



# VALIDATION REPORT

for the CDM Programme of Activities

## Vietnam National Biogas Programme

in

Viet Nam

Report No. 01 997 CDM 3  
Version No. 01.3, 2012-02-16

TÜV Rheinland (China) Ltd.

### I. Programme of Activities (PoA) Description:

**PoA title:** Vietnam National Biogas Programme  
**Host Country:** Viet Nam  
**Methodology:** AMS-I.C./ version 18  
 AMS-I.I./ version 02 ☐ Large Scale ☒ Small Scale  
**Annual average emission reductions (estimate):** Not applicable to the PoA  
**GHG reducing measure/technology:** Biogas digester

Party	Project Participants (as the coordinating and managing entity)	Party considered a project participant
Viet Nam	Ministry of Agriculture and Rural Development (MARD)	Yes

**Generic CPA title:** Vietnam National Biogas Programme (PoA) – “CPA name” (CPAxx)  
**Real-case CPA title:** Vietnam National Biogas Programme (PoA) – North-East zone (CPA01)  
**Host Country:** Viet Nam  
**CPA Implementer** Ministry of Agricultural and Rural Development (MARD)  
**To be project participants** Yes  
**Annual average emission reductions (estimate):** 28,455 tCO<sub>2</sub>e annum

### II. Validation:

**Contract party:** Ministry of Agriculture and Rural Development

**Validation Team:**

Role	Full name	Appointed for Sectoral Scopes	Affiliation
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	Mr. Wilfred Chan (until Sept 2010)	1, 6, 13	
<b>Technical Expert</b>	Mr. Jiang Zhu	1.1, 1.2, 4.5	TÜV Rheinland (China) Ltd.
<b>Local Expert</b>	Mr. Truong Le Tien Dung	N/A	TÜV Rheinland Vietnam Co., Ltd.
<b>Technical Reviewer</b>	Dr. Lixin Li	1.1, 1.2, 3.1	TÜV Rheinland (China) Ltd.

#### **Validation Phases:**

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

#### **Validation Status:**

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

### III. Validation Report:

Report No.: 01 997 CDM 3	Current revision No.: <b>01.3</b>	Date of current revision: 2012-02-16	Date of first issue: <b>2010-06-18</b>
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Final approval:	Released on:	Designated Operational Entity (DOE):
<input checked="" type="checkbox"/>	2012-02-16 <b>By: Mr. Praveen N. Urs</b>	<b>TÜV Rheinland China Ltd.</b> Unit 707, AVIC Building, No.10B, Central Road, East 3rd Ring Road, Chaoyang District, Beijing, CHINA 100 022 Tel: +86 10 6566 6660-288 E-mail: GHG-DOE@bj.chn.tuv.com

## Executive Summary – Validation Opinion

The validation team assigned by the DOE (TÜV Rheinland (China) Ltd.<sup>1</sup>) has performed the validation of “Vietnam National Biogas Programme” in Viet Nam on the basis of UNFCCC criteria for Clean Development Mechanism (CDM) programme of activities according to Article 12 of the Kyoto Protocol and the subsequent decisions by the COP/MOP and CDM Executive Board with regard to the simplified modalities and procedures for small-scale CDM project activities, the procedures for registration of a programme of activities and the application of approved methodologies. The validation findings are summarized in the validation report and the validation protocol.

The review of the Programme design documentations (i.e. PoA-DD, CPA-DD and real-case CPA-DD) and the subsequent follow-up interviews have provided the DOE with sufficient evidence to determine the fulfilment of stated criteria.

The validation was executed in the following steps so far:

- Desk review of GSP documents:
  - PoA-DD/ Version 01 dated 24<sup>th</sup> December 2009
  - Real-case CPA-DD for CPA01/ Version 01 dated 24<sup>th</sup> December 2009
  - Generic CPA-DD/ Version 01 without effective date
- Public stakeholder comment process (31<sup>st</sup> December 2009 to 29<sup>th</sup> January 2010)
- On-site visit with stakeholder interviews (27<sup>th</sup> to 29<sup>th</sup> April 2010)
- Issue of checklist with corrective action requests (CARs) and clarification requests (CLs) and the draft validation report & protocol (18<sup>th</sup> June 2010)
- Desk review of revised PoA-DD, CPA-DD and real-case CPA-DD
  - PoA-DD/ Version 8.1 dated 13<sup>th</sup> February 2012
  - Real-case CPA-DD for CPA01/ Version 6.1 dated 13<sup>th</sup> February 2012
  - Generic CPA-DD/ Version 6.1 without effective date
- Review of proposed corrections and clarifications
- Issue of the final validation report & protocol

The proposed programme is a unilateral PoA. The host country is Viet Nam. The LoA from the Vietnamese DNA – Ministry of Natural Resources and Environment of Viet Nam, has been validated to confirm the voluntary participation of Ministry of Agriculture and Rural Development (MARD).

The validation team notes that the proposed PoA received public funding from several sources. However, the validation team did not reveal any information that indicates that the PoA can be seen as a diversion of ODA funding towards the host country.

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

It is demonstrated that the PoA is not a baseline scenario. The current general practice for the rural households is to use the fossil fuels and agricultural residues for cooking, and this is the baseline scenario. In the absence of the PoA, the baseline scenario will remain unchanged. Emission reductions attributable to a programme activity included to

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<sup>1</sup> Formerly TUV Rheinland Japan Limited before 1 Nov 2011 as designated in UNFCCC

the PoA are hence expected to be additional to any that would occur in the absence of the programme activity provided that the PoA meets the requirements for demonstrating additionality established in the PoA-DD.

Monitoring plan and procedures have been presented in the PoA-DD. According to F-CDM-SSCWg ver 01 SSC\_571, the Small-Scale Working Group agreed that the project participant can apply AMS-I.I for their PoA involving household biogas projects. Therefore the CME applies the monitoring methodology from AMS-I.I for the PoA monitoring. The validation team considers that the programme monitoring plan fully comply with the monitoring requirements from the CDM EB. Training plans and manuals about CDM monitoring and technical aspects such as installation, operation and maintenance are reviewed by the validation team. The training records for the end-users, technicians and masons are also checked, and confirmed to be valid.

In summary, the validation team has revealed that the relevance of outlined barriers (prevailing practice, investment and technological barriers) is sufficiently evidenced. Thus, it is the validation team's opinion that the Vietnam National Biogas Programme in Viet Nam, as described in the updated versions of PoA-DD, CPA-DD and real-case CPA-DD for CPA01 meets all the relevant UNFCCC requirements for the CDM PoA and relevant host country criteria. The proposed PoA correctly applies the baseline and monitoring methodology AMS-I.C./Version 18, and makes use of the monitoring procedures in AMS-I.I./ version 02. The validation team of TÜV Rheinland (China) Ltd. therefore recommends the proposed PoA to be registered as a small-scale CDM Programme of Activities with the UNFCCC.

## Abbreviations

ADB	Asian Development Bank
AMS	Approved Methodology Small scale
BE	Baseline Emission
BUS	Biogas User Surveys
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CDM EB	CDM Executive Board
CPA	CDM Programme activity
CPA-DD	CDM Programme Activity Design Document
CER	Certified Emission Reduction
CL	Clarification Request
CO <sub>2</sub>	Carbon Dioxide
CO <sub>2</sub> e	Carbon Dioxide Equivalent
DBT	District Biogas Technician
DOE	Designated Operational Entity
DNA	Designated National Authority
DR	Document Review
EB	Executive Board
EIA	Environmental Impact Assessment
ER	Emission Reduction
ERPA	Emission Reduction Purchase Agreement
FAR	Forward Action Request
FSR	Feasibility Study Report
GHG	Greenhouse Gas
GWh	Giga Watt Hours
I	Interview
IPCC	Intergovernmental Panel on Climate Change
IRR	Internal Rate of Return
kW	Kilo Watt
kWh	Kilo Watt Hours
L <sub>y</sub>	Leakage
LoA	Letter of Approval
LoE	Letter of Endorsement
LPG	Liquefied Petroleum Gas
MARD	Ministry of Agriculture and Rural Development
MoV	Means of Verification
MW	Mega Watt
MWh	Mega Watt Hours
NGO	Non Government Organisation
NO <sub>x</sub>	Nitrogen Oxides
ODA	Official Development Assistance
OSV	On Site Visit
PE	Project Emission
PIN	Project Information Note
PoA	Programme of Activities
PoA-DD	Programme of activities design document
PP	Project Participant
SA	Sensitivity Analysis
SO <sub>2</sub>	Sulphur Dioxide
SD	Sustainable Development
SNV	Netherlands Development Organization in Viet Nam

t	Tonne
UNFCCC	United Nations Framework Convention on Climate Change
VND	Vietnamese Dong
VVM	Validation and Verification Manual

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## 1 INTRODUCTION

Ministry of Agriculture and Rural Development of Vietnam has commissioned the DOE TÜV Rheinland (China) Ltd. to perform a validation of the proposed CDM Programme of Activities (PoA) "Vietnam National Biogas Programme" in Viet Nam (hereafter called "the PoA"). This report summarises the findings of the validation of the PoA identified in the PoA Design Document (PoA-DD), the CDM Programme Activity Design Document (CPA-DD) template with generic information relevant to all CDM Program Activities (CPAs) to be included in the PoA, and the associated real case CPA-DD. The validation was performed on the basis of UNFCCC criteria for the PoAs under the CDM, as well as the criteria given to provide for consistent programme operations, monitoring and reporting. The term "UNFCCC criteria" refers to Article 12 of the Kyoto Protocol, the CDM modalities and procedures, the simplified modalities and procedures for small-scale CDM project /programme activities, the procedures for registration of a programme of activities and the subsequent decisions by the CDM Executive Board.

### 1.1 Objective

The purpose of a validation is to have an independent third party assess the PoA-DD, generic CPA-DD and the associated real case CPA-DD (also known as completed CPA-DD). In particular, the eligibility criteria for inclusion and demonstration of additionality of CPAs, the programme's baseline determination, monitoring plan, and the programme's compliance with relevant UNFCCC and host Party criteria are validated in order to confirm that the programme design, as documented, is sound and reasonable and meets the identified criteria. Validation is a requirement for all CDM PoAs and is seen as necessary to provide assurance to stakeholders of the quality of the programme and its intended generation of certified emission reductions (CERs).

### 1.2 Scope

The validation scope is defined as an independent and objective review of the PoA-DD, generic CPA-DD and the real-case CPA-DD. The PoA-DD, generic CPA-DD and the real-case CPA-DD were reviewed against the criteria stated in Article 12 of the Kyoto Protocol, the CDM modalities and procedures as agreed in the Marrakech Accords, the simplified modalities and procedures for small-scale CDM project/ programme activities, the procedures for registration of a programme of activities as a single CDM project activity and the relevant decisions by the CDM Executive Board, including the approved baseline and monitoring methodology AMS-I.C. (Version 18) and make use of monitoring procedure in AMS-I.I. version 02. The validation team has, based on the recommendations in the Validation and Verification Manual employed a rules-based approach, focusing on the requirements of the EB's VVM for project implementation and the generation of CERs.

The validation is not meant to provide any consulting towards the coordinating/managing entity and participants of small-scale CDM-PoA. However, stated requests for clarifications, corrective actions, and/or forward actions may provide input for improvement of the programme design.

## 2 METHODOLOGY

The validation consists of the following four phases:

- I a desk review of the PoA-DD, generic CPA-DD and the real-case CPA-DD;
- II global publication of the programme design documents (PoA-DD, generic CPA-DD and real-case CPA-DD) in UNFCCC;
- III on-site visit and follow-up interviews with programme stakeholders
- IV the resolution of outstanding issues and the issuance of the final validation report and opinion.

The following sections outline each step in more detail.

### 2.1 Desk Review of the Programme Design Documentation

Table 1: The following table outlines the documentation reviewed during the validation

/1/	/1.1/	PoA-DD/ Version 01 (GSP), 24 <sup>th</sup> December 2009
	/1.2/	PoA-DD/ Version 8.1, 13 <sup>th</sup> February 2012
/2/	/2.1/	Generic CPA-DD/ Version 01 (GSP, date not specified)
	/2.2/	Generic CPA-DD/ Version 6.1 (date not specified)
/3/	/3.1/	Real-case CPA-DD (for CPA01)/ Version 01 (GSP), 24 <sup>th</sup> December 2009
	/3.2/	Real-case CPA-DD (for CPA01)/ Version 6.1, 13 <sup>th</sup> February 2012
/4/	/4.1/	UNFCCC, Small-Scale CDM Programme of Activities Design Document form (CDM-SSC-PoA-DD), Version 01, EB33, Annex 43
	/4.2/	UNFCCC, Small-Scale CDM Programme Activity Design Document form (CDM-SSC-CPA-DD), Version 01, EB33, Annex 44
/5/	UNFCCC, Clean Development Mechanism Validation and Verification Manual (Version 01.2), EB 55 Annex 1	
/6/	UNFCCC, "Glossary of CDM Terms" (Version 05)	
/7/	/7.1/	UNFCCC, Attachment A of Appendix B, Version 08, EB 63 Annex 24
	/7.2/	UNFCCC, "Non-binding best practice examples to demonstrate additionality for SSC project activities" (Version 01), EB 35 Annex 34
	/7.3/	UNFCCC, "Guidelines for objective demonstration and assessment of barriers" (Version 01), EB 50 Annex 13
	/7.4/	UNFCCC, "Guidelines for Demonstrating Additionality of Microscale Project Activities" (Version 03) EB63 Annex 23
/8/	/8.1/	UNFCCC, "Guideline for determining the occurrence of de-bundling under a programme of activities" (Version 03.0), EB 54 Annex 13
	/8.2/	UNFCCC, "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" (Version 04.1), EB 55 Annex

	38
/8.3/	UNFCCC, Clarifications regarding the “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” (Version 01), EB 60 Annex 26
/8.4/	UNFCCC, “Procedures for review of erroneous inclusion of a CPA” (Version 03.0), EB 61 Annex 22
/8.5/	UNFCCC, “Standard for Demonstration of Additionality, Development of Eligibility Criteria and Application of Multiple Methodologies for PoA” (Version 01.0), EB65 Annex 3
/8.6/	UNFCCC, “Standard for Sampling and Surveys for CDM Project Activities and PoA” (Version 02.0), EB65 Annex 2
/9/	UNFCCC, “General Guidelines to SSC CDM Methodologies” (version 17), EB 61 Annex 21
/10/	UNFCCC, AMS-I.C. “Thermal energy production with or without electricity” (Version 18), EB56
/11/	UNFCCC, AMS-I.I. “Biogas/biomass thermal applications for households/small users” (version 02), EB61
/12/	UNFCCC, “Guideline on the demonstration and assessment of prior consideration of the CDM” Version 04, EB62
/13/	Organization Chart for PoA, MARD
/14/	CPA01 Database with Emission Reduction Calculation spreadsheet (MARD database, extracted parts for CDM purpose only)
/15/	Socialist Republic of Viet Nam and Asian Development Bank, Loan contract “Quality and Safety Enhancement of Agricultural Products and Biogas Development Project”, 30 <sup>th</sup> June 2009
/16/	Certificates (2 nos.) of Construction Technicians
/17/	Technical and financial proposal for the invitation of PoA validation service (for TUV Rheinland), Asian Development Bank (Project Consultant), December 2009 MARD and TUV Rheinland, Validation Contract, 30 <sup>th</sup> December 2009
/18/	Revised 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Table 2.5, Page 2.22, Chapter 2, Volume 2
/19/	Sustainable Energy Development Consultancy Joint Stock Company, Research Report “Evaluation Study for Household Biogas Models”, December 2009
/20/	National Biogas Programme in Vietnam, Webpage for Notification of the commencement of stakeholder feedback round, <a href="http://210.245.92.22/English/Home.aspx">http://210.245.92.22/English/Home.aspx</a>
/21/	Decision from the Ministry of for Development Corporation of Dutch Government (declaration of no division of ODA to the Biogas Programme in

	Vietnam), (ref. no.: DMW/FK-308/06) 10 <sup>th</sup> April 2006
/22/	Biogas Project Division, Organizational chart
/23/	Vietnam Government, Decree no. 149 on “Regulation on Licensing of Water Resources Exploitation, Extraction and Utilization and Waste Water Discharge in Water Sources”
/24/	“Guiding Strategic Environmental Assessment, Environmental Impact Assessment and Environmental Protection Commitment” issued by the Ministry of Natural Resources and Environment, December 2008 (No. 05/2008/TT-BTNMT)
/25/	Law on Environmental Protection of Vietnam (No: 52/2005/ QH11)
/26/	MARD and SNV, Biogas User Survey (BUS) 2006 prepared by InvestConsult Group, January 2008
/27/	Final Report on Biogas User Survey (BUS) 2009 prepared by Joint Stock Company for Agricultural, Rural, Environmental Development and GIS (RICA), January 2010
/28/	Biogas Program Division, SNV ODA Decision No. 2968 QD/BNN-HTQT, 12 <sup>th</sup> October 2006 (project approval for the notification of financial support to the biogas programme to Vietnamese Government up to 2011)
/29/	Memorandum of Understanding between the Minister of Development Organization and SNV – the Netherlands Development Organization regarding cooperation in the framework of the Asia Biogas Programme (including Vietnam), 14 <sup>th</sup> December 2004
/30/	Form 3 of MARD’s Biogas Programme, Application for Biogas Plant Construction Support for the 1 <sup>st</sup> participated household in CPA01, 5 <sup>th</sup> July 2007
/31/	Form 4 of MARD’s Biogas Programme, cooperation agreement between the households and BPD for the clear description of the transfer of credits ownership all along the investment chain for the 1 <sup>st</sup> participated household in CPA01, 6 <sup>th</sup> July 2007
/32/	Form 6 of MARD’s Biogas Programme, cooperation agreement between the households and mason for the construction of biogas digester for the 1 <sup>st</sup> participated household in CPA01, 8 <sup>th</sup> July 2007
/33/	Form 7 of MARD’s Biogas Programme, Form of Acceptance Check for Biogas Plant by District Biogas Technician for the 1 <sup>st</sup> participated household in CPA01, 4 <sup>th</sup> August 2007
/34/	Form 9 of MARD’s Biogas Programme, BPD Inspection Form for biogas digester operation (for quality control), 21 <sup>st</sup> July 2007
/35/	Acknowledgement of Receipt of financial subsidies signed by participated households
/36/	MARD, Provincial Biogas Project Division (PBPD) Manual and Guidelines, “Biogas Programme for the Animal Husbandry Sector in Vietnam, phase II”, 2011

/37/	Project brochures, user manuals, promotional video disc and safety leaflets
/38/	Letter of Endorsement for List of Project Information Note (PIN) for CDM project issued by Ministry of Natural Resources and Environment of Viet Nam (Vietnamese DNA, ref. no.: SO4185/BTNMT-HTQT), 28 <sup>th</sup> September 2006
/39/	Mitsubishi Securities UFJ, PDD developed with the financial assistance for the project development with carbon credit, 2006
/40/	Netherlands Development Organization in Viet Nam, Draft GS PDD
/41/	Memorandum of Understanding for draft PoA methodology development and project documentation with the financial assistance from GFA Envest, 5 <sup>th</sup> April 2009
/42/	Investconsult Group, "Micro Credit for Households Constructing Biogas Plants in 2009" for DLP of MARD, April 2010
/43/	MARD, Sectoral Standard for small size biogas plant 2006 (Ref. no.: 10TCN97-2006)
/44/	Asian Development Bank (the original PP listed in the GSP PoA-DD, the current CDM consultant for the proposed PoA), Email for the notification of two CPAs to UNFCCC and DOE with "List of Specific CPAs", 27 <sup>th</sup> January 2010
/45/	Embassy of Netherlands, confirmation of non-diversion ODA for the financial assistance provided by the Netherlands Development Organization to MARD for the proposed PoA, (ref. no. HAN-2010/96)
/46/	MARD, Decision No. 3662 QD/BNN-HTQT on approval of the Preliminary Design Report of the QSEAP-BDP using ADB loan with CDM consideration, 20 <sup>th</sup> November 2008
/47/	GFA Envest, United Nations Environment Programme (UNEP) Risoe Center, MARD and SNV, CDM PoA Manual – Mini biogas plant for households in Vietnam" September 2009
/48/	Local Stakeholder Consultation Report for the Biogas Workshop in Nghe An Province on 3 <sup>rd</sup> April 2009
/49/	Local Stakeholder Consultation Report for the Biogas Workshop in Phu Tho Province on 8 <sup>th</sup> April 2009
/50/	UNFCCC, F-CDM-SSCwg ver 01 SSC_571, "Clarification on the use of monitoring requirements from AMS-I.I for biogas projects using AMS-I.C", 14 <sup>th</sup> October 2011
/51/	Sample training records for the biogas users before the digester construction (5 January 2010) and after the digester construction (20 November 2010)
/52/	Phu Tho Province Agricultural Extension Center under MARD, Report on Training of Masons, March 2010
/53/	General statistics principle in the webpage of University of Florida, <a href="http://edis.ifas.ufl.edu/pd006">http://edis.ifas.ufl.edu/pd006</a>
/54/	SNV, Popular Summary of the Test Reports on Biogas Stoves and Lamps

	prepared by testing institutes in China, India and the Netherlands (with the data for Vietnam), 2009
/55/	MARD and SNV, Preliminary Design Report for the Biogas Programme 2007-2010, September 2006
/56/	Ministry of Natural Resources and Environment of Viet Nam (Vietnamese DNA), Letter of Approval (Ref no.: 15/2012/DMHCC-BCD), 15 <sup>th</sup> February 2012
/57/	Ministry of Natural Resources and Environment of Viet Nam (Vietnamese DNA), Email Confirmation for Issue of LoA, 15 <sup>th</sup> February 2012
/58/	Central Intelligence Agency, Coordinate of Vietnam <a href="https://www.cia.gov/library/publications/the-world-factbook/fields/2011.html">https://www.cia.gov/library/publications/the-world-factbook/fields/2011.html</a> <i>"This entry includes rounded latitude and longitude figures for the centroid or center point of a country expressed in degrees and minutes; it is based on the locations provided in the Geographic Names Server (GNS), maintained by the National Geospatial-Intelligence Agency on behalf of the US Board on Geographic Names".</i>
/59/	MARD national standard: 10 TCN 97 issued in 2006 issued in the decision No. 4006/QĐ-BNN-KHCN of Ministry of Agriculture and Rural development, 26 <sup>th</sup> December 2006
/60/	Mitsubishi Securities UFJ, PDD developed with the financial assistance for the project development with carbon credit, 2006
/61/	Modalities of Communication, 6 <sup>th</sup> February 2012
/62/	Email communication between MARD and the ADB's Asia Pacific Carbon Fund about the cooperation in the CDM development of the Vietnam Biogas Programme, February 2008

## 2.2 Follow-up Interviews with Programme Stakeholders

Table 2: The following table identifies the personnel who have been interviewed and/or provided additional information to the presented documentation:

	Date	Name and Title	Organization
/i/	2010/4/27	Nguyen Van Hung (Vice Director)	Phu Tho Service of Agriculture & Rural Department
/ii/		Tram Thi Thuy (Deputy Manager of Plantation Department)	
/iii/		Ta Anh Son (Vice Director)	Agriculture Extension Center (Phu Tho Province)
/iv/		Dinh Hong Tam (Technician)	
/v/		Vu Cong Huan (Household)	Phu Pho Province



/vi/		Cao Duc Tay (Household)	Cha Hoa Commune (Viet Tri City, Phu Tho Province)
/vii/		Nguyen Thanh Xuan (Household)	
/viii/		Ha Van Thang (Household)	
/ix/		Ha Hong Son (Technician)	Agriculture Extension Center (Phu Tho Province)
/x/		Nguyen Thanh Xuan (Technician)	
/xi/	2010/4/28	Dr. Nguyen Van Ly (Officer)	Department of Scientist, Technology and Environment
/xii/	2010/4/28 to 2010/4/29	Dr. Nguyen Thanh Son (Deputy General Director) – Management Representative of the proposed PoA	Department of Livestock Production (DLP) of Ministry of Agricultural and Rural Development (MARD)
/xiii/		Le Thi Xuan Thu (Officer)	
/xiv/		Nguyen Quynh Hoa (Officer)	
/xv/	2010/4/27 to 2010/4/29	Kenjiro Suzuki (Consultant)	Asian Development Bank
/xvi/		Darshak Mehta (Consultant)	
/xvii/		Ha Dang Son (Consultant)	

Table 3: Interview topic

	Date	Organization	Topic
/a/	2010/04/27 to 2010/04/29	MARD and ADB (Project Participant)	<ul style="list-style-type: none"> <li>➤ Programme design</li> <li>➤ PoA related legal issues</li> <li>➤ CDM development history</li> <li>➤ Technical equipment</li> <li>➤ Sustainable development issues</li> <li>➤ Additionality</li> <li>➤ Crediting period</li> <li>➤ Monitoring plan</li> <li>➤ Training history</li> <li>➤ Operation and Management system</li> <li>➤ Environmental impacts</li> </ul>

			<ul style="list-style-type: none"><li>➤ Stakeholder process</li><li>➤ Approval by the host country</li></ul>
/b/	2010/04/27	Phu Tho Local Community	<ul style="list-style-type: none"><li>➤ Programme design</li><li>➤ Programme related legal issues</li><li>➤ Programme status</li><li>➤ Sustainable development issues</li><li>➤ Environmental impacts</li><li>➤ Stakeholder process</li><li>➤ Issues affecting the local community</li><li>➤ Approval by the local governments</li></ul>



## 2.3 Resolution of Outstanding Issues

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

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

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

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

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

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

A forward action request (FAR) may be raised to highlight issues related to the PoA implementation that require review during the first verification.

A revised set of document (PoA-DD, real-case and generic CPA-DD) was submitted to the validation team for final validation. The revision was based on the CARs and CLs in the draft validation report. The major amendments include: programme description, version of methodology, starting date & expected crediting period of the CPA, estimation of the parameters applied in the ER calculation, and monitoring arrangement etc. The following table highlights the major changes:

Subject	Webhosted PDD	Correction to webhosted PDD in the final PDD submission for registration with DOE acceptance
Methodologies	AMS-I.C. Version 16	AMS-I.C. Version 18 and make use of monitoring procedures in AMS-I.I. version 02
CER calculations	Not applicable to PoA	Not applicable to PoA

Additionality	Barriers due to prevailing practice, investment barriers and technological barrier	Barriers due to prevailing practice, investment barriers and technological barrier. The substantiation is supplemented in the final PDD version.
Monitoring	AMS-I.C. version 16 with simple random sampling	AMS-I.I. version 02 with multi-stage sampling and simple random sampling
Crediting period	Not applicable to PoA	Not applicable to PoA
<p>Please refer to Appendix A of this report for details of each change between webhosted PDD and the final PDD for submission. The Validation Team has carried out the validation process based on the Webhosted PDD and raised CARs/CLs against the project by issuing the validation protocol.</p> <p>With the updated information and corrections done on final PDD, the PP has addressed all the CARs /CLs that were raised by the Validation Team.</p> <p>It is concluded that the Validation Team has reviewed the project in line with the VVM (version 01.2) and all the evidence, corrections, justifications and updating done on the final PDD with respect to CARs /CLs raised are accepted and closed by the validation Team, issuing the positive validation opinion for project registration.</p>		

<b>Validation Protocol Table A: Mandatory Requirements for CDM Programme of Activity</b>		
<b>Requirement</b>	<b>Reference</b>	<b>Conclusion</b>
<i>The requirements the programme must meet.</i>	<i>Gives reference to the legislation or agreement where the requirement is found.</i>	<i>This is either acceptable based on evidence provided (OK), a <b>Corrective Action Request (CAR)</b> of risk or non-compliance with stated requirements or a request for <b>Clarification (CL)</b> where further clarifications are needed.</i>

<b>Validation Protocol Table B: Requirement checklist</b>				
<b>Checklist Question</b>	<b>Reference</b>	<b>Means of verification (MoV)</b>	<b>Comment</b>	<b>Draft and/or Final Conclusion</b>
<i>The various requirements in Table 1 are linked to checklist questions the programme should meet. The checklist is organised in different sections, following the logic of the small-scale PoA-DD/ CPA-DD templates, version 01. Each section is then further sub-divided.</i>	<i>Gives reference to documents where the answer to the checklist question or item is found.</i>	<i>Explains how conformance with the checklist question is investigated. Examples of means of verification are document review (DR) or interview (I). N/A means not applicable.</i>	<i>The section is used to elaborate and discuss the checklist question and/or the conformance to the question. It is further used to explain the conclusions reached.</i>	<i>This is either acceptable based on evidence provided (OK), or a <b>corrective action request (CAR)</b> due to non-compliance with the checklist question (See below). A request for <b>clarification (CL)</b> is used when the validation team has identified a need for further clarification.</i>

<b>Validation Protocol Table C: Resolution of Corrective Action and Clarification Requests</b>				
<b>CL/CAR No.</b>	<b>Observations</b>	<b>Reference</b>	<b>Summary of project owner response</b>	<b>Validation team conclusion</b>
<i>CL/ CAR XX</i>	<i>If the conclusions from the draft Validation are either a CAR or a CL, these should be listed in this section.</i>	<i>Reference to the checklist question number in Table A and B where the CAR or CL is explained.</i>	<i>The responses given by the project participants during the communications with the validation team should be summarised in this section.</i>	<i>This section should summarise the validation team's responses and final conclusions. The conclusions should also be included in Table A and B, under "Final Conclusion".</i>

**Figure 1. Validation protocol tables**

## 2.4 Internal Quality Control

The validation report including the validation findings underwent a technical review before requesting registration of the PoA. The technical review was performed by a technical reviewer qualified in accordance with TÜV Rheinland's qualification scheme for CDM validation and verification.

## 2.5 Validation Team

Role	Full Name	Appointed for Sectoral Scopes	Affiliation
Team Leader	Mr. Tommy Lo	1.2, 13.1	TÜV Rheinland Hong Kong Ltd.
Team Member	Mr. Harold Hai	1.2, 13.1	
	Mr. Wilfred Chan (until Sept 2010)	1, 6, 13	
Technical Expert	Mr. Jiang Zhu	1.1, 1.2, 4.5	TÜV Rheinland (China) Ltd.
Local Expert	Mr. Truong Le Tien Dung	N/A	TÜV Rheinland Vietnam Co., Ltd.
Technical Reviewer	Dr. Lixin Li	1.1, 1.2, 3.1	TÜV Rheinland (China) Ltd.

## 3 VALIDATION FINDINGS

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

The final validation findings relate to the programme design as documented and described in the revised PoA-DD, generic CPA-DD and real-case CPA-DD.

### 3.1 Approval and Participation

According to the PoA-DD, the proposed programme is a unilateral CDM PoA which involves one project participant: Ministry of Agriculture and Rural Development (MARD) from host party, Viet Nam.

MARD is a public entity, which belongs to the Vietnamese government, and also acts as the coordinating/managing entity of the SSC-PoA. The host party, i.e. Viet Nam meets all relevant participation requirements in CDM. The Letter of Approval (LoA) /56/ issued by the Vietnamese DNA (i.e. Ministry of Natural Resources and Environment of Viet Nam) has been validated for confirming the voluntary participation of the project participant, i.e. coordinating/managing entity. The relevant project approval was

confirmed by the Vietnamese DNA through an email notification to the validation team on the 15<sup>th</sup> of February 2012 /57/. Thus the authenticity of the LoA is confirmed.

According to Section A.4.5. of the PoA-DD and the on-site interview with the representative from Asian Development Bank (ADB, as project consultant) and MARD /xv, xvi and xii/, several entities provide public funding to the proposed PoA, they are namely: a) Government of Netherlands; b) Asian Development Bank and c) others etc. The mentioned entities affirm that the funding for the biogas programme does not result in the diversion of ODA with respective supporting documents and the funding is not counted towards the financial obligation of the concerned entities. The validation of various funding is detailed as follows:

a) The validation team checked the letter (ref. no. (ref. no.: DMW/FK-308/06 dated 10<sup>th</sup> April 2006) from Ministry of Foreign Affairs, Environment and Water Department of Netherlands for the funding to the programme /21/. The financial assistance was arranged by the Netherlands Development Organization to the proposed PoA. The validation team also checked the letter (ref. no. HAN-2010/96) from Embassy of Netherlands for the confirmation of non-diversion ODA for the financial assistance provided by the Netherlands Development Organization to MARD for the proposed PoA /45/.

b) According to the Asian Development Bank, ADB assisted the programme for the CDM development with the provision of consultancy service. Moreover, ADB was also provided the loan to the Vietnamese government for the development of the programme. The validation team checked the loan contract between the Socialist Republic of Viet Nam and ADB dated 30<sup>th</sup> June 2009 for “Quality and Safety Enhancement of Agricultural Products and Biogas Development Project”, i.e. the proposed PoA /15/. However, there is also no indication of any ODA diversion from ADB.

c) Others. The validation team checked the MoU between MARD and German entity GFA ENVEST for the development of PoA for the biogas programme in Vietnam /41/. The GFA ENVEST provided administrative support by conducting study for the PoA CDM documentation development in the programme. The study was funded by the German Ministry of Environment. However, there was no diversion of ODA from the Ministry of Environment of German government.

In conclusion, the validation team does not reveal any information that indicates the project can be seen as a diversion of ODA funding towards Viet Nam.

Table 4: The below table summarizes the project participant and party involved.

<b>Project participants</b>	Ministry of Agriculture and Rural Development (MARD)
<b>Parties involved</b>	Viet Nam (host)
<b>APPROVAL</b>	
LoA received	Yes
Date of LoA	15 <sup>th</sup> February 2012

Reference to document	15/2012/DMHCC-BCD
LoA received from	Project Participant (CME)
Validation of authenticity	Confirmed by the Vietnamese DNA through an email notification on 15 <sup>th</sup> February 2012 /57/
Validity of LoA	Valid
<b>PARTICIPATION</b>	
Party is party to Kyoto Protocol	Yes. Viet Nam ratified the Kyoto Protocol on 25 <sup>th</sup> September 2002 <sup>2</sup> .
Voluntary participation	Yes. Approved by the DNA of Viet Nam
Diversion of official development aid towards host country	N/A
Programme contribution to SD	Yes. Approved by the DNA of Viet Nam

### 3.2 Programme of Activities Design Documents

The validation team validated that the provided PoA-DD /1/ and generic CPA-DD /2/ and real-case CPA-DD (for CPA01) /3/ are based on the currently valid PoA-DD template /4.1/ and CPA-DD template /4.2/, and are correctly completed.

### 3.3 Program Description

The “Vietnam National Biogas Programme” involves the installation and implementation of the domestic biogas digesters in rural households of Vietnam. The coordinate of Vietnam is indicated in the PoA-DD [16°00’ (16.0000) North of the Equator, 106°00’ (106.0000) East of Greenwich], as sourced from Central Intelligence Agency /58/. The CDM programme activities (CPAs) under the PoA will be implemented throughout the different provinces in Vietnam.

With reference to the Section A.4.2.1. of the PoA-DD, the implementation of the PoA is to install and implement the model types KT.1 and KT.2 or equivalent domestic biogas design plants which are recognized by MARD in the national biogas standard. The biogas plant consists of biogas digester, gas pipe, main valves, stoves and gas lamps (optional). The size of biogas digesters ranges from will be limited to maximum 25m<sup>3</sup> depending on the requirements (such as no. of livestock) of the households. With feeding of on-farm produced manure (from such as pigs, cattle and buffalo) to the digester, biogas will be produced to meet the energy demand of the household. The residue of the digestion process from the digester can be used by the households as organic fertilizer. According to the representative from Pho Tho Service of Agricultural & Rural Development /i/, the selection of model types is assessed by the District Biogas

<sup>2</sup> Information from UNFCCC website:

[http://unfccc.int/files/kyoto\\_protocol/status\\_of\\_ratification/application/pdf/kp\\_ratification.pdf](http://unfccc.int/files/kyoto_protocol/status_of_ratification/application/pdf/kp_ratification.pdf)

Technician (DBT) based on the requirements of households, geological features of the landscapes and specific climatic conditions. The design, construction and fittings have been standardized in MARD's "Sectoral Standard for small size biogas plant 2006" /43/. The designs of the digesters have been proven to be virtually maintenance-free. The revised standard design for both KT.1 and KT.2 (including KT2A and KT2B) models digesters accommodates digester volumes with maximum 25m<sup>3</sup>.

According to the Section A.4. of the PoA-DD, the biogas units contribute to the GHG reductions in 3 ways:

- 1) the manure management system which results in reductions of methane emission is introduced, as compared with the current practice of manure dumping in rivers, streams or open lagoons;
- 2) the produced biogas replaces conventional fossil fuels; and
- 3) the produced slurry as organic fertilizers can replace chemical fertilizers.

However, due to the limitation of data, the possible emission reductions from manure management and fertilizer substitution were not accounted under the PoA. The validation team considers that this is a conservative approach in the estimation of emission reductions from the reduction of fossil fuels consumption only.

All the CDM programme activities (CPAs) under the proposed PoA will be implemented in Vietnam by Ministry of Agriculture and Rural Development (MARD), thus MARD will be the project participant or CPA implementing entity for all the CPAs to be included in the PoA. This programme development was approved by the Vietnamese DNA, Ministry of Natural Resources and Environment as indicated in the "List of Project for CDM project" /38/.

The MARD is the government ministry of Vietnam, while the biogas end-users are the Vietnamese rural residents. The MARD manages and coordinates the biogas project. The units are built by independent masons and inspected on quality by MARD provincial staff (district and provincial technicians). MARD is the regulatory body ensuring that units are built of high quality. When the rural residents participate in the PoA, then they will sign a contract with MARD (form 4). This contract also includes the transfer of CER from households to MARD.

For the participated households in the proposed PoA, they could receive a one-off subsidy payment in order to assist the households to install the biogas digesters type KT.1 or KT.2. The validation team checked the first application form (namely form 3 by MARD /30/) for the biogas digester construction from the applied household for CPA01 was submitted on 5<sup>th</sup> July 2007. After the submission of application form from the household to Department of Agricultural Rural Development (DARD, the regional department of MARD), then the DARD sent qualified District Biogas Technician (DBT) to the households for site inspection, and decided the type and size of digester to be installed. After that the construction contract (namely form 6 by MARD) was signed on 8<sup>th</sup> July 2007 between the qualified mason and the households for the construction cost. (Raw materials for construction would be prepared by the households as the mason only



provide labour for the digester construction). In addition, construction assistance contract (namely form 4 by MARD) was signed on 6<sup>th</sup> July 2007 for the transfer of the CER from the household to the CME, with the fixed amount of one-off subsidy payment of VND1.2 million to the participated household. After the installation of the digester, this was checked and accepted by technician in form 7 (acceptable form with biogas ID) dated 4<sup>th</sup> August 2007 /33/. Then the household received the subsidy payment and signed the receipt for confirmation /35/.

Since the first successful application was submitted by the participated household for the first CPA (CPA01) on 5<sup>th</sup> July 2007 /30/, and this is identified as the starting date of the CPA01. The validation team considers that this date was the earliest date at which implementation or construction or real action of the project activity begins. Thus for the successful applications submitted later than 5<sup>th</sup> July 2007 by the participated households, these were also included in the first CPA as implemented in North-eastern Vietnam (namely CPA01) for the PoA. The first CPA would be validated in the following sections of the report. Thus the validation team considers that starting date of the first CPA (CPA01) is correctly identified, in accordance to the Glossary of CDM terms /6/.

According to EB47 paragraph 72, *“the Board decided to grant an exemption to paragraph 5(d) of the “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” to programmes of activities which have commenced validation prior to 31 December 2009. Therefore such programmes may include CPAs with a starting date between 22 June 2007 and the commencement of validation of the PoA, if a list of such specific CPAs is provided to validating DOE and UNFCCC secretariat prior to 31 January 2010”*.

For the proposed PoA, the validation contract was signed between the MARD and the DOE on 30<sup>th</sup> December 2009 /17/, the GSP was then started with the publication of PoA-DD and the CPA-DD for the first CPA (CPA01) on 31<sup>st</sup> December 2009. In addition, the validation team received the email from Asian Development Bank (the original PP listed in the GSP PoA-DD /1/, the current CDM consultant for the proposed PoA), for the notification of two CPAs to UNFCCC and validating DOE on 27<sup>th</sup> January 2010 /44/. The two CPAs were CPA01 of North-East zone, and CPA2 of West-South zone. (In this report, only the validation of the eligibility of CPA01 is included for requesting registration and inclusion.) Since these two specific CPAs were stated as started between 22<sup>nd</sup> June 2007 and the commencement of validation of the PoA (i.e. 30<sup>th</sup> December 2009), thus these two specific CPAs are eligible to be included in the PoA according to the EB47 paragraph 72. In this report, only the inclusion for CPA01 is validated.

The starting date of the PoA is identified to be on 1<sup>st</sup> May 2012 or the date of registration whichever is later. It is only after registration that implementation of CPAs will occur constituting “real action” as defined by the EB guidance. Moreover, the length of the PoA is taken as 28 years, in which it complies with “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” version 04.1 in EB 55 /8.2/.



In the CPA-DD Section A.4.3.1, the starting date of renewable crediting period of the first CPA (CPA01) is selected as 1/5/2012 or date of registration of the PoA-DD and inclusion of the CPA01 into the PoA-DD whichever is later, which is in accordance with the requirement stated in the Glossary of CDM Terms /9/ “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”. The operational lifetime of CPA01 is 25 years, in which the validation team considers that this is also feasible as the biogas digester is virtually maintenance-free. Moreover, since all the biogas digesters in CPA01 followed the MARD national standard: 10 TCN 97 issued in 2006, the operational lifetime can be maintained up to 25 years /59/. The validation team considers that the operation lifetime for the equipment in CPA01 is traceable.

Table 5: The critical programme description milestones from the PoA-DD are tabulated as follows:

Starting date of PoA	Length of the PoA
1 <sup>st</sup> May 2012 or the date of registration, whichever is later (The validation contract was signed between the MARD and the DOE on 30 <sup>th</sup> December 2009 /17/, the GSP was then started on 31 <sup>st</sup> December 2009)	28 years

In summary, under the validation by means of document review and on-site interviews with stakeholders, the validation team considers that the programme description in PoA-DD is accurate and complete.

### 3.4 Eligibility Criteria for CPA Inclusion

The PoA-DD, Section A.4.2.2 states eligibility criteria for inclusion of a CPA under the PoA and validated by the validation team according to the “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” (Version 04.1) as below. This also makes reference to the “Standard for Demonstration of Additionality, Development of Eligibility Criteria and Application of Multiple Methodologies for PoA” version 01.0 in EB65. The validation for the first specific CPA (CPA01) is also included as follows:

Table 6: Validation of the Eligibility Criteria for CPA Inclusion

<b>Eligibility criteria for a SSC-CPA to be included in the PoA</b>	1. “A new CPA shall have a clearly identified geographical boundary including a time-induced boundary consistent with the geographical boundary of Viet Nam”.
<b>Validation Opinion on the eligibility criteria</b>	OK. It is confirmed to be a reasonable criterion. The MARD /xii/ confirmed that only new installation of type KT.1 and KT.2 biogas digesters in Vietnam will be included in the CPA.
<b>Validation Opinion on the inclusion of CPA01 as indicated in the Section B.2. of CPA-DD</b>	The validation team checked the database for CPA01 /14/, in which all the installed biogas digesters are either type KT.1 or KT.2 in Vietnam.

<b>Eligibility criteria for a SSC-CPA to be included in the PoA</b>	2. "Each biogas unit installed in a CPA shall have an unique identification number".
<b>Validation Opinion on the eligibility criteria</b>	OK. It is confirmed to be a reasonable criterion. The MARD /xii/ stated that the unique identification number will be used to avoid double counting. All biogas plants have a unique ID code and all biogas plants are recorded in a database, even the ones from National Biogas Programme phase I in 2003-2005 (note this is not part of this PoA). Thus the MARD can check the unique ID for the biogas digester, in order to avoid double counting. The validation team considers this is applicable for such purpose.
<b>Validation Opinion on the inclusion of CPA01 as indicated in the Section B.2. of CPA-DD</b>	<p>The validation team checked the database for CPA01 /14/, in which the unique identification numbers for all the units in CPA01 are indicated.</p> <p>Each biogas plant has a unique registration code, and is assigned once the biogas plant was completed and inspected for compliance with the MARD standard. Then trained MARD technician will fill up the commissioning report (form 7) with the assigned biogas digester registration code. Then this registration code will be input in the MARD's database, together with other information as indicated in the PoA-DD. The biogas facilities can be differentiated from the unique identification code.</p> <p>During the on-site visit, the validation team also physically visited the sampled biogas digesters, and checked that some information (mason ID code, biogas plant size and model and date of construction completion) are marked on the covers or nearby structure of biogas digesters. Together with the biogas digester registration code assigned after commissioning, these can be used to confirm the unique identification for avoiding double-counting. Thus the validation team considers that the CPA01 fulfils this eligibility criterion for inclusion in the PoA.</p>
<b>Eligibility criteria for a SSC-CPA to be included in the PoA</b>	3. "A new CPA will install biogas technologies (such as KT1 and KT2 or equivalent) that are recognized in the MARD national biogas standard with a maximum digester volume of 25 m <sup>3</sup> ".
<b>Validation Opinion on the eligibility criteria</b>	OK. It is confirmed to be a reasonable criterion. The validation team also checked the sectoral standard set by the MARD /43/. For the participated households, they must apply the construction of biogas digester through DARD. Then the technician from DARD will visit the household in order to determine the type and size of the biogas plant. Once it is approved, the households have to sign the agreement (form 4 /31/) with DARD. When the installation is completed, the DARD will inspect the biogas digester as per MARD biogas sector standard. After the commissioning is accepted by the DARD, then the households can receive the subsidy from the CPA.

	<p>Thus the validation team considers that the biogas plants in the CPA are able to follow the MARD biogas sector standard.</p> <p>According to the DARD /i/, the type and size of biogas digester would be determined by the qualified masons, depending on the no. of livestock for the households. The maximum design can be limited to 25m<sup>3</sup>. Thus the validation team considers that this criterion is reasonable and feasible.</p>
<b>Validation Opinion on the inclusion of CPA01 as indicated in the Section B.2. of CPA-DD</b>	<p>The validation team checked the database for CPA01 /14/, in which all the installed biogas digesters were approved by the DARD. The approval documents (form 7) /33/ according to the MARD biogas sector standard were checked by the validation team. Moreover, they are all either KT.1 or KT.2. types of biogas digesters recognized in the MARD. Thus all the biogas plants in the CPA01 follow the MARD biogas sector standard.</p> <p>From the database for CPA01 /14/, the biogas units under CPA01 were all within 25m<sup>3</sup> in volume. For CPA01, the volume size is ranged from 5-25m<sup>3</sup> for 10,518 biogas units, with average size of 12.28m<sup>3</sup>. Thus the validation team considers that the CPA01 fulfils this eligibility criterion for inclusion in the PoA.</p>
<b>Eligibility criteria for a SSC-CPA to be included in the PoA</b>	4. "Each biogas units installed will be inspected on compliance with the national standard before commissioning to the household".
<b>Validation Opinion on the eligibility criteria</b>	OK. It is confirmed to be a reasonable criterion. The validation team also checked the sectoral standard set by the MARD /43/. When the installation is completed, the DARD will inspect the biogas digester as per MARD biogas sector standard before the commissioning to the household. The trained biogas technician will then sign the acceptance form (form no. 7) to confirm that the biogas units are in compliance with national standard. Thus the validation team considers that this criterion is reasonable and feasible.
<b>Validation Opinion on the inclusion of CPA01 as indicated in the Section B.2. of CPA-DD</b>	The validation team checked the database for CPA01 /14/, in which all the installed biogas digesters were approved by the DARD. The approval documents (form 7) /33/ according to the MARD biogas sector standard were checked by the validation team. Thus all the biogas plants in the CPA01 follow the MARD biogas sector standard before commissioning. Thus the validation team considers that the CPA01 fulfils this eligibility criterion for inclusion in the PoA.
<b>Eligibility criteria for a SSC-CPA to be included in the PoA</b>	5. "The starting date of a new CPA is identified as the application date of the first household that has built a biogas plant".
<b>Validation Opinion on the eligibility criteria</b>	OK. It is confirmed to be a reasonable criterion. This is deemed to be the earliest real action and implementation for a CPA as referred to the CDM glossary. Thus the validation team considers that this criterion is reasonable and feasible.

<b>Validation Opinion on the inclusion of CPA01 as indicated in the Section B.2. of CPA-DD</b>	The validation team checked the database for CPA01 /14/, the first household application can be referred to 5 July 2007 from the application form 3 /30/. Thus the validation team considers that the CPA01 fulfils this eligibility criterion for inclusion in the PoA.
<b>Eligibility criteria for a SSC-CPA to be included in the PoA</b>	6. "A new CPA shall meet the eligibility criteria listed in paragraph 1 to 11 of AMS-I.C version 18 and paragraph 1 to 4 of AMS-I.I".
<b>Validation Opinion on the eligibility criteria</b>	OK. It is confirmed to be a reasonable criterion for the CPA inclusion with same methodology applied in the PoA. The MARD /xii/ confirmed that for every CPA, the installed capacity will be limited according to the EB's threshold of 45 MW thermal. Further biogas units will be included in another CPA if the installed capacity exceeds the threshold of 45 MW thermal. Moreover, the unit capacity for each biogas digester will be less than 150kW thermal threshold.
<b>Validation Opinion on the inclusion of CPA01 as indicated in the Section B.2. of CPA-DD</b>	<p>The validation team checked the eligibility criteria for CPA01 to be included in the PoA. It is confirmed that the AMS-I.C. and the corresponding monitoring methodology from AMS-I.I. can be applicable to CPA01. Please refer to Section 3.7 for details. The validation team checked the database for CPA01 /14/, in which the total installed volume of the biogas units is <math>129,216\text{m}^3</math>, which is equivalent to about 12.9 MW thermal and within the threshold limit of 45 MW thermal. The detailed validation of unit capacity per volume of biogas digester is described in the following part.</p> <p>According to the calculation of unit capacity per volume of biogas digester, the maximum installed thermal energy generation of the project biogas digester can then be estimated as about 2.5kW thermal (<math>0.0997\text{ kW/m}^3 \times 25\text{m}^3</math>), as the maximum size of biogas digester in CPA01 is <math>25\text{m}^3</math>. Thus this is less than 150kW thermal. This also complies with the threshold requirement of AMS-I.I. version 02 clause 3.</p> <p>Thus the validation team considers that the CPA01 fulfils this eligibility criterion for inclusion in the PoA.</p>
<b>Eligibility criteria for a SSC-CPA to be included in the PoA</b>	7. "A new CPA shall meet the additionality criteria listed in section A.4.3 and the debundling check in A.4.4.1".
<b>Validation Opinion on the eligibility criteria</b>	OK. It is confirmed to be a reasonable criterion for the CPA inclusion. Please refer to Section 3.8 for the discussion of additionality.
<b>Validation Opinion on the inclusion of CPA01 as indicated in the Section B.2. of CPA-DD</b>	The validation team checked the CPA01 database /14/, in which the total volume of the biogas digesters included in the CPA01 is $(12.285\text{m}^3/\text{unit} \times 10,518\text{ unit}) \approx 129,216\text{ m}^3$ . Thus the total capacity is about $(129,216\text{ m}^3 \times 0.0997\text{kW/m}^3) \approx 12,883\text{ kW}$ thermal, which is smaller than 15MW thermal. In addition, the maximum volume of the unit biogas digester is $25\text{m}^3$ , thus

	<p>the maximum unit capacity is about 2.5kW (<math>25\text{m}^3 \times 0.0997\text{kW/m}^3</math>). Therefore the CPA01 is additional according to the clause 2(c) of the “Guidelines for Demonstrating Additionality of Microscale Project Activities” (Version 03) EB63 Annex 23. As the unit capacity is also less than 1% of SSC threshold of 450kW thermal, this is exempted from de-bundling check according to “Guideline for determining the occurrence of de-bundling under a programme of activities” (Version 03.0), EB 54 Annex 13”. Please refer to Section 3.7 for details.</p> <p>The validation team considers that the CPA01 fulfils this eligibility criterion for inclusion in the PoA.</p>
<b>Eligibility criteria for a SSC-CPA to be included in the PoA</b>	8. “A new CPA shall affirm that funding from Annex I parties, if any, does not lead to a diversion of Official Development Assistance (ODA) by supplying a non-ODA diversion declaration”.
<b>Validation Opinion on the eligibility criteria</b>	OK. It is confirmed to be a reasonable criterion for the CPA inclusion. Please refer to Section 3.1 for the discussion of public funding to the PoA. The CME shall follow EB’s Standard by providing affirmation that the funding will not result in diversion of ODA.
<b>Validation Opinion on the inclusion of CPA01 as indicated in the Section B.2. of CPA-DD</b>	The validation team checked the declaration issued by Dutch Government for non-ODA diversion for CPA01 /21/. (This is also applied to CPA02 as both CPA01 and CPA02 were financially supported by Dutch Government funding.) The validation team considers that the CPA01 fulfils this eligibility criterion for inclusion in the PoA.
<b>Eligibility criteria for a SSC-CPA to be included in the PoA</b>	9. “A new CPA will only install a biogas unit in household that do not have a biogas plant, have livestock and use partially fossil fuels for cooking”.
<b>Validation Opinion on the eligibility criteria</b>	OK. It is confirmed to be a reasonable criterion. The MARD /xii/ confirms that most of the rural households use fossil fuel (such as coal, LPG) and agricultural wastes (such as straw) as cooking fuel. During the on-site interview, the validation team also physically visited some of the households. For the households without biogas digesters (assumed to be potential participants for the future CPA /vii-viii/, coal was commonly used by the households. For the households with biogas digesters (CPA01 participants), they stated that before the installation of biogas digesters, they mainly used coal for cooking but sometimes might use agricultural wastes /v-vi/. Therefore the validation team considers that this criterion is reasonable and feasible.
<b>Validation Opinion on the inclusion of CPA01 as indicated in the Section B.2. of CPA-DD</b>	The validation team checked the database for CPA01 /14/, in which all the participated households partially use fossil fuel as baseline fuel. During the on-site visit, the CPA01 households stated that before the installation of biogas digesters, they mainly used coal for cooking but sometimes might use agricultural wastes /v-vi/. Thus the validation team considers that the CPA01 fulfils this eligibility criterion for inclusion in the



	PoA.
<b>Eligibility criteria for a SSC-CPA to be included in the PoA</b>	10. "A new CPA will execute a monitoring survey according to monitoring methodology as described in section A.4.4.2 of this PoA-DD".
<b>Validation Opinion on the eligibility criteria</b>	OK. The validation team checked the monitoring plan in the PoA-DD and considers that this fulfils the requirements for the approved methodology AMS-I.I. Please refer to Section 3.6 for details. Therefore it is considered that this criterion is reasonable and feasible.
<b>Validation Opinion on the inclusion of CPA01 as indicated in the Section B.2. of CPA-DD</b>	The validation team checked the monitoring plan in CPA-DD for the first CPA, and it is considered that the MARD can arrange the monitoring survey according to the monitoring methodology. Thus the validation team considers that the CPA01 fulfils this eligibility criterion for inclusion in the PoA.
<b>Eligibility criteria for a SSC-CPA to be included in the PoA</b>	11. "The biogas units installed under a CPA will be approved and registered under the national biogas programme of MARD".
<b>Validation Opinion on the eligibility criteria</b>	OK. It is confirmed to be a reasonable criterion. For the participated households, they must apply sign the agreement (form 4 /31/) with DARD. When the installation is completed, the DARD will approve the biogas digester under the national biogas programme of MARD. Thus the validation team considers that the biogas units in the CPA are able to be approved and registered by MARD.
<b>Validation Opinion on the inclusion of CPA01 as indicated in the Section B.2. of CPA-DD</b>	The validation team checked the database for CPA01 /14/, in which all the biogas units were checked, approved and registered under the national biogas programme of MARD. Thus the validation team considers that the CPA01 fulfils this eligibility criterion for inclusion in the PoA.
<b>Eligibility criteria for a SSC-CPA to be included in the PoA</b>	12. "The biogas units under a CPA are to be constructed by the biogas construction teams trained and licensed by MARD".
<b>Validation Opinion on the eligibility criteria</b>	OK. It is confirmed to be a reasonable criterion. According to the DARD /i/, all the biogas construction team would be trained and qualified by the DARD, thus also licensed by MARD. During the on-site validation, the validation team checked some of biogas digesters were checked and certified by the District Biogas Technician (DBT). The validation team also interviewed with one of the "Extension team" for technology monitoring of the PoA, i.e. DBT in Phu Tho Province /ix-x/. They stated that the extension team was responsible for the assessment of biogas digester design, which includes the type and size to be installed. After the installation of digester, they would report to the MARD for the commissioning results in approval form 7 /33/. The validation team also checked some of the certificates licensed by MARD for the qualified technicians /16/. Thus the validation team considers that this criterion is reasonable and feasible.
<b>Validation Opinion on the</b>	The validation team checked the database for CPA01 /14/, in

<b>inclusion of CPA01 as indicated in the Section B.2. of CPA-DD</b>	which the biogas units under CPA01 were constructed by biogas construction teams trained and licensed under national biogas programme of MARD. The validation team also checked the acceptance report (form 7 /33/) for the biogas unit in CPA01, which was constructed and approved by the trained biogas technician. Thus the validation team considers that the CPA01 fulfils this eligibility criterion for inclusion in the PoA.
<b>Eligibility criteria for a SSC-CPA to be included in the PoA</b>	13. "Households that participate in the CPA have transferred their CER rights to MARD in return for after sales services and support".
<b>Validation Opinion on the eligibility criteria</b>	OK. It is confirmed to be a reasonable criterion. The MARD /xii/ confirmed that for every participated household has to sign an agreement (form 4 /31/) for the CER transfer to MARD once they participated in the CPA. The validation team also checked some of the signed form 4 between the households and MARD for the transfer of CER. In the form 4, it is also stated that the household can obtain the one-off payment subsidy for the construction of biogas unit for the CPA, and the after sale services and support from MARD.
<b>Validation Opinion on the inclusion of CPA01 as indicated in the Section B.2. of CPA-DD</b>	The validation team checked the database for CPA01 /14/, in which all the households received the subsidy payment from MARD. It represents that all the participated households signed the agreements for the transfer of CER to MARD. They could also obtain the after sale services and support from MARD in the biogas unit operation. Thus the validation team considers that the CPA01 fulfils this eligibility criterion for inclusion in the PoA.

The validation team also considers that since the local stakeholder consultations and environmental impact analysis were understood in PoA level, thus it is not necessary to consider these as the CPA inclusion eligibility criteria. Please refer to Section 3.12 and 3.13 for details.

### **Validation of unit capacity per volume of biogas digester**

According to the PoA-DD Section A.4.2.2., the installed capacity for one CPA is limited by the threshold of 45MW thermal indicated in the AMS-I.C. version 18 clause 4. The specific thermal capacity is validated as follows:

Item	Value	Validation Opinion
Average biogas production per digester	1.31m <sup>3</sup> /day	MARD and SNV's Biogas User Survey 2006 statistics /26/
Average digester volume	9.6m <sup>3</sup>	
Specific biogas production	136.8 L	Calculated from 1.31/9.6 = 0.136m <sup>3</sup>
Methane content in biogas	60%	Consistent with default value from UNFCCC SSC methodology AMS-III.D
Methane density	0.67 kg/m <sup>3</sup>	

Methane energy density	55.65 MJ/kg	Consistent with IPCC 2006 volume 4 chapter 10
Biogas stove efficiency	39%	The validation team checked the SNV (Netherlands Development Organization in Viet Nam) test report 2009 for biogas stoves and lamps prepared by the accredited testing institutes /54/.
Average operating hours of biogas stove	3.3 hour/ household/day	MARD and SNV's Biogas User Survey 2006 /26/

According to the PoA-DD Section A.4.2.2., the specific generation capacity is correctly calculated as  $0.0997\text{kW/m}^3$ . For the threshold of 45MW thermal for SSC project, the threshold installed capacity for one CPA will be:  $45,000\text{kW} / 0.0997\text{kW/m}^3 = 451,251\text{m}^3$  (then round off to  $450,000\text{m}^3$ ). The cumulative installed capacities of all the biogas digester in one CPA should be limited to  $450,000\text{m}^3$ . Thus the validation team considers that the eligibility criteria no. 7 is applicable and reasonable.

### 3.5 Operational and Management Plan

The operational and management arrangement has been established in the PoA-DD Section A.4.4.1. for the implementation of PoA. This is complied with the requirements in clause 6 (i) of the 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" version 04.1 in EB 55. This also makes reference to the "Standard for Demonstration of Additionality, Development of Eligibility Criteria and Application of Multiple Methodologies for PoA" version 01.0 in EB65. The operation Management System can assure to meet the requirement indicated in the relevant section of SSC-PoA-DD form /3.1/:

#### ***A. Definition of roles and responsibilities of personnel involved in the process of inclusion of CPAs, including a review of competencies***

According to the PoA-DD, the personnel involved for CPA inclusion are identified, in order to make sure the competency of the process.

#### ***B. A record keeping system for each CPA under the PoA***

From the description of the operation and management arrangement and on-site interviews with the representatives from MARD and ADB /xii, xv-xvii/, the MARD will be the sole coordinating entity of the PoA and the implementer of all CPAs under the PoA. Thus MARD can ensure that those operating CPA are aware of and have agreed that their activity is being subscribed to the PoA.

A separate database will be organized for each of the CPAs under PoA by the MARD, which includes the essential information of the biogas units. The construction of each of the biogas plant will be checked and accepted by the trained District Biogas Technician (DBT) from DARD. The DBT would sign the acceptance document (form 7) and the



subsidy will be sent to the participated households via post. A unique registration number will be assigned to the accepted biogas digester under the national biogas programme. The distribution of the subsidy to the participated households are also tracked and recorded in the database. Thus a record keeping system can be established for clear record of each biogas unit.

The validation team also interviewed with the DARD /i-ii/ in which the participated households' information will be collected and monitored by the district biogas technicians. The district biogas technicians were also trained by the DARD, the training record was also checked by the validation team during the on-site visit /16, 52/. The validation team also visited the DARD, and understanding the cross-checking procedures carried out by the trained DARD staff for quality control. Since the DARD is also under the management from MARD, the validation team considers the CPA database is deemed to be reliable as it is cross-checked by different staff in different levels of MARD.

Moreover, the CME opts for a verification of each CPA. For CPA01, the number of biogas plant installed will be further verified during the verification of the real case CPA01.

The validation team actually made the on-site visit to several households of CPA 01. The validation team also carried out interviews with the MARD, DARD officials, masons as well as households. The database cross-checking was also carried out when the validation team visited the MARD office in the Biogas Programme Division. In addition, the validation team could realize all the signed contracts between the MARD and households for the installation of biogas digester under the programmes, although the validation team only randomly took some samples for checking. In addition, the database from MARD is checked by the validation team, together with the explanation with the MARD staff, it is well understood by the validation team for the information integrated in the CPA01 database. Moreover, since the database and all the biogas program are in the Ministry level of the Vietnamese government, all the related information are also open to public as checked via the website:

<http://biogas.org.vn/English/Home.aspx>

Therefore, the validation team considers that the information in the database for CPA01 is reliable.

### ***C. Procedures for technical review of inclusion of CPAs***

According to the PoA-DD, technical review for CPA inclusion will be carried out by competent personal in CME, as assisted by MARD director of livestock department. The review includes the eligibility criteria, cross-checking with UNFCCC registry and relevant biogas database and preparation for DOE review etc. As the CME and CPA implementers are the staff under the management by MARD, thus this ensures that the CPA inclusion will be reviewed before inviting DOE for checking. The validation team

considers that this complies with the requirements in the Standard of EB65 Annex 3 clause 17.

#### ***D. A system/procedure to avoid double accounting***

It is also mentioned that there will be an individual database for each CPA under the PoA in order to avoid double accounting. The database will include the following information for example (but not limited to):

- Name and ID number of the head of households where biogas units were installed under the CPA;
- Unique plant ID code;
- Date of commissioning.

The database for the CPA01 is checked by the validation team, in which the above mentioned information is indicated. As confirmed by the representative from MARD /xii/, by checking the unique biogas plant registration number (which is associated with the other variables in the database, such as biogas digester location, mason who built the biogas plant, size, model and date of construction completion etc.), this can avoid double accounting of biogas unit installed and subsidy distributed. The MARD will also check whether the biogas plants are already registered as CDM projects by searching the information from UNFCCC. The validation team considers that this can avoid double counting of biogas digesters in the same CPA and PoA. Moreover, there is no double accounting issue for the CPA01.

#### ***E. Measures for continuous improvement of the PoA management system***

The MARD confirmed that annual meeting will be held for the discussion of improvement for PoA management. Meeting minutes will be prepared for the meeting during PoA implementation.

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

According to the Guidance for Determining the Occurrence of De-bundling under a PoA version 03 EB54 Annex 13, "If each of independent subsystems (biogas digester) included in the CPA of a POA is no greater than 1% of the thresholds defined by the methodology, the CPA of PoA is exempted from de-bundling check". As the PoA applies with AMS-I.C./ Version 18 with thresholds of 45MW thermal for applied thermal equipment, the threshold for individual biogas digester is 450kW thermal. Only when the individual biogas digester volume is larger than 4,500m<sup>3</sup> (equivalent to 450kW thermal), then the de-bundling check should be carried out. However, the validation team considers that it is unlikely for rural households to install a large biogas unit with 4,500m<sup>3</sup>, as it is only designed for very large scale of livestock farms, and it is not designed for the proposed technology of KT.1 and KT.2 for small-scale households in the PoA. In addition, the maximum installed capacity of biogas digester for this proposed PoA will be limited to 25m<sup>3</sup>. Thus the maximum installed thermal energy generation of the project biogas digester can be estimated as about 2.5kW thermal (0.0997 kW/m<sup>3</sup> x

25m<sup>3</sup>). Thus this is less than 150kW thermal. This also complies with the threshold requirement of AMS-I.I. version 02 clause 3.

According to the PoA-DD and CPA01 database /14/, the average installed capacity of a biogas unit for CPA01 is 1.228kW, thus the CPA of this PoA is exempted from performing the de-bundling check, i.e., considering as not being a de-bundled component of a large scale activity.

***G. The provisions to ensure that those operating the CPA are aware of and have agreed that their activity is being subscribed to the PoA***

Since the MARD is the sole coordinating entity of the PoA and also implementer of all CPAs under the PoA, the MARD will also coordinate the regional department, i.e. DARD for the management of the biogas programme. Thus the MARD are aware of all CPA operating entities under MARD.

The validation team considers that the operational and management plan established by MARD for the implementation of the PoA inter alia the issues identified in paragraph 4 (i) of “Procedures for Registration of a PoA as a single CDM project activity and Issuance of CER for a POA”, version 04.1 EB55. In addition, the MARD will also develop and implement a management system as stipulated in the clause 17 of the “Standard for Demonstration of Additionality, Development of Eligibility Criteria and Application of Multiple Methodologies for PoA” version 01.0 in EB65”.

### **3.6 Monitoring Plan**

According to the monitoring plan in section A.4.4.2 of PoA-DD, the monitoring parameters for each CPA are addressed. A database will be set up by the MARD for each CPA under the PoA. The database for each CPA is based on the standard data such as geographic location, name, ID of the biogas unit owner. The monitoring plan for the CPA under the PoA is included in the PoA-DD Section A.4.4.2.

According to F-CDM-SSCwg ver 01 SSC\_571 for the “Clarification on the use of monitoring requirements from AMS-I.I for biogas projects using AMS-I.C”, “the SSC WG agreed that the project participants should be encouraged to apply AMS-I.I for their PoA involving household biogas projects, since this methodology has been specifically designed for this type of project activity and provides more detailed and relevant procedures than AMS-I.C”. Therefore the MARD applies the monitoring methodology from latest valid AMS-I.I version 02 for the PoA monitoring of emission reductions.

The validation team checked that the Baseline Emissions are based on the Option 1 for “avoided quantity of fossil fuel consumption”. The annual consumption of baseline fossil fuel is determined as per AMS-I.I paragraph 10 (b). The CME will set up a baseline control group with users not installed with biogas digester. The users will be defined with similar average income level, household occupancy, food or heating habits, climate/temperature zone, availability, price and type of fuel used. The fossil fuel consumption of the control group is monitored throughout the crediting period.

Moreover, since the programme biogas digesters are designed, constructed and operated under the inspection and approval of DARD according to the Vietnamese national standard, thus the Option 1 can be applied in this PoA as per paragraph 12 of AMS-I.I.

For the estimation of Project Emissions, the CME also correctly applies the estimation of annual consumption of fossil fuel after the biogas digester operation. The data about fossil fuel consumption and the annual performance ratio for the proportion of biogas units remain operating will be collected annually by survey in each CPA. Thus this also fulfills the requirements of paragraph 11 of AMS-I.I. The validation of emission reductions will be covered in later part of this report.

The CME also includes a proposed statistically sound sampling method/procedure to be used by DOEs for verification of the amount of reductions of anthropogenic emissions by sources or removals by sinks of greenhouse gases achieved by CPAs under the PoA. According to the sampling plan in PoA-DD Section A.4.4.2, the survey will be conducted annually for the monitoring of proportion of biogas units remain operating, fossil fuel consumption for baseline control group and project performance group. The details of the data collection procedures have been described in the sampling plan of the monitoring plan. According to the “General Guidelines for Sampling and Surveys for Small-Scale CDM Project Activities” in EB50 Annex 30 and with the reference of “Standard for Sampling and Surveys for CDM Project activities and PoA (version 02.0)” in EB65 Annex 2, since there is no specific guidance in the AMS-I.I./Version 02, the CME applies the 90/10 confidence and precision level has been adopted. The calculation of sample size according to 90/10 of confidence/precision level has been verified by the validation team and it was considered appropriate for the PoA. The calculation is based on the general statistics principle as stated in the webpage of University of Florida /53/, and is considered as reliable. It is noted that for this equation, it is simplified to the calculation of 95% confidence level. As the CME only requires at least 90% of confidence level, thus the validation team considers that this applied formula is conservative to calculate the sample size. The CME also decided to take more samples up to about 20% more sampled households for control group and project performance group respectively. The validation team considers that this is more conservative and reliable.

#### Validation of Sampling Plan

The validation team checked the sampling plan presented in the PoA-DD Section A.4.4.2. and confirmed that it is prepared in accordance with the Appendix 3 of the “Standard for Sampling and Surveys for CDM Project activities and PoA (version 02.0)”. The validation results are tabulated as follows:

Table 7: Validation of Sampling Plan

Parameters	Validation Opinion	
	Control Group Survey –	Project Performance Survey

	Baseline monitoring of the control group	
Objectives and Reliability Requirements	It is defined in PoA-DD Section A.4.4.2. that the data described in PoA-DD Section E.7. will be collected during the crediting period with a sampling approach of 90/10 confidence/precision, which fulfills the requirements for reliable and unbiased estimation in the mentioned Guideline. This also complies with the requirement in the AMS-I.I. version 02 clauses 10-11.	
Target Population	The target population size for the calculation of the sample size is unknown but can be simplified to all households with the technical potential for biogas in the CPA project area. The technical potential is identified as households that have daily at least 25 kilogram animal manure at their disposal. The validation team considers that it is reasonable since this is the manure amount for the application of project biogas digester. The target population can be obtained from the local government as requested by the MARD. Moreover, the validation team considers that this induces a higher target population in the sampling, but thus results in a more conservative approach.	The target population will be determined from the individual CPA database of each CPA. For the CPA01, the validation team checked that the target population is 10,518 households, which is already the total population in CPA01.
Sampling Method	Multi-stage sampling is applied. The general situations in rural areas are similar to each other, thus is considered to be homogenous for the rural households in similar villages of CPA. Therefore the multi-stage sampling with primary sampling units of villages in a CPA and the second sampling units of households in the villages in a CPA is considered as correctly applied according to the mentioned Guideline.	The general situations in rural areas are similar to each other, thus is considered to be homogenous for the rural households. Therefore the simple random sampling is correctly applied as per the mentioned Guideline.
Sample Size	The sampling size will be calculated according to the 90/10	

	confidence/precision. However, the CME will collect about 20% extra samples of households, which is more than the minimum requirement. The validation team considers that this fulfills the requirements as stipulated in the mentioned Guideline. For the sample size for the project performance group in CPA01, the sample size is correctly calculated as 99 households, and a large sample size of 119 households will be applied for conservative approach.	
Sampling frame	Sampling frame will be drawn from the population without biogas digester located in the villages of CPA database of each CPA. Since the villages are also randomly selected, the validation team considers that it is also complied with the sampling Guideline.	Sampling frame will be drawn from the total population in the CPA database of each CPA. The validation team checked the database of CPA01, in which the information of CPA01 population is clearly indicated, and can be considered as the sampling frame.
Field measurements	It is defined that data for each season will be collected by on-site interview with the randomly selected baseline control group households.	It is defined that data for each season will be collected by on-site interview with the randomly selected project participated households.
Quality Assurance/Quality Control	Questionnaire will be developed and the survey will be conducted by training surveyors. Fuel consumption data will be referred to fossil fuel purchase receipts or on-site measurement by the surveyors. Quality assurance and quality control procedures for recording, maintaining and data collection will be implemented. The data will be cross-checked by other group of trained MARD staff to double-confirm the survey results. It is noted that in case of non-response, the surveyor will proceed to next households by random sampling approach. The survey results will be discussed with the local independent experts. Moreover, the data entry process for the database will be also double-checked by trained MARD staff. Thus the validation team considers that the survey results are deemed to be reliable and the quality control procedures	
Procedures for Administering Data Collection and Minimizing Non-Sampling Errors	The survey record or questionnaires will be collected and stored by MARD, and will be available during the verification process. In case of non-response the surveyor will proceed to the next household in the list of random selected households. Moreover, the trained surveyor will ensure the household interviewees understand the questionnaires. Thus the validation considers that this can minimize the non-sampling errors induced.	
Implementation	It is defined in the PoA-DD that after each monitoring period, the sampling will be implemented in order to collect the data for	



	the baseline fuel consumption and project performance parameters. The data collection will be carried out by the trained monitoring team: surveyors, survey team leader, monitoring report author, expert reviewer and draft report commenters. Thus the validation team considers that the qualifications and experience can be ensured providing that the monitoring team will be well trained as per the training plan. In addition, the potential conflicts of interest can be also avoided since the monitoring will be consulted with the relevant independent experts.
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In addition, the validation team has reviewed the sampling plan, and validated according to the Appendix 5 of the “Standard for Sampling and Surveys for CDM Project activities and PoA (version 02.0)”:

- a) The sampling plan presents a reasonable approach for obtained unbiased, reliable estimates of the variable by using the 90/10 confidence/precision approach to ensure the reliability. In addition, all the sampled households are unbiased since they are all rural households with similar relevant parameters;
- b) The sampling frame is defined as the households with similar parameters (e.g. average income level, household occupancy, food or heating habits, climate/temperature zone, availability, price and type of fuel used for baseline control group, while total population in each CPA database for the project performance group respectively. This complies with the requirements in AMS-I.I. clauses 10-11;
- c) The sampling approach is clear by using the multi-stage sampling for baseline control group, and simple random sampling for project performance group ;
- d) The proposed sampling size is adequate as it follows the minimum 90/10 confidence/precision as the criteria for reliability of sampling efforts as per the mentioned Guideline and Standard;
- e) The samples are deemed to be representative as they will be identified from multi-stage for baseline control group, and simple random sampling for project performance group;
- f) The data collection/measurement method is likely to provide reliable data as the relevant parameters of influence such as household occupancy, food or heating habits would not be experienced with dramatic changes during the crediting period. Moreover, the questionnaire to be responded by the sampled households would mainly concern with their daily living style, and is deemed not to cause any significant respondent error due to sensitivity or measurement error;
- g) The procedures for data measurements are well defined with the necessary forms to be used during the data measurement; adequate quality assurance and quality control procedures for recording, maintaining and data collection are also provided to avoid any bias. Moreover, the sampling and data collection would be consulted by independent experts. The validation team considers that since the measurement was based on annual sampling, the sampling frequency fulfills EB's General Guidelines for Sampling and Surveys for Small-Scale CDM Project Activities;

- h) The sampling frame contains the information necessary to implement the sampling approach. The persons conducting the sampling activities should be qualified as they will be trained to implement the monitoring plan as well as the sampling procedures.

### 3.7 Baseline and Monitoring Methodology

#### 3.7.1 Applicability of the selected methodology

The PoA and consequently each CPA applies the simplified baseline and monitoring methodology for small-scale CDM project activity AMS-I.C./ Version 18 "Thermal energy production with or without electricity".

Applicability criteria for the baseline methodology AMS-I.C. version 18 are assessed by the validation team by means of document review and interview. It is agreed in the validation team's opinion that the PoA fully met the criteria as described below:

- The PoA applies renewable energy technology (biogas digester) that supplies individual households or users with thermal energy that displaces fossil fuel coal used for cooking. The thermal energy, which is in form of biogas, is derived from decomposition of livestock manure;
- The total installed capacity of the each CPA will be limited to less than 45MW thermal, which does not exceed the threshold as stated in the small-scale methodology;
- The PoA only utilizes renewable biomass energy without any fossil fuels. Thus it does not involve in any co-fired system and biomass cogeneration units;
- The biogas produced by the PoA is captured and used within the cookers of households. It does not involve in delivery to another facilities within the boundary as the biogas digesters are installed in the underground area of livestock farm for the individual households;
- The PoA involves new installation of biogas digesters, and it does not seek to retrofit or modify any existing facility for renewable energy generation.

In addition, according to F-CDM-SSCwg ver 01 SSC\_571, the SSC WG also agreed that *"if the project participants decide not to switch methodologies (i.e. to continue using AMS-I.C), they may use the monitoring procedures provided in AMS-I.I, for the project biogas units, as long as the applicability conditions of AMS-I.I are met and validated"*. Thus the applicability criteria for the baseline methodology AMS-I.I. are assessed by the validation team by means of document review and interview. It is agreed in the validation team's opinion that the PoA fully met the criteria as described below:

- The PoA aims in generation of renewable thermal energy using renewable biogas for residential applications;
- The total installed capacity of the each CPA will be limited to less than 45MW thermal, which does not exceed the threshold as stated in the small-scale methodology.;



- The maximum installed thermal energy generation of the project biogas digester is about 2.5kW thermal ( $0.0997 \text{ kW/m}^3 \times 25\text{m}^3$ ), as the maximum size of biogas digester will be  $25\text{m}^3$ . Thus this is less than 150kW thermal.
- PoA only utilizes renewable biomass energy without any fossil fuels. Thus it does not involve in any biomass residues.

Thus the validation team considers that the project participant has correctly applied the approved methodology for the proposed PoA. As stated from the CME /xii/, no auxiliary fuel would be used for the operation of biogas digesters. Apart from this, the validation team confirms that there are no other major sources of emission from the PoA. Therefore the validation team considers that the greenhouse gas emissions occurring within the proposed PoA boundary as a result of the implementation of the proposed PoA which are not addressed by the applied methodology, is deemed to contribute less than 1% of the overall expected average annual emission reductions.

### **Applicability of the selected methodology for first CPA (CPA01)**

From the CPA01 database /14/, the validation team checked that the CPA01 can meet the above mentioned criteria. In addition, the maximum volume of the unit biogas digester in CPA01 is  $25\text{m}^3$ , thus the unit capacity of the biogas digester is about 2.5kW thermal ( $0.0997 \text{ kW/m}^3 \times 25\text{m}^3$ ), which is less than the rate capacity threshold of 150kW thermal. Thus the validation team considers that the CPA01 can also comply with the relevant eligibility criteria for CPA inclusion as indicated in PoA-DD Section A.4.2.2.

### **3.7.2 CPA Boundary**

During the on-site visit, the validation team has visited one household with newly installed KT.1 type digester and one household with newly installed KT.2 type digester for the CPA01 in Phu Tho Province.

In the absence of CPA, they do not have any equipment to capture the biogas produced by the decomposition of livestock manure. The validation team also visited two households never been having any biogas units and will participate in the CPA for the installation of biogas digesters. The households explained that the construction of biogas digesters was too expensive, in which they could not afford for such construction fee without the support from the government. The investment barrier will be covered in the later section of this report. Therefore the households can simply use fossil fuels (such as coal, LPG and kerosene etc.) for daily cooking.

The project boundary is the physical, geographical site of the baseline equipment and project equipment, i.e. biogas digesters producing biogas. It is defined as the geographical locations of baseline equipment and each biogas plant constructed by households participating in the SSC-CPA. Since the biogas digesters will be installed along the livestock farm of the rural households, these do not involve in any industrial, commercial or residential facility. The exact locations of the biogas units in the SSC-CPA will be defined in the future CPA inclusion; the biogas plants will be installed within the geographical boundary of Vietnam. The validation team considers that the physical, geographical site of the baseline equipment and project equipment, i.e. digesters

producing biogas delineates the project boundary in accordance with AMS-I.C./ Version 18.

It is also in line with the reference to AMS-I.I/ version 02, in which the project boundary is the physical, geographical site of the biogas digesters producing thermal energy during the crediting period, i.e. the locations within the involved provinces in Vietnam where all the included biogas digesters are to be operated by the end-users and implemented for the project activity. This is considered encompassing all anthropogenic emissions by sources of greenhouse gases under the control of the CME that are significantly and reasonably attributable to the SSC-CPA. These spots of biogas digesters are nevertheless not yet identified at the current stage because the proposed project will only be implemented and become realistic when the proposed PoA is registered. (For this PoA, the CPA01 and CPA02 were realistically developed and notified to UNFCCC on 27<sup>th</sup> January 2010 /44/ in accordance with EB47 paragraph 72.) In addition, each biogas digester will be identified accordingly (in this case the identification is the digester I.D. code). For the CPA01, it is checked by the validation team that this CPA involves 11 provinces as indicated in CPA-DD for CPA01, which is consistent with the information in the CPA01 database for MARD's biogas programme /14/. For the detailed validation of identification of biogas digesters for avoiding double-counting, this can be referred to Section 3.5 of this report.

It is also confirmed that the project neither generates electricity on grid nor transports the thermal power to other regions. The project boundary is clear and reasonably demonstrated.

Table 8: The SSC-CPA boundary is justified transparently and is presented as below.

	GHGs involved	Description
<b>Baseline</b>	CO <sub>2</sub>	Major source of emission due to consumption of fossil fuels such as coal, LPG and kerosene etc.
	CH <sub>4</sub>	Minor emission source, excluded for simplification
	N <sub>2</sub> O	Minor emission source, excluded for simplification
<b>Programme Activity</b>	CO <sub>2</sub>	Major source of emission due to consumption of fossil fuels such as coal, LPG and kerosene etc.
	CH <sub>4</sub>	Minor emission source, excluded for simplification (CH <sub>4</sub> is produced as the major composition of biogas and it is then used as the bio-fuel for cooking purpose of households.)
	N <sub>2</sub> O	Minor emission source, excluded for simplification

### 3.7.3 Baseline Identification

According to AMS-I.C./Version 18, the baseline is identified as the fuel consumption of the technologies that would have been used in the absence of the PoA multiplied by an emission factor for the fossil fuel displaced. This is in line with the baseline in the applied monitoring procedure in AMS-I.I/version 02, in which the baseline is prescribed in clause 6 as *"the fuel consumption of the thermal application used or that would have been used"*

*in the absence of the project activity times an emission factor for the fossil fuel displaced*". Thus it also refers to the fossil fuel consumption displaced by the use of project technology, i.e. biogas digester.

During the on-site interview with the rural residents /v-viii/, they claimed that using fossil fuels such as coal, LPG and kerosene for their daily cooking are the current practice locally. The rural residents stated that the installation of biogas digesters was too expensive, in which they could not afford for such construction fee without the support from the government. In addition, they will not use electrical stoves for cooking as the electricity is rather expensive than the fossil fuels. Electricity will be used for other electrical appliances but not for cooking purposes. During the on-site visit of 4 different households, the validation team also observed that electrical stoves are not used by the rural households.

The MARD /xii/ mentioned that there are also some households with higher living standards apply electricity on cooking. These households are generally richer than the ordinary rural households, and thus will not be considered as the target group of the PoA. The consumption of fossil fuels in the rural villages would continue in the absence of PoA. Therefore it can be confirmed that the baseline scenario is the emissions occurring due to the consumption of fossil fuels for daily cooking purposes.

The baseline determination is considered as transparent and reasonable.

### **3.8 Additionality**

#### **3.8.1 CDM consideration of the component of the programme**

According to Clarifications regarding the "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" (Version 01, EB 60 Annex 26), "*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". According to the PoA-DD Section B.1, the starting date of the CPA01 is selected as 5<sup>th</sup> July 2007 and hence earlier than the start date of validation, i.e. signing date of validation contract (i.e. 30<sup>th</sup> December 2009). Since this PoA refers to the EB 47 para. 72 for "programmes of activities which have commenced validation prior to 31<sup>st</sup> December 2009", thus the CME should demonstrate the prior CDM consideration of the CPA01.

According to "Guideline on the demonstration and assessment of prior consideration of the CDM" (Version 04), for the project with a start date before 2<sup>nd</sup> August 2008, for which the start date is prior to the date of publication of the PDD for global stakeholder consultation, are required to demonstrate that the CDM was seriously considered in the decision to implement the project activity.

The MARD started the national biogas programme in 2003 with the support from the Government of Netherlands. The first phase was completed in 2006 with a total of

18,000 biogas units installed nationwide. Then the phase 2 of the biogas programme was started in 2007 under the loan "Quality and Safety Enhancement of Agricultural Products and Biogas Development Project" from Asian Development Bank /15/. This SSC-CDM PoA also partially refers to the phase 2 of the national biogas programme of MARD.

Table 9: CDM development milestones of the PoA as presented in GSP PoA-DD

Date	History	
	Programme related	CDM related
2006		MARD has developed a draft PDD with Mitsubishi Securities for the project development with carbon credit /60/
28 <sup>th</sup> Sept 2006		MARD developed a PIN for CDM project to Vietnamese DNA  Vietnamese DNA issued a Letter of Endorsement to (LoE) MARD /38/
Sept 2006	Preliminary Design Report for the PoA prepared by BPD and SNV /55/	
12 <sup>th</sup> Oct 2006	Approval of preliminary Design Report by MARD	
5 <sup>th</sup> July 2007	Beginning of national biogas programme phase 2  Starting date of the CPA01 defined as date of submission for application of installation of the first biogas digester in the first CPA /28/	
February 2008		Email communication between MARD and the ADB's Asia Pacific Carbon Fund about the cooperation in the CDM development of the Vietnam Biogas Programme /62/
20 <sup>th</sup> Nov 2008		Approval of the Preliminary Design Report using ADB loan with CDM consideration issued by MARD /46/

Date	History	
	Programme related	CDM related
May 2009		Development of PoA documentation (Remarks: According to the interview with ADB /xv, xvi/, the project documentation was developed after the simplification of PoA procedures in EB47 held in May 2009 (para 72), "the Board decides to grant an exemption to PoA which have commenced validation prior to 31 <sup>st</sup> Dec 2009. Such PoA may include CPAs with a starting date between the 22 <sup>nd</sup> June 2007 and the commencement of validation of the PoA, if a list of such specific CPAs is provided to validating DOE and UNFCCC secretariat prior to 31 <sup>st</sup> Jan 2010".
30 June 2009	Loan contract "Quality and Safety Enhancement of Agricultural Products and Biogas Development Project" was signed between the Vietnamese Government and ADB /15/	
March to Sept 2009		PoA methodology development and project documentation by GFA Envest; CDM PoA Manual was prepared by GFA Envest with the coordination of United Nations Environment Programme (UNEP) Risoe Center, MARD and SNV in September 2009 /47/
30 Dec 2009		ADB invited technical and financial proposal for the validation service of PoA, then MARD signed the validation contract with TUV Rheinland /17/
31 Dec 2009 to 29 Jan 2010		PoA-DD and CPA-DD publication on UNFCCC webpage (Details in Section 3.14)

### **Starting date of CPA01**

From the programme history described above concerning CDM development, the first successful application was submitted by the participated household for the first CPA (namely CPA01) on 5<sup>th</sup> July 2007 /30/, and this is identified as the starting date of the CPA01. The validation team considers that this date was the earliest date at which implementation or construction or real action of the project activity begins.

### **Prior CDM consideration and continuous actions**

Since the starting date of the CPA01 is defined as 5<sup>th</sup> July 2007, which was before 2<sup>nd</sup> August 2008 and also before the starting of GSP (i.e. 31<sup>st</sup> December 2009), the PP has

to demonstrate the (i) serious CDM consideration prior to the starting date of CPA01, and (ii) continuous real actions to secure the CDM status for the CPA01 in parallel with its implementation. By reviewing the provided evidence and description in PoA-DD Section A.4.3, the CDM development was considered before the starting date of CPA01. The MARD developed a Project Information Note (PIN) and submit to the Vietnamese DNA for the CDM development for the proposed PoA. The Vietnamese DNA acknowledged the PIN and also issued a Letter of Endorsement (LoE) with list of approval project to MARD /38/. Thus this fulfills the requirements of “Guidelines for the demonstration and assessment of prior consideration of the CDM” version 4 EB62 clause 6.

In addition, the CME also carried out continuous real actions after the CPA01 starting date. An agreement was signed with ADB for the loan of PoA with CDM development /46/ in November 2008. Then the MARD and ADB worked on the PoA after the simplification of PoA procedures in EB47 held in May 2009 (para 72). In addition, the MARD also coordinated with GFA Envest, United Nations Environment Programme (UNEP) Risoe Center, and SNV in the development of “CDM PoA Manual for Vietnam Biogas Programme” in September 2009 /47/. Since there is less than 2 years of a gap between the documented evidence, the validation team concludes that continuing and real actions were taken by MARD to secure CDM status for the project activity. Thus this fulfills the requirements of “Guidelines for the demonstration and assessment of prior consideration of the CDM” version 4 EB62 clause 8.

Table 10: Summary of prior CDM consideration to the starting date of CPA01

<b>Starting date of CPA01</b>	<b>Justification of and evidences (references) on the starting date</b>	<b>Date of CDM consideration</b>
5 <sup>th</sup> July 2007	The submission of first successful application by the participated household for the CPA01	The PIN submitted to Vietnamese DNA by CME in Sept 2006 /38/.

### 3.8.2 Additonality of the PoA

According to the on-site interview, the MARD /xii/ confirmed that there is no mandatory regulation on the fuel consumption for the rural households and treatment of livestock waste for rural households in Vietnam. According to the Letter of Approval issued by the Vietnamese DNA /56/, it is also confirmed that this is a voluntary project for MARD to implementation the PoA. Thus the proposed PoA is confirmed to be a voluntarily coordinated action.

According to the PoA-DD, the additionality of each CPA will be demonstrated according to the installed capacity of CPA. For the CPA installed capacity less than 5MW (15MW thermal equivalent), the CME would apply the “Guidelines for Demonstrating Additionality of Microscale Project Activities” (Version 03) in EB63” for the demonstration of additionality. Since the individual subsystems (biogas digester) in each CPA is maximum at about 2.5kW ( $25\text{m}^3 \times 0.0997\text{kW/m}^3$ ), and smaller than the installed capacity of 1,500kW (4,500kW thermal) threshold. In addition, the end users of the biogas



digesters are the households of rural villages in Vietnam. Therefore this fulfills the requirements of the clause 2 (c) of the mentioned Guidelines.

For the CPA installed capacity ranged from 15MW to 45MW thermal, the MARD shall demonstrate the additionality as validated in the following paragraphs.

According to the “Standard for Demonstration of Additionality, Development of Eligibility Criteria and Application of Multiple Methodologies for PoA” version 01.0 EB65, the CME has demonstrated that “in the absence of CDM, none of the implemented CPAs would occur. Referring to the “Attachment A of Appendix B” (Version 08, EB 63 Annex 24) /7.1/, the barrier analysis is applied to demonstrate the additionality of the PoA. Moreover, according to “General Guidelines to SSC CDM Methodologies” (Version 17, EB 61 Annex 21) /9/, the following two documents are used to provide additional guidance or guidelines:

- 1) “Non-binding best practice examples to demonstrate additionality for SSC project activities” (Version 01, EB 35 Annex 34) /7.2/;
- 2) “Guidelines for objective demonstration and assessment of barriers” (Version 01, EB 50 Annex 13) /7.3/.

The CME has carried out the analysis of the barriers indicated in the “Attachment A of Appendix B”. These include: (a) barrier due to prevailing practice, (b) technological barrier and (c) investment barrier.

- Barriers due to prevailing practice

During the on-site interview with the rural residents /v-viii/, they claimed that using fossil fuels such as coal, LPG and kerosene for their daily cooking are the current practice locally. The rural residents stated that the installation of biogas digesters was too expensive, in which they could not afford for such construction fee without the support from the government. In addition, they will not use electrical stoves for cooking as the electricity is rather expensive than the fossil fuels. Electricity will be used for other electrical appliances but not for cooking purposes. During the on-site visit of 4 different households, the validation team also observed that electrical stoves are not used by the rural households.

The MARD /xii/ mentioned that there are also some households with higher living standards apply electricity on cooking. These households are generally richer than the ordinary rural households, and thus will not be considered as the target group of the PoA, and only the households using the baseline fossil fuel will be the targeted households. The MARD also realized that it is still common for households to discharge livestock waste into open lagoon or compost for general treatment, biogas digester is not commonly installed for rural households.

According to the DRAD /i/, the coverage for biogas digester is about 8% in rural households.



- Investment barriers

*Investment barrier at the level of the national programme*

The validation team realizes that the national biogas programme is managed by MARD, which is a public entity for dissemination of biogas facilities to rural households. This PoA is not designed to attract commercial investment for generation of revenues. The sources of investment mainly comes from public fundings. This is illustrated in the implementation of phase 1 of the national biogas programme (2003-2005), in which the programme was supported by the Government of Netherlands. For the phase 2 programme, the MARD aims to install 140,000 biogas facilities in 58 provinces of Vietnam. It is indicated in PoA-DD that at the start of phase 2 programme, the MARD pursued CDM incomes as one of the financing options of the programme /38/.

*Investment barrier for biogas facilities at household level*

According to the PoA-DD, the average investment cost for biogas facility which includes the construction and supporting costs of biogas digesters are indicated. According to the Biogas User Survey (BUS) 2006 – 2009 /26-27/, the average cost for biogas digester (material cost plus construction cost) was 0.95 million VND/m<sup>3</sup>. The average size of digester was 11.8 m<sup>3</sup>, thus the average cost for an average biogas digester was about 11.22 million VND. However, the average annual income of the small farm households is about 11.9 million VND per person (4-5 persons in one household). Thus the cost of biogas digester occupies a large portion of the average income of households. Some of the programme subsidy is supported by public funding, such as from Dutch Government /29/. However, such subsidy is still not yet enough to support the programme development. This was already stated in the Project Information Note (PIN) /38/ submitted to the Vietnamese DNA in 2006, financial support such as CDM revenue was the essential part for the support the programme development. The validation team also checked that the Dutch Government will terminate the financial support in 2012 /29/. Thus in order to continue the biogas programme, financial fundings such as CDM income is required.. The validation team considers that the investment barrier is demonstrated for the proposed PoA.

- Technological barrier

According to the PoA-DD, the poor quality of biogas digesters is a well-known barrier for the dissemination of biogas digesters in Vietnam.

The validation team also checked the research report “Evaluation Study for Household Biogas Models” issued by the “Sustainable Energy Development Consultancy Joint Stock Company” in December 2009 for the study of various types of biogas digesters in LDC /19/.

It is reported that the most common type of biogas digester is the nylon bag. It is easy to construct, low requirements of skillful workers for construction, and with easy availability of raw material. The construction cost is relatively low, about 1-1.2 million VND compared with KT1 and KT2 for 2.6-3.5 million VND (Part VI of the report). However, since it is made by nylon, it is comparably low durability and safety. Biogas leakage will be easily happened. Thus the O&M is comparably inconvenient. There is another type of

digester called the Vacvina type. It is excluded in the study: “*Vacvina model was not selected because its weaknesses like non-material saving, less durable structure, low safety as gas is store in nylon bag nor low gas pressure etc.*” Thus in the absence of CDM support, the households basically installed poor quality of biogas digesters with relatively cheap cost without the quality control and assurance.

It is reported that in Vietnam, since more skillful labours are required for the construction, quality control and assurance of KT.1 and KT.2 or equivalent biogas digesters, it causes a technological barrier to the installation of KT.1 and KT.2 digesters. In addition, the relatively high cost also is another investment barrier to the proposed PoA.

Thus it is substantiated that without the financial subsidies, other cheaper type of biogas digesters will be installed with lower quality, thus it is a technological barrier to the PoA in the construction of the KT.1 and KT.2 biogas digester.

According to the barrier analysis as stipulated in the requirements of “Attachment A of Appendix B” (Version 08, EB 63 Annex 24), the validation team considers that the CME has demonstrated that the proposed voluntary measure of PoA would not be implemented in the absence of CDM.

Referring to the interview with the representative of MARD /xii/, there are currently no national or regional regulations prescribing the implementation of biogas units in small farm households. There is also no foreseeable regulations at present. The representative from the Department of Scientist, Technology and Environment /xi/ also stated that there is no such mandatory policy for the implementation of biogas facilities being enforced. Since there is no existing mandatory policy/regulation, it is demonstrated that in the absence of the CDM, “(ii) the mandatory policy/regulation would be systemically not enforced and that non-compliance with those requirements is widespread in the country” and “(iii) the PoA will lead to a greater level of enforcement of the existing mandatory policy/regulation” are not applicable to the PoA.

### **3.8.3 Approach for demonstrating additonality of CPA under the PoA**

For the CPA with installed capacity under 15MW thermal, the additionality will be demonstrated by the CME according to “Guidelines for Demonstrating Additionality of Microscale Project Activities” (Version 03) EB63 Annex 23. For the CPA with installed capacity within 15-45MW thermal, the additionality of CPA is assessed and demonstrated in accordance with the following criteria:

#### *(a) Investment barrier*

According to the MARD, the target participants of the CPA will be the poor households who cannot afford the investment costs of the biogas plants. Once the conditions of the households are accessed by the MARD, eligible households can obtain the financial assistance from the MARD. As stated in the previous Section, the cost of biogas digester occupies a large portion of the average income of households. In addition, the

proposed PoA and subsequent CPA also include the promotional costs, training cost (for masons, technicians and user households), after-service cost for the guarantee period of 12 months for the installed biogas digesters etc. Thus it is demonstrated that the investment barrier exists in both household level and the CME level.

*(b) Technological barrier*

All of the biogas units installed under the proposed SSC-CPA will be purchased from and installed by trained and certified biogas construction teams. Since the biogas digester is not widespread in Vietnam, the technique and skills in the installation, maintenance of biogas digester is limited. Therefore the MARD has provided special training to the mason and technician in order to help to enhance the construction of biogas digesters for the rural households. Referring to the validation opinion in the previous section, the validation team considers that the technological barrier is also demonstrated for the SSC-CPA in the proposed PoA.

*(c) Barriers due to prevailing practice*

As confirmed by MARD and the on-site interview with the rural residents /v-viii/, it is common for the rural households in Vietnam using traditional fossil fuels and agricultural residues for cooking. For those rich households using electricity for cooking, they will not be the target households in the proposed PoA. As validated in the previous section, the validation team considers that prevailing practice for using the fossil fuel is demonstrated as a barrier of biogas digester. For the details, please refer to the previous Section.

### **Additionality demonstrated in the real-case CPA-DD**

As per the real-case CPA-DD Section B.3, the assessment of additionality of the CPA01 refers to discussion of eligibility criteria in section B.2 (i.e. criterion 7). The validation team checked the CPA01 database /14/, in which the total volume of the biogas digesters included in the CPA01 is  $(12.285\text{m}^3/\text{unit} \times 10,518 \text{ unit}) \approx 129,216 \text{ m}^3$ . Thus the total capacity is about  $(129,216 \text{ m}^3 \times 0.0997\text{kW}/\text{m}^3) \approx 12,883 \text{ kW}$  thermal, which is smaller than 15MW thermal. In addition, the maximum volume of the unit biogas digester is  $25\text{m}^3$ , thus the maximum unit capacity is about 2.5kW ( $25\text{m}^3 \times 0.0997\text{kW}/\text{m}^3$ ). Therefore the CPA01 is additional according to the clause 2(c) of the “Guidelines for Demonstrating Additionality of Microscale Project Activities” (Version 03) EB63 Annex 23.

## **3.9 GHG Emission Reductions from a typical CPA**

The calculation of emission reductions ( $ER_y$ ) has been demonstrated in section E.6.2 of the PoA-DD and section B.5.2 of the real-case CPA-DD (CPA01). The validation team assessed the ex-ante estimation of the applied parameters, and considered that the calculations are transparently documented with assumptions regarding the forecast emission reductions.

The MARD applies the monitoring methodology from latest valid AMS-I.I version 02 for the PoA monitoring of emission reductions. The validation team checked that the Baseline Emissions are based on the Option 1 for “avoided quantity of fossil fuel

consumption". The annual consumption of baseline fossil fuel is determined as per AMS-I.I paragraph 10 (b) for setting up a baseline control group not installed with biogas digester. Then the clause 10 (a) is applied with a representative sample of targeted households for measurement for a minimum of 90 days. The seasonal pattern of usage of the traditional stove for fossil fuel consumption is accounted.

For the Project Emissions, the annual performance ratio for the proportion of biogas units remain operating and the annual fossil fuel consumption for the participated households will be monitored by surveys in each CPA. This also fulfills the requirement in the AMS-I.I.

According to the selected methodology AMS-I.I./Version 02, the emission reductions ( $ER_y$ ) by the programme activity during the crediting period is the difference between the baseline emissions ( $BE_y$ ), project emissions ( $PE_y$ ) and leakage emissions ( $LE_y$ ), which is expressed as follows:

$$ER_y = BE_y - PE_y - LE_y$$

Same interpretation can be also applied for AMS-I.C./Version 18 for the above estimation of emission reductions.

Regarding to the leakage emissions ( $LE_y$ ), through on-site visit, the validation team confirms that the biogas digesters were installed along the small farm of households, and the digesters were not allowed to be transferred to any other location. Moreover, it only involved the feeding of livestock waste into the biogas digester, and it did not involve any biomass residues in the biogas digester. Therefore according to the AMS-I.I./Version 02, leakage emissions are not required to be considered and are assumed as zero. Same interpretation can be also applied for AMS-I.C./Version 18.

For the baseline emissions, according to the PoA-DD Section E.6.2,

$$BE_y = \sum_i FC_{BL,i} * NCV_i * EF_{FF,i}$$

Where:

$BE_y$	Baseline emissions of the control group household during the year y (tCO <sub>2</sub> )
$i$	Index for the type of baseline fossil fuel consumed
$FC_{BL,i}$	Annual consumption of baseline fossil fuel i (mass or volume unit)
$NCV_i$	Net calorific value of the fossil fuel i (GJ/mass or volume unit) The validation team checked that the NCV values are obtained from 2006 IPCC Guidelines, thus these are considered as reliable.
$EF_{FF,i}$	CO <sub>2</sub> emission factor of fossil fuel i (tCO <sub>2</sub> /GJ) The validation team checked that the CO <sub>2</sub> emission factors are obtained from 2006 IPCC Guidelines, thus these are considered as reliable.

For CPA01, since the control group will be set up when the PoA is registered. Thus the data of baseline fuel consumption in the CPA01 database /14/ is applied for the ex-ante estimation of baseline emissions. The validation team checked the CPA01 database, and confirms the data applied is consistent with the information in the database. Moreover, the fuel consumption of baseline control group will be measured ex-post during monitoring.

It is noted that the baseline emissions per household is calculated, the contribution of the proportion of biogas digester remain operation would be then considered in the emission reductions calculation. The validation team considers that this is also in line with the applied methodology, and the net effect of the biogas digester remain operation is also indicated.

For the project emissions, according to the PoA-DD Section E.6.2,

$$PE_{y,j} = \sum_i FP_{i,y,j} * NCV_i * EF_{CO2,i}$$

Where:

- $PE_{y,j}$  Project emissions per household for the CPA j in year y  
 $FP_{i,y,j}$  Amount of fossil fuel i consumed per year in project case for the CPA j  
 $NCV_i$  Net Calorific value of the fuel i  
 The validation team checked that the NCV values are obtained from 2006 IPCC Guidelines, thus these are considered as reliable.  
 $EF_{CO2,i}$  Emission factor for the fuel type i  
 The validation team checked that the emission factors are obtained from 2006 IPCC Guidelines, thus these are considered as reliable.

For the real-case CPA01, according to the Biogas User Survey 2006 /26/, the fossil fuel (coal, LPG and kerosene) consumption for baseline situation and project case were sourced and applied in the calculation of baseline and project emissions as indicated in the real-case CPA-DD Section B.5.2. As the leakage emissions are neglected, the ex-ante estimation of emission reductions per unit is correctly calculated as:

$$ER_{y,j} = (BE_{y,j} - PE_{y,j}) * N_{k,j} * n_{k,y,j}$$

Where:

- $ER_{y,j}$  Emission reductions in CPA j in year y  
 $BE_{y,j}$  Baseline emissions per control group household in year y belonging to CPA j  
 $PE_{y,j}$  Project emissions per household for the CPA j in year y  
 $N_{k,j}$  Number of biogas units in CPA j  
 $n_{k,y,j}$  Performance ratio of the biogas units in year y in CPA j

The ex-ante emission reductions of CPA01 ( $ER_{CPA,y,j}$ ) are also indicated in the real-case CPA-DD. The validation team checked the calculation worksheet and the CPA01 database /14/, the number of biogas digester in CPA01 is confirmed as 10,518 units. For ex-ante calculation, it is assumed that the performance ratio is 100%, i.e. all the installed

biogas digester are remained in operation. Thus the ex-ante estimation of emission reductions for CPA01 is 28,455 tCO<sub>2</sub>e per year.

The ex-ante calculations of baseline emissions and project emissions have been demonstrated in the Section B.6 of the PoA-DD and Section B.5 of CPA-DD. The baseline emissions and project emissions are calculated according to the annual consumption data of fossil fuels per household from the CPA01 database and official Biogas User Surveys (BUS). Thus this is based on the most recent data available at the time of submission of the PoA-DD, generic CPA-DD & real-case CPA-DD to the DOE for validation (i.e. GSP, 31<sup>st</sup> December 2009 to 29<sup>th</sup> January 2010) for the calculation of baseline emissions and project emissions of the project. Therefore the validation team considers that the estimation was reasonably and transparently carried out.

Table 11: The summary of GHG emission reduction

All assumptions made for estimating GHG are listed in the PoA-DD	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	As per Section B.6 of the PoA-DD and Section B.5 of CPA-DD, assumptions were made for ex-ante GHG emission reductions.
All data used by project participants are listed in the PoA-DD	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	All data such as NCV, emission factor used by the CME are listed in the Section B.6 of the PoA-DD and Section B.5 of CPA-DD.
Their references and sources are also listed in the PoA-DD	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	All data from public sources, such as IPCC, Biogas User Survey are listed in the Section B.6 of the PoA-DD and Section B.5 of CPA-DD.
Formulas, parameters, values are complete, accurate, transparent and conservative	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	The validation team checked the reference information and confirms that the formulas, parameters, values applied in the PoA-DD and CPA-DD are complete, accurate, transparent and conservative.
All the references and documents used are correctly quoted and conservatively interpreted in the PoA-DD	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	The validation team checked the public references and documents, and confirms that these are correctly quoted and conservatively interpreted in the PoA-DD and CPA-DD.
Methodology has been applied correctly to calculate project emissions, baseline emissions, leakage emissions and emission reductions	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	The AMS-I.I./Version 02 is applied correctly to calculate project emissions, baseline emissions, leakage emissions and emission reductions.
All the emissions of baseline emissions can be replicated using information provided in the PoA-DD	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	The validation team checked the information provided in the PoA-DD and CPA-DD with the reference information, and all the emissions of baseline emissions can be replicated.

### 3.10 Monitoring Plan for a typical CPA

The monitoring plan is presented in Section E.7 of PoA-DD Section E.7 and CPA-DD Section B.6. By reviewing the monitoring plan, the validation team considers that the



monitoring plan for a typical CPA meets the requirements of the approved monitoring methodology AMS-I.I./Version 02.

### 3.10.1 Parameters determined ex-ante

The ex-ante parameters for determining the GHG emission reductions are described in section E.6.3 of the PoA-DD. According to AMS-I.C./version 18 paragraph 13, IPCC default values shall be used for calculating the emission factor when the country specific data are not available. The validation team checked the values applied for the ex-ante parameters (net calorific values and emission factors for fossil fuels), and confirmed that they are consistent with the data source of 2006 IPCC Guidelines /18/. Meanwhile the number of biogas digesters installed can be available from the CPA database during the CPA inclusion. In addition, the validation team considers that the estimation of emission reductions follow the requirements in the AMS-I.I.

### 3.10.2 Parameters monitored ex-post

The parameters for determining the GHG emissions reductions are described in section E.7.1 of the PoA-DD and section B.5 of CPA-DD.

Table 12: The summary of GHG emission reduction

Parameter	Description	Monitoring frequency
$FC_{BL,coal,j,y}$	Consumption of coal per household in year y of the control group belonging to CPA j	Annually
$FC_{BL,LPG,j,y}$	Consumption of LPG per household in year y of the control group belonging to CPA j	Annually
$FC_{BL,kerosene,j,y}$	Consumption of kerosene per household in year y of the control group belonging to CPA j	Annually
$FC_{coal,j,y}$	Consumption of coal per household in year y in CPA j in the project scenario	Annually
$FC_{LPG,j,y}$	Consumption of LPG per household in year y in CPA j in the project scenario	Annually
$FC_{kerosene,j,y}$	Consumption of kerosene per household in year y in CPA j in the project scenario	Annually
$n_{k,y,j}$	Annual performance ratio of installed plants k in year y in CPA j	Annually

The validation team checked the values of data applied for the parameters applied in calculating the ex-ante emission reductions. The source of data applied such as the CPA01 database and Biogas User Survey 2006 is validated. In addition, the validation team considers that the estimation of emission reductions follows the requirements in the AMS-I.I./ Version 02. Please refer to the Section 3.9 of this report for details.

### 3.10.3 Management system and quality assurance

The monitoring plan for a SSC-CPA is described in section E.7.2 of the PoA-DD, in which this is consistent with the monitoring plan for the PoA in section A.4.4.2 of the same document. Separate database will be organized for each of the CPAs under PoA managed by the MARD. The data will be monitored by sampling. The sampling plan follows the requirements of "General Guidelines for Sampling and Surveys for small-



scale CDM project activities” and makes reference to the Standard for Sampling and Surveys for CDM Project Activities and PoA” (Version 02.0), EB65 Annex 2. Please refer to the Section 3.6 for the detailed validation of sampling plan for monitoring management.

During the on-site interview with the MARD /xv/, the monitoring of each CPA will be in charge and responsible by the MARD. The organization chart of the MARD /22/ was checked for confirming its management structure. All staff, masons, technicians and biogas digester end-users involved in the monitoring will be trained by the MARD or by a person dedicated by the MARD before performing any monitoring activities. All the training and implementation procedures are indicated in the “Biogas Project Division Guidelines” prepared by the BPD or MARD /36/. The training plans and manuals about CDM monitoring and technical aspects such as installation, operation and maintenance are reviewed by the validation team /37/. The training records for the end-users, technicians and masons are also checked, and confirmed to be valid /16, 51, 52/. In addition, QA/QC procedures to handle non-response data are described, which are confirmed to be able to ensure a real, measurable and conservative calculation of emission reductions from a CPA.

According to document review in PoA-DD, on-site interview with representatives from the MARD /xii/, the monitoring arrangements described in the monitoring plan is assessed; it is reasonably believed that the monitoring plan can be feasible within the CPA operation stage. The validation team considered that CME and the CPA implementer are capable to implement the monitoring plan provided that sufficient training can be arranged to the monitoring team.

### 3.11 Sustainable Development

The validation team validated that the programme is considered to be contributing to sustainable development (SD) of Vietnam in the following ways:

- (i) Contribution to economic development: the biogas sector creates significant employment from construction, after-sales service of biogas digester in rural areas;
- (ii) Contribution to social development: provision of convenient fuel supply which could save time and money for enhancing the opportunities of education and other social activities for women and children. In addition, the reduction in consumption of fossil fuels could improve the indoor air pollution of households, thus the health conditions of households;
- (iii) Contribution to environmental development: substituting fossil fuels and synthetic fertilizer, changing traditional manure management systems, and reduction of the emissions of greenhouse gases etc. It can also improve the situation of deforestation by reducing the consumption of firewood as fossil fuels.

Thus, the sustainable development in social, environmental and economic aspects could be achieved by implementation of the PoA. Moreover, the validation team has checked

the LoA /56/ from the Vietnamese DNA for the confirmation of the contribution of the PoA to the sustainable development of Viet Nam.

### **3.12 Environmental Impacts (at PoA level)**

Referring to the PoA-DD form /4.1/, it is allowed the environmental analysis to be done at PoA level or CPA level. It has been indicated in PoA-DD that the environmental analysis is done at the PoA level.

There are no host country requirements for Environmental Impact Assessment to be done for this type of programme for the small farm households. This is also confirmed by the representative from the Department of Scientist, Technology and Environment /xi/ during the on-site interview. In addition, the biogas plants from participating households will be registered under the national biogas programme, i.e. the PoA, as managed and coordinated by the MARD.

As stated in the PoA-DD, the Circular No. 05/2008/TT-BTNMT dated 8 December 2008 provides the guidance and procedures for the preparation of environmental assessments /24/. It is stated that only the livestock farms with more than 1,000 heads per year and poultry farms with more than 20,000 heads per year require the environmental assessment. As the MARD only limits the small farm households to participate in the PoA, the environmental assessment is thus not necessary for the PoA. During the on-site visit, the validation team also observed that the households are small farms with less than 40 heads of livestock in each farm.

In addition, it is analysed in the PoA-DD that the PoA does not result in negative environmental impacts. The PoA can contribute environmental development by substituting fossil fuels and synthetic fertilizer, changing traditional livestock manure management systems, reducing the emissions of greenhouse gases etc. The PoA can also improve the situation of deforestation by reducing the consumption of firewood as fossil fuels.

### **3.13 Local Stakeholder Consultation (at PoA level)**

Referring to the PoA-DD form /4.1/, it is allowed the local stakeholder consultation to be done at PoA level or CPA level. It has been indicated in the PoA-DD that the local stakeholder consultation is done at the PoA level.

According to the PoA-DD, the stakeholder consultation workshops were carried out in two provinces: i) Nghe An Province on 3<sup>rd</sup> April 2009 and ii) Phu Tho Province on 8<sup>th</sup> April 2009. In addition, the CDM PoA was presented in a stakeholder workshop on 12<sup>th</sup> June 2009 in Hanoi city. Apart from these workshops, the biogas programme is a country-wide national biogas programme being promoted in various media.

The consultation was done prior to the publication of the PoA-DD on the UNFCCC website (i.e. 31<sup>st</sup> December 2009). For the provincial workshops, these were conducted by the provincial offices of the Ministry of Agriculture. According to the Local Stakeholder Consultation Reports /48-49/, the stakeholder consultation workshop in Nghe An

Province was carried out on 3<sup>rd</sup> April 2009 in Nghi Thuan commune with 44 people attended, while the stakeholder consultation meeting in Phu Tho Province was carried out on 8<sup>th</sup> April 2009 in Phong Chau town with 39 people attended.

The lists of participants for the both meetings are included Meeting Reports. From the background of the stakeholders, the stakeholders consisted of government officials from local authority (Provincial BPD, district extension centre), environmental office, Women union, Farmer Union, town representatives and local villagers. The surveyed stakeholders included representatives from different genders, age groups, educational levels and occupations. It was reasonably believed that the survey could reflect the general attitudes towards the project activity from the local stakeholders who were possibly affected by the project, thus the validation team considers that the local stakeholder consultations were adequate and appropriate. The validation team has reviewed the attendance lists with the signatures of the participants.

During the on-site visit, the representatives from the local villages (Cha Hoa Commune of Viet Tri City) in Phu Tho Province were interviewed /v-viii/. In general, the interviewees showed adequate understanding of the nature of the biogas programme through the introduction prepared by the MARD. For the two households with biogas units (one with KT.1 and another with KT.2 types), they are familiar with the operation of the biogas digesters. They also stated that there is no unpleasant odor due to the operation of biogas digesters, thus they consider there is no adverse environmental impacts. Under the national biogas programme, they received the financial support from the MARD for the installation of biogas units. The signed receipts for financial support were checked by the validation team /35/. They also stated that in the absence of CPA, they use the fossil fuels such as coal, LPG and agricultural residues for daily cooking, but not the electrical stoves. The interviewees' overall response was supportive to the programme.

### 3.14 Comments by Parties, Stakeholders and NGOs

The PoA-DD/ Version 01 and real-case CPA-DD/ Version 01 dated 24<sup>th</sup> December 2009, and CPA-DD/ Version 01 without effective date were made publicly available on UNFCCC's website (<http://cdm.unfccc.int/ProgrammeOfActivities/Validation/DB/FYHTWZ3QLWM91NKR9DB47YIHGQ5KSU/view.html>) and parties, stakeholders and NGOs were through the CDM website invited to provide comments during a 30 days period from 31<sup>st</sup> December 2009 to 29<sup>th</sup> January 2010, where no comment was received.

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## Appendix A

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### **THE VALIDATION PROTOCOL FOR CDM PROGRAMME OF ACTIVITIES**

based on CDM Validation and Verification Manual

Vietnam National Biogas Programme  
in Viet Nam

Report No. 01 997 CDM 3  
Version No. 01

**Table A Mandatory Requirements for Clean Development Mechanism (CDM) Programme of Activities (PoA)**

Requirement	Reference	Conclusion
<b>About Parties</b>		
1. The programme shall assist Parties included in Annex I in achieving compliance with part of their emission reduction commitment under Art.	Kyoto Protocol Art.12.2	N/A/. No Annex I party is involved.
2. The project shall assist non-Annex I Parties in contributing to the ultimate objective of the UNFCCC.	Kyoto Protocol Art.12.2.	<p>The ultimate objective of the UNFCCC is to achieve "...stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system".</p> <p>The programme aims in reduction of fossil fuel consumption with biogas digester in Viet Nam. GHG emission reductions can be achieved by the reduction of fossil fuel consumption for cooking.</p>
3. The project shall have the written approval of voluntary participation from the designated national authority of each Party involved.	Kyoto Protocol Art. 12.5a, CDM Modalities and Procedures §40a	The LoA is issued from the DNA of host country, Viet Nam.
4. The project shall assist non-Annex I Parties in achieving sustainable development and shall have obtained confirmation by the host country thereof.	Kyoto Protocol Art. 12.2, CDM Modalities and Procedures §40a	The LoA /56/ issued by the DNA of Vietnam confirms the proposed programme in contributing to sustainable development of Vietnam.
5. In case public funding from Parties included in Annex I is used for the project activity, these Parties shall provide an affirmation that such funding does not result in a diversion of official development assistance and is separate from and is not counted towards the financial obligations of these Parties.	Decision 17/CP.7, CDM Modalities and Procedures Appendix B, § 2	The proposed Po A received public funding from several sources. The validation team checked that there was no diversion of ODA as confirmed by the Dutch Government.

Requirement	Reference	Conclusion
6. Parties participating in the CDM shall designate a national authority for the CDM.	CDM Modalities and Procedures §29	The designated national authority (DNA) of Viet Nam is Ministry of Natural Resources and Environment of Viet Nam.
7. The host Party and the participating Annex I Party shall be a Party to the Kyoto Protocol.	CDM Modalities §30/31a	Viet Nam ratified the Kyoto Protocol on 25 <sup>th</sup> September 2002
8. The participating Annex I Party's assigned amount shall have been calculated and recorded.	CDM Modalities and Procedures §31b	N/A/. No Annex I party is involved.
9. The participating Annex I Party shall have in place a national system for estimating GHG emissions and a national registry in accordance with Kyoto Protocol Article 5 and 7.	CDM Modalities and Procedures §31b	N/A/. No Annex I party is involved.
<b>About Design of Programme</b>		
10. The CDM-POA-DD sets a framework for the implementation of the PoA and defines unambiguously a CPA under the PoA.	PoA Procedures § 2	Yes. The implementation of the PoA is described in the PoA-DD. Moreover, detailed descriptions of criteria for CPA inclusion are provided in section A.4.2.2 of the PoA-DD.
11. The coordinating/managing entity shall be identified.	PoA Procedures § 2 (a)	The Ministry of Agriculture and Rural Development (MARD) is identified as the coordinating / managing entity (CME) of the PoA, which is also confirmed in the LoA /56/ issued by the DNA of Vietnam.
12. The boundary for the PoA in terms of a geographical area (e.g., municipality, region within a country, country or several countries) within which all CPAs included in the PoA will be implemented is defined.	PoA Procedures § 2 (b)	The boundary for the PoA for all CPAs to be included and implemented is defined as in the whole country of Vietnam.

Requirement	Reference	Conclusion
13. Eligibility criteria are defined for inclusion of a project activity as a CPA under the PoA, which shall include criteria for demonstration of additionality, and the type and/or extent of information (e.g. criteria, indicators, variables, parameters or measurements) that shall be provided by each CPA in order to ensure its eligibility.	PoA Procedures § 2 (g)	OK. The detailed descriptions of eligibility criteria for CPA inclusion are provided in section A.4.2.2 of the PoA-DD, which include criteria for demonstration of additionality, and the type and/or extent of information (e.g. criteria, indicators, variables, parameters or measurements) that shall be provided by each CPA in order to ensure its eligibility.
14. The length of the PoA is not exceeding 28 years.	PoA Procedures § 2 (h)	The length of the PoA is taken as 28 years.
15. The operational and management arrangements established by the coordinating/managing entity for the implementation of the PoA is described, including a description of a record keeping system for each CPA under the PoA, 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 CDM project activity or as a CPA of another PoA, the provisions to ensure that those operating the CPA are aware and have agreed that their activity is being subscribed to the PoA.	PoA Procedures § 2 (i)	The operational and management arrangement has been established in the PoA-DD Section A.4.4.1 for the implementation of PoA. The operation Management System can assure to meet the requirement indicated in the relevant section of SSC-PoA-DD form: 1) Record keeping system for each CPA under the PoA; 2) Procedure to avoid double counting; 3) Procedure to check for debundling; 4) Awareness and agreement of those operating a CPA on PoA subscription.
16. The proposed statistically sound sampling method/procedure to be used by DOEs for verification of the amount of emission reductions achieved by CPAs under the PoA is described. In case the coordinating/managing entity opts for a verification method that does not use sampling but verifies each CPA there is a transparent system defined and described that ensures that	PoA Procedures § 2 (k)	The detailed sampling plan is described in section E.7.2. of the PoA-DD, which is confirmed to be in accordance with the requirements in the "General Guidelines for Sampling and Survey for



Requirement	Reference	Conclusion
no double accounting occurs and that the status of verification can be determined anytime for each CPA.		Small-Scale CDM Project Activity” (EB 50 Annex 30). The monitoring procedure in the PoA-DD also follows the Sampling Guidelines and can be ensured that no double accounting occurs.
<b>About small-scale programmes of activities (if applicable)</b>		
17. The CPAs shall meet the eligibility criteria for small scale CDM project activities set out in § 6 (c) of the Marrakech Accords.	Simplified Modalities and Procedures for Small Scale CDM Project Activities §12a,c	The assessment for CPA as small scale CDM CPA is included in eligibility criteria for CPA inclusion.
<b>About additionality</b>		
18. Additionality of the programme as a whole is demonstrated because in the absence of the CDM (i) the proposed voluntary measure would not be implemented, or (ii) the mandatory policy/regulation would be systematically not enforced and that non- compliance with those requirements is widespread in the country/region, or (iii) that the PoA will lead to a greater level of enforcement of the existing mandatory policy/ regulation.	Kyoto Protocol Art. 12.5c, CDM Modalities and Procedures §43 PoA Procedures § 2 (e)	As per the applied baseline and monitoring methodology, the SSC additionality guideline “Attachment A of Appendix B” for the Simplified modalities and procedures for small-scale CDM project activities, the additionality of the PoA is demonstrated.  It is confirmed that the proposed PoA is a voluntarily coordinated action and it would not be implemented in the absence of the CDM, due to the barrier from prevailing practice, investment barrier and technological barrier.
19. Additionality of a typical CPA is demonstrated by using the procedure provided in the baseline and monitoring methodology applied.	PoA Procedures § 2 (f)	The additionality of CPAs is included in the eligibility criteria for inclusion of a SSC-CPA in the PoA in section 4.2.2 of the PoA-DD /1/ and section B.2 of the

Requirement	Reference	Conclusion
		real-case CPA-DD /2/, which is in accordance with the requirement of EB 55 Annex 38 /8.2/. As per the applied baseline and monitoring methodology, the SSC additionality guideline “Attachment A of Appendix B” for the Simplified modalities and procedures for small-scale CDM project activities” is applied to demonstrate additionality.
<b>About application of baseline and monitoring methodology</b>		
20. The baseline and monitoring methodology shall be previously approved by the CDM Executive Board.	CDM Modalities and Procedures §37e	The PoA and its CPAs applies the approved baseline and monitoring methodology AMS-I.C./Version 18 “Thermal energy production with or without electricity”, which is approved by the EB. According to F-CDM-SSCwg ver 01 SSC_571, the Small-Scale Working Group agreed that the project participant can apply AMS-I.I for their PoA involving household biogas projects. Therefore the CME applies the monitoring methodology from AMS-I.I for the PoA monitoring.
21. A baseline shall be established on a project-specific basis, in a transparent manner and taking into account relevant national and/or sectoral policies and circumstances.	CDM Modalities and Procedures §45c,d	As the per PoA-DD section E.4, the baseline scenario is prescribed according to the applied methodology AMS-I.C./Version 18, the baseline is identified as the fuel consumption of the technologies that would have been used in the absence of the PoA multiplied by an emission factor for the fossil fuel displaced.

Requirement	Reference	Conclusion
22. The baseline methodology shall exclude to earn CERs for decreases in activity levels outside the project activity or due to force majeure.	CDM Modalities and Procedures §47	The applied methodology AMS-I.C./Version 18 excludes to earn CERs for decreases in activity levels outside the project activity or due to force majeure.
23. The monitoring plan for a typical CPA is developed in accordance with the approved monitoring methodology, and identification of the monitoring provisions and data parameters a CPA has is to apply/monitor	PoA Procedures § 2 (j)	For each CPA, all parameters described in section E.7.1 of the PoA-DD will be monitored according to the monitoring plan in section E.7.2. By reviewing the monitoring plan, the validation team considers that the monitoring plan for a typical CPA meets the requirements of the approved monitoring methodology AMS-I.C./Version 18.
24. Provisions for monitoring, verification and reporting shall be in accordance with the modalities described in the Marrakech Accords and relevant decisions of the COP/MOP.	CDM Modalities and Procedures §37f	The validation team confirms that the provisions for monitoring, verification and reporting are in accordance with the modalities described in the Marrakech Accords and relevant decisions of the COP/MOP.
<b>About Environmental Analysis</b>		
25. Documentation on the analysis of the environmental impacts of the project activity, including transboundary impacts, shall be submitted, and, if those impacts are considered significant by the project participants or the Host Party, an environmental impact assessment in accordance with procedures as required by the Host Party shall be carried out.	CDM Modalities and Procedures §37c	As per on-site interview with representative of the MARD and the Department of Scientist, Technology and Environment /xi-xii/, it is confirmed that there is no requirement to conduct an environmental impact assessment for implementing the biogas digester PoA and its CPAs, and no negative impact is expected on the local

Requirement	Reference	Conclusion
		<p>environment. As stated in Circular No. 05/2008/TT-BTNMT dated 8 December 2008, only the livestock farms with more than 1,000 heads per year and poultry farms with more than 20,000 heads per year require the environmental assessment. As the MARD only limits the small farm households to participate in the PoA, the environmental assessment is thus not necessary for the PoA.</p> <p>Moreover, since the environmental analysis has been addressed in the PoA-DD, it is not necessary to be mentioned in the real-case CPA-DD.</p>
<b>About stakeholder comments</b>		
<p>26. Comments by local stakeholders shall be invited, a summary of these provided and how due account was taken of any comments received.</p>	<p>CDM Modalities and Procedures §37b</p>	<p>As per section D.2 of the PoA-DD /1.1/, the stakeholder consultation workshops were carried out in two provinces: i) Nghe An Province on 3 April 2009 and ii) Phu Tho Province on 8 April 2009. In addition, the CDM PoA was presented in a stakeholder workshop on 12 June 2009 in Hanoi city.</p> <p>The MARD summarized the comments including the feedbacks from stakeholders' comments and described in section D.3 of PoA-DD /1.1/. The general comments are positive. Major concerns from the stakeholders are described in section D.3 of PoA-DD,</p>

Requirement	Reference	Conclusion
		and responses from the PP are also provided.
27. Parties, stakeholders and UNFCCC accredited NGOs shall have been invited to comment on the validation requirements for minimum 30 days, and the project design document and comments have been made publicly available.	CDM Modalities and Procedures §40	The PoA-DD/ Version 01, generic CPA-DD/ Version 01 and a real-case CPA-DD/ Version 01 were made publicly available on UNFCCC's website and parties, stakeholders and NGOs were through the CDM website invited to provide comments during a 30 days period from 31 December 2009 to 29 January 2010. Until the end of publication period, no comment was received.
<b>Other</b>		
28. The project design document shall be in conformance with the UNFCCC CDM-SSC-PoA-DD format.	CDM Modalities and Procedures Appendix B, EB Decision	Yes. All the project design documents, i.e. PoA-DD and CPA-DD are in conformance with the UNFCCC CDM-SSC-PoA-DD format.

**Table B: Requirement Checklist**

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

(MoV = Means of Verification, DR= Document Review, I= Interview)

CHECKLIST QUESTION	Ref.	MoV*	Findings, comments, references, data sources	Draft Concl.	Final Concl.
<b>A. General Description of Programme Activity</b> The project design is assessed.					
<b>A.1 Programme Boundaries</b> <i>Project/Programme Boundaries are the limits and borders defining the GHG emission reduction project.</i>					
A.1.1. Are the programme's spatial boundaries (geographical) clearly defined?	/1/	DR	Yes. As per the PoA-DD /1/, the geographical boundary of the PoA is clearly defined as the whole country of Vietnam.	OK	OK
A.1.2. Are the programme's system boundaries (components and facilities used to mitigate GHGs) clearly defined?	/1/	DR	Yes. The programme's system boundaries are defined as biogas digester.	OK	OK
A.1.3. Can each CPA under the PoA be clearly identified individually including spatial boundaries (geographical) clearly defined	/1/	DR	Yes. All CPA will be clearly identified individually including the spatial geographical boundaries of different regions in Vietnam.	OK	OK
<b>A.2 Participation Requirements</b> <i>Referring to Part A, Annex 1 and 2 of the PoA-DD as well as the CDM glossary with respect to the terms Party, Letter of Approval, Authorization and Project Participant.</i>					

CHECKLIST QUESTION	Ref.	MoV*	Findings, comments, references, data sources	Draft Concl.	Final Concl.
A.2.1 Which Parties and programme participants are participating in the project?	/1/ /56/	DR	<p>According to the PoA-DD and LoA, the proposed programme is a unilateral CDM PoA which involves one project participant: Ministry of Agricultural and Rural Development (MARD) from Vietnam.</p> <p><b>CAR01</b></p> <p>Please provide the LoAs for the project participants to the validation team for validation.</p>	<b>CAR01</b>	OK (Refer to Table 3)
A.2.2 Has the coordinating/managing entity of the programme been identified?	/1/	DR	Yes. The project participant, Ministry of Agricultural and Rural Development (MARD), is the coordinating / managing entity (CME) of the PoA.	OK	OK
A.2.3 Have all involved Parties provided a valid and complete letter of approval and have all private/public project participants been authorized by an involved Party?	/1/ /56/	DR	Yes. The Letter of Approval (LoA) /56/ issued by the DNA of Vietnam has been validated for confirming the voluntary participation of MARD and its coordination role on the PoA.	OK	OK
<p>A.2.4 Do all participating Parties fulfil the participation requirements as follows:</p> <ul style="list-style-type: none"> <li>- Ratification of the Kyoto Protocol</li> <li>- Voluntary participation</li> <li>- Designated a National Authority</li> </ul>	/1/	DR	Yes. The host party, i.e. Viet Nam, meets all relevant participation requirements in CDM. Viet Nam ratified the Kyoto Protocol on 25 <sup>th</sup> September 2002. Ministry of Natural Resources and Environment of Viet Nam is the designated national authority (DNA) of Viet Nam.	OK	OK
A.2.5 Has it been checked that if there is public funding for the programme from Parties in Annex I, this funding shall not be a diversion of official development assistance.	/1/ /21/ /28/ /45/	DR	Yes. According to Section A.4.5 and Annex 2 of the PoA-DD and on-site interview with the representative from MARD /xii/, the PoA received public funding from Dutch Government. However, the Dutch Embassy	<b>GL01</b>	OK (Refer to Table 3)



CHECKLIST QUESTION	Ref.	MoV*	Findings, comments, references, data sources	Draft Concl.	Final Concl.
			also confirmed that there was no diversion of ODA.  <b>CL01</b> According to the GSP PDD, supporting documents from the entities involved such as Government of Vietnam, Provincial Government from participating provinces, Government of Netherlands, ADB, World Bank and German Ministry of Environment etc. should be provided to the validation team for the substantiation of the sources and nature of the public funding.		
<b>A.3 Technology to be employed</b> <i>Validation of project technology focuses on the programme engineering, choice of technology and competence/ maintenance needs. The validator should ensure that environmentally safe and sound technology and know-how is used.</i>					
A..3.1 Does the programme design engineering reflect current good practices?	/1/, /55/	I DR	Yes. The programme applies certified biogas digester technology for the treatment of livestock waste, in which this can reflect good engineering practices.	OK	OK
A.3.2 Does the programme use state of the art technology or would the technology result in a significantly better performance than any commonly used technologies in the host country?	/1/, /55/	I DR	Yes. The biogas digester technology results in a significantly better performance than the commonly used technology of traditional fossil fuel consumption for cooking for the rural households of Vietnam.	OK	OK
A.3.3 Does the programme make provisions for meeting training and maintenance needs?	/1/, /16/, /51-52/	I DR	As per on-site interview with the MARD, trainings will be provided to the masons, technicians and end-user households for the biogas digester installation, operation and maintenance needs. The training records	OK	OK

CHECKLIST QUESTION	Ref.	MoV*	Findings, comments, references, data sources	Draft Concl.	Final Concl.
			were checked accordingly.		
<b>A.4 Contribution to Sustainable Development</b> <i>The programme's contribution to sustainable development is assessed.</i>					
A.4.1 Has the host country confirmed that the programme assists it in achieving sustainable development?	/1/, /56/	DR	The Letter of Approval (LoA) /56/ issued by the DNA of Vietnam has been validated for confirming the proposed programme in contributing to sustainable development of Vietnam.	OK	OK
A.4.2 Will the programme create other environmental or social benefits than GHG emission reductions?	/1/	I DR	<p>The validation team validated that the programme is considered to be contributing to sustainable development of host country (i.e. Vietnam) in the following ways:</p> <ul style="list-style-type: none"> <li>(i) Contribution to economic development: the biogas sector creates significant employment from construction, after-sales service of biogas digester in rural areas;</li> <li>(ii) Contribution to social development: provision of convenient fuel supply which could save time and money for enhancing the opportunities of education and other social activities for women and children. In addition, the reduction in consumption of fossil fuels could improve the indoor air pollution of households, thus the health conditions of households;</li> <li>(iii) Contribution to environmental development: substituting fossil fuels and synthetic fertilizer, changing</li> </ul>	OK	OK

CHECKLIST QUESTION	Ref.	MoV*	Findings, comments, references, data sources	Draft Concl.	Final Concl.
			<p>traditional manure management systems, and reduction of the emissions of greenhouse gases etc. It can also improve the situation of deforestation by reducing the consumption of firewood as fossil fuels.</p> <p>The validation team interviewed local stakeholders during OSV and got the above positive feedbacks from the villagers to national government representatives. Thus, the sustainable development in social, environmental and economic aspects could be achieved by implementation of the PoA.</p>		
<b>A.5 Small scale programme activity</b> <i>Is this assessed whether the project qualifies as small-scale CDM project activity</i>					
A.5.1. Do CPAs under the programme qualify as a small scale CDM project activity as defined in paragraph 6 (c) of decision 17/CP.7 on the modalities and procedures for the CDM?	/1/	DR	Yes. The CPAs under the programme qualify as small scale CDM project activities as defined in paragraph 6 (c) of decision 17/CP.7 on the modalities and procedures for the CDM.	OK	OK
A.5.2. Is the small scale project activity not a de-bundled component of a larger project activity?	/1/ /8.1/	DR	According to the Guidance for Determining the Occurrence of De-bundling under a PoA version 03 EB54 Annex 13, "If each of independent subsystems (biogas digester) included in the CPA of a POA is no greater than 1% of the thresholds defined by the methodology, the CPA of PoA is exempted from de-bundling check". As the PoA applies with AMS-I.C./ Version 18 with thresholds of	CL05 CL06	OK (Refer to Table 3)

CHECKLIST QUESTION	Ref.	MoV*	Findings, comments, references, data sources	Draft Concl.	Final Concl.
			<p>45MW thermal for applied thermal equipment, the threshold for individual biogas digester is 450kW. Only when the individual biogas digester volume is larger than 4,500m<sup>3</sup> (equivalent to 450kW thermal), then the de-bundling check should be carried out. However, the validation team considers that it is unlikely for rural households to install a large biogas unit with 4500m<sup>3</sup>, as it is only designed for very large scale of livestock farms, and it is not designed for the proposed technology of KT.1 and KT.2 for small-scale households in the PoA. According to the PoA-DD and CPA01 database, the average installed capacity of a biogas unit for CPA01 is 1.228kW thermal, thus the CPA of this PoA is exempted from performing the de-bundling check, i.e., considering as not being a de-bundled component of a large scale activity.</p> <p><b><u>CL05</u></b> Please clarify the sources of information in the estimation of the unit capacity of each digester and the number of household limited for a CPA.</p> <p><b><u>CL06</u></b> Please provide the individual database for the CPA of North-East zone (CPA01) as indicated in the real case of GSP CPA-DD for validation.</p>		
<b>A.6 Operational, management and monitoring plan</b>					

CHECKLIST QUESTION	Ref.	MoV*	Findings, comments, references, data sources	Draft Concl.	Final Concl.
<b>for the programme</b>					
A.6.1. Do the operational and management arrangements established by the coordinating entity include a record keeping system for each CPA under the programme?	/1/	DR	Yes. The operational and management arrangements established by the coordinating entity include a record keeping system for each CPA under the programme.	OK	OK
A.6.2. Do the operational and management arrangements established by the coordinating entity include a system/procedure to avoid including CPAs that have already been registered either as CDM project activity or as a CPA of another PoA?	/1/, /14/	DR	Yes. The operation and management arrangements established by MARD include a system/procedure to avoid including CPAs that have already been registered either as CDM project activity or as a CPA of another PoA. The MARD will check the PoA database and UNFCCC information for such management arrangement.	OK	OK
A.6.3. Do the operational and management arrangements established by the coordinating entity include provisions to ensure that CPA implementers are aware and have agreed that their activity is being subscribed to the PoA?	/1/	/DR	N/A. The CPA implementers are same as the CME, which will be the regional offices of MARD. Thus the CPA implementers are also under the management of MARD.	OK	OK
A.6.4. Does the monitoring plan include a description of a proposed statistically sound sampling method and procedure to be used by designated operational entities for verification of GHG emission reductions by CPAs under the programme? OR If the programme does not use verification method that applies a statistical method for sampling, has a system been defined to avoid double counting of CERs, and is the system transparent?	/1/ , /8.6/	/DR	Yes. The monitoring plan includes a description of a proposed sampling method and procedure as per "General Guidelines for Sampling and Surveys for Small-Scale CDM Project Activities, EB50", which is a statistically sound sampling method and procedure to be used by designated operational entities for verification of GHG emission reductions by CPAs under the PoA.  <b>CAR02</b> Please include the sampling approach and sampling plan in the PoA-DD in accordance	<b>CAR02</b> <b>CL07</b> <b>CL14</b>	OK (Refer to Table 3)

CHECKLIST QUESTION	Ref.	MoV*	Findings, comments, references, data sources	Draft Concl.	Final Concl.
			<p>with the requirements of the Guidelines for Sampling. Detailed procedures and supporting information for the calculation of sampling size should be also provided.</p> <p><b>CL07</b> Please clarify how the proposed monitoring procedures are in line with the requirements in the approved methodology. The monitoring plan should be revised as per the applied methodology.</p> <p><b>CL14</b> The identification procedures for unique registration under MARD should be further clarified. In addition, the financial support records for the participating households of the CPA should be provided for validation.</p>		
<b>B. Duration of the Programme of Activities, Crediting Period</b>					
B.1.1. Is the programme starting date and length of the programme clearly defined and evidenced?	/1/ /30/	DR	<p>According to the PoA-DD Section B.1, the starting date of the CPA01 is defined as 5<sup>th</sup> July 2007. It is defined as the first successful application for the installation of biogas digester for the first CPA. The PoA will be started on 1<sup>st</sup> May 2012, or date of registration whichever is later. Meanwhile, the length of the PoA is 28 years.</p> <p><b>CL02</b> Please clarify the starting date of PoA according to Glossary of CDM term, in which this was the earliest date at which</p>	<b>CL02</b>	OK (Refer to Table 3)



CHECKLIST QUESTION	Ref.	MoV*	Findings, comments, references, data sources	Draft Concl.	Final Concl.
			implementation or construction or real action of the PoA began.		
B.1.2. Does the PoA design documentation confirm that the length of the PoA does not exceed 28 years?	/1/	DR	Yes. As per the PoA-DD, the length of the PoA is 28 years.	OK	OK
<b>C. Environmental Impacts</b> <i>Documentation on the analysis of the environmental impacts will be assessed, and if deemed significant, an EIA should be provided to the validator.</i>					
C.1.1. Has an analysis of the environmental impacts of the programme been sufficiently described?	/1/, /24-25/	DR I	<p>Not applicable. As per on-site interview with representative of the MARD and Department of Scientist, Technology and Environment /xi-xii/, it is confirmed that there is no requirement to conduct an environmental impact assessment for implementing a PoA and its CPAs for biogas digester for small households scale.</p> <p><b>CL18</b> Please provide the relevant information for the regulations outlined in the GSP PoA-DD Section C.3. including the current waste management policy for the small farm households for validation.</p>	<b>CL18</b>	OK (Refer to Table 3)
C.1.2. Are there any Host Party requirements for an Environmental Impact Assessment (EIA)?	/1/, /24-25/	DR I	Not applicable. As per on-site interview with representative of the MARD and Department of Scientist, Technology and Environment /xi-xii/, it is confirmed that there is no requirement to conduct an environmental impact assessment for implementing a PoA and its CPAs for biogas digester for small households scale.	OK	OK

CHECKLIST QUESTION	Ref.	MoV*	Findings, comments, references, data sources	Draft Concl.	Final Concl.
C.1.3. Will the programme create any adverse environmental effects?	/1/, /24- 25/	I DR	No. As per on-site interview with representative of the MARD, Department of Scientist, Technology and Environment, and local stakeholders, no negative impact is expected on the local environment induced by the PoA.	OK	OK
C.1.4. Are transboundary environmental impacts considered in the analysis?	/1/, /24- 25/	DR	No. There are no transboundary environmental impacts.	OK	OK
C.1.5. Have identified environmental impacts been addressed in the programme design?	/1/, /24- 25/	DR	Not applicable. There are no adverse environmental impacts identified in the programme design.	OK	OK
C.1.6. Does the programme comply with environmental legislation in the host country?	/1/, /24- 25/	DR	Not applicable. As per on-site interview with representative of the MARD and Department of Scientist, Technology and Environment /xi-xii/, it is confirmed that there is no environmental legislation in Vietnam for the application of biogas digester and treatment of livestock waste for small scale households.	OK	OK
<b>D. Stakeholder Comments</b> <i>The validator should ensure that stakeholder comments have been invited with appropriate media and that due account has been taken of any comments received</i>					
D.1.1. Have relevant stakeholders been consulted?	/1/, /20/, /48- 39/	DR	Yes. As per section D.2 of the PoA-DD /1.1/, the stakeholder consultation workshops were carried out in two provinces: i) Nghe An Province on 3 April 2009 and ii) Phu Tho Province on 8 April 2009. In addition, the CDM PoA was presented in a stakeholder	<b>CL19</b> <b>GL20</b>	OK (Refer to Table 3)

CHECKLIST QUESTION	Ref.	MoV*	Findings, comments, references, data sources	Draft Concl.	Final Concl.
			<p>workshop on 12 June 2009 in Hanoi city. Apart from these workshops, the biogas programme is a country-wide national biogas programme being promoted in various media.</p> <p><b>CL19</b> Please summarize in the PoA-DD for the background information of the households who participated in the workshops conducted by the provincial offices of the Ministry of Agriculture.</p> <p><b>CL20</b> The project participants are requested to provide the relevant records of the three workshops (2 provincial and 1 in Hanoi) to the validation team for validation.</p>		
D.1.2. Have appropriate media been used to invite comments by local stakeholders?	/1/, /20/, /48-39/	DR	The notification of the stakeholder consultation meetings was published on a local newspaper, and public media before the meetings and workshops.	OK	OK
D.1.3. If a stakeholder consultation process is required by regulations/laws in the host country, has the stakeholder consultation process been carried out in accordance with such regulations/laws?	/1/, /20/, /48-39/	I DR	Not applicable. There is no regulation/law regarding the stakeholder consultation process in the host country.	OK	OK
D.1.4. Is a summary of the stakeholder comments received provided?	/1/, /20/, /48-39/	DR	PP summarized the comments including the feedbacks from stakeholders' comments and described in section D.3 of PoA-DD /1.1/.	OK	OK
D.1.5. Has due account been taken of any stakeholder	/1/,	DR	No applicable. The general comments are	OK	OK

CHECKLIST QUESTION	Ref.	MoV*	Findings, comments, references, data sources	Draft Concl.	Final Concl.
comments received?	/20/ /48- 39/		positive.		
<b>E. Programme Baseline</b> <i>The validation of the project/programme baseline establishes whether the selected baseline methodology is appropriate and whether the selected baseline represents a likely baseline</i>					
<b>E.1. Baseline Methodology</b> <i>It is assessed whether the project/programme applies an appropriate baseline methodology.</i>					
E.1.1. Does the project/programme apply an approved methodology and the correct version thereof?	/1/	DR	The PoA and its CPAs applies the approved baseline and monitoring methodology AMS-I.C./Version 18 "Thermal energy for the user with or without electricity", which is approved by the EB and also be a valid applicable version.	OK	OK
E.1.2. Are the applicability criteria in the baseline methodology all fulfilled?	/1/	DR	Yes. The applicability criteria for the baseline methodology in section E.2 of the PoA-DD are assessed by the validation team by means of document review and interview, and confirmed to be fulfilled with the AMS-I.C.	OK	OK
<b>E.2. Baseline Scenario Determination</b> <i>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.</i>					

CHECKLIST QUESTION	Ref.	MoV*	Findings, comments, references, data sources	Draft Concl.	Final Concl.
E.2.1. What is the baseline scenario?	/1/ /14/	DR	As the per PoA-DD section E.4, the baseline scenario is prescribed according to the applied methodology AMS-I.C./Version 18, "the baseline is identified as the fuel consumption of the technologies that would have been used in the absence of the PoA multiplied by an emission factor for the fossil fuel displaced".  <b>CL08</b> Please clarify why fossil fuels are major emissions in the programme activity as indicated in the GSP PDD Section E.3.	<b>CL08</b>	OK (Refer to Table 3)
E.2.2. What other alternative scenarios have been considered and why is the selected scenario the most likely one?	/1/	DR	Not applicable. It is prescribed in the applied methodology AMS-I.C./Version 18.	OK	OK
E.2.3. Has the baseline scenario been determined according to the methodology?	/1/	DR	Not applicable. It is prescribed in the applied methodology AMS-I.C./Version 18.	OK	OK
E.2.4. Has the baseline scenario been determined using conservative assumptions where possible?	/1/	DR	Not applicable. It is prescribed in the applied methodology AMS-I.C./Version 18.	OK	OK
E.2.5. Does the baseline scenario sufficiently take into account relevant national and/or sectoral policies, macro-economic trends and political aspirations?	/1/	DR	Not applicable. It is prescribed in the applied methodology AMS-I.C./Version 18. Moreover, there are no laws and regulations for the livestock waste management by small scale households and application of biogas digesters.	OK	OK
E.2.6. Is the baseline scenario determination compatible with the available data and are all literature and sources clearly referenced?	/1/	DR	Not applicable. It is prescribed in the applied methodology AMS-I.C./Version 18.	OK	OK
E.2.7. Have the major risks to the baseline been	/1/	DR	Not applicable. It is prescribed in the applied	OK	OK

CHECKLIST QUESTION	Ref.	MoV*	Findings, comments, references, data sources	Draft Concl.	Final Concl.
identified?			methodology AMS-I.C./Version 18.		
<b>E.3. Additionality of the Programme of Activities</b> <i>The assessment of additionality will be validated with focus on whether the programme itself is not a likely baseline scenario.</i>					
E.3.1. Has it been demonstrated that the programme is a voluntary coordinated action that would not be implemented in the absence of CDM?	/1/	DR I	According to the PoA-DD Section A.4.3, the MARD stated that “there is no mandatory programme in Vietnam to promote the installation the biogas digester”. As per on-site interview with representative of the MARD and Department of Scientist, Technology and Environment /xi-xii/, there is no mandatory law/regulation or other governmental campaign to enforce the application of biogas digester. Thus the proposed PoA is confirmed to be a voluntarily coordinated action.	OK	OK
E.3.2. If the programme is implementing a mandatory policy/regulation, has it been demonstrated whether the policy/regulation is being enforced? If it is enforced, has it been demonstrated that the programme will lead to a higher level of enforcement?	/1/	DR	Not applicable. According to the PoA-DD Section A.4.3, the MARD stated that “there is no mandatory programme in Vietnam to promote the installation the biogas digester”. As per on-site interview with representative of the MARD and Department of Scientist, Technology and Environment /xi-xii/, there is no mandatory law/regulation or other governmental campaign to enforce the application of biogas digester.	OK	OK
E.3.3. Are all assumptions stated in a transparent and conservative manner?	/1/	DR	Yes. All assumptions are stated in a transparent and conservative manner.	OK	OK



CHECKLIST QUESTION	Ref.	MoV*	Findings, comments, references, data sources	Draft Concl.	Final Concl.
E.3.4. Is sufficient evidence provided to support the relevance of the arguments made?	/1/	DR	Yes. Sufficient evidence is provided to support the relevance of the arguments. Financial barrier, prevailing practice and technological barriers are demonstrated for the additionality of the proposed programme.	OK	OK
E.3.5. If the starting date of the project/programme activities is before the date of validation, has sufficient evidence been provided that the incentive from the CDM was seriously considered in the decision to proceed with the programme?	/1/ /30/	DR	<p>Yes. By reviewing the provided evidence and description in PoA-DD Section A.4.3, the CDM development was considered before the starting date of CPA01. The MARD developed a Project Information Note (PIN) and submit to the Vietnamese DNA for the CDM development for the proposed PoA. The Vietnamese DNA acknowledged the PIN and also issued a Letter of Endorsement (LoE) MARD. Thus this fulfills the requirements of "Guidelines for the demonstration and assessment of prior consideration of the CDM" version 4 EB62 clause 6.</p> <p><b>CAR03</b></p> <p>Please provide supporting information to demonstrate the CDM consideration prior to the starting date and continuing real actions for the PoA in accordance with "guideline on the demonstration and assessment of prior consideration of the CDM".</p> <p><b>CL09</b></p> <p>Please clarify the starting date of CPA01 according to Glossary of CDM term, in which this was the earliest date at which implementation or construction or real action</p>	<b>CAR03</b> <b>CL09</b>	OK (Refer to Table 3)

CHECKLIST QUESTION	Ref.	MoV*	Findings, comments, references, data sources	Draft Concl.	Final Concl.
			of the CPA01 began.		
<b>E.4. Additionality of CPAs</b>					
E.4.1. Is the approach described for demonstrating additionality of a CPA in accordance with the using the procedure provided in the baseline and monitoring methodology applied?	/1/, /26- 27/	DR	<p>Yes. As per AMS-I.C./Version 18, for the CPA with installed capacity under 15MW thermal, the additionality will be demonstrated by the CME according to “Guidelines for Demonstrating Additionality of Microscale Project Activities” (Version 03) EB63 Annex 23. For the CPA with installed capacity within 15-45MW thermal, the additionality of CPA is assessed and demonstrated by barrier analysis, i.e. prevailing practice, financial and technological barriers.</p> <p><b>CL10</b> Please clarify whether the “common practice of current manure waste treatment” fulfills the relevant environmental regulations and how the implementation of PoA could change this prevailing practice of waste treatment system.</p> <p><b>CL11</b> Please clarify the total investment required for the PoA, and the financial capital arrangement for the program.</p> <p><b>CL12</b> Please provide the evidences for the investment costs of biogas units and how they are considered as a significant amount</p>	<b>CL10</b> <b>CL11</b> <b>CL12</b> <b>CL13</b>	OK (Refer to Table 3)

CHECKLIST QUESTION	Ref.	MoV*	Findings, comments, references, data sources	Draft Concl.	Final Concl.
			for small farm households.  <b>CL13</b> Further supporting information should be provided in order to substantiate the poor quality of biogas digesters is the technological barrier to the PoA.		
E.4.2. Are specific criteria for demonstrating the additionality of a specific CPA included to the PoA?	/1/, /26- 27/	DR	The criteria for demonstrating the additionality of a specific CPA basically follow the approach of additionality of PoA as per "Attachment A of Appendix B".	OK	OK
E.4.3. Is the additionality of a typical CPA demonstrated?	/1/, /26- 27/	DR	Yes. As per the real-case CPA-DD Section B.3, the assessment of additionally of the CPA refers to discussion of eligibility criteria in section B.2. As per AMS-I.C./Version 18, for the CPA with installed capacity under 15MW thermal, the additionality will be demonstrated by the CME according to "Guidelines for Demonstrating Additionality of Microscale Project Activities" (Version 03) EB63 Annex 23. For the CPA with installed capacity within 15-45MW thermal, the additionality of CPA is assessed and demonstrated by barrier analysis, i.e. prevailing practice, financial and technological barriers.	OK	OK
<b>E.5. Calculation of GHG Emission Reductions – Project emissions</b> <i>It is assessed whether the project emissions are stated according to the methodology and whether the argumentation for the choice of default factors and values</i>					

CHECKLIST QUESTION	Ref.	MoV*	Findings, comments, references, data sources	Draft Concl.	Final Concl.
<i>– where applicable – is justified.</i>					
E.5.1. Has the procedure to calculate project emissions of an individual CPA been documented according to the approved methodology and in a complete and transparent manner?	/1/, /14/	DR	Yes. The procedure to calculate emission reductions of an individual CPA is documented according to the approved methodology and in a complete and transparent manner.	OK	OK
E.5.2. Have conservative assumptions been used when calculating the project emissions?	/1/, /50/	DR	Yes. The calculation of emission reductions is conservative. Moreover the CME applied the AMS-I.I according to the F-CDM-SSCwg ver 01 SSC_571 for the calculation of project emissions.	OK	OK
E.5.3. Are uncertainties in the project emission estimates properly addressed?	/1/	DR	Yes. The uncertainties in project emission estimation are properly addressed.	OK	OK
<b>E.6. Calculation of GHG Emission Reductions – Baseline emissions</b> <i>It is assessed whether the procedure for calculating baseline emissions is according to the methodology and whether the argumentation for the choice of default factors and values – where applicable – is justified</i>					
E.6.1. Has the procedure to calculate baseline emissions of an individual CPA been documented according to the approved methodology and in a complete and transparent manner?	/1/	DR	Yes. The procedure to calculate emission reductions of an individual CPA is documented according to the approved methodology and in a complete and transparent manner.	OK	OK
E.6.2. Have conservative assumptions been used when calculating the baseline emissions?	/1/	DR	Yes. The calculation of emission reductions is basically considered conservative. Only the reduction of fossil fuel consumption is considered for the estimation of baseline emissions.	OK	OK

CHECKLIST QUESTION	Ref.	MoV*	Findings, comments, references, data sources	Draft Concl.	Final Concl.
E.6.3. Are uncertainties in the baseline emission estimates properly addressed?	/1/	DR	Yes. The uncertainties in baseline emission estimation are properly addressed.	OK	OK
<b>E.7. Calculation of GHG Emission Reductions – Leakage</b> <i>It is assessed whether the procedure for calculating leakage is according to the methodology and whether the argumentation for the choice of default factors and values – where applicable – is justified.</i>					
E.7.1. Has the procedure to calculate leakage emissions of an individual CPA been documented according to the approved methodology and in a complete and transparent manner?	/1/	DR	Regarding to the leakage emissions (LEy), through on-site visit, the validation team confirms that the biogas digesters were installed along the small farm of households, and the digesters were not allowed to be transferred to any other location. Moreover, it only involved the feeding of livestock waste into the biogas digester, and it did not involve any biomass residues in the biogas digester. Therefore according to the AMS-I.I./Version 02, leakage emissions are not required to be considered and are assumed as zero. Same interpretation can be also applied for AMS-I.C./Version 18.	OK	OK
E.7.2. Have conservative assumptions been used when determining the procedure to be used to calculate the leakage emissions?	/1/	DR	As described above, the assumptions have been used for the leakage emissions, and leakage emissions are not required to be considered and are assumed as zero.	OK	OK
E.7.3. Are uncertainties in the leakage emission estimates properly addressed?	/1/	DR	As described above, the uncertainties are properly addressed for the leakage emissions, and leakage emissions are not required to be considered and are assumed	OK	OK

CHECKLIST QUESTION	Ref.	MoV*	Findings, comments, references, data sources	Draft Concl.	Final Concl.
			as zero.		
<b>E.8. Emission Reductions</b> <i>The emission reductions shall be real, measurable and give long-term benefits related to the mitigation of climate change.</i>					
E.8.1. Does the PoA-DD provide a clear and correct way of calculating the emission reductions from each CPA?	/1/, /50/	DR	<p>Yes. The procedure to calculate emission reductions of an individual CPA is documented according to the approved methodology AMS-I.I and in a complete and transparent manner.</p> <p><b>CAR04</b></p> <p>The estimation of emission reductions in the GSP PoA-DD does not follow the requirements in the approved methodology. Please revise the estimation of emission reductions in the calculation worksheet. Relevant parameters for estimation of emission reductions should be revised accordingly.</p>	<b>CAR04</b>	OK (Refer to Table 3)
<b>E.9. Monitoring Methodology</b> <i>It is assessed whether the project applies an appropriate monitoring methodology.</i>					
E.9.1. Is the monitoring plan documented according to the approved methodology and in a complete and transparent manner?	/1/, /50/	DR	Yes. The monitoring plan is based on the monitoring methodology AMS-I.I./Version 18 in a complete and transparent manner.	OK	OK
E.9.2. Will all monitored data required for verification and issuance be kept for two years after the end of the crediting period or the last issuance of CERs, for this project activity, whichever occurs later?	/1/, /50/	DR	Yes. As indicated in the monitoring operation and management plan, all the monitored data will be kept for two years after the end of the crediting period.	OK	OK

CHECKLIST QUESTION	Ref.	MoV*	Findings, comments, references, data sources	Draft Concl.	Final Concl.
<b>E.10. Monitoring of Plan</b> <i>It is established whether the monitoring plan provides for reliable and complete project emission data over time.</i>					
E.10.1. 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?	/1/, /50/	DR	Yes. Electronic databases for PoA and individual CPA will be operated and maintained by the CME, which include all relevant data necessary for estimation and measuring the GHG emissions during crediting period.  <b>CL03</b> Please revise the registry database (ER calculation worksheet) for the biogas program of MARD to include the detailed information of the CPA.	<b>CL03</b>	OK (Refer to Table 3)
E.10.2. Are the choices of project GHG indicators reasonable and conservative?	/1/, /50/	DR	Yes. The choices of project GHG indicators are reasonable and conservative, as per AMS-I.I.	OK	OK
E.10.3. Is the measurement method clearly stated for each GHG value to be monitored and deemed appropriate?	/1/, /50/	DR	Yes. The measurement method is clearly stated for each GHG value to be monitored as per AMS-I.I.	OK	OK
E.10.4. Is the measurement equipment described and deemed appropriate?	/1/, /50/	DR	Yes. The measurement equipment is clearly described and deemed to be appropriate monitored as per the monitoring requirements of AMS-I.I.	OK	OK
E.10.5. Is the measurement accuracy addressed and deemed appropriate? Are procedures in place on how to deal with erroneous measurements?	/1/, /50/	DR	Yes. The measurement is based on the survey carried out during monitoring by trained personnel, and is deemed to be appropriate.	OK	OK



CHECKLIST QUESTION	Ref.	MoV*	Findings, comments, references, data sources	Draft Concl.	Final Concl.
E.10.6. Is the measurement interval identified And deemed appropriate?	/1/, /50/	DR	Yes. The measurement interval is based on the requirements from AMS-I.I., and is deemed to be appropriate.	OK	OK
E.10.7. Is the registration, monitoring, measurement and reporting procedure defined?	/1/, /50/	DR	Yes. The CME is responsible for preparing the monitoring report and relevant procedures in order to fulfill the EB's requirements in registration, monitoring, measurement and reporting.	OK	OK
E.10.8. Are procedures identified for maintenance of monitoring equipment and installations? Are the calibration intervals being observed?	/1/, /50/	DR	N/A. No monitoring equipment is required as the monitoring will be conducted mainly through survey and interview, as per the requirements in AMS-I.I.	OK	OK
E.10.9. Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation)	/1/, /50/	DR	Yes. The procedures identified for regular record handling including the keeping, storage of monitoring documentation.	OK	OK
<b>E.11. Monitoring of Sustainable Development Indicators/ Environmental Impacts</b> <i>It is assessed whether choices of indicators are reasonable and complete to monitor sustainable performance over time.</i>					
E.11.1. Is the monitoring of sustainable development indicators/ environmental impacts warranted by legislation in the host country?	/1/	I DR	No. According to MARD, it is not required in host country.	OK	OK
E.11.2. Does the monitoring plan provide for the collection and archiving of relevant data concerning environmental, social and economic impacts?	/1/	DR	N/A. Data concerning environmental, social and economic impacts are not included in the monitoring plan.	OK	OK

CHECKLIST QUESTION	Ref.	MoV*	Findings, comments, references, data sources	Draft Concl.	Final Concl.
E.11.3. Are the sustainable development indicators in line with stated national priorities in the Host Country?	/1/, /56/	DR	<p>The validation team interviewed stakeholders during OSV and got the positive feedbacks from the villagers and local government representatives. It is considered that the sustainable development in social, environmental and economic aspects could be achieved by implementation of the PoA. Moreover, The Letter of Approval (LoA) /56/ issued by the DNA of Vietnam has been received to confirm the PoA in assisting to achieve sustainable development in Vietnam.</p> <p><b>CL17</b></p> <p>Please provide the relevant document from the Vietnamese DNA for the confirmation of PoA contributing to sustainable development.</p>	<b>CL17</b>	OK (Refer to Table 3)
<b>E.12. Management System and Quality Assurance for Monitoring and Reporting</b> <i>It is checked that programme implementation is properly prepared for and that critical arrangements are addressed</i>					
E.12.1 Is the authority and responsibility of overall project management clearly described?	/1/, /13/	DR I	Yes. During the on-site interview with the MARD /xii/, the monitoring of each CPA will be in charge and responsible by the MARD. The organization chart of the MARD as the CME /13/ was checked for confirming its management structure.	OK	OK
E.12.2 Are procedures identified for training of monitoring personnel?	/1/, /13/	DR I	The monitoring training to relevant monitoring staff and technicians will be provided before each CPA operation. The validation team has checked the Biogas Project Division Manual and Guidelines for the identification of monitoring procedures.	<b>CL04</b> <b>CL16</b>	OK (Refer to Table 3)

CHECKLIST QUESTION	Ref.	MoV*	Findings, comments, references, data sources	Draft Concl.	Final Concl.
			<p><b>CL04</b></p> <p>Please provide the full sets of documents for some of sample installed biogas digesters in order to illustrate the biogas units are constructed and certified by trained and licensed construction teams.</p> <p><b>CL16</b></p> <p>Please provide information for the necessary training plans and schedule for the implementation of monitoring plan for each of CPA.</p>		
E.12.3 Are procedures identified for emergency preparedness for cases where emergencies can cause unintended emissions?	/1/, /13/	DR I	N/A. There are no unintended emissions induced by the PoA. The validation team has checked the Biogas Project Division Manual and Guidelines for the identification of monitoring procedures, includes the procedures to hand monitoring errors.	OK	OK
E.12.4 Are procedures identified for review of reported results/data?	/1/, /13/	DR I	<p>Yes. The validation team has checked the Biogas Project Division Manual and Guidelines for the identification of monitoring procedures for review of reported results/data.</p> <p><b>CL15</b></p> <p>Please clarify for how the monitoring procedures can be implemented with quality control and assurance in each of CPA.</p>	<b>CL15</b>	OK (Refer to Table 3)
E.12.5 Are procedures identified for corrective actions in order to provide for more accurate future monitoring and reporting?	/1/, /13/	DR I	Yes. The validation team has checked the Biogas Project Division Manual and Guidelines for the identification of procedures	OK	OK

CHECKLIST QUESTION	Ref.	MoV*	Findings, comments, references, data sources	Draft Concl.	Final Concl.
			for accurate monitoring.		

Table C: List of Requests for Corrective Action (CAR) and Clarification (CL)

No.	CAR/CL	Observation (CAR/CL)	Reference	Summary of project owner response	Validation team conclusion
1.	✓	<p><b>CAR01</b></p> <p>Please provide the LoAs for the project participants to the validation team for validation.</p>	A.2.1	LoA is submitted to the validator.	<p>The Letter of Approval (LoA) /56/ issued by the DNA of Vietnam has been received to confirm the PoA in assisting to achieve sustainable development in Vietnam.</p> <p>OK. Therefore the CAR is closed.</p>
2.	✓	<p><b>CAR02</b></p> <p>Please include the sampling approach and sampling plan in the PoA-DD in accordance with the requirements of the Guidelines for Sampling. Detailed procedures and supporting information for the calculation of sampling size should be also provided.</p>	A.6.4	<p>Sampling approach and sampling plan is included in PoA-DD v2 section E.7.2 and A.4.4.2</p> <p>1) Section A 4.4.2 describes the baseline data collections as follows: The data about the fuel consumption in the baseline and project case will be collected through surveys. In this way each CPA will have its own baseline collected during the period of acquiring participating households which will be included in the CPA. After the CPA is formed, the project emissions and the performance of the units will be monitored.</p> <p>2.1) The sampling procedure is described in section A.4.4.2. Two surveys will be executed. For the one for the baseline amongst control group participants without a biogas plant, multi-stage sampling approach</p>	<p>The validation team checked the revised PoA-DD v2 section E.7.2 and A.4.4.2. the sampling approach and sampling plan in the PoA-DD in accordance with the requirements of the Guidelines for Sampling. The CME introduced two different groups: control group survey for baseline fuel consumption monitoring for the households without biogas digesters, and project performance survey for the fuel consumption of project targeted households with biogas digesters.</p> <p>For the control group survey, multi-stage sampling is applied while for project performance survey, simple sampling approach is applied. The validation team considers that both approaches are also complying with requirements of EB's sampling Guidelines.</p>

					<p>will be used. For the survey for the project participants, random sampling will be used. Consequently, for each monitoring interval a new batch of samples are included. The batch of samples will always be different as the selection is at random for both control group and project group. This approach will ensure maximum reliability and validity of the survey results</p> <p>The sampling (survey) will be carried out by MARD/CME.</p> <p>2.2) The information obtained from sampling will be checked by a number of persons within MARD which is CME for this project. The officers doing internal quality control will be independent of the CPA to be monitored.</p>	<p>Detailed procedures for the calculation of sampling size are included, in which the validation team considers that it is also complied with the Guidelines with the 90/10 confidence precision reliability. In addition, the validation team considers that the final sample size is more than the required samples from the Guidelines, thus it is deemed to be a reliable and conservative approach for sampling.</p> <p>As the database will be fixed during the CPA establishment for inclusion throughout the crediting period, the project performance samples will be picked up from the households in the fixed database randomly as generated by random computation. This also fulfils the Guidelines for sampling on the requirements of simply random sample. Please refer to Section 3.6 for details.</p> <p>OK. Therefore the CAR is closed.</p>
3.	✓		<p><b>CAR03</b> Please provide supporting information to demonstrate the CDM consideration prior to the starting date and continuing real actions for the PoA in accordance with “guideline on the demonstration and</p>	E.3.5	<p>The starting date of CPA01 is confirmed as 5 July 2007. It contains form 03 (date of application (05 July 2007) and the date of commissioning (form 07) dated 04 August. The date of the first digester completion and operation is 04 August 2007.</p>	<p>The CME identified the starting date of the first CPA, in which the real actions for application of the biogas digesters installation was carried out.</p> <p>By reviewing the provided evidence</p>

			assessment of prior consideration of the CDM".		Supporting information on prior consideration of CDM is provided in the PoA-DD.	<p>and description in PoA-DD Section A.4.3, the CDM development was considered before the starting date of PoA. The MARD developed a Project Information Note (PIN) and submit to the Vietnamese DNA for the CDM development for the proposed PoA. The Vietnamese DNA acknowledged the PIN and also issued a Letter of Endorsement (LoE) MARD. Thus this fulfills the requirements of "Guidelines for the demonstration and assessment of prior consideration of the CDM" version 4 EB62 clause 6.</p> <p>The MARD carried out continuous real actions after the CPA01 starting date. An agreement was signed with ADB for the loan of PoA with CDM development in November 2008. The MARD also coordinated with GFA Envest, United Nations Environment Programme (UNEP) Risoe Center, and SNV in the development of "CDM PoA Manual for Vietnam Biogas Programme" in September 2009. Since there is less than 2 years of a gap between the documented evidence, the validation team concludes that continuing and real actions were taken by MARD to secure CDM status for the project activity.</p>
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						OK. Therefore the CAR is closed.
4.	✓		<p><b>CAR04</b></p> <p>The estimation of emission reductions in the GSP PoA-DD does not follow the requirements in the approved methodology. Please revise the estimation of emission reductions in the calculation worksheet. Relevant parameters for estimation of emission reductions should be revised accordingly.</p>	E.8.1	<p>The CME has adopted another approach to the baseline and monitoring that was approved by the SSC WG:</p> <p>Clarification on the use of monitoring requirements from AMS-I.I for biogas projects using AMS-I.C (submitted 12 Sep 11):</p> <p><a href="http://cdm.unfccc.int/UserManagement/FileStorage/7SWAZIE8F4YDT3BCV96KN2HLUJ5G01">http://cdm.unfccc.int/UserManagement/FileStorage/7SWAZIE8F4YDT3BCV96KN2HLUJ5G01</a></p> <p>Both the baseline and the monitoring is modified in line with the methodology AMS-I.I. This approach is applicable as long as the applicability criteria of AMS-I.I are met for this project type.</p> <p>AMS-I.I is applicable to projects for generation of renewal thermal energy using renewable biogas for use in households or small farms. Other applicability conditions, i.e. total installed capacity is less than 45 MWth and the individual units has a capacity less than 150 kw has are the same with AMS-I.C and already evidenced.</p> <p>The CPA worksheet for ER</p>	<p>According to F-CDM-SSCwg ver 01 SSC_571 for the "Clarification on the use of monitoring requirements from AMS-I.I for biogas projects using AMS-I.C", "the SSC WG agreed that the project participants should be encouraged to apply AMS-I.I for their PoA involving household biogas projects, since this methodology has been specifically designed for this type of project activity and provides more detailed and relevant procedures than AMS-I.C". The validation team considers that the CME correctly applies the monitoring methodology from AMS-I.I for the PoA ER monitoring.</p> <p>The estimation of ER follows the AMS-I.I., and the relevant parameters are revised accordingly. The validation team also checked the calculation worksheet, and confirmed to be correctly indicated for the ER estimation.</p> <p>OK. Therefore the CAR is closed.</p>

					calculation is revised, see also the PoA-DD section E.6.2.	
5.		✓	<b>CL01</b> Supporting documents from the entities involved such as Government of Vietnam, Provincial Government from participating provinces, Government of Netherlands, ADB, World Bank and German Ministry of Environment etc. should be provided to the validation team for the substantiation of the sources and nature of the public funding.	A.2.5	<p>There is no ODA diversion in this PoA. ODA is provided under no condition, or whatsoever, that the CERs are transferred back in exchange for ODA.</p> <p>In the Biogas Programme Phase II, there is only ODA from the Dutch government. A non-ODA declaration has been sent to the DOE. Dutch funding is meant to support the Asia Biogas Programme of SNV. Part of this money is used for the biogas programme in Vietnam. This money is public funding in regard to this PoA. The amount awarded to the programme is budgeted.</p> <p>There is public funding from the Vietnamese government in this PoA, as the CME is the MARD from Vietnamese Government.</p> <p>The world bank and the Germany ministry is not involved in the current CPA</p>	<p>According to the CME, there is no ODA diversion for the proposed PoA.</p> <p>The validation team checked the financial structure for the biogas programme II, in which it does not involve in public funding from ADB. ADB just provide loan and administrative support to the biogas programme. The PoA mainly consists of funding from Vietnamese government and Dutch ODA. The validation team also checked the letter (ref. no. HAN-2010/96) from Embassy of Netherlands for the confirmation of non-diversion ODA for the financial assistance provided by the Netherlands Development Organization to MARD for the proposed PoA.</p> <p>The validation team also checked the MoU between MARD and German company GFA for the development of PoA documentation for the biogas programme in Vietnam. It is mentioned in the document that although the programme is funded by the Dutch financial assistance, these funds are not sufficient to allow for achieving</p>

						<p>the overall objective of installation. Thus CDM income is required. The GFA will therefore provide the administrative support for the PoA CDM documentation development in the programme. However, it is not the ODA from the German Government.</p> <p>OK. Therefore the CL is closed.</p>
6.		✓	<p><b>CL02</b></p> <p>Please clarify the starting date of PoA according to Glossary of CDM term, in which this was the earliest date at which implementation or construction or real action of the PoA began.</p>	B.1.1	<p>The supporting evidences for starting date of CPA01 to be included are provided to DOE.</p> <p>Form 3 (Mau so 03) is the first page of the document. Form 03 is the preconstruction contract and is defined as the moment real action of construction starts. The earliest date is 05/07/2007 (see the first date of that document).</p> <p>The third page is form 07 (Mau so 07), the acceptance check or commissioning of the biogas plant. That is the date that the biogas plant is working and has been taken into operation; this was 04/08/2007 for the first digester in the PoA.</p> <p>CPA 01 and 02 therefore only contain digesters that have been commissioned on 04/08/2007 or later</p>	<p>The CME identified the starting date of the first CPA to be included in the proposed PoA, in which the real action for construction of the biogas digester was carried out. This is sourced from the CPA 1 database.</p> <p>The validation team checked the first application form (form 3) for the biogas digester construction for CPA01 was submitted on 5 July 2007, and agrees with the identification of project starting date as the earliest real actions for the first CPA01, thus the starting date of CPA01. The starting date of the PoA will be the date of PoA registration.</p> <p>OK. Therefore the CL is closed.</p>

					up until 31/12/2009.	
7.		✓	<b>CL03</b> Please revise the registry database (ER calculation worksheet) for the biogas program of MARD to include the detailed information of the CPA.	E.10.1	<p>The CME has adopted another approach to the baseline and monitoring that was approved by the SSC WG:</p> <p>Clarification on the use of monitoring requirements from AMS-I.I for biogas projects using AMS-I.C (submitted 12 Sep 11):</p> <p><a href="http://cdm.unfccc.int/UserManagement/FileStorage/7SWAZIE8F4YDT3BCV96KN2HLUJ5G01">http://cdm.unfccc.int/UserManagement/FileStorage/7SWAZIE8F4YDT3BCV96KN2HLUJ5G01</a></p> <p>Both the baseline and the monitoring is modified in line with the methodology AMS-I.I. This approach is applicable as long as the applicability criteria of AMS-I.I are met for this project type.</p> <p>AMS-I.I is applicable to projects for generation of renewable thermal energy using renewable biogas for use in households or small farms. Other applicability conditions, i.e. total installed capacity is less than 45 MWth and the individual units has a capacity less than 150 kw has are the same with AMS-I.C and already evidenced.</p>	<p>According to F-CDM-SSCwg ver 01 SSC_571 for the "Clarification on the use of monitoring requirements from AMS-I.I for biogas projects using AMS-I.C", "the SSC WG agreed that the project participants should be encouraged to apply AMS-I.I for their PoA involving household biogas projects, since this methodology has been specifically designed for this type of project activity and provides more detailed and relevant procedures than AMS-I.C". The validation team considers that the CME correctly applies the monitoring methodology from AMS-I.I for the PoA ER monitoring. In addition, the CPA database is also revised for the MARD to include the detailed information of the CPA01.</p> <p>OK. Therefore the CL is closed.</p>

					The CPA worksheet for ER calculation is revised, see also the PoA-DD section E.6.2. That is according to the CPA database. No future participants will be included.	
8.		✓	<b>CL04</b> Please provide the full sets of documents for some of sample installed biogas digesters in order to illustrate the biogas units are constructed and certified by trained and licensed construction teams.	E12.2	<p>Full set of evidences is provided to DOE, which includes the digester application for CPA01 by household in form 3 dated 5 July 2007 and digester construction accepted by technician on in form 7 dated 4 August 2007</p> <p>The document for biogas digester constructed and certified by trained and licensed construction teams are provided, in order to substantiate that the biogas digester in the PoA is certified.</p>	<p>The example documents for the installation of biogas digesters prepared by the qualified constructor are reviewed. It includes the installation application (form 3), CER transfer form (form 4), commissioning report prepared by trained and licensed construction team (form 7). These also included the specifications of the biogas digesters installed such as model and volume etc.</p> <p>The validation team checked the Report of Agricultural Extension Center to MARD and DARD in March 2010. It is indicated that 33 trained technicians for biogas plant installation. All the biogas digesters were constructed with high quality with stable operation. The operation of biogas plant will be inspected by the qualified technicians regularly during the biogas digester operation, in order to ensure the biogas plant can be maintained for designed biogas production with 1 year of guarantee period. The validation team also checked the training and certification records for</p>

						the qualified technicians.
						OK. Therefore the CL is closed.
9.		✓	<b>CL05</b> Please clarify the sources of information in the estimation of the unit capacity of each digester and the number of household limited for a CPA.	A.5.2	Data on biogas consumption is obtained from the Biogas User Survey (BUS) 2006 survey, the survey report is also provided to DOE. The unit capacity of each digester and the number of household limited for a CPA is then calculated, see the excel sheet for A4.4.2 of PoA-DD.	<p>The validation team checked the Biogas User survey 2006 conducted by a consultant company "InvestConsult Group".</p> <p>The validation team checked the PoA-DD for the inclusion criteria, in which the maximum volume for one digester (limited to 25m3) and the total volume of digester in one CPA (450,000m3) are included.</p> <p>The unit capacity of the digester is estimated as 0.1kW/m3 as determined from the Biogas User Survey conducted by MARD. Thus this is used to limit the no. of households and the volume of digester in order to limit the total installed capacity of one CPA to be within thresholds of 45kW thermal.</p> <p>OK. Therefore the CL is closed.</p>
10.		✓	<b>CL06</b> Please provide the individual database for the CPA of North-East zone (CPA01) as indicated in the real case of GSP CPA-DD for validation.	A.5.2	See the CPA01 database which includes the worksheet for all households including the commissioning date.	<p>The validation team checked the CPA01 database, in which it includes all the information as stated in the PoA-DD Section A.4.4.2, such as commissioning date.</p> <p>The validation team also reviewed 3</p>

						<p>nos. of samples of the biogas plant with the commissioning (acceptance of construction by qualified technician) report.</p> <p>OK. Therefore the CL is closed.</p>
11.		✓	<p><b>CL07</b></p> <p>Please clarify how the proposed monitoring procedures are in line with the requirements in the approved methodology. The monitoring plan should be revised as per the applied methodology.</p>	A.6.4	<p>The CME has adopted another approach to the baseline and monitoring that was approved by the SSC WG:</p> <p>Clarification on the use of monitoring requirements from AMS-I.I for biogas projects using AMS-I.C (submitted 12 Sep 11):</p> <p><a href="http://cdm.unfccc.int/UserManagement/FileStorage/7SWAZIE8F4YDT3BCV96KN2HLUJ5G01">http://cdm.unfccc.int/UserManagement/FileStorage/7SWAZIE8F4YDT3BCV96KN2HLUJ5G01</a></p> <p>Both the baseline and the monitoring is modified in line with the methodology AMS-I.I. This approached is applicable as long as the applicability criteria of AMS-I.I are met for this project type.</p> <p>AMS-I.I is applicable to projects for generation of renewal thermal energy using renewable biogas for use in households or small farms. Other applicability conditions, i.e. total installed capacity is less than 45 MWth and the individual units has a</p>	<p>According to F-CDM-SSCwg ver 01 SSC_571 for the “Clarification on the use of monitoring requirements from AMS-I.I for biogas projects using AMS-I.C”, “the SSC WG agreed that the project participants should be encouraged to apply AMS-I.I for their PoA involving household biogas projects, since this methodology has been specifically designed for this type of project activity and provides more detailed and relevant procedures than AMS-I.C”. The validation team considers that the CME correctly applies the monitoring methodology from AMS-I.I for the PoA ER monitoring. In addition, the monitoring plan is also revised in the PoA-DD and CPA-DD for the monitoring of the required parameters indicated in the AMS-I.I.</p> <p>OK. Therefore the CL is closed.</p>



					<p>capacity less than 150 kw has are the same with AMS-I.C and already evidenced.</p> <p>The monitoring plan is thus revised according to the AMS-I.I.</p>	
12.		✓	<p><b><u>CL08</u></b> Please clarify why fossil fuels are major emissions in the programme activity as indicated in the GSP PDD Section E.3.</p>	E.2.1	<p>The PoA was designed only for fossil fuel replacement. Other types of energy sources will not be considered. Section A.4.2.2 is revised to declare that “the households use partially fossil fuels in the absence of the CPA”.</p>	<p>The PoA-DD is revised, and the PoA is aimed to replace partially fossil fuel consumption by biogas application. Other types of energy will be not considered in the ER. According to the on-site interview with the households with biogas digesters, they stated that after the installation of biogas digesters, they mainly used the biogas for cooking. The baseline fuel consumption such as fossil fuels and agricultural residues is obviously reduced to great amount. As the PoA only account for the reduction in fossil fuel consumption in the ER estimation, thus this is considered as a conservative approach.</p> <p>OK. Therefore the CL is closed.</p>
13.		✓	<p><b><u>CL09</u></b> Please clarify the starting date of CPA according to Glossary of CDM term, in which this was the earliest date at which implementation or construction or real action of the CPA</p>	E.3.5	<p>Please refer to CL02, the supporting evidences for starting date of CPA01 have provided to DOE.</p> <p>Form 3 (Mau so 03) is the first page of the document. Form 03 is the</p>	<p>The CME identified the starting date of the CPA01, in which the real action for application of construction for the biogas digester was carried out. The validation team considers this was the earliest date at which</p>

			began.		preconstruction contract and is defined as the moment real action of construction starts. The earliest date is 05/07/2007 for the starting date of CPA01 (see the first date of that document).	implementation or construction or real action of the CPA01 began. Please refer to CL02 for details.  OK. Therefore the CL is closed.
14.		✓	<b>CL10</b> Please clarify whether the "common practice of current manure waste treatment" fulfills the relevant environmental regulations and how the implementation of PoA could change this prevailing practice of waste treatment system.	E.4.1	<p>The common waste management practice as described in the PoA fulfills the relevant regulations. In Vietnam only specific regulation on wastewater discharging permit is developed for every individuals or enterprises that discharge more than 10 m3 of waste water a day (see decree 149, Circular 02). Livestock household will produce much less waste water and hence this regulation does not apply to them.</p> <p>Farms with a livestock population of over 1,000 pig heads and 20,000 poultry head require an EIA. Livestock household hold much less animals and hence an EIA is not required.</p> <p>The Decree 21 specifies regulation for farms with more than 1000 head or that discharge more than 10 m3, however, there are no regulation for wastewater treatment in livestock sector. In addition, there are no regulation prohibit the discharge of waste from livestock treatment into</p>	<p>The validation team interviewed with the representative from the MARD, and realized that there are no mandatory requirements for the waste management for small-scale household farms. Only for large farms with more than 1,000 pig heads and 20,000 poultry head requires the EIA and waste management facilities.</p> <p>For the prevailing practice of waste treatment, there are no special treatment strategies. In the PoA, the waste will be treated in the digesters, and the volatile solids will be digested into methane as biogas. In addition, the BOD and COD in the effluents will be decreased and thus improve the water quality of the discharge effluent. According to the IPCC, about 90% of the methane can be removed pared with the traditional untreated prevailing practice of solid management.</p> <p>The validation team checked the Decree 149/2004/ND-CP</p>

				<p>the river or water body.</p> <p>The PoA can change this prevailing practice of waste management system as follows:</p> <p>In a biogas plant, biodegradable matter is converted into biogas and hence the effluent will contain less biodegradable matter. Methane is sourced from biodegradable matter (or volatile solids, VS) and hence destruction of VS in the biogas plant will reduce the potential for methane emissions from the effluent. Removing the methane potential also reduces the COD and BOD concentration of manure which consequently will not deplete oxygen concentration in water bodies.</p> <p>The IPCC in chapter 10 of its 2006 guidelines estimates that anaerobic digestion will remove around 90% of the methane potential of manure, which is a great improvement over the baseline situation where, depending on the manure management system, up to 79% of the methane potential of manure is converted into methane (in case of anaerobic lagoon at 23 degrees or above), see page 10.77 in the guidelines.</p>	<p>“regulating the licensing of water resources exploitation, abstraction and utilization and waste water discharge into water sources”, and confirms that specific regulation only for applies in large farms with wastewater discharge more than 10m<sup>3</sup>/day.</p> <p>OK. Therefore the CL is closed.</p>
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15.		✓	<p><b>CL11</b> Please clarify the total investment required for the PoA, and the financial capital arrangement for the program.</p>	<p>E.4.1</p> <p>It is difficult to estimate on the total investment and capital arrangement of the PoA as the PoA is an open investment.</p> <p>Data on household income is provided in the micro credit survey and the BUS 2009. The average price that households pay is also shown in the previous table. The cost of a biogas plant is composed of labor and construction materials. The evidences and prices in 2007/2008 and 2009 are provided in the PoA-DD. It shows that the cost of biogas digester has occupied a large portion of households' income, thus this is the investment barrier for the households.</p> <p>For the subsidy payment in the PoA, a flat rate of 1.2 million VND is applied as subsidy level for each accepted biogas plant, not depending to digester size. Only biogas users can receive subsidy from the project through money transfer service of Post System.</p>	<p>The validation team checked the National biogas programme phase II financial arrangement, it includes the capitals from Vietnamese central and local government, and also the Dutch ODA. The validation team also checked the supporting information for the "breakdown of digester cost" from MARD. According to the CPA01 database, the average unit cost of biogas plant is calculated.</p> <p>The households' income is sourced from the National Biogas User Survey 2009 for the average annual income of 11.9 million VND. According to the BUS, the average cost (construction labour cost plus material cost) for an average 12m<sup>3</sup> digester was about 10-11.7 million VND in 2011; the average cost for an average 6-6.7m<sup>3</sup> digester was about 5.3-6.1 million VND in 2007-2008 (BUS 2007-2008); while the average cost for an average 10m<sup>3</sup> digester was about 7.2-11 million VND in 2009 (BUS 2009).</p> <p>It is considered that the cost of digester occupied a large portion of the average income of households. Thus the validation team considers that there is financial barrier for the households to install the biogas</p>
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					<p>digester.</p> <p>It is also confirmed from the MARD that the subsidy of 1.2 million VND per biogas digester is independent of the digester size. All the households that are eligible to participate in the Biogas Programme II can obtain the same amount of subsidy of 1.2 million VND in order to provide part of the initial investment for the households.</p> <p>OK. Therefore the CL is closed.</p>
16.		✓	<p><b>CL12</b></p> <p>Please provide the evidences for the investment costs of biogas units and how they are considered as a significant amount for small farm households.</p>	<p>E.4.1</p> <p>This is evidenced from 2 official references:</p> <p>According to Biogas user survey 2009:</p> <ul style="list-style-type: none"> <li>- average income of small households is about 6.70-14.89 million VND/person/year (equivalent to 335-745USD/person/year) (see page 34)</li> <li>- Estimate average cost per m<sup>3</sup> built biogas plant is about 0.60-1 million VND/m<sup>3</sup> (equivalent to 30-50 USD/m<sup>3</sup>)</li> <li>- Average volume of built biogas digester is 13.80m<sup>3</sup> in that year</li> <li>- That means, cost for construction a biogas plant is about 414-690 USD.</li> </ul>	<p>The validation team checked the authoritative Biogas user survey 2009 for Agricultural, Rural, Environmental Development and GIS (RICA), the average income of non-biogas user household was 11.9 million VND (Table 10 of the survey).</p> <p>According to Table 13, the average biogas digester is 11.22 m<sup>3</sup> in volume. Referring to Table 14, the unit cost of construction cost of biogas digester is 0.51-1.07 million VND/m<sup>3</sup>. Thus the unit cost for the biogas digester is ranged from 5.7-12 million VND. The validation team considers that the biogas digester construction cost occupies the major portion of the households' annual income, and thus is considered as a</p>

				<p>In summary, the investment cost of a biogas plant is around a year income of a person. Such an investment can be considered as a significant investment.</p> <p>According to Micro Credit survey 2009 conducted by independent consultant, InvestConsult Group for MARD:</p> <p>The main difficulty of the potential users is affordability. Up to 64.0% of the respondents say they cannot afford to pay all the costs incurred by the construction of biogas works. Besides, the amount VND 1 million [subsidy] (previously) or VND 1.2 million (at present) is considered low and does not play any important role when the households decide whether or not to build biogas works. A vast majority of the households request higher subsidies. (page 62)</p> <p>The needs for loans to build biogas works are quite high with 72.4% of the households that plan to build biogas works saying they will go out for loans. And when supposed that there would be a micro-credit program exclusive for construction of biogas works, this rate is to rise even higher (84.1%). This shows that the</p>	<p>significant amount for small farm households.</p> <p>According to the survey “Micro Credit for Households Constructing Biogas Plants in 2009” carried out by the “Investconsult Group” and coordinated by Department of Livestock, it is stated that the small households were willing to install the biogas digester, however, most of them required loan (up to 72.4%). Thus it is evidenced that the construction cost is relatively high compared with the households’ annual income. Although they want to install the biogas digester, but an affordable loan rate is one of the factors to be considered by the households.</p> <p>OK. Therefore the CL is closed.</p>
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					investment is a considerably investment for the majority of the households.	
17.		✓	<b>CL13</b> Further supporting information should be provided in order to substantiate the poor quality of biogas digesters is the technologicla barrier to the PoA.	E.4.1	<p>The most common alternative models is the nylon bag, with a shorter PBP and much higher IRR, however, the quality and reliability is much lower. The users will therefore without the PoA choose for the Nylon bag and not the KT1 or KT2 for these reasons. See page 3 of the 2010 document and page 41 for the prices.</p> <p>Another alternative cheaper than the KT1 and KT2 is the Vacvina. An evaluations study conducted by SNV showed that the VACVINA is a less appropriate model than the KT2,see page 24 in the comparison of model document.</p> <p>In conclusion, the KT1 and KT2 is a better quality biogas plant compared to the nylon bag and the VACVINA. Without the PoA household however will due to the investment barrier choose lower quality alternatives and will not opt for the KT1 and KT2.</p>	<p>The validation team checked the research report “Evaluation Study for Household Biogas Models” issued by the “Sustainable Energy Development Consultancy Joint Stock Company” in December 2009 for the study of various types of biogas digesters in LDC.</p> <p>It is reported that the most common type of biogas digester is the nylon bag. It is easy to construct, low requirements of skillful workers for construction, and with easy availability of raw material. The construction cost is relatively low, about 1-1.2 million VND compared with KT1 and KT2 for 2.6-3.5 million VND (Part VI of the report). However, since it is made by nylon, it is comparably low durability and safety. Biogas leakage will be easily happened. Thus the O&amp;M is comparably inconvenient.</p> <p>There is another type of digester called the Vacvina type. It is excluded in the study: “Vacvina model was not selected because its weaknesses like non-material saving, less durable structure, low</p>



						<p>safety as gas is store in nylon bag nor low gas pressure etc.”</p> <p>It is reported that in Vietnam, since more skillful labours are required for the construction of KT1 and KT2 biogas digesters, it causes a technological barrier to the installation of KT1 and KT2 digesters. In addition, the relatively high cost also is another investment barrier to the proposed PoA.</p> <p>Thus it is substantiated that without the financial subsidies, other cheaper type of biogas digesters will be installed with lower quality, thus it is a technological barrier to the construction of the KT1 and KT2 biogas digester.</p> <p>OK. Therefore the CL is closed.</p>
18.		✓	<p><b>CL14</b></p> <p>The identification procedures for unique registration under MARD should be further clarified. In addition, the financial support records for the participating households of the CPA should be provided for validation.</p>	A.6.4	<p>For identification the farmer`s ownership of one biogas plant, there are two options.</p> <p>1) Looking for the unique digester number on the digester neck or on the wall nearby the plant. According to project`s regulations, during construction progress, every mason must inscribe the unique number on the digester neck or on the wall nearby (e.q. the kitchen wall).</p>	<p>The validation team considers the identification procedures for unique registration is deemed applicable.</p> <p>Each biogas plant has a unique registration code, and is assigned once the biogas plant was completed and inspected for compliance with the MARD standard. Then trained MARD technician will fill up the commissioning report (form 7) with</p>

				<p>The unique number of the biogas plant is recorded in form 7 (certification and acceptance form) and entered in the database along with contact details and address of the household.</p> <p>2) Second choice is cross check the unique ID number of the household (similar to passport number) with the ID number on registration form of project. This number is recorded in form 03 (letter of interest for biogas construction) and form 07. This number is also retained in the database.</p> <p>The household enter their ID number on the registration form of project and this is very important as they are identified based on that number when they pick up subsidy from the post office.</p> <p><u>Subsidy payment</u> The subsidy (financial support) is transferred to household by post, the household is identified by all the information (full name, ID number, address) according to the following procedure:</p> <p>Subsidy is sent by post to the household → the post sent a letter</p>	<p>the assigned biogas digester registration code. Then this registration code will be input in the MARD's database, together with other information as indicated in the PoA-DD. The biogas facilities can be differentiated from the unique identification code.</p> <p>During the on-site validation, the validation team also checked some information of biogas digesters were marked on the biogas digester, such as mason code, and the date of construction, biogas model and size. It is stated by the CME that the identification number matches with the household' ID no., with corresponding address and contact no. The validation team checked that this information is also recorded in the CPA database, such as CPA01 database. The validation team considers that through this unique identification plan, it can avoid the double-counting of the biogas digester during the programme monitoring.</p> <p>Financial support record for the participating households for the CPA:</p> <p>The validation team checked one of the provided payment record for a</p>
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				<p>Once the biogas plant is handed over the owner, the subsidy amount is sent to the post office. The post office subsequently contacts the owner of the biogas plant by mail → the owner can then go to the post office to pick up the subsidy where he or she is identified based on his/her ID number. If the numbers are the same, the household signs a paper and receive subsidy. The post office sends these papers back to the programme office in Hanoi and this is marked in the database.</p> <p>Subsidy receipts are recorded in the database. The amount that a biogas user can obtain is 1.2 million VND, irrespective of the digester volume/cost.</p> <p>A set of forms is included to DOE and containing:</p> <ul style="list-style-type: none"> <li>• Of two households with form number 3, 7 and 9. Form number 3: Application form, form 7: acceptance check and form 9: The under construction check.</li> <li>• One subsidy payment document</li> </ul>	<p>household for the subsidy of biogas digester construction. However, please provide the brief translation in English for the essential part, such as name of household, subsidy received, the construction cost of the biogas digester etc.</p> <p>The validation team checked the CPA01 database with the information of the subsidy received by the participated households. In addition, the validation team also reviewed the sample receipts for the subsidy which is received and signed by the household.</p> <p>Moreover, the validation team checked the following sets of forms for the illustration of the workflow for the programme:</p> <p>(i) Digester application by household in form 3 and digester construction accepted by technician on in form 7 (with biogas ID and biogas measurement details)</p> <p>(ii) Signed construction contract (Form 6) between the qualified mason and the households for the construction cost. (Raw materials for construction will be prepared by the households as the mason only provide labour for the digester construction)</p>
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						<p>(iii) Signed construction assistance contract (form 4) for the transfer of the CER/VER from the household to the CME, with the subsidy of 1.2 million VND for the participated households</p> <p>(iv) Form 9 for the checking and evaluation of under-construction Biogas Plant, in which this is checked by the Biogas Project Office for quality control regularly.</p> <p>(v) Sample receipts for the subsidy which is received and signed by the household.</p> <p>OK. Therefore the CL is closed.</p>
19.		✓	<p><b>CL15</b> Please clarify for how the monitoring procedures can be implemented with quality control and assurance in each of CPA.</p>	E.12.4	See the implementation manual in Provincial Biogas Project Division Guidelines issued by the BPD of MARD, chapter III Quality control	<p>The validation team checked the implementation manual chapter III for the quality control of the programme activity. It includes the QC procedures for under-construction plant, acceptance check, QC for construction-completed plant and settlement claim procedures. In addition, the construction and commissioning will be carried out by trained technician (DBT) in order to ensure the quality of the biogas digester. For the monitoring, the results will be also discussed with the local experts in agricultural field in order to control</p>

						<p>the quality of monitoring results.</p> <p>The QA/QC procedure is also included in the monitoring plan of PoA-DD Section A.4.4.2. The validation team considers that the QC procedures are clear and applicable to the PoA.</p> <p>Therefore the CL is closed.</p>
20.		✓	<p><b>CL16</b></p> <p>Please provide information for the necessary training plans and schedule for the implementation of monitoring plan for each of CPA.</p>	E.12.2	<p>Training manual is included in the Provincial Biogas Project Division Guidelines issued by the BPD of MARD, see page 22</p>	<p>The validation team checked the implementation manual and guidelines issued by the BPD of MARD. The training in the programme activity is indicated in the chapter IV of the Guidelines.</p> <p>It includes the training plans of the PoA for the users (before and after the construction), regular exchange workshop for technician and mason team, DBT training, biogas mason training, and refresh training for technician and mason etc.</p> <p>The training plan is also indicated in the PoA-DD. The validation team considers that the training plan is clear and applicable to the PoA.</p> <p>In addition, the validation team also interviewed with some trained mason during on-site visit. They stated that they were trained by</p>

						<p>BPD of MARD, and received the certificate in order to be the qualified biogas construction team for the PoA. The sample certificates for the mason and technicians were also reviewed by the validation team.</p> <p>Therefore the CL is closed.</p>
21.		✓	<p><b>CL17</b> Please provide the relevant document from the Vietnamese DNA for the confirmation of PoA contributing to sustainable development.</p>	E.11.3	LoA is submitted to the validator.	<p>The Letter of Approval (LoA) /56/ issued by the DNA of Vietnam has been received to confirm the PoA in assisting to achieve sustainable development in Vietnam.</p> <p>OK. Therefore the CL is closed.</p>
22.		✓	<p><b>CL18</b> Please provide the relevant information for the regulations outlined in the GSP PoA-DD Section C.3. including the current waste management policy for the small farm households for validation.</p>	C.1.1	<p>In Vietnam only specific regulation on wastewater discharging permit is developed for every individuals or enterprises that discharge more than 10 m3 of waste water a day (see decree 149, Circular 02). Livestock household will produce much less waste water and hence this regulation does not apply to them.</p> <p>Farms with a livestock population of over 1,000 pig heads and 20,000 poultry head require an EIA. Livestock household hold much less animals and hence an EIA is not required.</p> <p>The Decree 21 specifies regulation for farms with more than 1000 head or that discharge more than 10 m3,</p>	<p>The validation team checked the Circular "Guiding Strategic Environmental Assessment, Environmental Impact Assessment and Environmental Protection Commitment" issued by the Ministry of Natural Resources and Environment, December 2008 (No. 05/2008/TT-BTNMT), and Law on Environmental Protection of Vietnam (No: 52/2005/ QH11), there are no special requirements for the small farm households for the waste management of the farm manure. During the on-site interview, the representative from the MARD realized that there are no mandatory requirements for the waste management for small-scale household farms. Only for large</p>

					however, there are no regulation for wastewater treatment in livestock sector. In addition, there are no regulation prohibit the discharge of waste from livestock treatment into the river or water body.	farms with more than 1000 pig heads and 20000 poultry head requires the EIA and waste management facilities.  OK. Therefore the CL is closed.
23.		✓	<b>CL19</b> Please summarize in the PoA-DD for the background information of the households who participated in the workshops conducted by the provincial offices of the Ministry of Agriculture.	D.1.1	The background information is included in the PoA section D for both local stakeholder meetings	The validation team checked the PoA section for the brief description of the local stakeholder consultation meeting. From the background of the local stakeholders, it is reasonably believed that the consultation can reflect the general attitudes towards the programme from the local villagers who might take part in the PoA. The background information is also included in the PoA-DD Section D1.  OK. Therefore the CL is closed.
24.		✓	<b>CL20</b> The project participants are requested to provide the relevant records of the three workshops (2 provincial and 1 in Hanoi) to the validation team for validation.	D.1.1	Records are provided for validation: 1. Stakeholder consultation report (SCR) Nghe AN 2. SCR Phu Tho 3. Hanoi	The validation team checked the 2 local stakeholder consultation reports for the consultation in Nghe An Province and Phu Tho Province held on April 2009 respectively. About 40 participants took part in each of the consultation, in which they included the local farms (with or without the biogas digesters), biogas digester mason, commune party committee, head of district, WWF (Gold Standard NGO), head of town extension team, and some observers etc.



					<p>The validation team also checked the final meeting summary for the Biogas PoA workshop held by GFA in Hanoi on 12 June 2009. The participants included the representatives from Vietnamese government MARD, KfW, ADB, Dutch government and other local CDM consultants etc.</p> <p>The validation team considers that from the background of the local stakeholders, it is reasonably believed that the consultation can reflect the general attitudes towards the programme from the local villagers who might take part in the PoA.</p> <p>OK. Therefore the CL is closed.</p>
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## Appendix B

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### CERTIFICATES OF COMPETENCE

## Qualification

Lo, Tommy /

## Emission Trading

### United Nations Framework Convention on Climate Change

Auditor No.:  
(AuditorenRegNr)

Appointed:  
(Zugelassen)

☒ ja

Qualification Level: Auditor  
(Qualifikationsstufe)

External:  
(Externer)

☐ ja

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

EAC Scopes:  
(EAC Branchen)

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

Add. qualification:  
(zus. Qualifikation)

First Appointment:  
(Erstberufung)

2008-04-28

Valid to:  
(Gültig bis)

2012-10-12

Remarks:

CDM 01 limited to TA1.2 - Renewable Energies  
CDM 13 limited to TA13.1 - Waste handling and disposal  
  
(as GHG auditor from 2009-10-14)

Languages:

Chinese  
English  
Mandarin  
Chinese simplified  
Chinese traditional

## Experience Exchange

Date

Location

Remarks

Accreditation(s)

## Monitoring

Latest Monitoring:  
(letzte Beurteilung)

Next  
Monitoring:  
(n-chste  
Beurteilung)

Remarks:

[View / Edit Monitoring](#)

## History of scope allocation

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

### History

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

## Qualification

Hai, Harold /

### Emission Trading

#### United Nations Framework Convention on Climate Change

Auditor No.:  
(AuditorenRegNr)

Appointed:  
(Zugelassen)

☒ ja

Qualification Level: Auditor  
(Qualifikationsstufe)

External:  
(Externer)

☐ ja

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

EAC Scopes:  
(EAC Branchen)

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

Add. qualification:  
(zus. Qualifikation)

First Appointment:  
(Erstberufung)

2007-12-19

Valid to:  
(Gültig bis)

2012-09-25

Remarks:

2010-10: revised to meet Accreditation Standard Ver.02:  
- CDM 01 limited to TA1.2 - Renewable Energies  
- CDM 13 limited to TA 13.1- Waste handling & disposal

Languages:

Chinese  
English  
Mandarin  
Chinese simplified  
Chinese traditional

### Experience Exchange

Date

Location

Remarks

Accreditation(s)

### Monitoring

Latest Monitoring:

Next

(letzte Beurteilung)

Monitoring:  
(n-chste  
Beurteilung)

Remarks:

## History of scope allocation

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

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

## History

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

## Qualification

Chan, Wilfred /

### Emission Trading

#### United Nations Framework Convention on Climate Change

Auditor No.:  
(AuditorenRegNr)

Appointed:  
(Zugelassen)

☒ ja

Qualification Level: Auditor  
(Qualifikationsstufe)

External:  
(Externer)

☐ ja

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

EAC Scopes:  
(EAC Branchen)

CDM 06 - Construction  
CDM 13 - Waste handling and disposal  
CDM 01 - Energy industries (renewable - / non-renewable sources)

Add. qualification:  
(zus. Qualifikation)

First Appointment:  
(Erstberufung)

2008-03-24

Valid to:  
(Gültig bis)

2011-03-23

Remarks:

2008-08-03:  
Addition of CDM-01 based on project experience, but limited to renewable energies except Biomass power / cogeneration projects.

Languages:

Chinese  
Chinese simplified  
Chinese traditional  
English  
Mandarin

### Experience Exchange

Date

Location

Remarks

Accreditation(s)

### Monitoring



**Latest Monitoring:**  
(letzte Beurteilung)

**Next  
Monitoring:**  
(n-chste  
Beurteilung)

Remarks:

## History of scope allocation

Date:  
Change:  
By:  
Reason:

Date: 2007-06-24  
Change: EAC CDM, CDM added  
By: Manfred Brinkmann  
Reason: No indication yet for training as CDM auditor and participation in completed validation / verification activities, therefore changed application to 'Expert'.

## History

<b>Created:</b>	2007-05-23 01:58:07 PM	Wilfred Chan/Hk/Chn/TUV
<b>Modified:</b>	2008-08-03 10:37:43 AM	Manfred Brinkmann/Jpn/TUV

## Qualification

Zhu, Jiang /

## Emission Trading

### United Nations Framework Convention on Climate Change

Auditor No.:

(AuditorenRegNr)

Appointed:

(Zugelassen)

☒ ja

Qualification Level: Auditor

(Qualifikationsstufe)

External:

(Externer)

☐ ja

Add. reviewer:

(Zus-tzlicher Prüfer)

☐ yes

EAC Scopes:

(EAC Branchen)

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

CDM 04 - Manufacturing industries

Add. qualification:

(zus. Qualifikation)

First Appointment:

(Erstberufung)

2009-03-08

Valid to:

(Gültig bis)

2012-03-07

Remarks:

CDM 01: valid for TA 1.1, 1.2

CDM 04: valid for TA 4.5 - Other WHR and Fuel Switch

Languages:

Chinese

English

## Experience Exchange

Date

Location

Remarks

Accreditation(s)

## Monitoring

Latest Monitoring:

(letzte Beurteilung)

Next

Monitoring:

(n-chste  
Beurteilung)

Remarks:

## History of scope allocation

Date: 2009-03-08  
Change: EAC CDM added  
By: Manfred Brinkmann  
Reason:

### History

Created:	2008-03-20 01:56:52 PM	Daxun Li/Bj/Chn/TUV
Modified:	2011-01-13 03:24:11 PM	Manfred Brinkmann/Jpn/TUV
	ZE9	Manfred Brinkmann/Jpn/TUV
	2011-01-13 03:22:23 PM	Manfred Brinkmann/Jpn/TUV
	ZE9	Manfred Brinkmann/Jpn/TUV
	2010-11-10 06:24:28 PM	Daxun Li/Bj/Chn/TUV
	ZE9	
	2010-11-10 06:23:35 PM	
	ZE9	
	2008-03-20 01:57:07 PM	

## Qualification

Li, Lixin /

### Emission Trading

#### United Nations Framework Convention on Climate Change

Auditor No.:

(AuditorenRegNr)

Appointed:

(Zugelassen)

☒ ja

Qualification Level:

(Qualifikationsstufe)

External:

(Externer)

☐ ja

Add. reviewer:

(Zus-tzlicher Prüfer)

☒ yes

EAC Scopes:

(EAC Branchen)

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

CDM 03 - Energy demand

Add. qualification:

(zus. Qualifikation)

First Appointment:

(Erstberufung)

2010-09-06

Valid to:

(Gültig bis)

2013-09-05

Remarks:

Appointed as Technical Reviewer for  
TA 1.1, 1.2  
TA 3.1

Languages:

### Experience Exchange

Date

Location

Remarks

Accreditation(s)

2010-12-21 Beijing

United Nations Framework Convention on Climate Change

GC CDM Auditor Experience Exchange, Beijing, 2010-12-21to23

### Monitoring

Latest Monitoring:

(letzte Beurteilung)

Next

Monitoring:

(n-chste  
Beurteilung)

Remarks:

## History of scope allocation

Date:  
Change:  
By:  
Reason:

Date:  
Change:  
By:  
Reason:

Date: 2010-11-08  
Change: EAC CDM, CDM added  
By: Manfred Brinkmann  
Reason: Appointed as Technical Reviewer for

## History

Created:	2010-08-13 11:09:24 AM	Lixin Li/Bj/Chn/TUV
Modified:	2012-02-12 06:12:39 PM	Praveen Urs/Chn/TUV
	2010-11-15 04:02:03 PM	Lixin Li/Bj/Chn/TUV
	2010-11-15 04:01:56 PM	Lixin Li/Bj/Chn/TUV
	2010-11-08 09:36:09 AM	Manfred Brinkmann/Jpn/TUV
	ZE9	Manfred Brinkmann/Jpn/TUV
	2010-11-08 09:28:17 AM	Manfred Brinkmann/Jpn/TUV
	ZE9	Manfred Brinkmann/Jpn/TUV
	2010-11-08 09:28:07 AM	Lixin Li/Bj/Chn/TUV
	ZE9	
	2010-11-08 09:27:39 AM	
	ZE9	
	2010-08-13 11:09:41 AM	