implementation of the CDM project activity in year y, continuous monitoring, monthly recorded.

***$EG_{PJ,\ ele,y}$*:** MWh/yr, Quantity of electricity consumed by the Project facilities in year *y,* continuous monitoring, monthly recorded.

The validation team has checked all the parameters presented in the monitoring plan against the requirement of the methodology, no deviations relevant for the project activity have been found in the plan.

Monitoring organization:

The monitoring organization is illustrated in Figure E-2 of PoA-DD, and the responsibilities of overall supervisor of the PoA, CPA implementer, team leader, assistant and operators are listed in section E.7.2 of PoA-DD. The specific CPA is not in operation at the time of validation, but the description is in compliance with envisioned situation

Monitoring will be carried out during the whole biogas generation and usage process. The monitoring system is shown in Figure E-3 of PoA-DD, and for different scenario I, II and III, the location of the monitoring meters is different.

Equipment:

As shown in Figure E-3 of the PoA-DD, Meter F will be equipped at the end of gas tank for measurement of total generated biogas ($BG_{biogas,PJ,y}$) and/or meter F1 will be equipped at

the entrance of boiler system to measure the biogas supplied to boiler system ($BG_{biogas-1,PJ,y}$) and/or F2 will be installed to measure the biogas supplied to the equipments whose maximum output capacity are less than 45 kW thermal, e.g. biogas stoves, ($BG_{biogas-2,PJ,y}$), and/or meter F3 will be equipped at the entrance of power generation system to measure the biogas supplied to the power generator ($BG_{biogas-3,PJ,y}$) , and/or metering system Fs will be equipped to measure the thermal energy supplied ($EG_{thermal,y}$) by the project activity, and/or E will be equipped to measure the electricity supplied ($EG_{BL,y}$) by the project activity, and E1 will be equipped to measure the electricity consumption ($EG_{PJ, ele,y}$) by the project activity.

If the biogas flared ($BG_{biogas-4,PJ,y}$) and fuelled ($BG_{biogas-1,PJ,y}$, $BG_{biogas-2,PJ,y}$, $BG_{biogas-3,PJ,y}$ **)** is continuously monitored separately, the two fractions can be added to determine the biogas recovered ($BG_{biogas,PJ,y}$). In that case, recovered biogas ($BG_{biogas,PJ,y}$) need not be monitored separately, i.e., the Meter F need not be equipped.

In case the biogas is supplied to the flare, meter F4 will be equipped at the entrance of flare to measure the biogas supplied to flare ($BG_{biogas-4,PJ,y}$), and the thermocouple will be equipped to measure the temperature in the exhaust gas of the flare (T_{flare}).

The installation of the monitoring meters is in accordance with the methodologies.

The accuracy of the equipments will be satisfied with the related national standards, and the equipment will undergo routing maintenance and calibration subject to the appropriate industry and/or national standards and requirements by the CDM operator and outsourced company with the help of the operators.

As there is no sampling plan for the PoA and every CPA, all data of the parameters monitored will be collected and reported and finally reported to CME.

CAR06 was raised: 1) Please further clarify whether CDM implementer of each CPA is included in the monitoring structure of the PoA; 2) Please clarify whether there is sampling process involved in the monitoring plan. The CPA implementer is included in the monitoring structure of the PoA, and the monitoring structure of each CPA is described in E.7.2.The CMEs clarifies that there is no sampling process involved in the monitoring plan, and the PoA-DD has been revised accordingly. CAR06 is closed.

CAR05 was raised: Please describe the monitoring plan for the thermal component as per the AMS-I.C. and the actual situation. Also please update relevant monitoring parameter in E.7.1 of the PoA-DD. The monitoring plan for the thermal component has been revised as per the AMS-I.C. The following monitoring parameters in E.7.1 of the PoA-DD have also been added: Genetic source, FFR, $MS\%_l$, Q_y, CT_y, DAF_w, $Q_{y,treatment}$, $CT_{y,treatment}$, $DAF_{treatment}$, AI_l, T_{flare}, Other

flare operation parameters, FE, $BG_{biogas-3,PJ,y}$, $BG_{biogas-4,PJ,y}$, $EG_{thermal,y}$, Continuous operation of the thermal equipment/system. CAR05 is closed.

During document review and on-site visit, the validation team is able to verify that necessary procedures related to data handling, quality assurance, and monitoring personnel will be appropriately implemented.

According to the described validation method, the estimations in the PoA-DD for the parameters monitored ex-post are considered to be reasonable. Complying with Para. 124 of VVM, Para 17 of the PoA standard, the validation team confirms that the monitoring plan complies with the requirements of the methodology; the monitoring arrangements described in the monitoring plan are feasible; the project participants are able to implement the monitoring plan.

3.10 Environmental Impacts

Environmental Analysis is done at CPA level because According to the “National Environmental Impact Assessment Law”, EIA is required for each construction project, and the EIA of this project type should be conducted on project level. The EIA will be undertaken at CPA level based on the EIA of each activity in the CPA, because it’s not possible to undertake at PoA level for the following reasons:

1) During the PoA validation, the potential project activities are uncertain or even not happen, and the EIA of each project activity in all the CPAs included in the PoA is not available.

2) The potential projects are totally independent and fall into different energy consumption scenarios, different scales, thus is impossible to do the EIA applicable to all the projects.

The environmental impact results from the CPA-001 have been identified and analyzed in the CPA-DD.

This is validated to be in compliance with the Environmental Impact Assessment Law issued by Ministry of Environmental Protection on 28/10/2002 /62/

3.11 Local Stakeholder Consultation

In order to ensure full participation and consultation of local stakeholders of each CPA, the proposed Programme of Activities intends to undertake the local stakeholder consultation at CPA level. Local stakeholders will be invited at the SSC-CPA level to participate in a stakeholder meeting or a questionnaire survey launched by CPA implementer,

CL02 was raised: Please clarify whether local stakeholder consultation will be done at PoA level or CPA level as CPA level is selected according to site interview with the consultant. Relevant clarification and revision was made in section D.1 of the PoA-DD and checked to be correct. Hence CL02 was closed.

4. COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS

The PoA-DD was made publicly available from 28/04/2012 in accordance with paragraph 40(b) of the modalities and procedures for the CDM and received, within 30 days, comments from Parties, stakeholders and UNFCCC accredited non-governmental organizations and make them publicly available. No comments were received during this process.

No CARs, CLs or FARs were raised in this section.

5. VALIDATION OPINION

China Environmental United Certification Center Co., Ltd. (CEC) has performed validation of "HuaQi Livestock Farms Methane Engineering Programme of Activities" project based on UNFCCC criteria for the Clean Development Mechanism and host country criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.

The review of the programme design documentation and additional documents related to baseline and monitoring methodology, and the subsequent background investigation, follow-up interviews and review of comments by parties and stakeholders have provided CEC with sufficient evidence to validate the fulfilment of the stated criteria.

The conclusions can be summarized in detail as follows:

- The PoA is in line with all relevant host country criteria of China, with the Letter of Approval from the China DNA and with all relevant UNFCCC requirements for Programme of Activities.
- The operational and management plan established by the coordinating entity is suitable for the PoA validated.
- The baseline has been appropriately identified as per the applied methodology.
- Eligibility criteria in the PoA-DD are sufficient to ensure that all CPAs would comply with the CDM requirements applicable to the proposed PoA. These requirements include the means of demonstrating the additionality of the CPA and the applicability of the applied methodology.
- The PoA's additionality is sufficiently justified in the PoA-DD.
- The monitoring plan and the Operational and Management Plan are transparent and adequate.
- The calculation of validated CPA emission reductions has been carried out in a transparent and conservative manner, following the approved methodologies.
- Information on the local stakeholders' consultation by the project participants prior to submitting the PoA for validation is sufficiently provided in the PoA-DD.
- All information has been also consistently applied in the generic CPA-DD form.

It is CEC's opinion that "HuaQi Livestock Farms Methane Engineering Programme of Activities" project, as described in the PoA-DD version 02 dated 11/10/2012 and Generic CPA-DD version 02 dated 11/10/2012, meets all relevant UNFCCC requirements for the CDM and all relevant host country criteria, correctly applies the baseline and monitoring methodologies AMS-III.D (version 18.0), AMS-I.C (version 19.0), AMS-I.F (version 2.0)., and also meets the stated validation criteria. CEC thus requests the registration of the project as a CDM programme of activities.

Beijing, 25/10/2012	Beijing, 28/10/2012
LIU Qingzhi	TANG Dingding
Validation Team Leader	Chairman of Board

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23. Guidelines on the demonstration of additionality of small-scale project activities, version 09.0, Annex 27 of EB68

24. Tool for the demonstration and assessment of additionality, version 06.0.0, Annex 21 of EB65

25. Guidelines on the Assessment of Investment Analysis, version 05, Annex 5 of EB62

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47. Statistics of coal and electricity consumption from 2009-2011, Leiyang Ecological Husbandry Group (the livestock in CPA-001)

48. Guidance on FSR Development on Biogas Digester, Chemical Industry Press, issued on 01/09/2007

49. Law of the People's Republic of China on Enterprise Income Tax, State Tax Law, 01/01/2008

50. Baseline Emission Factors of Regional Grids in China, published by NDRC of China on20/10/2011

51. Environment Impact Assessment Report (EIA) of CPA-001, completed by Changsha Environmental Protection Technological Institute in Oct. 2011

52. EIA approval issued by Leiyang Environmental Protection Bureau on 14/12/2011

53. Local stakeholder consultation signature form with the investigated staff, dated on 23/02/2012

54. 30 copies of questionnaires of local stakeholder consultation Feb, 2012

55. EB38 meeting Report.

56. China Statistics Yearbook, 2006-2010.

    http://www.stats.gov.cn/tjsj/ndsj/2011/indexch.htm

    http://www.stats.gov.cn/tjsj/ndsj/2011/html/I0915e.htm

57. The technical agreement of the existing coal-fired boiler in Leiyang Ecological Husbandry Group dated Dec. 2006.

58. Environmental protection acceptance opinion of Leiyang Ecological Husbandry Group issued by EPB of Hengyang city dated in Aug, 2008.(Leiyang city is one of the administrative division in Hengyang city)

59. Tool to calculate the emission factor for an electricity system，version.02.2.1, Annex 19 of EB63.

60. Tool to determine project emissions from flaring gases containing methane, version 01, Annex 13 of EB28

61. AMS-III.F: “Avoidance of methane emissions through composting”, version 11.0

62. Environmental Impact Assessment Law issued by Ministry of Environmental Protection on 28/10/2002

63. Implementation Rules for Law of the People's Republic of China on Enterprise Income Tax, Promulgated by Decree No. 512 of the State Council of the People's Republic of China dated 06/12/2007 and valid since 01/01/2008

64. State Tax Bureau informs to clarify executing date on entrepreneur adjusting fixed asset

residual rate, Guoshuihan [2005]883" issued by State Administration of Taxation on 14/09/2005

65. IGES database: http://www.iges.or.jp/en/cdm/report.html

CDM pipeline: http://cd4cdm.org/CDMJIpipeline.htm

66. State Tax Law Provisional Regulations on Urban Maintenance and Construction Tax, valid since 1985.

67. The state council's decision on revising <Interim regulations of education fee addition> Guowuyuanling No.448.

6. PEOPLE INTERVIEWED

Name	Organization / Function
ZHANG Hu	HuaQi Environmental Clean Technologies Co., Ltd./General manager
YANG Zhenxing	HuaQi Environmental Clean Technologies Co., Ltd./Vice general manager
XU Yong	Innovative Carbon Investment Co., Ltd./Director of implementation
LIU Jing	Innovative Carbon Investment Co., Ltd./Analyst
LIU Jia	Hunan New Wellful Co., Ltd./Communications manager
LI Haiyan	Hunan Provincial Rural Energy Office/Section Chief
HAN Yuming	Hunan Provincial Rural Energy Office/Section Chief
CAI Zhengfang	Hunan Provincial DRC/Section Chief
CAO Wencai	Leiyang County Environmental Protection Bureau/Assistant Engineer
ZHOU Senlin	Hunan New Wellful Co., Ltd./Manager of Leiyang Ecological Husbandry Group

APPENDIX A VALIDATION PROTOCOL

Table 1 PoA-DD Requirement Checklist

Checklist Question	**MoV**	**Comments** MoV=Means of Validation, DR=Document Review, I=Interview, O=Observation	**Draft Conclusion**	**Final Conclusion**
A. General Description of SSC Programme of activities				
A.1 Title of the Programme of activities				
A.1.1 Does the project title clearly identify the unique CDM activity?	DR	Yes. The project title is "HuaQi Livestock Farms Methane Engineering Programme of Activities", which identifies the unique CDM activity clearly. The project title is consistent with the LoA and MoC. The title of the project and version number of the document and data is complete and correct.	OK	OK
A.1.2 Are there any indication concerning the history of the versions?	DR	Yes. The version 01 dated 23/04/2012 was compiled for the GSP in UNFCCC website. The final revised PoA-DD version 02 is dated 11/10/2012.	OK	OK
A.1.3 Does the PoA-DD apply the latest UNFCCC template?	DR	Yes. The PoA-DD and template CPA-DD applied the UNFCCC template (Small-Scale CDM Programme of Activities Design Document form, version 01.0 /10/ and Small-Scale CDM Programme Activity Design Document form, version 01.0/11/) completely and accurately. These two templates are valid until 31/01/2013.	OK	OK

A.2 Description of the SSC Programme of activities (PoA)				
A.2.1 Is the description delivering a transparent overview of the general operating and implementing framework of the PoA?	DR O	Yes. HuaQi Environmental Clean Technologies Co., Ltd. will coordinate the Small-Scale Programme of Activities (SSC-PoA) and will support the CPA implementer(s) in implementing the CDM Programme Activities (CPAs) in Hunan Province, Henan Province and Guangxi Province. The proposed programme after implementation will result in GHG emission reduction by installing animal manure treatment systems with recovery of biogas and then utilizing the generated biogas as fuel for thermal energy in place of fossil fuel, or power generation from the Central China Power Grid (CCPG) or China Southern Power Grid (CSPG) respectively. There are three scenarios for energy generation involved in the PoA as follows: **1)** The biogas produced by the project is used for supplying users with thermal energy that displaces fossil fuel use.(Hereafter referred to as **Scenario I**); **2)** The biogas produced by the project is used for generating electricity for captive use that displaces electricity from national or a regional grid. (Hereafter referred to as **Scenario II**); **3)** The biogas produced by the project is used for supplying users with thermal energy that displaces fossil fuel use and for generating electricity for captive use that displaces electricity from national or a regional grid. (Hereafter referred to as **Scenario III**).	OK	OK

A.2.1 Is the description delivering a transparent overview of the general operating and implementing framework of the PoA?	DR O	The technology employed in the CPAs includes manure treatment system, biogas recovery system and biogas utilization system. The excrement from livestock farms will firstly enter into adjusting tank, and then enter into anaerobic reactor where anaerobic digestion takes place to convert organic matter included in manure into biogas. The recovered biogas from anaerobic reactor will be led into desulphurization and dehydration facilities to purify the gas and extract harmful substances, and then the biogas will be utilized for thermal energy generation and/or electricity energy generation. The slurry and residue from the reactor will be used for soil application.	OK	OK
A.2.2 What proofs are available demonstrating that the project description is in compliance with the actual situation or planning?	DR	The following documents are major evidence documents available and checked against the information in PoA-DD by the validation team: ● Business licence of CME and CPA-001 implementer /8/ ● Approval of HuaQi Livestock Farms Methane Engineering Programme of Activities by Hunan Provincial Rural Energy Office /28/ ● FSR and its approval of CPA-001/35//36/ ● EIA and its approval of biogas engineering project of CPA-001/51//52/	OK	OK
A.2.3 Is the policy/measure or stated goal of the PoA clearly and unambiguously presented?	DR	Yes, it has been clearly presented that the proposed PoA is to install animal manure treatment systems with biogas recovery system and then to utilize the biogas as energy across Hunan, Henan and Guangxi Province. Project activities under the PoA include three scenarios. Each CPA falls into one of the following three scenarios can be eligible to include to the PoA:	OK	OK

A.2.3 Is the policy/measure or stated goal of the PoA clearly and unambiguously presented?	DR	Scenario I: The biogas produced by the project is used for supplying users with thermal energy that displaces fossil fuel use. Scenario II: The biogas produced by the project is used for generating electricity for captive use that displaces electricity from national or a regional grid. Scenario III: The biogas produced by the project is used for supplying users with thermal energy that displaces fossil fuel use and for generating electricity for captive use that displaces electricity from national or a regional grid. By recovery and utilization of biogas, the CPAs under the PoA can contribute to the reduction of greenhouse gases in 2 ways: 1) The biogas recovery system reduces methane emission into atmosphere; 2) The recovered biogas replaces conventional fossil fuels for energy generation, and therefore avoids CO2 emissions from energy generation by the fossil fuel. Because unlimited number of CPAs can be included in a PoA, it's hard to estimate the emission reductions of the PoA. By now, only the emission reduction of the first CPA (CPA-001) is calculated, which is 5,345tCO2e per year and totally 37,415tCO2e during the first crediting period, details refer to the specific SSC-CPA-DD.	OK	OK
A.2.4 Is there a valid confirmation that the proposed PoA is a voluntary action by the coordinating/managing entity?	DR	There is no mandatory law to enforce animal breeding entities to install animal manure treatment system with recovery of biogas and also no law to forbid fossil fuel-based energy used in China. Therefore, the CME confirms that the proposed PoA is a voluntary action. This has been verified against the Environmental Impact Assessment Law issued by MEP of China.	OK	OK

A.2.5 Is the information provided by the PoA-DD consistent with the information provided by proofs?	DR	Yes. All the information provided by the PoA-DD is consistent with the information provided by proofs.	OK	OK
A.2.6 Is the project a large scale project, a small scale project with average annual emission reductions above 15,000 t or a bundled small scale project? Has on-site visit been carried out?	DR I	The programme of activities is a small scale programme of activities, because the emission reductions from type III components of the CPA should be less than or equal to 60,000 tCO2/yr and the total thermal installed capacity of the CPA is less than 45 MW_{th}. During 13/06/2012 to 15/06/2012, the validation team performed an on-site visit and interviews with the CME, the CPA 001 implementer,local officials and stakeholders to confirm the provided information.	OK	OK
A.2.7 Does the programme of activities involve alternation of existing installation? If so, have the differences between pre-project and post-project activity been clearly described in the PoA-DD?	DR I O	The CPAs under the PoA is to install a new manure treatment system to replace the existing open lagoons and install a new biogas boiler to replace the existing coal fired boiler, and the difference between pre-project and post-project activity have been clearly described in the PoA-DD.	OK	OK

A.2.8 Does the description of the technology to be applied provide sufficient and transparent input to evaluate its impact on the greenhouse gas balance?	DR	Yes, the proposed PoA will promote the development of renewable energy and facilitate the abatement of greenhouse gas emissions in 2 ways: 1) the biogas recovery system reduces methane emission into atmosphere; 2) the recovered biogas replaces conventional fossil fuels for energy generation, and therefore avoids CO2 emissions from energy generation by the fossil fuel. The description of technology to be applied provides sufficient and transparent input to evaluate its impact on the greenhouse gas balance.	OK	OK
A.3 Coordinating/managing entity and participants of SSC-POA				
A.3.1 Is the CME clearly indicated in the PoA-DD?	DR	Yes. HuaQi Environmental Clean Technologies Co., Ltd. is clearly indicated as the coordinating/managing entity (CME) of the proposed SSC PoA in the PoA-DD. This has been confirmed via reviewing CME qualification approval by Hunan Development and Reform Committee/28/ and the LoA/6/.	OK	OK
A.3.2 Is the information of CME consistent in the whole PoA-DD?	DR	The information of the CME is consistent in the whole PoA-DD, including that in the Annex 1 of PoA-DD.	OK	OK
A.3.3 Is the form required for the indication of project participants correctly applied?	DR	Yes. The form is correctly applied.	OK	OK

A.3.4 Does it clearly specify the CMEs, all the Parties and project participants?	DR	The project participants are HuaQi Environmental Clean Technologies Co., Ltd. (P.R. China). The CME is HuaQi Environmental Clean Technologies Co., Ltd. CAR01 LoA from DNA of China has not been provided. If the project is a unilateral project, the Host Party shall be recognized as a project participant in section A.3.	~~CAR01~~	OK
A.3.5 Is the participation of the listed entities or Parties confirmed by each one of them?	DR	HuaQi Environmental Clean Technologies Co., Ltd. as the CME of the proposed PoA, it is also a project participant. Please refer to CAR01.	~~CAR01~~	OK
A.3.6 Is all information on participants /Parties provided in consistency with details provided by further chapters of the PDD (in particular annex 1)?	DR	Please refer to CAR01.	~~CAR01~~	OK

A.3.7 Is the Coordinating Agency a project participant authorized by all participating host countries DNAs involved and identified in the modalities of communication as the entity which communicates with the Board?	DR	Please refer to CAR01.	~~CAR01~~	OK
A.3.8 Does the written approval from the host country confirm that the project contributes to the sustainable development in the country?	DR	Please refer to CAR01.	~~CAR01~~	OK
A.4 Technical description of the small-scale Programme of activities				
A.4.1 Location of the programme of activities				

A.4.1.1 Does the information provided on the location of the programme allow for a clear definition identification of the boundary for the PoA in terms of a geographical area, within which all CPAs included in this PoA will be implemented?	DR I O	The proposed project is an animal manure treatment programme located in Hunan Province, Henan Province and Guangxi Province, P.R. China. CL 04 Please provide evidence for the geological coordinates for the PoA boundary.	~~CL04~~	OK
A.4.1.2 Do the requirement that all applicable national and/or sectoral policies and regulations of the host country within the boundaries chosen taken into account?	DR	Yes. The boundaries of the Programme have been well established, and all sectoral policies and regulations of the host country have been taken into account	OK	OK
A.4.2 Description of a typical small-scale CDM programme activity (CPA)				
A.4.2.1 Technology or measures to be employed by the SSC-CPA				

A.4.2.1.1 To which category(ies) does the programme of activities belonging to? Is the category correctly identified and indicated?	DR	The project falls under Sectoral scope 1 and 15, Technical area 1.2 and 15.2: “Energy generation from renewable energy sources” and “Animal waste management”. The category and methodology is correctly identified in Section A 4.2 of the PoA-DD.	OK	OK
A.4.2.1.2 Does the technical design of the programme of activities reflect current good practices?	DR I	Yes. After document review and on-site visit, the project uses animal manure treatment systems with recovery of biogas and then to utilize the generated biogas as fuel for energy generation, which reflects the advanced technology and current good practices.	OK	OK
A.4.2.1.3 Does the description of the technology to be applied provide sufficient and transparent input/information to evaluate its impact on the greenhouse gas balance?	DR	Yes. The description of the technology is complete, relative document evidences have been provided and checked. The PoA will use recovered biogas to generate thermal energy to satisfy the heat demand, or to generate the electricity for captive use, or the both. In the absence of the PoA, animal manure would be left to decay anaerobically without methane recovery and destruction, and equivalent amount of thermal energy would be generated based on fossil fuel and equivalent electricity would be generated by Central China Power Grid or China Southern Power Grid.	OK	OK

A.4.2.1.4 Does the implementation of the programme of activities require any technology transfer from Annex I countries to the host country(ies)?	DR I	No. No technology transfer from Annex I countries is involved.	OK	OK
A.4.2.1.5 Is the technology implemented by the programme of activities environmentally safe?	DR I	Yes. As the project will generate thermal energy and electricity using recovered biogas, the technology implemented by the programme of activities is environmentally safe.	OK	OK
A.4.2.1.6 Does the project require extensive initial training and maintenance efforts in order to be carried out as scheduled during the project period?	DR	The proposed PoA does not require extensive initial training and maintenance effort.	OK	OK
A.4.2.1.7 Is the information provided by the generic CPA consistent with the information in PoA?	DR	Yes. It is consistent.	OK	OK

A.4.2.1.8 Do the CPAs involve alternation of existing installation? If so, have the differences between pre-project and post-project activity been clearly described in the POA-DD?	DR	The CPAs under the PoA is to install a new manure treatment system to replace the existing open lagoons and install a new biogas boiler to replace the existing coal fired boiler, and the difference between pre-project and post-project activity have been clearly described in the PoA-DD.	OK	OK
A.4.2.2 Eligibility criteria for inclusion of a SSC-CPA in the PoA				
A.4.2.2.1 Are there clear and unambiguous eligibility criteria for the inclusion of a SSC-CPA into the PoA?	DR I	The eligibility criteria has been stated clearly and checked with regards to the following: 1.Geographical boundary check. 2.Avoid double counting check. a) Each CPA under the PoA and each livestock farm involved in one CPA shall have a unique geopraphical coordinates. b) Confirmation letter from the CPA Implementer and CME for confirming that the project is not registered or in the process of being registered as a individual CDM project, nor as a part of any other PoA. c) Confirmation check by reviewing the website of the UNFCCC/DNA by the CME. 3.Installed capacity check and must not involve capacity addition, retrofitting or modifying of an existing facility for renewable energy generation. 4.Starting date check: any CPA is not, or will not be, prior to the commencement of validation of the programme of activities. 5.Comply with applicability and other requirements of the applied methodologies.	~~CAR 02~~	OK

		6. The additionality assessment criteria for each CPA (as per E.5 particularly in E.5.2 of the PoA-DD are met). 7. Local stakeholder consultations and environmental impact analysisprior to the inclusion of the CPA. 8. No public from Annex 1 Parties has been involved in each CPA under the proposed PoA. 9. Monitoring requirement of the CPA, including sampling is applicable. 10. Non-debundled component check. 11. Confirmation on the crediting period of the SSC-CPA which shall not exceed the length of the PoA (28 years) regardless of the time of inclusion of CPA in the PoA 12. The SSC-CPA shall be in line with laws and regulations available at the time of inclusion of the CPA into the PoA Please refer to CAR02.		
A.4.2.2.2 Are the eligibility criteria for CPAs sufficient to ensure that all CPAs would comply with the CDM requirements applicable to the PoA?	DR I	CAR02 1.please clarify whether the CME have the competencies to check the features of potential CPAs and ensure that each CPA meets all requirements and eligibility criteria before inclusion in the registered PoA; 2. Please further demonstrate the choice of eligibility criteria for including CPAs in the PoA-DD as per PoA Standard (EB65 annex 3) and the applied combined methodologies.	~~CAR02~~	OK
A.4.3 Description of how the anthropogenic emissions of GHG by sources are reduced by a SSC-CPA below those that would have occurred in the absence of the registered PoA (assessment and demonstration of additionality)				

A.4.3.1 Is the PoA additionality assessed according to current versions of : • Applicable methodology; • Tool used to demonstrate the Additionality; • 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	DR	It is validated that there is no mandatory law to enforce animal breeding entities to install animal manure treatment system with recovery of biogas and also no law to forbid fossil fuel-based energy used in China. Therefore, the CME confirms that the proposed PoA is a voluntary action. The CME have planned to implement the PoA all over Hunan, Henan and Guangxi Province. Due to investment barriers, lack of infrastructure construction and so on, the proposed PoA would not be implemented in the absence of the PoA. The CPA additionality under the proposed PoA will be assessed through any one of the following options: **Approach 1:** Demonstrating additionality according to "Guidelines for Demonstrating Additonality of Microscale Project Activities" (Version 04.0). In case of Approach 1, the projects included in the CPA should meet relevant requirements in "Guidelines for demonstrating additionality of microscale project activities", including: 1) The total installed capacity for type I (both electrical units and thermal units) of the CPA is no more than $15MW_{ther}$; 2) The emission reductions from type III components of the CPA are no more than 20 $ktCO_2e$ per year; 3) The geographic location of the project activity is in a special underdeveloped zone (SUZ) of the host country. OR	~~CAR03~~	OK

A.4.3.1 Is the PoA additionality assessed according to current versions of : • Applicable methodology; • Tool used to demonstrate the Additionality; • 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	DR	**Approach 2:** Demonstrating addtionality according to "Guidelines on the demonstration of additionality of small-scale project activities"(Version 09.0). In case of Approach 2, the additionality for each CPA can be demonstrated by any one of the following options: **Option 1**: The CPA can meet the following criteria in the positive list of technologies and project activity types: • The CPA as a whole meets the threshold criteria of a small scale CDM project activity; and • The CPA is solely composed of isolated unites where the users of the technology/measure are households or communities or Small and Medium enterprises (SMEs); and • The size of each isolated unit is under 2,250 kWther install capacity or the 3,000 tCO2e of emission reductions per year. OR **Option 2:** The financial/economic indicator (such as IRR, NPV) of the projects included in the CPA should be worse than the selected benchmark，which is indicated in investment decision document (such as FSR). CAR03: Please further clarify the procedure for assessment and demonstration of additionality based on the scale and location of the project in accordance with the latest version of addtionality tool and guidelines.	~~CAR03~~	OK
A.4.3.2 Has it been demonstrated that the PoA is a voluntary coordinated action that would not be implemented in the absence of CDM?		Yes, the PoA is a voluntary coordinated action that would not be implemented in the absence of CDM.	OK	OK

A.4.3.3 If the PoA is implementing a mandatory policy/regulation, has it been demonstrated whether the policy/regulation is not being enforced? If it is enforced, has it been demonstrated that the PoA will lead to a higher level of enforcement?	DR	Not applicable. The programme is not implementing a mandatory policy/regulation.	OK	OK
A.4.3.4 Are all assumptions stated in a transparent and conservative manner?	DR	Yes, they have been stated in a transparent and conservative manner.	OK	OK
A.4.3.5 Is sufficient evidence provided to support the relevance of the arguments made?	DR	The final PDD details the sources and evidences to back up the additionality of the PoA, and they have been provided to the validation team and deemed adequate.	OK	OK
A.4.4 Operational, management and monitoring plan for the programme of activities (PoA)				
A.4.4.1 Operational and management plan				

A.4.4.1.1 Does the PoA-DD and generic CPA-DD clearly state the coordinating/managing entity?	DR	Yes. HuaQi Environmental Clean Technologies Co., Ltd. is identified to be the coordinating/managing entity of the PoA.	OK	OK
A.4.4.1.2 Are the operational and management arrangements established by the coordinating/managing entity suitable for the PoA being validated?	DR O	CAR04 Please further demonstrate operational and management arrangements in section A.4.4.1 of the PoA-DD to ensure that the CME will have control of all records and information related to the implementation of individual CPAs and will be in a position to ensure each CPA is being operated in accordance with the specific requirement of the programme in the following aspects: 1) Respective responsibilities of CME and CPA implementer; 2) The system/procedure to avoid double accounting. 3) De-bundling check as per para 10, page 3 of "Guidelines on assessment of debundling for SSC project activities"	~~CAR04~~	OK

A.4.4.1.3 Are record keeping system for each CPA under the PoA suitable?	DR	Yes, each CPA will maintain an appropriate records system with standardized formats, which includes the following information: ● Number and address of the CPAs ● Number, name and address of the livestock farms under the CPAs ● Number, name and address of households who gain the biogas from the CPAs ● The name and contact details of each participating CPA implementer ● The geographical coordinates of each CPA (for example, GPS coordinates) ● The record of technical specification of each CPA ● Monitoring parameters of each CPA. Based on CEC local and sectoral knowledge, it is judged the record keeping system is appropriate to the proposed PoA.	OK	OK
A.4.4.1.4 Are methods to avoid double counting suitable?	DR	The CME seeks confirmation in SSC-CPA when conducting CPA eligibility check .The methods to avoid counting are as following measures: All animal manure treatment units registered in one CPA will be uniquely defined and recorded, thus each CPA is uniquely identified. In addition, the CME will compare every new CPA to the already existing records and the list of the project activities under-validation or registered at the UNFCCC to ensure that any animal manure treatment unit in a new CPA has neither already been registered as a CDM project, nor as a CPA of another PoA. By measures above, double accounting can be avoided. Based on CEC sectoral knowledge, it is judged the methods to avoid counting are appropriate.	OK	OK

A.4.4.1.5 Is there a procedure to check for de-bundling?	DR	Yes. There is a procedure to check for de-bundling which is in accordance with Guidelines on Assessment of Debundling for SSC Project Activities (Ver. 03). The CME and the livestock farm owners confirm that, each CPA included into the PoA is not a de-bundled component of a large scale activity if there is already an activity, which has the same activity implementer as the proposed small scale CPA or has coordinating or managing entity, which also manages a large scale PoA of the same technology/measure, and the boundary is within 1 km of the boundary of the proposed small-scale CPA, at the closest point. Also, the database described above will be used to perform the de-bundling check. Every new CPA will be compared to the already existing database and the list of project activities under-validation or registered at the UNFCCC. Moreover as shown in subsection (iv) below, the project implementers will be made aware of the de-bundling rules and will certify that the proposed CPA is not a de-bundled part of another CDM programme activity (CPA) or CDM project activity. Furthermore, if a proposed CPA is a de-bundled component of another CDM programme activity (CPA) or CDM project activity, it won't be included into the PoA. Therefore it is judged the criteria for non-debunlding check are appropriate.	OK	OK
A.4.4.1.5 Is there procedure for awareness of CPA implementers on PoA provisions?	DR	Before inclusion of a specific CPA, the CME will sign an agreement with SSC-CPA implementer(s) for that the SSC-CPA implement(s) are aware of and have agreed that their activity is being subscribed to the PoA.	OK	OK
A.4.4.2 Monitoring plan				
A.4.4.2.1 Is the management system for monitoring plan described transparently?	DR I	Yes, the monitored parameters, responsibilities of CME and CPA implementers, operation and monitoring manual, data collection and archiving, etc. have been described in the PoA-DD.	OK	OK

A.4.4.2.2 Does the monitoring plan provide for the collection and archiving of all relevant data necessary for estimation or measuring the greenhouse gas emissions within the programme boundary during the crediting period?	DR I	The monitoring plan clearly provide for the collection and archiving of all relevant data with in the project boundary during the crediting period. Based on document review and on-site visit, it is judged the established monitoring plan is in compliance with the applied methodology, and the CME has the ability to implement the monitoring plan. CAR06 1) Please further clarify whether CDM implementer of each CPA is included in the monitoring structure of the PoA. 2) Please clarify whether there is sampling process involved in the monitoring plan. If yes, please propose statistically sound sampling methods/procedures to be used by DOEs for verification as per template of CDM-SSC-PoA-DD.	~~CAR06~~	OK
A.4.5 Public funding of the programme of activities (PoA)				
A.4.5.1 Is any public funding from Annex I countries available to the proposed project?	DR I	No. According to the document review and on-site auditing, there is no public funding involved in the proposed PoA. In addition, according to the CPA eligibility criteria, before CPA inclusion, a confirmation letter from each CPA implementer will be provided and checked by the CME.	OK	OK
A.4.5.2 Is the information provided in compliance with actual situation or planning?	DR I O	Yes. By document review, on-site visit and interviews, it is confirmed that the information is in compliance with actual planning. The confirmation letter from CPA-001 has been checked.	OK	OK

A.4.5.3 Is all information provided consistent with the details given in remaining chapters of the POA-DD?	DR	Yes, the information provided is consistent.	OK	OK
B. Duration of the Programme of activities				
B.1 Starting date of the programme of activities (PoA)				
B.1.1 Is the starting date of the programme of activities clearly defined and evidenced?	DR	CL01 Please clarify how the starting date of the PoA is determined.	~~CL01~~	OK
B.1.2 Is the start date of the crediting period of PoA indicated and justified?	DR	Please refer to CL01.	~~CL01~~	OK
B.2 Length of the programme of activities (PoA)				
B.2.1 Is the Length of the programme of activities clearly defined and evidenced?	DR I	Yes It is clearly defined as 28 years.	OK	OK
B.2.2 Is the length of the PoA compliance to the EB requirements?	DR	Yes, it is.	OK	OK

C. Environmental Analysis				
C.1 Please indicate the level at which environmental analysis as per requirements of the CDM modalities and procedures is undertaken. Justify the choice of level at which the environmental analysis is undertaken				
C.1.1 Is the environment analysis undertaken at POA level? In negative case, is this issue correctly described and reflected in the CDM-POA-DD?	DR	It is justified that the environmental analysis will be done in CPA level, Each CPA under the PoA is totally independent and the livestock farms in the CPA are needed to implement environmental analysis respectively and in case that each livestock farm under a CPA has implemented its environmental analysis, then as a result, the environmental analysis can satisfy the requirements of the local laws and regulations.	OK	OK
C.1.2 Are there any Host Party requirements for an Environmental Impact Assessment (EIA), and if yes, has an EIA been approved?	DR	Yes. According to the “National Environmental Impact Assessment Law”, EIA is required for each construction project, and the EIA of this project type should be conducted on project level.	OK	OK
C.2 Documentation on the analysis of the environmental impacts, including transboundary impacts				
C.2.1 Has the analysis of the environmental impacts of the project activity been sufficiently described?	DR	Yes. Analysis of the environmental impacts of the project activity will be detailed described in specific CPA-DD. The CME will require itself and SSC-CPA implementer(s) to take suitable measures to contribute to the prevention of mercury pollution from the CPA project activity.	OK	OK
C.3 Please state whether in accordance with the host Party laws/regulations, an environmental impact assessment is required for a typical CPA, included in the programme of activities (PoA)				

C.3.1 Are there any Host Party requirements for an Environmental Impact Assessment (EIA), and if yes, has an EIA been approved?	DR	Via checking the enforcement of "Environmental Impact Assessment law" issued by MEP of China, it is confirmed EIA is a must for the construction project, and this regulation has been complied by the CME.	OK	OK
C.3.2 Will the Programme create any adverse environmental effects? Have they identified as significant?	DR	Not applicable, the proposed PoA aims to recover and use renewable biogas from mutrue treatment system and does not create any adverse environmental effects.	N/A	N/A
C.3.3 Were transboundary environmental impacts identified in the analysis?	DR	Not applicable, the proposed PoA does not create any transboundary environmental impacts.	N/A	N/A
D. Stakeholder Comments				
D.1 Please indicate the level at which local stakeholder comments are invited. Justify the choice				
D.1.1 Is the stakeholders' consultation process undertaken at POA level? In negative case, is this issue correctly described and reflected in the CDM POA-DD?	DR I	CL02 Please clarify whether local stakeholder consultation will be done at PoA level or CPA level as CPA level is selected according to site interview with the consultant.	~~CL02~~	OK

D.1.2 If a stakeholder consultation process is required by regulations/laws in the host country, has the stakeholder consultation process been carried out in accordance with such regulations/laws?	DR	Not applicable, as a stakeholder consultation process is not required by regulations/laws in the host country.	OK	OK
D.1.3 Is the undertaken stakeholder process that was carried out described in a complete and transparent manner?	DR	Please refer to CL02.	~~CL02~~	OK
D.2 Brief description how comments by local stakeholders have been invited and compiled				
D.2.1 Have relevant stakeholders been consulted?	DR	Please refer to CL02.	~~CL02~~	OK
D.2.2 Have appropriate media been used to invite comments by local stakeholders?	DR	Please refer to CL02.	~~CL02~~	OK
D.3 Summary of the comments received				

D.3.1 Is a summary of the received stakeholder comments provided?	DR	Please refer to CL02.	~~CL02~~	OK
D.4 Report on how due account was taken of any comments received				
D.4.1 Has due account been taken of any stake-holder comments received?	DR	Please refer to CL02.	~~CL02~~	OK
E. Application of a Baseline and Monitoring Methodology				
E.1 Title and reference of the approved SSC baseline and monitoring methodology applied to a SSC-CPA included in the PoA				
E.1.1 Are reference number, version number, and title of the approved baseline and monitoring methodology clearly indicated?	DR	The project applies approved methodology AMS-III.D version 18.0, AMS-I.C version 19.0, and AMS-I.F version 2.0, which is valid onwards. The project meets all the applicability conditions and is in line with the requirements and stipulations mentioned in all sections in the approved methodology. The referred tools are also described in the PoA-DD. The latest versions of the tools are applied. CL03 Please clarify whether the approved SSC baseline and monitoring methodology have been approved for use in a PoA by the Board in section E.1 of the PoA-DD. Also, please clarify whether the combination of the approved methodologies have been approved for application in CPAs of PoA in section E.1 of the PoA-DD. Version numbers of the methodologies and tools are missing in some parts of PoA-DD and generic CPA-DD.	~~CL03~~	OK

E.1.2 Is the type and category of project activities correctly identified and indicated?	DR I	Yes, the proposed PoA belongs to Type I and Type III, and the Category is correctly identified.	OK	OK
E.1.3 Is the applied version the most recent one and/or is this version still applicable?	DR	Yes. The applied version is the latest at the commencement of the validation.	OK	OK
E.1.4 Does the POA-DD refer to the corresponding tools with their latest approved versions?	DR	Yes, the referred tools are also described in the PoA-DD. The latest versions of the tools available at the commencement of validation are applied.	OK	OK
E.2 Justification of the choice of the methodology and why it is applicable to a SSC-CPA				
E.2.1 Does a typical CPA apply a combination of approved methodologies? If so, has such combination been approved in accordance with "Procedures for approval of the application of multiple methodologies to a programme of activities"?	DR	The combination of AMS-III.D v18.0, AMS-I.C v19.0 and/or AMS-I.F v2.0 complies with the paragraph 29(c) of EB 65, Annex 3, "A principle technology/measure is applied consistently in each CPA using multiple combinations of methodologies." the principle technology/measure of the PoA is anaerobic manure management systems with different ways of utilizing recovered biogas (scenario I for thermal generation, scenario II for electricity generator, and scenario III for both). It is not fulfilled. CL05 Please further analyze the applicability criteria of the combined methodologies for all CPAs under the PoA.	~~CL05~~	OK

E.2.2 Is the justification of the choice of the approved baseline and monitoring methodology(ies) for the typical CPA sufficient?	DR	Yes. The justification of the choice of the approved baseline and monitoring methodology for the specific CPA is sufficient.	OK	OK
E.2.3 Can all applicability criteria in the methodology, the applied tools or any other Methodology component referred to therein be sufficiently fulfilled by a typical CPA?	DR	Yes. The applicability criteria of methologies AMS-III.D, AMD-I.C and AMS-I.F are checked as sufficiently justified.	OK	OK
E.2.4 Has a typical CPA been demonstrated as in accordance with all other PoA specific stipulations and requirement mentioned in the methodology and relevant tools/guidance, e.g., leakage?	DR	Yes. It has been demonstrated that a typical CPA is in accordance with all other PoA specific stipulations and requirement mentioned in the methodology and relevant tools/guidance.	OK	OK
E.3 Description of the sources and gases included in the SSC-CPA boundary				

E.3.1 Does the information regarding GHG emissions occurring within the proposed project boundary as a result of the implementation of the proposed project which are expected to contribute more than 1% of the overall expected average annual emissions reductions, including those not addressed by the applied methodology?	DR O	Yes. All the sources and gases included in the boundary of the proposed PoA (baseline scenario, project scenario and leakage) are in accordance with the applied methodologies AMS-III.D, AMS-I.C and AMS-I.F. No other sources not addressed by the applied methodology contribute more than 1% of the emission reductions is found.	OK	OK
E.3.2 Are the project's spatial boundaries (geographical) clearly defined?	DR	The political boundary of Hunan Province, Henan Province and Guangxi Province in China are chosen as the geographical boundary of the PoA. The CPAs that will be included under the PoA will be within the defined geographical location of the CPA area and follow applicable national and/or sectoral policies and regulations. CL04 Please provide evidence for the geological coordinates for the PoA boundary.	~~CL04~~	OK

E.4 Description of how the baseline scenario is identified and description of the identified baseline scenario(Baseline Scenario Determination) The choice of the baseline scenario will be validated with focus on whether the baseline is a likely scenario, and whether the methodology to define the baseline scenario has been followed in a complete and transparent manner.				
E.4.1 Have all technically feasible baseline scenario alternatives to the project activity been identified and discussed by the PDD? Why can this list be considered as being complete?	DR	Yes. The baseline scenario has been identified according to the AMS-III.D, AMS-I.C, and AMS-I.F separately. As per AMS-III.D (Ver.18.0), for animal manure management the baseline scenario is the situation where, in the absence of the project activity, animal manure is left to decay anaerobically within the project boundary and methane is emitted to the atmosphere. According to AMS-I.C (Ver.19.0), for renewable energy technologies that displace technologies using fossil fuels, the simplified baseline is the fuel consumption of the technologies that would have been used in the absence of the project activity times an emission factor for the fossil fuel displaced. According to AMS-I.F (Ver.2.0), the project activity will displace electricity from an electricity distribution system that is or would have been supplied by at least one fossil fuel fired generating unit i.e. in the absence of the project activity, the users would have been supplied electricity from a national or a regional grid. With the different methodologies combination of AMS-III.D (Ver.18.0), AMS-I.C (Ver.19.0) and AMS-I.F (Ver.2.0), the baseline scenario for a CPA can be concluded as follows:	OK	OK

E.4.1 Have all technically feasible baseline scenario alternatives to the project activity been identified and discussed by the PDD? Why can this list be considered as being complete?	DR	Scenario I: Animal manure is treated anaerobically without methane recovery and destruction, and the equivalent thermal energy is generated based on fossil fuel; Scenario II: Animal manure is treated anaerobically without methane recovery and destruction, and the equivalent electricity is generated based on CCPG or CSPG; Scenario III: Animal manure is treated anaerobically without methane recovery and destruction, the equivalent thermal energy is generated based on fossil fuel, and the equivalent electricity is generated based on CCPG or CSPG. The baseline scenario is correctly identified. No other alternative baseline scenarios need to be considered.	OK	OK
E.4.2 Does the project identifies correctly and excludes those options not in line with regulatory or legal requirements?	DR	Yes. The baseline scenario is correctly identified as AMS-III.D. (Ver 18.0), AMS-I.C (Ver 19.0) and AMS-I.F (Ver 2.0).	OK	OK
E.4.3 Have applicable regulatory or legal requirements been identified?	DR	Yes. The baseline scenarios have been defined in themethodologies, relevant national and/or sectoral policies, macroeconomic trends and political aspirationshad been considered in the methodology.	OK	OK
E.4.4 Does the PDD identify the most likely baseline scenario in absence of the project activity?	DR	Yes. The most likely baseline scenario is identified as per the applied methodologyies AMS-III.D. (Ver 18.0), AMS-I.C (Ver 19.0) and AMS-I.F (Ver 2.0).	OK	OK

E.5 Description of how the anthropogenic emissions of GHG by sources are reduced below those that would have occurred in the absence of the SSC-CPA being included as registered PoA (assessment and demonstration of additionality of SSC-CPA)				
E.5.1 Assessment and demonstration of additionality for a typical SSC-CPA				
E.5.1.1 Does the additionality justification follow the requirements of the applied methodology and/or methodological tools?	DR	A specific SSC-CPA argues additionality based on "Guidelines for demonstrating additionality of microscale project activities"(Version 04.0) or the guidance provided by "Guidelines on the demonstration of additionality of small-scale project activities"(Version 09.0). CAR03 was raised. Please further clarify the procedure for assessment and demonstration of additionality based on the scale and location of the project in accordance with the latest version of addtionality tool and guidelines.	~~CAR 03~~	OK
E.5.1.2 Is the prior consideration of CDM correctly demonstrated in the PoA-DD?	DR I	Yes. As the starting date of 28/04/2012 was after 02/08/2008, the project is defined as a “new programme of activity” according to para 100 of VVM. According to para 7(d) of the Procedures for Registration of a Programme of Activities as a Single CDM Project Activity and Issuance of CERs for a Programme of Activities” (Version 04.1), the start date of any CPA is not, or will not be, prior to the commencement of validation of the programme of activities, i.e. the date on which the CDM-PoA-DD is first published for global stakeholder consultation. Therefore, notification of prior consideration to host party DNA and EB is not necessary for the PoA, which is in accordance with para 101 of VVM and Guideline on the Demonstration and Assessment of Prior Consideration of the CDM.	OK	OK

E.5.1.3 Is the additionality demonstrated by barriers to investment?	DR	The additionality demonstration by barriers not noly to investment. The additionality is demonstrated based on capacity and other characteristics of the potential CPAs which is in accordance with the relevant EB guidelines on additionality. Further please refer to section E.5.1. CAR 03 was raised.	~~CAR 03~~	OK
E.5.1.4 Is financial analysis appropriately demonstrated?		Yes. Since each project under the CPA will earn revenues not only from the CERs sales but also from coal and electricity saved revenue and the baseline scenario is not a specific investment project. So the benchmark analysis to each specific project is appropriate if . The selected benchmark(or discount rate when NPV used as financial indicator) will be demonstrated to be compliance with the relevant rules indicated in the “Tool for the demonstration and assessment of additionality” (Ver.06.0.0)	OK	OK
E.5.1.5 Are the parameters used in the investment analysis appropriate?		Yes. The main parameters used in financial analysis have been listed in section E.5.1.	OK	OK

E.5.2 Key criteria and data for assessing additionality of a SSC-CPA				
E.5.2.1 Is the additionality of a typical CPA demonstrated?	DR	It will be demonstrated at a CPA level. The detail demonstration methods refer to Section E.5.1. of SSC PoA-DD and section of specifc B.3 of CPA-DD	OK	OK
E.5.2.2 Is sufficient evidence provided to support the relevance of the arguments made?	DR	Yes, the sources and evidences provided are deemed correct.	OK	OK
E.6 Estimation of Emission reductions of a CPA				
E.6.1 Explanation of methodological choices, provided in the approved baseline and monitoring methodology applied, selected for a typical SSC-CPA				

<table>
<tr>
<td>E.6.1.1 Are the methodological choices correctly applied according to the applied approved methodology?</td>
<td>DR</td>
<td>As mentioned in E.1. of PoA-DD, the methodology combination for different CPA project scenarios in this PoA could be summarized as below:
<table>
<tr><th>Scenario No.</th><th>Description of project scenario on energy generation</th><th>Methodology Combination</th></tr>
<tr><td>Scenario I</td><td>The biogas produced by the project is used for supplying users with thermal energy that displaces fossil fuel use.</td><td>AMS-III.D (Ver.18.0) and AMS-I.C (Ver.19.0).</td></tr>
<tr><td>Scenario II</td><td>The biogas produced by the project is used for generating electricity for captive use that displaces electricity from national or a regional grid.</td><td>AMS-III.D (Ver.18.0) and AMS-I.F (Ver.2.0).</td></tr>
<tr><td>Scenario III</td><td>The biogas produced by the project is used for supplying users with thermal energy that displaces fossil fuel use and for generating electricity for captive use that displaces electricity from national or a regional grid.</td><td>AMS-III.D (Ver.18.0), AMS-I.C (Ver.19.0) and AMS-I.F (Ver.2.0).</td></tr>
</table>
CL05
Please further analyze the applicability criteria of the combined methodologies for all CPAs under the PoA.</td>
<td>~~CL05~~</td>
<td>OK</td>
</tr>
</table>

E.6.1.2 In case the implementation of the project activity lead to GHG emissions within the project boundary which are expected to contribute more than 1% of the overall expected average annual emission reductions, which are not addressed by the methodology, has this parameter been included in the calculation of the emission reductions?	DR	No GHG emissions within the project boundary which are expected to contribute more than 1% of the overall expected average annual emission reductions and which are not addressed by the methodology, has been detected.	OK	OK
E.6.2 Equations, including fixed parametric values, to be used for calculation of emission reductions of a SSC-CPA				
E.6.2.1 Is the explanation of methodological choices, provided in the approved baseline and monitoring methodology applied, selected for a typical CPA?	DR	Yes. The methodological choices are selected correctly according to the approved baseline and monitoring methodologies applied for a typical CPA and the CPA indicates the choices of the relevant scenarios.	OK	OK

E.6.2.2 Are the equations to be used for calculation of emission reductions of a CPA correctly indicated?	DR	Yes. According to the AMS-III.D. (Ver 18.0), AMS-I.C (Ver 19.0) and AMS-I.F (Ver 2.0), the equations used for calculation of emission reductions of a CPA are correctly presented.	OK	OK
E.6.2.3 Have conservative assumptions been used when calculating the emission reductions?	DR	The conservative assumptions have been used when calculating the emission reduction according to the methodology AMS-III.D. (Ver 18.0), AMS-I.C (Ver 19.0) and AMS-I.F (Ver 2.0). CL06 Please clarify whether the ex-ante calculation of emission factor will be performed at PoA level or CPA level.	~~CL06~~	OK
E.6.2.4 Is the choice of ex-ante or ex-post vintage of grid emission factors clearly specified in the PoA-DD?	DR	Yes. Ex-ante is clearly specified in the PoA-DD according to the approved methodology and tool.	OK	OK
E.6.2.5. Are uncertainties in the emission reduction estimates properly addressed?	DR	No uncertainties have been detected.	OK	OK
E.6.3 Data and parameters that are to be reported in CDM SSC-CPA-DD form				

E.6.3.1 Is the list of parameters to be reported in each CPA considered to be complete and correct with regard to the requirements of the applied methodology?	DR	Yes. The list of parameters to be reported in each CPA is considered to be complete and correct with regard to the requirements of the applied methodologies.	OK	OK
E.6.3.2 Are all the data derived from official data sources or replicable records and been correctly quoted?	DR	Yes, they are derived from official data sources and they have been correctly quoted.	OK	OK
E.7 Application of the monitoring methodology and description of the monitoring plan				
E.7.1 Data and parameters to be monitored by each SSC-CPA				
E.7.1.1 Are the parameters to be monitored in accordance with the requirement of the applied methodology?	DR	Yes. According to the AMS-III.D. (Ver 18.0), AMS-I.C (Ver 19.0) and AMS-I.F (Ver 2.0), the parameters to be monitored are listed in the PoA-DD.	OK	OK

E.7.1.2 Are the means of monitoring of all parameters contained in the monitoring plan in accordance with the requirements of the applied methodology? (such as name of the data/parameter, data unit, description, source of data, measurement equipment, monitoring frequency, QA/QC procedures)	DR	The information of all parameters contained in the monitoring plan, including name, data unit, description, source of data are stated clearly and transparently. CAR05 Please describe the monitoring plan for the thermal component as per the AMS-I.C. and the actual situation. Also please update relevant monitoring parameter in E.7.1 of the PoA-DD.	~~CAR05~~	OK
E.7.2 Description of the monitoring plan for a SSC-CPA				
E.7.2.1 Is the monitoring plan clearly described and in compliance with methodology?	DR O	Please refer to CAR05.	~~CAR05~~	OK
E.7.2.2 Are the responsibilities and institutional arrangements for data collection and archiving clearly provided?	DR I	CAR06 1) Please further clarify whether CDM implementer of each CPA is included in the monitoring structure of the PoA. 2) Please clarify whether there is sampling process involved in the monitoring plan. If yes, please propose statistically sound sampling methods/procedures to be used by DOEs for verification as per template of CDM-SSC-PoA-DD.	~~CAR06~~	OK

E.7.2.3 Are the provisions made for archiving Programme of Activities emission data sufficient to enable later verification?	DR	Yes, they are sufficient.	OK	OK
E.7.2.4 If applicable: Does annex 4 provide useful information enabling a better understanding of the envisioned monitoring provisions?	DR	No additional information has been included in Annex 4 of the PoA-DD.	OK	OK
E.8 Date of completion of the application of the baseline and monitoring methodology study				
E.8.1 Is the information provided consistent with the actual situation?	DR	Yes. The information provided is correct.	OK	OK
F. Generic CPA-DD				
F.1 Has the latest applicable version of the CDM-SSC-CPA-DD form been applied?	DR	Yes. The latest version of CDM-SSC-CPA-DD version 01 under VVM track has been applied.	OK	OK

F.2 Is all necessary information consistent between the PoA-DD and the generic CPA-DD?	DR	Yes. The information in the generic CPA-DD is consistent with the final version of the PoA-DD. All related requirements of the UNFCCC are met.	OK	OK
F.3 Does the generic CDM-CPA-DD correctly specify the squre bracket that can be edited by SSC-CPAs?	DR	Yes. The text in square bracket is correctly identified.	OK	OK
G. Sampling Plan				
G.1 Does the sampling plan present a reasonable approach for obtaining unbiased, reliable estimates of the variables?	DR	N/A	N/A	N/A
G.2 Is the population clearly defined, and how well does the proposed approach to developing the sampling frame represent that population?	DR	N/A	N/A	N/A

G.3 Is the proposed sampling approach clear?	DR	N/A	N/A	N/A
G.4 Is the proposed sample size adequate to achieve the minimum confidence/precision requirements? Is the ex ante estimate of the population variance needed for the calculation of the sample size adequately justified?	DR	N/A	N/A	N/A
G.5 Is the sample representative?	DR	N/A	N/A	N/A
G.6 Is the data collection/measurement method likely to provide reliable data given the nature of the parameters of interest and project, or is it subject to measurement errors?	DR	N/A	N/A	N/A

G.7 Are the procedures for the data measurements well defined and do they adequately provide for minimizing non-sampling errors?	DR	N/A	N/A	N/A
G.8 Does the frame contain the information necessary to implement the sampling approach?	DR	N/A	N/A	N/A

Table 2 Resolution of Corrective Action and Clarification Requests

CL/CAR/FAR Requests	***Refer to table 1***	***PP's Response***	***Validation Team's Conclusion***
CAR01 LoA from DNA of China has not been provided. If the project is a unilateral project, the Host Party shall be recognized as a project participant in section A.3.	A.3.4 A3.5	The LoA from China DNA has been provided. The project is a unilateral project and the host party has been recognized as a project participant in section A.3.	OK. The LoA from China DNA is provided and checked to be authentic. The host party has been recognized as a project participant in section A.3. CAR01 is closed.
CAR02 1.please clarify whether the CME have the competencies to check the features of potential CPAs and ensure that each CPA meets all requirements and eligibility criteria before inclusion in the registered PoA; 2. Please further demonstrate the choice of eligibility criteria for including CPAs in the PoA-DD as per PoA Standard (EB65 annex 3) and the applied combined methodologies.	A.4.2.2.1 A.4.2.2.2	1. The CME has the competencies to check the features of potential CPAs and ensure that each CPA meets all requirement and eligibility criteria before included. Please refer to section A.4.2.1. of the PoA-DD for details. 2. The demonstration for choice of eligibility criteria for including CPAs have been presented in the PoA-DD section A4.2.2.The choice of each eligibility criteria for inclusion to the PoA is on the consideration of PoA Standard (EB 65 Annex 3) and the relevant requirements in the applied latest version methodologies AMS-III.D, AMS-I.C and AMS-I.F.	OK. The competencies of the CME to check the features of potential CPAs has been demonstrated clearly and sufficiently in section A.4.2.1 of the PoA-DD. The CME ensures that each CPA meets all requirements and eligibility criteria before inclusion in the registered PoA, which is also confirmed by checking the CDM Management Manual/15/ and the official Approval from the local government/28/ and NDRC/6/ and be checked to be in accordance with the PoA standard (EB 65, Annex 3). The choice of eligibility criteria for including CPAs in the PoA-DD has been further and in detail descried in section A.4.2.2 as per PoA Standard

			(EB65 annex 3) and the applied combined methodologies. CAR02 is closed.
CAR03 Please further clarify the procedure for assessment and demonstration of additionality based on the scale and location of the project in accordance with the latest version of addtionality tool and guidelines.	A.4.3.1 E.5.1.3	The CPA in the POA will proceed to demonstrate its additionality as per “Approach 1” or “Approach 2” : **Approach 1:** Demonstrating additionality according to “Guidelines for Demonstrating Additonality of Microscale Project Activities” (Version 04.0). **Approach 2:** Demonstrating addtionality according to “Guidelines on the demonstration of additionality of small-scale project activities”(Version 09.0). The CPA is additional only if proved to be additional according to the either paragraph 2(c) or paragraph 1 (a) of "Guidelines on the demonstration of additionality of small-scale project activities", which is respectively demonstrated as Option 1 and Option 2 followed. Option 1: Positive list According to Guidelines on the demonstration of additionality of small-scale project activities	OK. The procedure for assessment and demonstration of additionality has been further completed based on the scale and location of the project in accordance with the latest version of addtionality tool and guidelines. CAR03 is closed.

		paragraph 2 (c), the small scale project activities are defined as automatically additional if the project activities solely composed of isolated unites 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. Option 2 Investment Barrier Please refer to the revised PoA-DD for details.	
CAR04 Please further demonstrate operational and management arrangements in section A.4.4.1 of the PoA-DD to ensure that the CME will have control of all records and information related to the implementation of individual CPAs and will be in a position to ensure each CPA is being operated in accordance with the specific requirement of the programme in the following aspects: 1) Respective responsibilities of CME and CPA implementer; 2) The system/procedure to avoid double accounting.	A.4.4.1.2	1) Respective responsibilities of CME and CPA implementer have been added in the revised PoA-DD. The CME will be in charge of the management of the whole PoA, and CPA implementers will be responsible for the operation of each CPA. 2) The procedures to avoid double accounting has been detailed stated in Section A4.4.1 of the revised PoA-DD. 3) The de-bundling check method has been presented in section	OK. The operational and management arrangements is further demonstrated in section A.4.4.1 of the PoA-DD, which is checked to ensure that the CME will have control of all records and information related to the implementation of individual CPAs and will be in a position to ensure each CPA is being operated in accordance with the specific requirement of the programme. Specifically the following aspects have been elaborated as requested:

3) De-bundling check as per para 10, page 3 of "Guidelines on assessment of debundling for SSC project activities"		A.4.4.1 of the revised PoA-DD. Please refer to PoA-DD for details.	1) Respective responsibilities of CME and CPA implementer; 2) The system/procedure to avoid double accounting. 3) De-bundling check as per para 10, page 3 of "Guidelines on assessment of debundling for SSC project activities" The validation team confirmed that the operational and management arrangements are in line with the PoA-DD template and PoA standard. CAR04 is closed.
CAR05 Please describe the monitoring plan for the thermal component as per the AMS-I.C. and the actual situation. Also please update relevant monitoring parameter in E.7.1 of the PoA-DD.	E.7.1.2 E.7.2.1	The monitoring plan for the thermal component has been revised as per the AMS-I.C. Metering system Fs will be equipped to measure the thermal energy supplied $EG_{thermal,y}$ by the project activity, and flow meter F2 will be installed to measure the biogas supplied to the equipments whose maximum output capacity are less than 45 kW thermal, e.g. biogas stoves, $BG_{biogas-2,PJ,y}$. The relevant monitoring parameters in E.7.1 of the PoA-DD have also been updated. Please refer to the revised PoA-DD	OK. The monitoring plan for thermal components has been clearly and correctly described in E.7.2 of the PoA-DD. Also relevant monitoring parameters have been added in E.7.1: Genetic source, FFR, $MS\%_l$, Q_y, CT_y, DAF_w, $Q_{y,treatment}$, $CT_{y,treatment}$, $DAF_{treatment}$, AI_l, T_{flare}, Other flare operation parameters, FE, $BG_{biogas-3,PJ,y}$, $BG_{biogas-4,PJ,y}$, $EG_{thermal,y}$, Continuous operation of the thermal equipment/system. The validation team confirmed it to be in accordance with the applied methodologies. CAR05 is closed.

		for details.	
CAR06 1) Please further clarify whether CDM implementer of each CPA is included in the monitoring structure of the PoA. 2) Please clarify whether there is sampling process involved in the monitoring plan. If yes, please propose statistically sound sampling methods/procedures to be used by DOEs for verification as per template of CDM-SSC-PoA-DD.	A.4.4.2.2 E.7.2.2	1) The CPA implementer is included in the monitoring structure of the PoA, and the monitoring structure of each CPA is described in E.7.2. 2) There is no sampling process involved in the monitoring plan, and the PoA-DD has been revised accordingly. Please refer to the revised PoA-DD for details.	OK. CDM implementer is included in the monitoring structure. Sampling process is not involved in the programme. This is confirmed and clarified by the PP and checked to be consistent with the actual situation. CAR06 is closed.
CL01 Please clarify how the starting date of the PoA is determined.	B.1.1	The starting date of the PoA has been revised to be the date on which the CDM-PoA-DD is first published for global stakeholder consultation.	OK. The starting date of the PoA has been revised to be the date on which the CDM-PoA-DD is first published for global stakeholder consultation. This is in line with EB guidance and correct. CL 01 is Closed.
CL02 Please clarify whether local stakeholder consultation will be done at PoA level or CPA level, as CPA level is selected according to site interview with the consultant.	D.1 D.2 D.3 D.4	The local stakeholder consultation will be done at CPA level, and the local stakeholder survey will be done for every livestock farm involved in the PoA. It has been revised in the PoA-DD and the specific CPA-DD.	The local stakeholder consultation will be done at CPA level and the questionnaires of local stakeholder consultation for CPA-001 have been provided. This is confirmed in the PoA-DD. The validation team confirmed it is consistent with the actual situation.

			CL02 is closed.
CL03 Please clarify whether the approved SSC baseline and monitoring methodology have been approved for use in a PoA by the Board in section E.1 of the PoA-DD. Also, please clarify whether the combination of the approved methodologies have been approved for application in CPAs of PoA in section E.1 of the PoA-DD. Version numbers of the methodologies and tools are missing in some parts of PoA-DD and generic CPA-DD.	E.1.1	1. The last paragraphs of methodologies AMS-III.D, AMS-I.C and AMS-I.F have demonstrated that the three methodologies are all applicable for a project activity under a PoA. 2. According to paragraph 11(c) of "*General Guidelines to SSC CDM Methodologies*" (Version. 17.0, EB 61, Annex 21), the combination of approved methodologies of AMS-III.D, AMS-I.C and AMS-I.F for application applied to a PoA without further assessment of cross effects. 3. The version numbers of the methodologies and tools have been added in the PoA-DD and generic CPA-DD.	OK. Confirmation and clarification has been made in the PoA-DD that the approved SSC baseline and monitoring methodology have been approved for use in a PoA by the Board and that approved methodologies have been approved for application in CPAs of PoA. This is checked to be consistent with applied methodologies and General Guidelines to SSC CDM Methodologies. Version numbers of the methodologies and tools have been added in PoA-DD and generic CPA-DD. CL03 is closed.
CL04 Please provide evidence for the geological coordinates for the PoA boundary.	A. 4.1.1.1 E.3.2	The information about the geological coordinates for each province could be evidenced by the official websites in corresponding footnotes in section A.4.1.1 of PoA-DD..	OK. Evidence for geographic coordinates has been elaborated in the footnote of the PoA-DD. CL04 is closed.
CL05 Please further analyze the applicability criteria of	E .2.1	The analyses of the applicability criteria of the combined methodologies for all the CPAs	OK. The applicability criteria of the

the combined methodologies for all CPAs under the PoA.		under the PoA have been revised, please refer to PoA-DD for details.	combined methodologies for all CPAs under the PoA have been further analyzed in the PoA-DD, which is based on the actual situation of the programme and the applied methodologies. CL05 is closed.
CL06 Please clarify whether the ex-ante calculation of emission factor will be performed at PoA level or CPA level.	E.6.2.3	The ex-ante calculation of emission factor is chosen to be done at CPA level, and this is in accordance with the CDM requirement.	OK. The ex-ante calculation of emission factor is chosen to be done at CPA level which is in accordance with relevant CDM requirement. Hence CL06 is closed.

APPENDIX B CERTIFICATE OF COMPETENCE

LIU Qingzhi

Qualification in accordance with CEC-4001C-B/8 *Operation Instruction for Personal Competence Assessment* for CDM

CDM Auditor: Yes

Industry Sector Expert for Technical Area(s): 1.2, 5.1, 8.2/10.2,11.1, 12.1

Beijing, 12 May 2012

ZHANG Xiaodan

CDM Supervisor, Technical Director

XU Linghua

Quality Assurance Management Division

LIU Yaotian

Qualification in accordance with CEC-4001C-B/7 *Operation Instruction for Personal Competence Assessment* for CDM

CDM Auditor: Yes

Industry Sector Expert for Technical Area(s): 1.2

Beijing, 01 Dec 2011

ZHANG Xiaodan

CDM Supervisor, Technical Director

XU Linghua

Quality Assurance Management Division

BAI Xuetao

Qualification in accordance with CEC-4001C-B/8 *Operation Instruction for Personal Competence Assessment* for CDM

CDM trainee Auditor: Yes

Industry Sector Expert for Technical Area (s):

Beijing, 09 Mar 2012

ZHANG Xiaodan

CDM Supervisor, Technical Director

XU Linghua

Quality Assurance Management Division

TAO Xiuping

Qualification in accordance with CEC-4001C-B/7 *Operation Instruction for Personal Competence Assessment* for CDM

CDM Technical Expert: Yes

Industry Sector Expert for Technical Area(s): 13.2, 15.2

Beijing, 01 Dec 2011

ZHANG Xiaodan

CDM Supervisor, Technical Director

XU Linghua

Quality Assurance Management Division

QIN Boya

Qualification in accordance with CEC-4001C-B/8 *Operation Instruction for Personal Competence Assessment* for CDM

CDM Auditor: Yes

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

Beijing, 12 May 2012

ZHANG Xiaodan

CDM Supervisor, Technical Director

XU Linghua

Quality Assurance Management Division

DING Ling

Qualification in accordance with CEC-4001C-B/7 *Operation Instruction for Personal Competence Assessment* for CDM

CDM Auditor: Yes

Industry Sector Expert for Technical Area(s): 13.2, 15.2

Beijing, 01 Dec 2011

ZHANG Xiaodan

CDM Supervisor, Technical Director

XU Linghua

Quality Assurance Management Division