GOLD STANDARD VERIFICATION REPORT

– 2ND PERIODIC –

BIOGAS PROGRAM FOR ANIMAL HUSBANDRY SECTOR OF VIETNAM

GOLD STANDARD REF. NO.: GS1083

Monitoring Period: 2012-01-01 to 2013-06-30
(incl. both days)

Report No: MY-PVerGS 14/028 <14/144>

Date: 2015-04-22

TÜV NORD CERT GmbH
JI/CDM Certification Program
Langemarckstraße, 20
45141 Essen, Germany
Phone: +49-201-825-3335
Fax: +49-201-825-2139
www.tuev-nord.de
www.global-warming.de

Verification Report:	***Report No.***		***Rev. No.***	***Date of 1st issue:***	***Date of this rev.***
	MY-PVerGS 14/028 <14/144>		1.2	2015-04-22	2015-04-22
Project:	***Title:***		***GS No***	***Registration date:***	***Gold Standard No.:***
	Biogas Program for Animal Husbandry Sector of Vietnam		1083	2012-06-28	GS1083
				Verification No.:	
				2nd Periodic verification	
Project Participant(s):	***Non Annex 1 country:***			***Annex 1 country:***	
	Vietnam			N/A	
	PP from non- Annex 1 country:			***PP from Annex 1 country:***	
	Biogas Project Management Unit (PMU) SNV Vietnam			N/A	
Applied methodology/ies:	***Title:***			***No.:***	***Scope(s) / TA(s)***
	Technologies and practices to displace decentralized thermal energy consumption, version 1.0			Ver. 1.0	1.1 / 3. / 13.1
Monitoring period and monitoring report	***Monitoring period (MP):***			***Monitoring Report:***	
	From:	***To:***	***No. of days:***	***Draft version:***	***Final version:***
	2012-01-01	2013-06-30	547	2014-10-21 v 1.0	2015-04-22 v 3.2
Verification team / Technical Review and Final Approval:	***Verification Team:***			***Technical review:***	***Final approval:***
	Cheong, Chun Yuen Pham, Van Trung – TE (Robert)) – TL/TE			Lubanga, David Saalmann, Martin	Saalmann, Martin
Key dates of verification:	***Publication of the work plan:***			***On-site (from):***	***On-site (to):***
	2014-10-27			2014-11-10	2014-11-13
Summary of Verification opinion	Biogas Project Management Unit (PMU) has commissioned the TÜV NORD JI/CDM Certification Program to carry out the 2nd periodic verification of the project: "Biogas Program for Animal Husbandry Sector of Vietnam", with regard to the relevant Gold Standard requirements. As a result of this verification, the verifier confirms that: ☒ all operations of the project are implemented and installed as planned and described in the validated project design document and Gold Standard additional Annexes to the project design document, ☒ the monitoring plan is in accordance with the applied approved GS methodology, ☒ the monitoring plan as set out in the validated project design document and the validated additional Annexes has been followed, ☒ the project contributes to sustainability development ☒ the monitoring system is in place and functional. The project has generated GHG emission reductions, and ☒ the GHG emission reductions are calculated without material misstatements in a conservative and appropriate manner. TÜV NORD JI/CDM CP herewith confirms that the project has achieved emission reductions in the above mentioned reporting period as follows:				
Emission reductions: [t CO_{2e}]	***Verified amount***				***As per PDD:***
	779,924				589,125/a
Document information:	*Filename:*				*No. of pages:*
	14-144 GS 1083 VBP MPII FVerR				122

Abbreviations:

BCC	**Biodigester Construction Companies**
CA	**Corrective Action / Clarification Action**
CAR	**Corrective Action Request**
CDM	**Clean Development Mechanism**
CER	**Certified Emission Reduction**
CL	**Clarification Request**
CO_2	**Carbon dioxide**
CO_2eq	**Carbon dioxide equivalent**
CP	**Crediting Period**
ER	**Emission Reduction**
ERC	**Emission Reduction Calculation Spread Sheet**
FAR	**Forward Action Request**
GHG	**Greenhouse gas(es)**
GS	**Gold Standard**
GSP	**Gold Standard Passport**
GST	**Gold Standard Toolkit 2.1**
MP	**Monitoring Plan**
MR	**Monitoring Report**
NBP	**National Biodigester Programme**
PA	**Project Activity**
PBPO	**Provincial Biodigester Programme Officer**
PDD	**Project Design Document**
PP	**Project Participant**
QA/QC	**Quality Assurance / Quality Control**
UNFCCC	**United Nations Framework Convention on Climate Change**
VVS	**Validation and Verification Standard**

Table of Contents *Page*

1. INTRODUCTION

Biogas Project Management Unit (PMU) has commissioned the TÜV NORD JI/CDM Certification Program (CP) to carry out the 2nd periodic Gold Standard (GS) verification of CP I for the project

"Biogas Program for Animal Husbandry Sector of Vietnam"

with regard to the relevant requirements for Gold Standard project activities. The verifiers have reviewed the implementation of the monitoring plan (MP) in the registered Gold Standard project.

GHG data as well as sustainability aspects for the monitoring period were verified in detailed manner applying the set of requirements, audit practices and principles as required under the Gold Standard requirements /GS/ and additional Validation and Verification Standard /VVS/ of the UNFCCC.

This report summarizes the findings and conclusions of this 2nd periodic verification for CP I of the above mentioned registered Gold Standard project activity.

1.1. Objective

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

- implementation and operation of the project activity as given in the PDD and GS Passport,
- compliance of the actual monitoring system and procedures with the provisions of the monitoring plan as a part of registered PDD, the GS monitoring matrix and the applied approved monitoring methodology,
- data given in the monitoring report by checking the monitoring records, the emissions reduction calculation and supporting evidence,
- accuracy of the monitoring equipment,
- quality of evidence,
- significance of reporting risks and risks of material misstatements.

1.2. Scope

The verification of this registered project is based on the validated project design document /PDD/, the validated Gold Standard Passport /GSP/, the carbon monitoring and sustainability monitoring report /MR/, the registered GS validation report /VAL/, supporting documents made available to the verifier and information collected through performing interviews and during the on-site assessment. Furthermore publicly available information was considered as far as available and required.

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

- Article 12 of the Kyoto Protocol /KP/,
- guidelines for the implementation of Article 12 of the Kyoto Protocol as presented in the Marrakech Accords under decision 3/CMP.1 /MA/, and subsequent decisions made by the Executive Board and COP/MOP,
- other relevant rules, including the host country legislation,
- CDM Validation and Verification Standard /VVS/,
- monitoring plan as given in the registered PDD /PDD/,
- Approved GS methodology. /GSM/
- Gold Standard Version 2.1/GS/
- Gold Standard Passport/GSP/.

2. GHG PROJECT DESCRIPTION

2.1. Technical Project Description

The project activity is aimed to install biodigesters at household level to treat animal manure to generate biogas replacing conventional fuel namely firewood, charcoal, coal, LPG, kerosene and agricultural residues for cooking. The digestate (bio-slurry) from the biodigester is further exploited for use as soil conditioners to replace chemical fertilizers for crops.

The biodigesters under the program consists of two designs KT1 and KT2 which were first developed by the Institute of Energy and further streamlined with the standard issued by the Ministry of Agriculture and Rural Development, which is the sectoral standard 10TCN 497:2005 - Part 6. Both designs have dome capacity range from 4 – 50 m^3. /T1/

Animal manure and / or human waste is fed into the biodigester and anaerobically degraded by microbes to produce biogas. The biogas is captured in an integrated gasholder and stored for household thermal energy services, mainly for cooking.

A typical system comprises of a hemispherical fixed dome type biodigester with two chambers, one for generation of the biogas and one for removal of the bio-slurry, a biogas stove and the necessary piping. Toilet connection to the biodigester is optional (recommended by the programme).

The slurry effluent from the biodigester will be utilized as organic fertilizer / soil conditioner.

The technology of the project activity will reduce GHG emissions with (1) avoidance of methane emissions from the animal waste; (2) displacement of non-sustainable energy sources such as firewood, charcoal, coal, LPG, kerosene, and agricultural residues, etc., used for cooking; and (3) displacement of chemical fertilizers with the bio-slurry from the biodigesters.

Typical key parameters of the biodigesters are given in Table 2-1:

Table 2-1: Typical Technical data of the biodigesters

Dung requirement for some typical biodigester units:								
Plant size (m^3)	5.3	7.9	10.5	13.2	15.9	21.2	26.5	31.8
Dung requirement (kg/day)	50	75	100	125	150	200	250	300

2.2. Project Location

The details of the project location are given in Table 2-2:

Table 2-2: Project Location

Description	Project Location
Host Country	Vietnam

Region:	52 provinces as of 2013 for this monitoring period II of crediting period I

Latitude/longitude of program provinces:

#	Province	Latitude (xx° xx' xx" N)	Longitude (xx° xx' xx" E)
Temperate zone			
1	Bắc Giang	21^0 16' 23"	106^0 11' 40"
2	Bắc Ninh	21^0 11'9"	106^0 04' 34"
3	Đắc Lắc	20^0 02' 12"	105^o 34' 54"
4	Điện Biên	21°22'59"	103°1'0"
5	Gia Lai	13°58'59"	108°0'0"
6	Hà Giang	22°49'59"	104°58'59"
7	Hà Nam	19°19'0"	105°47'59"
8	Hà Nội	21°1'59"	105°50'59"
9	Hà Tây	20°50'0"	105°40'0"
10	Hà Tĩnh	18°19'59"	105°54'0"
11	Hải Dương	20°55'59"	106°19'0"
12	Hải Phòng	20°51'21"	106°40'55"
13	Hoà Bình	20°48'47"	105°20'17"
14	Hưng Yên	20°38'59"	106°4'0"
15	Lâm Đồng	11°55'59"	108°25'0"
16	Lạng Sơn	21°49'59"	106°43'59"
17	Lào Cai	22°28'59"	103°57'0"
18	Nam Định	20°25'0"	106°10'0"
19	Nghệ An	18°40'0"	105°40'0"
20	Ninh Bình	20°15'14"	105°58'29"
21	Phú Thọ	21°20'0"	105°10'0"
22	Quảng Ninh	21°14'00"	107°20'05"
23	Quảng Trị	16°45'0"	107°12'0"
24	Sơn La	21°19'0"	103°54'0"
25	Thái Bình	20°27'0"	106°19'59"
26	Thái Nguyên	21°35'34"	105°50'39"
27	Thanh Hoá	19°48'0"	105°46'0"
28	Thừa Thiên Huế	16°28'0"	107°35'59"
29	Tuyên Quang	21°49'23"	105°13'5"
30	Vĩnh Phúc	21°17'59"	105°36'00"
31	Yên Bái	21°42'0"	104°52'0"
Warm zone			
1	An Giang	10°30'0"	105°13'0"
2	Bà Rịa-Vũng Tàu	10°30'0"	107°13'0"
3	Bạc Liêu	9°17'38"	105°43'40"
4	Bến Tre	10°13'59"	106°22'59"
5	Bình Định	14°7'59"	108°46'59"
6	Bình Phước	11°45'33"	106°51'5"
7	Cần Thơ	10°1'59"	105°46'59"
8	Đồng Nai	11°6'0"	107°20'59"
9	Đồng Tháp	10°40'05"	105°42'05"
10	Hậu Giang	9°47′0"	105°28′0"
11	Khánh Hòa	10°40'59"	105°10'0"
12	Kiên Giang	10°16'59"	104°39'0"
13	Long An	10°24'0"	106°19'59"

	14	Quảng Bình	17°28'9"	106°35'59"
	15	Quảng Nam	15°53'8"	108°15'24"
	16	Quảng Ngãi	15°7'0"	108°47'59"
	17	Sóc Trăng	9°36'11"	105°58'48"
	18	Tây Ninh	11°18'0"	106°5'59"
	19	Tiền Giang	10°22'0"	106°40'0"
	20	Trà Vinh	9°56'4"	106°20'43"
	21	Vĩnh Long	10°15'0"	105°58'0"

2.3. Project Verification History

Essential events since the registration of the project are presented in the following Table 2-3.

Table 2-3: Status of previous Monitoring Periods

#	Monitoring Period	Monitoring Dates	Status
1	MP I (CPI)	2010-06-28 to 2011-12-31	Issued
2	MP II (CPI)	2012-01-01 to 2013-06-30	Issuance request

3. METHODOLOGY AND VERIFICATION SEQUENCE

3.1. Verification Steps

The verification consisted of the following steps:

- Contract review
- Appointment of team members and technical reviewers
- Publication of the monitoring report / work plan
- A desk review of the Monitoring Report /MR/ submitted by the client and additional supporting documents with the use of customised verification protocol /CPM/ according to the Validation and Verification Standard /VVS/ and additional Gold Standard requirements,
- Verification planning,
- On-Site assessment,
- Background investigation and follow-up interviews with personnel of the project developer and its contractors,
- Draft verification reporting,
- Resolution of corrective actions (if any),
- Final verification reporting,
- Technical review,
- Final approval of the verification.

3.2. Contract review

To assure that

- the project falls within the scopes for which accreditation is held,
- the necessary competences to carry out the verification can be provided,
- Impartiality issues are clear and in line with the CDM and GS accreditation requirements

a contract review was carried out before the contract was signed.

3.3. Appointment of team members and technical reviewers

On the basis of a competence analysis and individual availabilities a verification team, consisting of one team leader and one additional team member, was appointed.

The list of involved personnel, the tasks assigned and the qualification status are summarized in the Table 3-1 below.

Table 3-1: Involved Personnel

	Name	Company	Function [1]	Qualification Status [2]	Scheme competence [3]	Technical competence [4]	Verification competence [5]	Host country Competence	On-site visit
☒ Mr. ☐ Ms.	Cheong, Chun Yuen (Robert)	TUV NORD Malaysia	TL	SA	☒	1.2, 13.1	☒	☐	☒
☒ Mr. ☐ Ms.	Pham, Van Trung	TUV NORD Malaysia	TM[A]	A	☒	1.2	☒	☐	☒
☒ Mr. ☐ Ms.	Lubanga, David	TUV NORD Cert GmbH	OR	A	☒		☒	☐	-
☒ Mr. ☐ Ms.	Saalmann Martin	TUV NORD Cert GmbH	TR/FA[B]	SA	☒	1.2 13.1	☒	☐	-

1) TL: Team Leader; TM: Team Member[A], TR: Technical review[B]; OT: Observer-Team[B], OR: Observer-TR[B]; FA: Final approval[B]
A) Team Member: GHG auditor (at least Assessor status), Technical Expert (incl. Host Country Expert or Verification Expert), not ETE
B) No team member: OT, TR, OR, FA

2) GHG Auditor Status: A: Assessor; LA: Lead Assessor; SA: Senior Assessor; T: Trainee; TE: Technical Expert

3) GHG auditor status (at least Assessor)

4) Technical Area / TR Subcategory as per S01-VA000-F02 or S01-VA070-F01 (such as 1.1, 1.2, …)

5) In case of verification projects

The team member contributed to the review of documents, the assessment of the project activity and to the preparation of this report under the leadership of the team leader.

Statements of competence for the above mentioned team member are enclosed in annex 2 of this report.

3.4. Verification Planning

In order to ensure a complete, transparent and timely execution of the verification task the team leader has planned the complete sequence of events necessary to arrive at a substantiated final verification opinion.

Various tools have been established in order to ensure an effective verification planning.

Risk analysis and detailed audit testing planning

For the identification of potential reporting risks and the necessary detailed audit testing procedures for residual risk areas table A-1 is used. The structure and content of this table is given in Table 3-2 below.

Table 3-2: Table A-1; Identification of verification risk areas

Table A-1: GHG calculation procedures and management control testing / Detailed audit testing of residual risk areas and random testing				
Identification of potential reporting risk	**Identification, assessment and testing of management controls**	**Areas of residual risks**	**Additional verification testing performed**	**Conclusions and Areas Requiring Improvement (including *Forward Action Requests*)**
The following potential risks were identified and divided and structured according to the possible areas of occurrence.	*The potential risks of raw data generation have been identified in the course of the monitoring system implementation.* *The following measures were taken in order to minimize the corresponding risks.* *The following measures are implemented:*	*Despite the measures implemented in order to reduce the occurrence probability the following residual risks remain and have to be addressed in the course of every verification.*	*The additional verification testing performed is described. Testing may include:* - *Sample cross checking of manual transfers of data* - *Recalculation* - *Spreadsheet 'walk throughs' to check links and equations* - *Inspection of calibration and maintenance records for key equipment* - *Check sampling analysis results* *Discussions with process engineers who have detailed knowledge of process uncertainty/error bands.*	*Having investigated the residual risks, the conclusions should be noted here. Errors and uncertainties are highlighted.*

The completed table A-1 is enclosed in Annex 1 (table A-1) to this report.

Project specific periodic verification checklist

In order to ensure transparency and consideration of all relevant assessment criteria, a project specific GS verification protocol has been developed. The protocol shows, in a transparent manner, criteria and requirements, means and results of the verification. The verification protocol serves the following purposes:

- It organises, details and clarifies the requirements a GS project is expected to meet for verification
- It ensures a transparent verification process where the verifying DOE documents how a particular requirement has been proved and the result of the verification.

The basic structure of this project specific verification protocol for the periodic verification is described in Table 3-3.

Table 3-3: Table A-2; Structure of the project specific periodic verification checklist

Table A-2: Periodic verification checklist				
Checklist Item	***Reference***	***Verification Team Comments***	***Draft Conclusion***	***Final Conclusion***
The checklist items in Table A-2 are linked to the various require-ments the monitoring of the project should meet. The checklist is organised in various sections as per the requirements of the topic and the individual project activity. It further includes guidance for the verification team.	*Gives reference to the information source on which the assessment is based on.*	*The section is used to elaborate and discuss the checklist item in detail. It includes the assessment of the verification team and how the assessment was carried out. The reporting requirements of the VVS shall be covered in this section.*	*Assessment based on evidence provided if the criterion is fulfilled (OK), or a CAR, CL or FAR (see below) is raised. The assessment refers to the draft verifi-cation stage.*	*In case of a corrective action or a clarification the final assessment at the final verification stage is given.*

The GS periodic verification checklist (verification protocol) is the backbone of the complete verification starting from the desk review until final assessment. Detailed assessments and findings are discussed within this checklist and not necessarily repeated in the main text of this report.

The completed verification protocol is enclosed in Annex 1 (table A-2) to this report.

3.5. Desk review

During the desk review all documents initially provided by the client and publicly available documents relevant for the verification were reviewed. The main documents are listed below:

- the registered version of the PDD, additional Annexes and further attached documents, including the monitoring plan /PDD/,
- the registered GS validation report /VAL/,
- the Monitoring/Usage Survey and Report/SDB2//SDB2//SDB1//SDB1/SDB3/
- the last revision of the carbon and sustainability monitoring report/MR/, including the claimed emission reductions for the project
- documentation of previous verifications/VER/
- the emission reduction calculation spreadsheet/ERC/.
- GS Passport /GSP/

Other supporting documents, such as publicly available information on the Gold standard website, on the UNFCCC website and background information were also reviewed.

3.6. On-site assessment

As most essential part of the verification exercise it is indispensable to carry out an inspection on site in order to verify that the project is implemented in accordance with

the applicable criteria. Furthermore the on-site assessment is necessary to check the monitoring data with respect to accuracy to ensure the calculation of emission reductions. Changes to the key sustainable development indicators and the achievement and implementation of mitigation / compensation measures are other integral parts of the on-site assessment. The main tasks covered during the site visit include, but are not limited to:

- The on-site assessment included an investigation of whether all relevant equipment is installed and works as anticipated.
- The operating staff was interviewed and observed in order to check the risks of inappropriate operation and data collection procedures.
- Information processes for generating, aggregating and reporting the selected monitored parameters were reviewed.
- The duly calibration of all metering equipment was checked.
- The monitoring processes, routines and documentations were audited to check their proper application.
- The monitoring data and monitoring/usage survey data were checked.
- The data aggregation trails were checked via spot sample down to the level of the meter recordings.
- Possibility of leakage was also checked.

Before and during the on-site visit the verification team performed interviews with the project participants to confirm selected information and to resolve issues identified in the document review.

Representatives of the Biogas Project Management Unit (PMU), SNV Vietnam and Nexus Project Consultant including the operational staff of the project were interviewed. The main topics of the interviews are summarised in Table 3-4.

Table 3-4: Interviewed persons and interview topics

Interviewed Persons / Entities	Interview topics
1. Project Participant & Operations Personnel: Biogas Project Management Unit (PMU) SNV Vietnam 2. Consultant Nexus 3. District / Provincial Masons / Technicians / Provincial Biogas	• General aspects of the project • Technical equipment and operation • Changes since validation / previous verification • Monitoring and measurement equipment • Remaining issues from previous verification • Calibration procedures • Quality management system • Involved personnel and responsibilities • Training and practice of the operational personnel • Implementation of the monitoring plan • Monitoring data management • Data uncertainty and residual risks

Interviewed Persons / Entities	Interview topics
Program Department	• GHG emission reduction calculation • Procedural aspects of the verification • Maintenance • Environmental aspects • Gold Standard Requirements • GS monitoring parameters

The list of interviewees is included in chapter 7.4.

3.7. Draft verification reporting

On the basis of the desk review, the on-site visit, follow-up interviews and further background investigation the verification protocol is completed. This protocol together with a general project and procedural description of the verification and a detailed list of the verification findings form the draft verification report. This report is sent to the client for resolution of raised CARs, CLs and FARs.

3.8. Resolution of CARs, CLs and FARs

Nonconformities raised during the verification can either be seen as a non-fulfilment of criteria ensuring the proper implementation of a project or where a risk to deliver high quality emission reductions is identified.

Corrective Action Requests (CARs) are issued, if:

- Non-conformities with the monitoring plan or methodology are found in monitoring and reporting, or if the evidence provided to prove conformity is insufficient;
- Mistakes have been made in applying assumptions, data or calculations of emission reductions which will impair the estimate of emission reductions;
- Issues identified in a FAR during validation or previous verifications requiring actions by the project participants to be verified during verification have not been resolved.

The verification team uses the term Clarification Request (CL), which is be issued if:

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

Forward Action Requests (FAR) indicate essential risks for further periodic verifications. Forward Action Requests are issued, if:

- the monitoring and reporting require attention and / or adjustment for the next verification period.

For a detailed list of all CARs, CLs and FARs raised in the course of the verification pl. refer to chapter 4.

3.9. Final reporting

Upon successful closure of all raised CARs and CLs the final verification report including a positive verification opinion can be issued. In case not all essential issues could finally be resolved, a final report including a negative verification opinion is issued.

The final report summarizes the final assessments w.r.t. all applicable criteria.

3.10. Technical review

Before submission of the final verification report a technical review of the whole verification procedure is carried out. The technical reviewer is a competent GHG auditor being appointed for the scope this project falls under. The technical reviewer is not considered to be part of the verification team and thus not involved in the decision making process up to the technical review.

As a result of the technical review process the verification opinion and the topic specific assessments as prepared by the verification team leader may be confirmed or revised. Furthermore reporting improvements might be achieved.

3.11. Final approval

After successful technical review an overall (esp. procedural) assessment of the complete verification will be carried out by a senior assessor located in the accredited premises of TÜV NORD.

After this step the verification team will submit the verification report including the verification opinion to the client via e-mail and to Gold Standard via the GS registry.

4. VERIFICATION FINDINGS

In the following paragraphs the findings from the desk review of the monitoring report/MR/, the calculation spreadsheet/ER/, PDD/PDD/, the Validation Report/VAL/ and other supporting documents, as well as from the on-site assessment and the interviews are summarised.

The summary of CAR, CL and FAR issued are shown in Table 4-1:

Table 4-1: Summary of CAR, CL and FAR

Verification topic	No. of CAR	No. of CL	No. of FAR
A – Description of project activity	3	0	0
B – Implementation of project activity	1	2	0
C – Description of Monitoring System	2	0	0
D – Carbon Data and Parameters	5	1	0
E - Calculation of Emission Reductions	5	4	0
F – Sustainability Monitoring Parameters	5	0	0
SUM	**21**	**7**	**0**

The findings of the verification process are summarized in the tables below.

Finding	A1		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	MR version 1.0, Monitoring Report Summary page: 1. The table did not indicate the animal icon for the project. 2. The applied Gold Standard version shall be included for clarity.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	The following revisions were updated in the Summary page of the Monitoring report (MR) 1. The pelican icon was added. 2. The applied GS version (2.1) was included.		
Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and VT assessments (#2, #3, etc.) shall be added.*	MR version 2.0, Summary Page" 1. The GS animal icon for the project is added and is correct. 2. The applied GS version of 2.1 is included and is correct.		

Finding	A1
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the next verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed

Finding	A2		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	MR version 1.0, Section A.1: 1. A table shall be included to list the key events of the project. 2. The total emissions reduction for this monitoring period MPII is not stated.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	The key milestones of project development and the estimated total emission reduction were added to the Section A.1 of the revised MR.		
Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and VT assessments (#2, #3, etc.) shall be added.*	MR version 2.0, section A.1: 1. A milestone table is added that list the key events of the project. The dates are cross-checked and are correct. 2. The total emissions for the monitoring are added and are correct.		
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the next verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed		

Finding	A3		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	MR version 1.0, Section A.2: The geographical locations and number of projects implemented for each province are not stated.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	The project is the nationwide program therefore the Vietnam geographical coordinates were added. Besides, the number of units per each province are stated in the Section A.2 of the revised MR.		
Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and VT assessments (#2, #3, etc.) shall be added.*	MR version 2.0, section A.2: 1. The project is not implemented nationwide. Therefore the geo-coordinates for the provinces where the biodigesters are installed shall be included. OPEN 2. The number of units for each province is added and in accordance with the database. CLOSED		
Corrective Action #2 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	1. The geo-coordinates of provinces were added in the tables 3 and 4 of the updated MR		

Finding	A3
Assessment #2 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and VT assessments (#2, #3, etc.) shall be added.*	MR version 2.1 Section A.2: The provinces geo-coordinates where the biodigesters are installed are added in revised MR.
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the next verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed

Finding	B1		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	MR version 1.0, Section B.1: 1. The number of units for each capacity of the biogas digester installed is not stated. 2. The number of units commissioned for each year was not stated. 3. The size of biogas units installed is indicated in the MR is from 4 to 50m^3. The specific size and corresponding feedstock required by each capacity of biogas unit is not stated.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	The following were updated in Section B.1 of the revised MR: 1. The histogram of the units' size (figure 3) 2. The installed units per year (table 7) 3. The detail feedstock by each capacity could also be found in the "Training material for Biogas Technician, 2011". In the monitoring report, the required daily feedstock per m^3 and some examples with specific size were added. See table 6 on page 11		
Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and VT assessments (#2, #3, etc.) shall be added.*	MR version 2.0, Section B.1: 1. A histogram is added in the MR to indicate the number of units for each capacity of the digesters installed. The number of units installed for each capacity is cross-checked with the CMS and KPT survey spreadsheet for correctness. /SDB`/SDB2/ 2. The number of units installed per year is added in the MR. The number of units was cross-checked with the usage survey data for correctness. /SDB3/ 3. A sample of the daily feedstock for each type digester capacity is included in revised MR. The data stated is cross-checked with the document "Training Material for Biogas Technician 2011" /O3/ for correctness.		
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the next verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed		

Finding	B2

Finding	B2		
Classification	☐ CAR	☒ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	MR version 1.0, Section B.2.3: According to the applied methodology PFT shall be conducted every other year or more frequent. According to GS 1st issuance final review report PFT to be conducted bi-annually. The PFT survey was conducted in April 2014 for monitoring period 2012-01-01 to 2013-06-30 and applied into the previous issuance to calculate the emissions to be deducted in 2nd issuance. Clarification requested is the survey results representative.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	According to the GS issuance review dated 26/02/2013, page 4, and PP response round 2 proposed that "*the BFT will only be organized once for the crediting period and the PFT will be biennial*". There was a typo mistake from the DOE for MPI between two words "biennial" (which means every two years) and "bi-annually" (which is 2 times per year) in the DOE response round 2. However, referring to Annex 5 of TPDDTEC methodology, page 49 states clearly that the PFT should be conducted every two years after first verification. An email requests for clarification from GS was sent. Please find the confirmation in the attached document named "Confirmation about PFT from GS"		
Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and VT assessments (#2, #3, etc.) shall be added.*	MR version 2.0, section B.2.3: The confirmation for GS clarifies that PFT will be conducted once in 2 years and in accordance to Annex 5 of the applied methodology. However, correction is not made in the MR. OPEN		
Corrective Action #2 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	The correction about frequency of conducting PFT has been added in Section B.2.3 of the updated MR.		
Assessment #2 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and VT assessments (#2, #3, etc.) shall be added.*	MR version 2.1 section B.2.3: Further explanation and clarification added that PFT will be conducted once in 2 years or biennial.		
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the next verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed		

Finding	B3		
Classification	☐ CAR	☒ CL	☐ FAR

Finding	**B3**
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	MR version 1.0, Section B.3: 1. According to GS final review, there is only 1 FAR to be considered for the 2nd verification. Correction requested to be in accordance to GS issuance review final report. 2. For FAR 01, FAR 03, FAR 04 and FAR 05 have been addressed in the 1st verification report by the verifying DOE. In the GS issuance review final report, it mentions one FAR that needs to be addressed during in the 2nd verification. Therefore, FAR 01, FAR 03, FAR 04 and FAR 05 are considered closed and no further actions required. Clarification requested on why these FARs are included.
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	1. The Forward Action Request 1 from the GS issuance review report for first verification period was addressed in the table 8 of the updated MR. 2. The FAR 01, FAR 03, FAR 04 and FAR 05 from the MPI verification report are actions for the project participants to follow up in the future monitoring period to avoid double counting (FAR 01), take into account the emission from digestate management system (FAR 03), apply the approved emission factor (FAR 04) and regularly conduct the PFT according to the methodology (FAR 05). Therefore they are included in the MPII MR to make sure that the monitoring was conducted correctly.
Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and VT assessments (#2, #3, etc.) shall be added.*	MR version 1.0, Section B.3: 1. The FAR raised during GS final review report is added to revised MR. For assessment refer to finding SD3. 2. The other FARs from MPI verification report has been addressed appropriately and considered closed out.
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the next verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed

Finding	**C1**		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	MR version 1.0, Section C: The following are not stated. 1. Calibration and maintenance of the respective equipment used by the project. 2. Emergency procedures for the monitoring system. 3. Data management and archiving.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	1. The calibration and maintenance procedure of scales which used in the monitoring survey were mentioned in Section C.2 of the MR. 2. The emergency procedures for the monitoring system were added in Section C.1 of the MR. 3. The data management and archiving procedure were added in Section C.1 of the MR.		

Finding	C1
Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and VT assessments (#2, #3, etc.) shall be added.*	MR version 2.0, Section C: 1. Calibration and maintenance for the weighing scale used for BFT and PFT is added in Section C.2 of revised MR. The calibration certificate for the scale is reviewed and could confirm is the valid for the monitoring period. /C1/ 2. The emergency procedure for data is added in Section C.1 of revised MR and appropriate. 3. Data management and archiving is added in section C.1 of revised MR. The data will be archived for 5 years at the end of the project activity which is appropriate.
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the next verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed

Finding	C2		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	MR version 1.0, Section C: The MR did not indicate the roles and responsibilities chart for monitoring of the project activity.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	The chart for roles and responsibilities for monitoring was added in the MR section C.1.		
Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and VT assessments (#2, #3, etc.) shall be added.*	MR version 2.0, Section C: Figure 6 is added in revised MR that shows the roles and responsibilities for monitoring of the project activity.		
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the next verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed		

Finding	D1		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	MR version 1.0, Section D.1: The heading for the section is not consistent with the GS registered PDD.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	The heading of Section D.1 was revised for consistent with the registered PDD.		

Finding	D1
Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and VT assessments (#2, #3, etc.) shall be added.*	MR version 2.0, section D.1: The heading for the section is revised and consistent with the GS registered PDD.
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the next verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed

Finding	D2		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	MR version 1.0, Section D.1, Data and parameters not monitored AWMS, Parameter $EF_{awms,T}$ is not included in the MR.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	According to the registered PDD (page 33), the baseline emission from animal waste management system will be calculated based on the Tier 1 approach. Therefore the Emission factors ($EF_{awms(T)}$) for the defined livestock population category T, (ton CH4 per head per yr) are the default values from IPCC, volume 4 chapter 10. The parameter ($EF_{awms(T)}$) is added in the section D.1 of the revised MR. Please note that in the registered PDD, the values reported is the weighted average based on the emission factors in both zones, however, in this MRII, the values are reported for each zone separately		
Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and VT assessments (#2, #3, etc.) shall be added.*	MR version 2.0, section D.1: Data and parameters not monitored AWMS, Parameter $EF_{awms,T}$ is added in revised MR. The PP explained the values stated in the MRII average for each zone, further clarification requested for the source of the data. OPEN		

Finding	D2
Corrective Action #2 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	As explained above that the baseline emission from animal waste management system will be calculated based on the **Tier 1 approach**. Therefore the Emission factors ($EF_{awms,T}$) for the defined livestock population category T, (ton CH_4 per head per yr) are the default values taken from the IPCC 2006 guidelines, volume 4 chapter 10 table 10A-4 to table 10A-8 for the region Asia (online at http://www.ipcc-nggip.iges.or.jp/public/2006gl/vol4.html) based on the average temperature of each zone (please see the calculation of average temperature in cell D2 and K2 of tab "Inputs", ER calculation spreadsheet for temperate and warm zone, respectively). With the average temperature of 23°C and 27°C for temperate and warm zones, the applied $EF_{awms(T)}$ for each zone are, according to the table 10A-4 to table 10A-8of IPCC 2006 guidelines, volume 4 chapter 10 for the region Asia:

Animal T	EF ($kgCH_4$/head/year)	
	Temperate zone	Warm zone
Pig	5.00	7.00
Buffalo	2.00	2.00
Dairy cow	23.00	31.00
Cattle	1.00	1.00

Assessment #2 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and VT assessments (#2, #3, etc.) shall be added.*	MR version 2.1, section D.1, Parameter $EF_{awms,T}$: Refer above explanation, the source for the applied data has been verified and could be confirmed as appropriate and correctly applied in the ER spreadsheet for both temperate and warm zones.
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the next verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed

Finding	D3		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	MR version 1.0, Section D.2: The representation for data / parameter PE_{dig} is not consistent with GS registered PDD.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	The parameter PE_{dig} has been revised to $PE_{bio\text{-}slurry}$ to be consistent with the GS registered PDD.		
Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and VT assessments (#2, #3, etc.) shall be added.*	MR version 2.0, Section D.2: The representation for data / parameter PE_{dig} is revised to $PE_{bio\text{-}slurry}$ and consistent with GS registered PDD.		
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the next verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed		

Finding	D4		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	MR version 1.0, Section D.3: Correction requested to the sentence below table 8.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	The typo mistake in Section D.3 which referring to validation was revised and referred to the verification in the updated MR below table 17 replace table 8		
Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and VT assessments (#2, #3, etc.) shall be added.*	MR version 2.0, Section D.3: Correction is made to the sentence below table 17 to verification instead of validation.		
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the next verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed		

Finding	D5		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	MR version 1.0, section D.3: The equation applied for the sample size is inconsistent with the GS registered PDD.		

Finding	D5
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	The sample size equation which was mentioned in the registered PDD, page 57 is: $$n = \frac{Nx}{1 + Nx(e)^2}$$ Where: n = minimal sample size e = level of precision (10%) Nx = the BP biogas population in zone$_x$ x = Temperature zone (warm or temperature) This formula is for calculating the minimum number of samples. In the following section of the PDD (page 58, 59) the designed effect (D=1.5) and rate of oversampling (10%) was also discussed to cover the loss of precision when conducting cluster sampling and to accommodate for non-responses of surveyed households. Therefore for clarity in the MRII, the sample size equation was combined all above factors together to one formula as below: $$n = \frac{Nx}{1 + Nx(e)^2} * D * 110\%$$ Where: n = minimal sample size e = level of precision (10%) Nx = the BP biogas population in zone x D = Design effect x = Temperature zone (warm or temperature) 110% = Oversampling rate The explanation about the combined equation has been added to the updated MR.
Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and VT assessments (#2, #3, etc.) shall be added.*	MR version 2.0, section D.3: The above explanation is added in revised MR explaining on the use of the combined equation to determine the sample size. The equation has to include design effect and oversampling rate in order to obtain an appropriate sample size. Therefore is correct.
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the next verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed

Finding	D6		
Classification	☐ CAR	☒ CL	☐ FAR

Finding	D6
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	MR version 1.0, Section D.3: Clarification requested for following: 1. Data for tables 6 to 8 2. Source for equation applied for cluster calculation 3. Table 11 90/30 rule check source 4. Source for equation $U_{F,y,h} = U_{y,h} \times Up_{y,h}$ 5. Data source for table 14
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	1. The sources for the mentioned tables are now shown in tables 14, 16 and 17 were updated in the MR 2. The source for the applied equation was taken from the International Journal of Database Theory and Application Vol 4 No.1 March 2011, available online at http://www.sersc.org/journals/IJDTA/vol4_no1/3.pdf. 3. The source for the 90/30 rule check is added and now in table 20. 4. The approach of using the effective usage rate was discussed and applied in the first monitoring report (page 42). This approach is conservative as it reduces the usage rate of the biogas digesters. 5. Data source for table 14 replace by table 23 where $U_{F,y,h}$ is updated in the MR.
Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and VT assessments (#2, #3, etc.) shall be added.*	MR version 2.0 Section D.3: 1. The sources for data in tables 6 to 8 now as tables 14, 16 and 17 are traceable to: a. ER spreadsheet Input tab for table 14 b. CMS and KPT HH sampling spreadsheet, Warm tab for table 16 c. CMS and KPT HH sampling spreadsheet, Temperate tab for table 17 CLOSED 2. The source for the applied cluster equation was checked and traceable to the stated journal page 25. CLOSED 3. The source for 90/30 rule data is linked to MPII_Monitoring database" spreadsheet ER fuel tab. CLOSED 4. The respond is not according to the finding. OPEN 5. The data source for table 14 now as table 23 is linked to ER spreadsheet, tab "US_results" and is correct. CLOSED

Finding	D6
Corrective Action #2 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	4. According to the methodology, for ER calculation only the cumulative adoption rate revealed by usage surveys needed to be applied (Please see in page 14 of the TPDDTEC methodology). However, during the first monitoring period, the GS requested the project participant to consider the duration that biodigesters were not being used among the units that are in operation. See following comment: "*The PP and DOE shall clarify how non-available days of biodigester are accounted for emission reduction calculation"* *Source: GS issuance review, page 9, round 3.* Based on that the PP introduced the concept "effective usage rate" in MRI, which stands for the percentage of time that the plants are in use. This has been calculated by multiplying "share of units being used" with "share of unit being used in operation". Please find the discussion in page 34 of the final Verification Report for MPI, version No. 01.4, 2013-02-21. The source for equation $U_{F,y,h} = U_{y,h} \times Up_{y,h}$ could be found in page 42 of the MR for first monitoring period. This approach is conservative as it reduces the usage rate of the biogas digesters and was approved by GS in the first issuance (please find the GS conclusion in page 12, response by GS round 4, question 1a.
Assessment #2 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and VT assessments (#2, #3, etc.) shall be added.*	MR version 2.1, Section D.3: The source of the equation is derived from the verification report for MPI based on the GS comment during the issuance of MPI. This is to determine the number of units not in operation should not be taken into account for ER calculation. Therefore is correctly applied in the MR and ER spreadsheet.
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the next verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed

Finding	E1		
Classification	☐ CAR	☒ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	MR version 1.0, section E.1: Clarification requested for following data for 2013 vintage: 1. $BE_{th,h,(From-2013)} = 3.83$ (tCO_{2e}/year) 2. $BE_{AWMS,(From-2013)} = 3.55$ tCO_2 per household 3. The reference to the excel spreadsheet for the data		

Finding	**E1**
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	1. Please find the $BE_{th,h,(From-2013)}$ (or $BE_{th,h,(2013\ vintage)}$) calculation in cell R68, sheet "ER_fuel" of the "MPII_Monitoring database_2013 vintage" spreadsheet. In the previous version of the ER spreadsheet, there was a drop-down list to select the vintage and the calculation would be updated automatically. However, to avoid confusion, please find separated calculation spreadsheets (version 2) for each vintage attached here with. 2. Same as above. Please find the calculation in cell D70, sheet "ER_AWMS" of the "MPII_Monitoring database_2013 vintage" spreadsheet. 3. The reference to the excel spreadsheet has been updated in the revised MR.
Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and VT assessments (#2, #3, etc.) shall be added.*	MR version 2.0, Section E.1: 1. The revised MPII_Monitoring database" spreadsheet for vintage year 2013 submitted and the data for $BE_{th,h,(From-2013)}$ is correct. 2. The revised MPII_Monitoring database" spreadsheet for vintage year 2013 submitted and the data for $BE_{AWMS,\ (From-2013)}$ is correct. 3. The reference in the revised MR is updated and linked correctly to the relevant MPII_Monitoring database" spreadsheet and is correct.
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the next verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed

Finding	**E2**		
Classification	☐ CAR	☒ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	MR version 1.0, section E.2: Clarification requested for following: 1. Reference sheet of MPII_Monitoring database" spreadsheet for data in table 21 2. Reference sheet of MPII_Monitoring database" spreadsheet for pre 2013 vintage: $PE_{th,h,}$ (Pre-2013) = 0.52 (tCO_2e/year) 3. Reference sheet of MPII_Monitoring database" spreadsheet for 2013 vintage: $PE_{th,h,}$ (From-2013) = 0.56 (tCO_2e/year)		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	1. The reference for fuel consumption is added (now is table 30, replacing table 21) of the updated MR. 2. Reference was added in footnote 47, page 49 of the updated MR. Please note that $PE_{th,h,}$ (Pre-2013) was changed to $PE_{th,h,}$ (2012 vintage) for clearer. 3. Reference was added in footnote 48, page 49 of the updated MR. Please note that $PE_{th,h,}$ (From-2013) was changed to $PE_{th,h,}$ (2013 vintage) for clearer.		

Finding	**E2**
Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and VT assessments (#2, #3, etc.) shall be added.*	MR version 1.0, section E.2: 1. The reference for the fuel consumption in table 21, replace by table 30 and linked to SD tab of MPII_Monitoring database" spreadsheet. 2. Reference sheet of MPII_Monitoring database" spreadsheet for $PE_{th,h,}$ (Pre-2013) = 0.52 (tCO_2e/year) is changed to $PE_{th,h,}$ (2012 vintage). The spreadsheet is reviewed and is correct. 3. Reference sheet of MPII_Monitoring database" spreadsheet for 2013 vintage: $PE_{th,h,}$ (From-2013) = 0.56 (tCO_2e/year) is change to $PE_{th,h,}$ (2013 vintage). The spreadsheet is reviewed and is correct.
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the next verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed

Finding	**E3**		
Classification	☐ CAR	☒ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	MR version 1.0, Section E.3: Clarification for below. 1. Source for the MCF by system applied in tables 22 & 23. 2. Data source for tables 22 to 39 are not traceable to the excel spreadsheet. 3. During MPI review, GS has raised on the project emissions that involve emissions from animal waste not treated in the bio-digester. The PP is requested to include in MR on how the emissions are calculated from this component.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	1. The sources have been updated in the 22 and 23 (now are tables 31 and 32) of the MR 2. The sources for tables 22 to 39 (now are tables 31 to 46) have been updated in the MR 3. The explanation about emission from animal waste not treated in the bio-digester was added to the Section E.3 of the monitoring report. The explanation was also provided during the MPI issuance review. For more detail, please find the information in page 4 and 5 of the MPI GS issuance review report.		

Finding	E3
Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and VT assessments (#2, #3, etc.) shall be added.*	MR version 2.0, section E.3: 1. Source for the MCF by system applied in tables 22 & 23 replaced by tables 31 and 32 are linked to ER_AWMS" of the "MPII_Monitoring database_2012 vintage" spreadsheet and ER_AWMS" of the "MPII_Monitoring database_2013 vintage" spreadsheet respectively. 2. The sources for tables 22 to 39 replaced by tables 31 to 46 are linked MPII_Monitoring database_2012 vintage" spreadsheet and MPII_Monitoring database_2013 vintage" spreadsheet and are correct. 3. The explanation about emission from animal waste not treated in the bio-digester was added to the Section E.3 of the revised monitoring report and in accordance to MPI MR. Therefore is correct.
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the next verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed

Finding	E4		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	MR version 1.0, Section E.3.1, Assessment of the methane potential of digestate: The reference is incorrect.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	The reference about remaining fraction of the original methane potential was corrected to EB66 Annex 32 in Section 3.1 of the updated MR.		
Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and VT assessments (#2, #3, etc.) shall be added.*	MR version 2.0, section E.3.1: The EB reference for "Assessment of the methane potential of digestate" is corrected and traceable as correct.		
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the next verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed		

Finding	E5		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	Excel spreadsheet, ER sheet: 1. Data in cell G4 is inconsistent with the data in the reference sheet and MR table 38. 2. Data from cell F71 to cell F88 are not traceable to the reference excel spreadsheet.		

Finding	E5
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	1. The number of decimal points for value in cell G4 of the ER sheet was increased to be consistent with the value in the table 38 (now is table 47) of the MR. 2. The values in cells F71 to F88 are the installed digesters per month from Jan 2012 to June 2013. The formulae in these cells is linking to the project database (tab "All Provinces" of the "CMS and KPT_sampling HHs" spreadsheet) and counting the number of installed digester. For instant, with cell F71, the excel formulae will count the digesters which the completion date (in column R, tab "All Provinces" of the "CMS and KPT_sampling HHs" spreadsheet) are after or on the date in cell D71 (01 Jan 2012) and before or on the date in cell E71 (31 Jan 2012).
Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and VT assessments (#2, #3, etc.) shall be added.*	Excel spreadsheet, ER sheet: 1. Data in cell G4 is corrected and consistent with the data in the reference sheet and MR table 38 replace by table 47. 2. Data from cell F71 to cell F88 are linked to CMS and KPT_sampling HHs" spreadsheet and correct.
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the next verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed

Finding	E6		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	Excel spreadsheet, ER fuel sheet and ER AWMS sheet: To be conservative, GWP 25 for methane emissions and GWP 298 for N_20 emissions shall be applied for post 2012 vintage data.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	The updated GWPs for CH_4 and N2O were already applied in the ER calculation by changing the vintage data validation in ER sheet, cell B1. However, to avoid confusion, the PP created two different ER spreadsheets for two vintage 2012 and 2013 and submitted herewith.		
Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and VT assessments (#2, #3, etc.) shall be added.*	Excel spreadsheet, ER fuel sheet and ER AWMS sheet: The PP has provided 2 separate spreadsheets to demonstrate the vintage year 2012 and 2013 data for the GWP for methane and N_2O emissions. Therefore is traceable and correct.		
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the next verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed		

Finding	E7		
Classification	☒ CAR	☐ CL	☐ FAR

Finding	E7
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	ER spreadsheet, ER sheet: 1. The vintage ERs for pre 2013 and post 2012 shall be demonstrated transparently. 2. The amount of ERs to be deducted based on the KPT results are not demonstrated transparently for pre 2013 and post 2012.
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	1. To avoid confusion, the PP created two different ER spreadsheets for two vintage 2012 and 2013 and submitted herewith. 2. In line with the FAR05 from the MPI verification report, the KPT result will be retroactively applied to the carbon credit from MPI. The retroactive GS VER result is 506,305 GS VER. Because 510,952 credits were issued for the MPI, an amount of 4,647 credit will be deducted in MPII for the 2012 vintage. Please find more detail in the "MPII_ER from both vintages" spreadsheet.
Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and VT assessments (#2, #3, etc.) shall be added.*	ER spreadsheet, ER sheet: 1. The PP has provided 2 separate spreadsheets to demonstrate the vintage year 2012 and 2013 data and traceable for correctness. 2. The amount of ERs deducted from this MPII due to KPT was not conducted during MPI. Based on the KPT results, the deduction is considered correct. The spreadsheet submitted is reviewed and data are traceable.
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the next verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed

Finding	E8		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	ER spreadsheet, SD sheet: The data for SD4, quality of employment are not traceable.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	The links and formulae for the number of trained masons and technicians were made in the ER spreadsheet.		
Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and VT assessments (#2, #3, etc.) shall be added.*	ER spreadsheet, SD sheet: The data source is added and traceable to the training records and is correct.		
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the next verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed		

Finding	E9		
Classification	☐ CAR	☒ CL	☐ FAR

Finding	E9
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	User survey sample HH spreadsheet, summary sheet: The table consists of range 0-1 year and less than 0.5 year. Clarification is requested whether the number of units for range 0-1 includes less than 0.5 year.
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	The number of units for range 0-1 includes the digesters which have age from 0.5 to 1.5 year according to the requirement in page 24 of the methodology: "*To ensure conservativeness, participants in a usage survey with technologies in the first year of use (age 0-1) must have technologies that have been in use on average longer than 0.5 years. For technologies in the second year of use (age 1-2), the usage survey must be conducted with technologies that have been in use on average at least 1.5 years, and so on*." The note for each group was added in the column D of the usage survey sample spreadsheet.
Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and VT assessments (#2, #3, etc.) shall be added.*	User survey sample HH spreadsheet, summary sheet: Explanatory notes added in the usage survey sample spreadsheet for clarity to demonstrate on the age of the units for sampling. Therefore in accordance to the methodology.
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the next verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed

Finding	SD1		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	MR version 1.0, Section F.2, Parameter ID1: 1. The situation as at 2011-12-31 is not consistent with MPI MR. 2. The baseline situation shall be consistent with GS registered Passport.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	1. The situation in ID1 of Section F.2 was revised accordingly. 2. The baseline situation was revised in the updated MR.		
Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and VT assessments (#2, #3, etc.) shall be added.*	MR version 2.0, Section F.2, Parameter ID1: 1. The situation as at 2011-12-31 is corrected and consistent with MPI MR. 2. The baseline situation is corrected and consistent with GS registered Passport		
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the next verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed		

Finding	SD2		
Classification	☒ CAR	☐ CL	☐ FAR

Finding	SD2
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	MR version 1.0, Section F.2, Parameter ID2: 1. The information in table for Situation at 2011-12-31 is not consistent with MPI MR. 2. The information in table for Situation at 2013-06-30 shall be consistent with MPI MR.
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	1. The situation in ID2 of Section F.2 was revised accordingly. 2. The information about fish feed was added to be consistent with the MPI MR.
Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and VT assessments (#2, #3, etc.) shall be added.*	MR version 2.0, Section F.2, Parameter ID2: 1. The information for situation at 2011-12-31 is corrected and consistent with MPI MR 2. The information for situation at 2013-06-30 is corrected and consistent with MPI MR.
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the next verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed

Finding	SD3		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	MR. version 1.0, Section F.2, Parameter ID4: According to the GS review outcome, the PP response did not address the comment raised on how the trained masons and technicians were chosen in line with the defined rules in monitoring of the SD parameter.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	According to the SD indicator number 4 of Quality of Employment, the future target for SD4 is that: “At least 2 district biogas technicians and 2 biogas masons per district provided with training”. In order to meet the defined rules, during its implementation, the BP program has been expanding to new districts as well as trained new masons and technician who based in these new districts. In the meantime, the new masons and technicians in existing districts which have only 1 trained mason or technician have also been selected for training to meet the target. For more detail, please refer to the section B.3 of the updated MR.		
Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and VT assessments (#2, #3, etc.) shall be added.*	MR. version 2.0, Section F.2, Parameter ID4: Refer the PP above explanation on how to meet the 2 trained masons or 2 technicians target for the SD. With the expansion of the project to other provinces, the PP is requested to demonstrate a training plan to meet the target. OPEN		

Finding	SD3
Corrective Action #2 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	Districts with only 1 trained mason or technician are not counted towards meeting the target. Districts that have reached the target must have at least 2 mason and 2 technicians trained. According to page 16 of the MR, the percentage of districts which meet the defined target of 2 masons and technicians has increased from 45.6% to 49.1% for trained masons and from 28.0% to 33.1% for trained technicians from MPI to MPII. The scoring is therefore positive in MPII as it is higher than in MPI. The program will continue to try to meet the target in more districts. Besides, target of at least 2 district biogas technicians and 2 masons per district is a future target and objective of the project so it is archiving step by step and there are not always 2 masons or 2 technician needed to be trained at the same time. As the program is market based therefore in the districts which do not have many digesters or low potential, only one person has been trained. Conversely the project has prioritized areas of higher demand. There are more trained people in the districts which have more digester. This makes the program more efficient and reduces workload for masons and technician in the district with higher potential for biogas digesters. With the implementation of the project, depending on demand and capacity of the project participant, some districts may have only 1 trained mason or technician in the first step, then it would be selected for further training to meet the target in the next steps (for example with Nghia Dan district in cell H85 of the "List of trained mason per district_20141124" spreadsheet, in MPI, it had only 1 mason was trained. However in MPII, this district had another trained mason so the total trained masons are 2, which met the target)
Assessment #2 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and VT assessments (#2, #3, etc.) shall be added.*	MR. version 2.1, Section F.2, Parameter ID4: The PP has issued letter to the respective provinces where the biogesters are installed to further conducted training for masons and technicians to support the program in order to meet the target of 2 trained masons and technicians per district. /O7/
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the next verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed

Finding	SD4		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	MR version 1.0, Section F.2, ID5: 1. The SD sheet states average HH size is 4.5. The link data reference is field survey data spreadsheet. It is unclear whether the data in the field survey data spreadsheet at cells BG 469 is determined correctly. 2. The number of units and households reported shall exclude the drop-off based on the user survey results.		

Finding	SD4
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	1. The notes for calculated data in cell BG 469 was added in cell BF469 of the CMS and KPT field survey results. 2. The number of units and people has been adjusted with considering the drop-off rate. Please find detail calculation in the tab "SD" of the MPII monitoring database.
Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and VT assessments (#2, #3, etc.) shall be added.*	MR version 2.0, Section F.2, ID5: 1. The notes cannot be traced in the cell BF469. OPEN 2. The detail calculation is not traceable. OPEN
Corrective Action #2 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	1. Please check again the table in range BF464 to BG469 as below A | Total people in Temperate zone: | 707.0 B | Total people in Warm zone: | 812.0 C | Total people in both zones: | 1,519 D | Total HHs | 340 E | Average number of people | 4.5 The average number of 4.5 people was calculated by dividing the total number of people in the surveyed households (A+B=C: 707+812=1519) and the dividing this by D (340) (1519/340=4.5) 2. Please check again the formulae in cell D34 of tab "SD". The total number of biogas plants (95,697) was calculated by multiply total number of household in the database (106,171 HHs in cell N54, tab "Inputs") with the drop-off rate (90.13% in cell I12, tab "US_results").
Assessment #2 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and VT assessments (#2, #3, etc.) shall be added.*	MR version 2.1, Section F.2, ID5: 1. The descriptions in cells BF464 to BF469 was added in the CMS and KPT field survey results for calculated data in cells BG464 to BG 469 2. The linked to the number of units and households reported that has excludes the drop-off for the monitoring period. The number of people benefited is calculated correctly.
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the next verification ☒ Additional action should be taken (finding remains open) ☐ The finding is closed

Finding	SD5		
Classification	☐ CAR	☒ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	MR version 2.0, Section F.2, ID7: Clarification requested on the change of values for situation as at 2011-09-13, 2011-12-31 and 2013-06-30 when compared with MR version 1.0?		

Finding	SD5
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	There was an error in ID7 of the MR version 1.0 because it was referring to the number of masons which were trained from 28 Jun 2010 to 31 Dec 2011 (which is 256 in cell N26 of the "List of trained mason per district_20141124" spreadsheet) and from 28 Jun 2010 to 30 June 2013 (which is 256 in cell N27 of the "List of trained mason per district_20141124" spreadsheet). In the updated MR, the situation was updated with the total trained masons from the beginning of the project and consistent with the GS Passport.
Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and VT assessments (#2, #3, etc.) shall be added.*	MR version 2.1, Section F.2, ID07: The correction is to update the values to reflect the number of trained masons from the start of the project implemented. Therefore in accordance to the GS Passport
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the next verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed

5. SUMMARY OF VERIFICATION ASSESSMENTS

The following paragraphs include the summary of the final verification assessments after all CARs and CRs are closed out. For details of the assessments pl. refer to the discussion of the verification findings in chapter 4 and the verification protocol (Annex 1).

5.1. Involved Parties and Project Participants

The following parties to the Kyoto Protocol and project participants are involved in this project activity.

Table 5-1: Project Parties and project participants

Characteristic	Party	Project Participant
Non-Annex 1	Vietnam	Biogas Project Management Unit (PMU) SNV Vietnam
Annex 1	N/A	N/A

5.2. Implementation of the project

During the verification, an onsite inspection was carried out from 2014-11-10 to 2014-11-13. On the basis of this site visit and the reviewed project documentation it can be confirmed that w.r.t. the realized technology, the project equipment, as well as the monitoring and metering equipment, the project has been implemented and operated as described in the GS registered PDD and the GS Passport. /PDD/GSP/

This is the 2nd monitoring period under the first renewable crediting period of the biogas programme.

During this monitoring period, the biogas programme has built up and commissioned 17,118 biogas units from 2012-01-01 to 2013-06-30. The accumulated number of biogas units commissioned as at 2013-06-30 was 106,171 units. /ER/

The number of units in operation for this monitoring period is 95,069 based on the user survey report. /SDB2/

Refer findings CAR A1, CAR A2, CAR A3, and CAR B1 raised and successfully closed out.

5.3. Project history

During the registration and 1st verification for MPI, the validating / verifying DOE might have raised issues that could not be closed or resolved during the validation / previous verification stage. For this purpose FARs might have been raised.

In the 1st monitoring period, there are 5 FARs raise. FAR01, FAR03, FAR04, and FAR05 have been closed out by the verifying DOE during the final issuance review by GS secretariat. The PP has included the responses in Section B.3 of MR.

The verification team has reviewed the responses and could confirm they have been addressed appropriately.

The verification team has reviewed GS final issuance review report and could confirm that one FAR was raised that needed to be addressed in MPII. The FAR raised is same as FAR02 raised by the verifying DOE for MPI. /GSR/

The PP has responded appropriately in Section B.3 of MR. The verification team has reviewed the response by the PP and could confirm appropriate measures have been taken to meet the target for Quality of Employment, for SD4 that "At least 2 district biogas technicians and 2 biogas masons per district provided with training".

Refer finding CL B3 has been raised and successfully closed out.

5.4. Compliance with the monitoring plan

The monitoring system and all applied procedures are in compliance to monitoring plan of the registered GS registered PDD. Evidences were available to the verification team to check the compliance of the monitoring plan.

The reporting procedures reflect the requirements of the monitoring plan for the carbon monitoring and sustainable development criteria. All relevant data is stored for the whole monitoring period, including MPI and traceable to the computer server located at the PP office.

5.5. Compliance with the sustainability monitoring plan:

The SD indicators as per the GS matrix are monitored and reported appropriately and cross-verified by means of desk review of supporting documents, interviews with the PP and selected householders. The monitoring system and all applied procedures are in compliance to the sustainability monitoring plan in the GS registered PDD and the Gold Standard principles. During the site visit, the verification team has randomly selected 140 households to conduct interviews by means of personal visits and telephone calls in several provinces of Vietnam (50 households interviewed via telephone calls and 90 households visited). The questions asked, where applicable, were basically based on requirements of the Annex I, Rules and Toolkit to the Gold Standard version 2.1. The main topics included, but not limited to the followings:

- Air quality
- Water quality and quantity
- Soil condition
- Biodiversity
- Quality of employment
- Livelihood of the poor

- Access to affordable and clean energy services
- Human and institutional capacity
- Quantitative employment and income generation
- Access to investment
- Technology transfer and technological self-reliance

A summary of interviewed questions and feedback received as presented in the below table:

SD indicator	Questions for households/masons/technicians during site interviews	Summary of feedback
Air quality (questions for households)	1. Do you have sufficient biogas from the biodigester for your daily cooking now? Do you need to use any other fuel now?	Households have sufficient biogas and sometimes redundant and do not need to use any other fuel except in rare case. The use of firewood or LPG mainly for small businesses or for cooking additional food during festive seasons. Biogas is now the main source of cooking fuel.
	2. Has there been a problem with the outdoor / indoor air quality in your house in the past? Do you think that the project help for cleaner air?	Before installing the biogas system, firewood and rice straw were used to cook food and sometime pigs feed which caused the ash scattered in the kitchen. With sufficient biogas, there is no need to use firewood any more. Only in rare case, firewood or LPG is use to cook more food in festive seasons. This does not affect the air quality in the house in general and particularly in the kitchen. There is no ash now with the biogas system (almost zero) due to a significant reduction in use of firewood or other agricultural wastes.
	3. Have there been bad odour problems in the past? Do you think this project help or worsen this problem?	The households visited mainly raise pigs (some have cows) and the pigs dung is smelly without proper treatment. With the biogas unit, the pig dung is fed into unit which is covered-up, thus reduced the smell significantly.
Soil condition (questions for households)	1. Have you ever removed the bio-slurry from the biodigester so far? If yes, what have you done with it?	Most of the interviewed households said that they have not removed the bio-slurry so far and the biodigesters are still in good operation condition. Only a small percentage of households have exploited the bio-slurry to fertilize their rice field and vegetable garden crops. In case, it is necessary to remove the bio-slurry, the households expressed that they would use for their rice field and crops in order to save money from buying chemical fertilizer.
	2. How is the water and soil quality after the installation and operation of the biodigesters?	Before the biogas unit is built the animal waste was either dumped into surrounding water bodies or into drainage system in the villages. Now with the biogas units, animal waste is

SD indicator	Questions for households/masons/technicians during site interviews	Summary of feedback
		treated in the system. The water and soil quality has been improved.
	3. What is the main crops / farming activities taking place in your household?	Most of households have paddy rice fields and short term crops mainly vegetables and fruits. Some of the households visited have small trading businesses or workshops or sundry shops or small catering businesses.
Biodiversity (questions for households)	1. How biogas from biodigester has helped you in savings money from buying fuel?	The biogas is sufficient and sometime it is redundant. There is no need to buy firewood or any other fuel type now. Households have saving on the fuel costs.
Quality of employment (questions for masons and technicians)	1. Did you participate in the training to be the program mason/technician? What are the criteria for selection of candidate mason / technician?	All masons and technicians participated in trainings provided by the program management have received certificates and codes after successful completion of training. Masons or technicians were trained based on the program rules and procedures.
	2. Do you think that this project could provide more permanent jobs?	The masons interviewed by the verification team during the onsite inspection could confirm they are local natives from the commune or village. Therefore, the program has created employment directly for the local residents to be masons and technicians.
	3. What suggestions would you give that may help the quality of employment in your community?	The interviewed masons are satisfied with their job as the biodigester builders. Both the masons and provincial technicians are very proud of having such a job in providing a cleaner environment to the villages.
Livelihood of the poor (questions for households)	1. How many persons are there in your household?	On average, a household consists of from 2-5 persons. In some households, children have grown up and gone to work or study away from their families.
	2. Have this program helps poor people?	Households expressed that the biodigester program is a very good and assist to improve the lifestyle reduce expenses on buying firewood or LPG or charcoal for cooking. Some household wish to be built addition biodigester as their animals population is increasing and have more waste to be treated.
	3. Have the program lead to better local sanitation or health?	Households responded that their premises and even the village roads have become much cleaner than before. Animal waste are now much better managed and treated in the biodigester.
Access to affordable and clean energy services (questions for	1. How are the biogas stoves in comparison with using kerosene, LPG and firewood / charcoal before?	Most of the households used double stoves with some have one double and one single stove. The biogas stoves are much cleaner than the normal firewood or kerosene stoves. As compared with cooking fuels, the biogas is free

SD indicator	Questions for households/masons/technicians during site interviews	Summary of feedback
households)		and therefore the households have savings. Most of the interviewed households do not using firewood, kerosene or charcoal for their daily cooking anymore. Only some cases, firewood are used where they need to cook more food during festive seasons. LPG is a standby gas in case additional cooking required. In general, biogas has replaced the traditional cooking fuel.
	2. Do you have electricity access before and now?	All the visited households have accessed to the local power grid for lightings. Households do not need biogas for lighting.
	3. How much on average do you have to pay for fuel in the past? How is it compared with the biogas as a source of fuel?	Households are not able to give a specific amount but they expressed that they can save some amount of money from buying LPG, firewood or charcoal.
	4. Are you satisfied with your biogas fuel for cooking?	The biogas fuel is a free fuel, clean and can cook food very fast as compared to using charcoal or firewood or agriculture waste..
	5. Do you think the project will contribute to a long lasting solution for your fuel needs?	As long as households are still raising animals they are happy with the biodigesters and biogas supply. Hence, biogas will be their free and clean source of fuel for daily use.
Technology transfer and technological self-reliance (questions for masons)	1. Have you been trained to become the program mason? Do you receive sufficient training to operate the biodigesters properly and safely?	The masons are sent to training organized by the program. They are provided with theoretical knowledge and then practical training by building one biodigester unit under supervision. When the skills are fulfilled a certificate will be issued with a mason code.
	2. Do you think that the biodigesters introduced is appropriate and will be help the community?	The biodigesters have helped villagers to have free of cost biogas as the main cooking fuel. The villages have become cleaner with the better management of animal waste.
	3. Do you think that biodigesters are important to the development of your community?	Biodigesters have significantly improved villagers' economic and environmental values.

Below are detailed data and assessments for each sustainable development indicator.

Sustainable Development Indicators

Indicator	Parameter	Value	Verification Opinion
SD1: Air Quality	Reduction in fuel (wood, agricultural residues, kerosene, charcoal and coal)	Firewood: 1,643.3 Agriculture residue: 584.4	The value was derived from the Kitchen Performance Test (KPT) conducted from January to April 2014. /SDB1/ Based on the KPT results, it was reported 1,643.3kg of firewood and 584.4kg of agricultural residues consumed as compared with the baseline situation of 0kg firewood and 0kg

<table>
<tr><th>Indicator</th><th>Parameter</th><th>Value</th><th>Verification Opinion</th></tr>
<tr><td></td><td>consumption (kg of fuel reduced / year)</td><td></td><td>agricultural residues respectively. /SDB1/

During the onsite interview and inspection for this monitoring period, 140 randomly selected households/LHH/ it was observed that the households do not use firewood for their daily cooking anymore. Firewood is used when required to cook lots of food during festive seasons and for small businesses.

In general, the interviewed households have sufficient biogas for their daily cooking. Some has redundant and pipe to the neighbour.

As compared with the baseline scenario, the amount of fuel consumed has reduced significantly thus improved air quality. Therefore, the score for this SD indicator is positive.</td></tr>
<tr><td>SD2:
Soil condition</td><td>Usage of bio-slurry (%)</td><td>Temperate zone: 42.17%

Warm zone: 36.51%</td><td>The data was derived from the Carbon Monitoring Survey (CMS). /SDB1/ The results for the current monitoring period is as follows:

<table>
<tr><th>Zone</th><th>Fertilizer</th><th>Don't use</th><th>Fish feed</th><th>Other</th></tr>
<tr><td>Temperate</td><td>42.17%</td><td>53.41%</td><td>3.25%</td><td>1.17%</td></tr>
<tr><td>Warm</td><td>36.51%</td><td>61.18%</td><td>1.69%</td><td>0.62%</td></tr>
</table>

The survey results were checked during the onsite interview of the randomly selected households that they used bio-slurry as fertilizers for their rice field and garden crops whenever they empty the biodigesters. Those households who used the bio-slurry as an alternative fertiliser reported a savings from buying chemical fertilizers. Besides the bio-slurry has helped to improve the yield.

It is noted that during the onsite inspection, the number of households found using bio-slurry for their rice field and crops is low. Although most of households have toilets connected to the biodigesters, the amount of bio-slurry does not increase.

In the baseline scenario, no bio-slurry used as fertilisers. Therefore, the score for this SD indicator is positive.</td></tr>
<tr><td>SD3:
Biodiversity</td><td>Cumulative savings of wood (tons/year)</td><td>148,869</td><td>The value was calculated from the difference between the baseline and project fuel usage, multiplied by the number of biodigesters installed during the monitoring period.

The baseline and project fuel usage were based on the Carbon Monitoring Survey conducted from January to April 2014. /SDB1/

As at 2013-06-30 for this monitoring period, a total savings of 148,869 tons of wood savings</td></tr>
</table>

Indicator	Parameter	Value	Verification Opinion
			was achieved. The accumulative savings of firewood was cross-checked with interview results during the onsite inspection that all households have sufficient biogas for their daily cooking and do not need to use firewood. In the baseline scenario, firewood is commonly used for daily cooking. Therefore, the score for this SD indicator is positive.
SD4: Quality of Employment	Number of masons and technicians participating in the trainings	Masons: 1038 Technicians: 707	The value was based on the records of trained masons and technicians in the project database. /ER/ During this monitoring period there is an increase for masons from 922 to 1,038 and technicians from 622 to 707. During the onsite inspections, the training records in the database for the number of masons and technicians trained for this monitoring period and the total numbers since the start of the program was verified. There is an increased of trained masons and technicians, therefore, the score for this SD indicator is positive.
SD5: Livelihood of the poor	Number of people having access to an improved waste management system	427,539	The value was derived from the Carbon Monitoring Survey (CMS). /SDB1/ In this monitoring period, 427,539 people have access to an improved waste management system. The number of people is calculated based on the number of households having biodigesters in operation. From the onsite inspection, it could observed the average size of households is 2-5 persons. This is as assessed as the actual situations in rural villages in Vietnam since grown-up children normally migrate to cities for work or study and stay away from their parents. Therefore, the average size of household is small. In the baseline scenario, there is no accessed to an improved waste management system. Therefore, the score for this SD indicator is positive.
SD6: Access to affordable and clean energy services	Total amount of energy replaced by biogas (MJ/hh/year)	33,839	The data is derived from the Carbon Monitoring Survey. /SDB1/ For the current monitoring period, the total amount of energy displaced by biogas was reported at 33,839 MJ/hh/year. From the onsite inspections and interviews, it

Indicator	Parameter	Value	Verification Opinion
			could be observed the households have a better living condition in terms of access to low-cost and clean energy (biogas) for their daily cooking. Most of the interviewed household expressed they have sufficient and abandon amount of biogas for daily cooking and do not have to purchase LPG, firewood, charcoal or other type of fuel anymore. Some households share the biogas with their neighbours who do not have a biodigester installed. In the baseline situation, there is no biogas to displace the amount of energy. Therefore, the score for this SD indicator is positive.
SD7: Technology transfer and technological self-reliance	Number of masons trained in the construction of KT1 or KT2 bio-digesters	1,038	The data is based on the records of masons trained for the program. /ER/ As at 2013-06-30 for this monitoring period, a total number of 1,038 masons have been trained. The training records in the program database were verified and could be confirmed as correct. In the baseline scenario, there were no trainings provided. Therefore, the score for this SD indicator is positive.

For further details concerning the sustainability indicators please refer to Annex 2.

Refer finding CAR E8, CAR SD1, CAR SD2, CAR SD3, and CAR SD4 raised and successfully closed out.

5.6. Compliance with the monitoring methodology:

The monitoring system is in compliance with the applied monitoring methodology “Technologies and practices to displace decentralized thermal energy consumption”, version 1.0.

Refer finding CAR C1 and CAR C2 raised and successfully closed out.

5.7. Carbon data and parameters:

During the verification all relevant monitoring parameters as listed in the GS registered PDD have been verified with regard to the appropriateness of the applied measurement / determination method, the correctness of the values applied for ER calculation, the accuracy and applied QA/QC measures. The results as well as the verification procedure are described parameter-wise in the project specific verification checklist.

After appropriate corrections were carried out by the project participant it can be confirmed that all monitoring parameters have been measured / determined without

material misstatements and in line with all applicable standards and relevant requirements.

Data and parameters monitored:

<table>
<tr><th>Parameter</th><th>Value</th><th>Verification opinion</th></tr>
<tr><td>$f_{NRB,y}$: Fraction of non-renewability</td><td>67%</td><td>The data is a fixed value from the baseline study for each crediting period.

For this crediting period the fraction for non-renewability for woody biomass is 67%.

The data was from the baseline study for each crediting period and fixed for the first crediting period as reported in the GS registered PDD annex 3.</td></tr>
<tr><td>$P_{b,y:}$ Quantity of fuel that is consumed in the baseline scenario in year y</td><td><table><tr><th>Fuel i</th><th>Value (kg/hh/day)</th></tr><tr><td>LPG</td><td>0.10</td></tr><tr><td>Firewood</td><td>5.26</td></tr><tr><td>Agriculture residues</td><td>1.88</td></tr></table></td><td>The data was based on the CMS / KPT results conducted from January to April 2014 and applied for this monitoring period. /SDB1/

According to the registered PDD, the data will be updated every 2 years or more frequent after 1st verification.</td></tr>
<tr><td>$P_{p,y}$: Quantity of fuel that is consumed in the project scenario in year y</td><td><table><tr><th rowspan="2">Fuel i</th><th>Value</th></tr><tr><th>kg/hh/day</th></tr><tr><td>LPG</td><td>0.01</td></tr><tr><td>Firewood</td><td>0.76</td></tr><tr><td>Agriculture residues</td><td>0.28</td></tr></table></td><td>The data was based on the CMS / KPT results conducted from January to April 2014 and applied for this monitoring period. /SDB1/

According to the applied GS methodology, the data will be updated every 2 years or more frequent. /GSM/

During the onsite inspection of the 140 randomly selected households, no charcoal or LPG being used for daily cooking although some households may use firewood or agriculture residues when they need to cook a lot of food during festive seasons and for small businesses. /LHH/</td></tr>
<tr><td>$U_{p,y}$: Percentage of bio-digesters in use in monitoring period y</td><td>85.32%</td><td>The data is calculated using data from the usage survey conducted from January to April 2014. /SDB2/</td></tr>
<tr><td>$N_{p,y}$: Number of biogas plants commissioned</td><td>106,171</td><td>The data was the accumulated number of biodigesters constructed since the start of the program recorded in the project database. /ER/

For the carbon emissions calculation, the number of biodigesters applied is 95,697 units due to some drop-off identified during the usage survey. /SDB2/</td></tr>
</table>

<table>
<tr><th>Parameter</th><th>Value</th><th>Verification opinion</th></tr>
<tr><td>$MS_{(T,s,k)}$: Fraction of livestock category T's manure fed into the bio-digester S, in climate zone k</td><td>
<table>
<tr><th>Animal</th><th>Temperate zone</th><th>Warm zone</th></tr>
<tr><td>Pig</td><td>97.77</td><td>97.63</td></tr>
<tr><td>Buffalo</td><td>25.00</td><td>100.00</td></tr>
<tr><td>Dairy cow</td><td>N/A</td><td>N/A</td></tr>
<tr><td>Cattle</td><td>60.87</td><td>31.78</td></tr>
</table>
</td><td>The data was based on the carbon monitoring survey (CMS) conducted from January to April 2014. /SDB1/

Tab Data of the survey worksheet was reviewed on the data, calculation and could be confirmed as correctly applied in the ER worksheet, tab ER_AWMS.</td></tr>
<tr><td>$MS_{(P,s,k)}$: Fraction of livestock category T's manure not fed into the bio-digester S, in climate zone k</td><td>
<table>
<tr><th>Animal</th><th>Temperate zone</th><th>Warm zone</th></tr>
<tr><td>Pig</td><td>2.2</td><td>2.4</td></tr>
<tr><td>Buffalo</td><td>75</td><td>0</td></tr>
<tr><td>Dairy cow</td><td>N/A</td><td>N/A</td></tr>
<tr><td>Cattle</td><td>39.1</td><td>68.2</td></tr>
</table>
</td><td>The data was based on the carbon monitoring survey (CMS) conducted from January to April 2014. /SDB1/.

The fraction of livestock category T's manure not fed into the bio-digester S, in climate zone k is calculated as the difference between the total amount of VS excreted and total VS entering biodigesters.

The data from the survey results was reviewed. The calculation for the fraction of livestock category T's manure fed into the bio-digester S, in temperate and warm zones. /SDB1/</td></tr>
<tr><td>N(T): Number of animals of livestock category T</td><td>
<table>
<tr><th>Animal</th><th>Temperate zone</th><th>Warm zone</th></tr>
<tr><td>Pig</td><td>24.94</td><td>28.18</td></tr>
<tr><td>Buffalo</td><td>0.05</td><td>0.01</td></tr>
<tr><td>Dairy cow</td><td>0</td><td>0</td></tr>
<tr><td>Cattle</td><td>0.23</td><td>1.98</td></tr>
</table>
</td><td>The data was based on the carbon monitoring survey (CMS) conducted from January to April 2014. /SDB1/

Tab ER_AWMS of the ER worksheet was reviewed for the calculation of these values for both temperate and warm zones. /ER,/SDB1/</td></tr>
<tr><td>PL: Physical leakage of the biodigester</td><td>10%</td><td>The data is a default value derived from the applied GS methodology. /GSM/</td></tr>
<tr><td>$EF_{awms,T}$: Animal waste methane emission factor by average temperatures</td><td>
<table>
<tr><th>Animal</th><th>Temperate zone</th><th>Warm zone</th></tr>
<tr><td>Pig</td><td>2.086</td><td>2.171</td></tr>
<tr><td>Buffalo</td><td>4.530</td><td>9.537</td></tr>
<tr><td>Dairy cow</td><td>0.000</td><td>0.000</td></tr>
<tr><td>Cattle</td><td>3.791</td><td>2.731</td></tr>
</table>
</td><td>The data is calculated using 2006 IPCC default value and local annual average temperature for each province in the respective zone. /O5/ER/</td></tr>
<tr><td>$PE_{bio\text{-}slurry}$: Emissions from anaerobic disposal of bio-slurry</td><td>For 2012 vintage:
<table>
<tr><th></th><th>Units</th><th>CO_2e/ unit</th><th>CO_2e</th></tr>
<tr><td>Temperate</td><td>81,805</td><td>0.011</td><td>921</td></tr>
<tr><td>Warm</td><td>24,366</td><td>0.016</td><td>394</td></tr>
</table>
</td><td>The data is calculated using the CMS survey multiplied with the number of installed biodigester. /ER/SDB1/</td></tr>
</table>

Parameter	Value	Verification opinion
	Total: 106,171 — 1315 Ave. emissions: 0.012 — tCO_2e/yr/hh For 2013 vintage: Temperate: 81,805 Units — 0.013 CO_2e/unit — 1097 CO_2e Warm: 24,366 — 0.019 — 469 Total: 106,171 — 1566 Ave. Emissions: 0.015 — tCO_2e/yr/hh	

Data and parameters not monitored:

Parameter	Value	Verification opinion / Data source
$EF_{b,CO2}$ - CO2 emission factor arising from use of fuels in the baseline scenario	**Fuel *b*** / **EF_{CO2}, (kg/TJ)** LPG: 63100 Charcoal: 112000 Coal: 94 600 Firewood: 112000 Agriculture residues: 100000 Kerosene: 71900 Charcoal production: 1285 gCO_2 /kg charcoal[1]	The data was taken from the 2006 IPCC Guidelines defaults, see chapter 2 Stationary Combustion: http://www.ipcc-nggip.iges.or.jp/public/2006gl/vol2.html
$EF_{i,CH4}$ - CH_4 emission factor arising from use of fuels in the baseline scenario	**Fuel *i*** / **EF_{CH4}, (kg/TJ)** LPG: 11.95 Charcoal: 330.5 Coal: 1458.5 Firewood: 1224 Agriculture residues: 2210 Kerosene: 12.6 Charcoal production: 1000	The data was taken from the 2006 IPCC Guidelines defaults see chapter 2 Stationary Combustion: http://www.ipcc-nggip.iges.or.jp/public/2006gl/vol2.html, table 2.9. For Charcoal production Good Practice Guidance and Uncertainty Management in National GHG inventories: http://www.ipcc-nggip.iges.or.jp/public/gp/bgp/2_2_Non-CO2_Stationary_Combustion.pdf table 1
$EF_{i,N2O}$ - N_2O emission factor arising from use of fuels in the baseline scenario	**Fuel *i*** / **EF_{N20}, (kg/TJ)** LPG: 2.1 Charcoal: 5.45 Coal: NA Firewood: 11.25 Agriculture: 9.7	The data was taken from the 2006 IPCC Guidelines defaults, see chapter 2 Stationary Combustion, table 2.9 http://www.ipcc-nggip.iges.or.jp/public/2006gl/vol2.html.

[1] Averaged CO_2 emissions from Kirk R. Smith, David M. Pennise (1999) Charcoal-Making Kilns in Thailand. Smith et al reported the CO2 emission as being between 970-1600 gCO_2/kg charcoal produced, 1285 is the average of that figure. Charcoal kilns are assumed to be similar or better in Thailand compared to Vietnam.

<table>
<tr><th>Parameter</th><th>Value</th><th>Verification opinion / Data source</th></tr>
<tr><td></td><td><table><tr><td>residues</td><td></td></tr><tr><td>Kerosene</td><td>1.55</td></tr><tr><td>Charcoal production</td><td>NA</td></tr></table></td><td></td></tr>
<tr><td>NCV_i . Net calorific value of the fuel i used in the baseline</td><td><table><tr><td>Fuel i</td><td>NCV_i (TJ/Gg)</td></tr><tr><td>LPG</td><td>47.3</td></tr><tr><td>Charcoal</td><td>29.5</td></tr><tr><td>Coal</td><td>25.8</td></tr><tr><td>Firewood</td><td>15.6</td></tr><tr><td>Agriculture residues</td><td>11.6</td></tr><tr><td>Kerosene</td><td>43.8</td></tr></table></td><td>The data was taken from the 2006 IPCC Guidelines defaults, see chapter 1 Energy table 1.2 http://www.ipcc-nggip.iges.or.jp/public/2006gl/vol2.html.</td></tr>
<tr><td>GWP_{CH4} . Global Warming Potential (GWP) of methane</td><td>21 for period 2012-01-01 to 2012-12-31

25 for period 2013-01-01 to 2013-06-30</td><td>GWP value of 21 is applicable until 2012-12-31 for the 1st commitment period.

For the second commitment as from 2013-01-01, the GWP value of 25 is applied which is in accordance to EB69 report annex 3 and GS guidance on the application of GWP for Gold Standard project activities.

Therefore, the PP has applied the GWP value correctly.</td></tr>
<tr><td>GWP_{N2O} . Global Warming Potential (GWP) of nitrous oxide</td><td>310 for period 2012-01-01 to 2012-12-31

298 for period 2013-01-01 to 2013-06-30.</td><td>GWP value of 310 is applicable until 2012-12-31 for the 1st commitment period.

For the second commitment as from 2013-01-01, the GWP value of 298 is applied which is in accordance to EB69 report annex 3 and GS guidance on the application of GWP for Gold Standard project activities.

Therefore, the PP has applied the GWP value correctly.</td></tr>
<tr><td>VS _(T) . Daily volatile solid excreted for livestock category T</td><td><table><tr><td>Animal</td><td>VS(T)</td></tr><tr><td>T</td><td>kg/day</td></tr><tr><td>Pig</td><td>0.3</td></tr><tr><td>Buffalo</td><td>3.9</td></tr><tr><td>Dairy cow</td><td>2.8</td></tr><tr><td>Cattle</td><td>2.3</td></tr></table></td><td>The default value applied was based on 2006 IPCC Guidelines for National Greenhouse Gas Inventories, volume 4, chapter 10. /IPCC/

http://www.ipcc-nggip.iges.or.jp/public/2006gl/vol4.html)</td></tr>
<tr><td>Bo_(T) . Maximum methane production capacity for manure produced by livestock category T</td><td><table><tr><td>Animal</td><td>VS(T)</td><td>Bo(T)</td></tr><tr><td>T</td><td>kg/day</td><td>m3CH4/kgVS</td></tr><tr><td>Pig</td><td>0.3</td><td>0.29</td></tr><tr><td>Buffalo</td><td>3.9</td><td>0.1</td></tr><tr><td>Dairy cow</td><td>2.8</td><td>0.13</td></tr><tr><td>Cattle</td><td>2.3</td><td>0.1</td></tr></table></td><td>The default value applied was based on 2006 IPCC Guidelines for National Greenhouse Gas Inventories, volume 4, chapter 10. /IPCC/

http://www.ipcc-nggip.iges.or.jp/public/2006gl/vol4.html)</td></tr>
<tr><td>MCF_(k) . Methane conversion factor for</td><td>10% for bio-digester systems</td><td>The default value applied was based on 2006 IPCC Guidelines for National Greenhouse Gas</td></tr>
</table>

Parameter	Value	Verification opinion / Data source
each manure management system by climate region k		Inventories, volume 4, chapter 10. /IPCC/ http://www.ipcc-nggip.iges.or.jp/public/2006gl/vol4.html)
$EF_{awms,T,}$ - Animal waste methane emission factor by average temperatures	Animal T / EF ($kgCH_4$/head/yr): Temperate zone / Warm zone Pig: 5.00 / 7.00 Buffalo: 2.00 / 2.00 Dairy cow: 23.00 / 31.00 Cattle: 1.00 / 1.00	The default value applied was based on 2006 IPCC Guidelines for National Greenhouse Gas Inventories, volume 4, chapter 10. /IPCC/ http://www.ipcc-nggip.iges.or.jp/public/2006gl/vol4.html)
$\eta_{biogasstove:}$ Combustion efficiency of the biogas stove	98%	The value of 98% is the default value derived from the applied GS methodology: Indicative Programme, baseline, and monitoring methodology for Small Scale Bio-digester /GSM/

Refer findings CAR D1, CAR D2, CAR D3 raised and successfully closed out.

5.8. Contribution to sustainable development:

During the verification, the SD indicators were verified with regards to the appropriateness that will contribute to sustainable development.

It was evidenced that the project mainly contributes to sustainable development in under-developed and remote villages in Vietnam.

For details assessment of SD indicators, refer to section 5.5 above.

5.9. Monitoring report:

A Gold Standard Monitoring Report along with relevant supporting documents was submitted to the verification team by the project participants. These documents form the basis for the verification opinion of TÜV NORD.

During the verification, mistakes and needs for clarification were identified. The PP has carried out the requested corrections so that it can be confirmed that the Monitoring report is complete and transparent and accordance with the registered PDD, the GS Passport and relevant GS requirements.

Refer finding CAR A1, CAR A2 and CL A3 raised and successfully closed out.

5.10. Sampling:

5.10.1. Implementation of the sampling plan:

The PP has taken the approach for the sampling plan by adopting EB69 Annex 5 and EB69 Annex 4.

The CMS/KPT and usage survey sampling plan was designed with a confidence interval of at least 90/30 according to GS recommendation to ensure the households interviewed are representative.

The sample size for the CMS is 17 households (include a 10% oversampling) from 20 clusters (10 clusters from each temperate and warm zone). The purpose of the 10% oversampling is to support any of the main selected households are not available during the survey. The total households for CMS survey are 340.

For PFT and KPT survey, 3 households for each district of 10 clusters from each zones making a total of 60 households.

For usage survey a sample size of 35 households with oversampling of 5 households, 6 clusters making a total of 210 households. /S2/ The purpose of the 5 households oversampling is to support any of the main selected households are not available during the survey.

The verification team has checked the sampling plan and considered appropriate since the number of households for each type of survey is representative. /S1/S2/

Refer finding CAR D4, CAR D5, CL D6, and CL E9 raised and successfully closed out.

5.10.2. Sampling approaches during verification:

The verification team has applied the sampling plan based on 90/30 confidence level according to GS recommendation to ensure the number households interviewed are representative.

The sample size of 140 households is selected from the clusters in the same village in different districts & provinces located in both temperate and warm zones. /LHH/ The selected provinces in the temperate zone are Bac Ninh, Hai Duong, Hung Yen, Ha Nam, Vinh Phuc, Ha Noi, Ha Tay, Thai Nguyen, and Thanh Hoa. The selected provinces in the warm zone are Binh Dinh, Ben Tre, Tien Giang, Dong Nai, An Giang and Quang Ngai. Therefore, the sampled households selected by the verification team are from both the two climatic zones to ensure the results are representative.

Furthermore, the verification team has cross checked with the below link to ensure the sample size of 140 is sufficient. With the number of households, the sample size for 95% CI with margin of error of 10% is 96. Therefore, the 140 sample of households is sufficient and meets the GS sampling requirements of 100. http://www.raosoft.com/samplesize.html /sz/

For details of the sampled households in the respective provinces, please refer to the list of sample households table 7-4 below of this report.

5.11. ER Calculation:

During the verification mistakes in the ER calculation were identified. Corresponding CARs were raised. A revised ER calculation was prepared by the PP and presented to the verification team. All raised issues were addressed appropriately so that all corresponding CARs and CLs could be closed out.

During the issuance of MPI, GS has raised FAR05 as regards to KPT was not conducted. KPT was conducted during this monitoring period. Therefore, the results were applied retroactively for MPI and to be deducted. Since MPI ERs have been issued the retroactive amount of 106 ERs are deducted from this monitoring period.

The final ERs for this monitoring period has deducted the retroactive amount as stated above. The ER spreadsheet was reviewed and could confirmed is overall correct.

Refer finding CL E1, CL E2, CL E3, CAR E4, CAR E5, CAR E6, and CAR E7 raised and successfully closed out.

5.12. Quality Management:

Quality Management procedures for measurements, collection and compilation of data, data storage and archiving, calibration, maintenance and training of personnel in the framework of this GS/CDM project activity have been defined. The procedures defined can be assessed as appropriate for the purpose. No significant deviations thereof have been observed during the verification.

Refer finding CAR C1 and CAR C2 raised and successfully closed out.

5.13. Comparison with ex-ante estimated emission reductions:

The MR includes a comparison of the calculated actual emission reductions with the ex-ante calculated values in the registered PDD.

Ex-Ante ERs per year: 589,125 tCO_2e

Ex-Ante ERs for this monitoring period (547 days): 868,817 tCO_2e

Ex-Post ERs for this monitoring period (547 days): 779,924 tCO_2e

Difference: 88,893tCO_2e

The ex-post value is found to be lower than the ex-ante determined value. Therefore no further justification is required.

5.14. Overall Aspects of the Verification:

All necessary and requested documentation was provided by the project participants so that a complete verification of all relevant issues could be carried out.

Access was granted to all installed households which are relevant for the project performance and the monitoring activities.

No issues have been identified indicating that the implementation of the project activity and the steps to claim emission reductions are compliant with the GS requirements or any other scheme the monitoring is referring to.

5.15. Hints for next periodic Verification:

No FAR has been raised for consideration during the next monitoring period.

6. VERIFICATION AND CERTIFICATION STATEMENT

Biogas Project Management Unit (PMU) has commissioned the TÜV NORD JI/CDM Certification Program to carry out the 2nd periodic verification of CPI for the project: "*Biogas Program for Animal Husbandry Sector of Vietnam*", with regard to the relevant requirements for GS project activities. The project reduces GHG emissions due to displacement of non-renewable cooking fuel by biogas, avoidance of methane emission from animal and human waste by capturing and destroying methane for thermal energy use and displacement of chemical fertilizers by bio-slurry. This verification covers the period from 2012-01-01 to 2013-06-30 (including both days).

In the course of the verification, 21 Corrective Action Requests (CAR) and 7 Clarification Requests (CL) were raised and successfully closed. No Forward Action Request (FAR) was raised and needs to be checked in the next verification. The verification is based on the draft monitoring report, revised monitoring report, the monitoring plan as set out in the registered PDD, the validation report, emission reduction calculation worksheet and supporting documents made available to the TÜV NORD JI/CDM CP by the project participant.

As a result of this verification, the verifier confirms that:

- all operations of the project are implemented and installed as planned and described in the validated project design document.
- the monitoring plan is in accordance with the applied approved GS methodology, i.e., Technologies and practices to displace decentralized thermal energy consumption, version 1.0.
- the installed equipment essential for measuring parameters required for calculating emission reductions are calibrated appropriately.
- the monitoring system is in place and functional. The project has generated GHG emission reductions.

As the result of the 2nd periodic verification of first renewable crediting period, the verifier confirms that the GHG emission reductions are calculated without material misstatements in a conservative and appropriate manner. The emission reductions are calculated in compliance with the monitoring plan and Gold Standard conservativeness principle. Furthermore all parameters listed in the Sustainability monitoring plan are duly monitored and verified. TÜV NORD JI/CDM CP herewith confirms that the project has achieved emission reductions in the above mentioned reporting period as follows:

Emission reductions: **779,924 tCO_2e**

Subang Jaya, 2015-04-22

Cheong, Chun Yuen (Robert)

TÜV NORD JI/CDM Certification Program

Verification Team Leader

Essen, 2015-04-22

Saalmann, Martin

TÜV NORD JI/CDM Certification Program

Final Approval

7. REFERENCES

Table 7-1: Documents provided by the project participant(s)

Reference	Document
Monitoring Report	
/MR/	Monitoring report version 1.0 dated 2014-10-21 Monitoring report version 2.0 dated 2014-11-26 Monitoring report version 2.1 dated 2014-12-02 Monitoring report version 2.2 dated 2014-12-31 Monitoring report version 3.0 dated 2015-02-25 Monitoring report version 3.1 dated 2015-04-06 Monitoring report version 3.1 dated 2015-04-22
ER spreadsheet	
/ER/	MPII Monitoring Database spreadsheet version 1.0 dated 2014-08-16 MPII ER for both vintage year 2012 & 2013 version 2.0 dated 2014-11-26 MPII ER for both vintage year 2012 & 2013 version 3.0 dated 2015-02-25 MPII ER for both vintage year 2012 & 2013 version 3.1 dated 2015-04-06 MPII ER for both vintage year 2012 & 2013 version 3.2 dated 2015-04-22 MPII Monitoring Database ER for both 2012 and 2013 vintage spreadsheet version 2.0 dated 2014-11-26 MPII Monitoring Database ER for both 2012 and 2013 vintage spreadsheet version 3.0 dated 2015-02-25 MPII Monitoring Database ER for both 2012 and 2013 vintage spreadsheet version 3.1 dated 2015-04-06 MPII Monitoring Database ER for both 2012 and 2013 vintage spreadsheet version 3.2 dated 2015-04-22
Calibration	
/C1/	Calibration for weighing scales for KPT conducted by Quality Assurance and Testing Centre 1 issued on 2014-01-07
Survey database	
/SDB1/	Carbon monitoring and Kitchen performance test survey results worksheet version 1.0 dated 2014-08-16 Carbon monitoring and Kitchen performance test survey results worksheet version 2.0 dated 2014-11-26
/SDB2/	Usage survey results worksheet version 1.0 dated 2014-08-16 Usage survey results worksheet version 2.0 dated 2014-11-26
Sampling	
/S1/	CMS & KPT survey sampling households version 1.0 dated 2014-08-16 CMS & KPT survey sampling households version 2.0 dated 2014-11-26

Reference	Document
/S2/	Usage survey sampling households version 1.0 dated 2014-08-16 Usage survey sampling households version 2.0 dated 2014-11-26
Sustainable Indicator	
/SI1/	Air Quality – reduction in usage of fuel , ER spreadsheet SD sheet
SI2/	Soil condition – usage of bio-slurry ER spreadsheet SD sheet
/SI3/	Biodiversity – Savings in wood ER spreadsheet SD sheet
/SI4/	Quality employment ER spreadsheet SD sheet List of trained masons per district List of trained technicians per district
/SI5/	Livelihood of the poor ER spreadsheet SD sheet
/SI6/	Access to affordable and clean energy services ER spreadsheet SD sheet
/SI7/	Technology transfer and technological self-reliance ER spreadsheet SD sheet
Forms	
/F1/	Biodigester unit form records: 1. Form 03 – Application for subsidy for building biodigester unit 2. Form 04 – Contract on technical and financial support for household building biodigester unit 3. Form 07 – Minute of final acceptance for constructed biodigester unit 4. Form 09 – Minute of inspection and evaluation of completed biodigester unit
Technology	
/T1/	Bio-digester KT1 and KT2 design parameters
Others	
/O1/	VBP Guideline for Programme activities at provincial level in 2013
/O2/	Sampling Guide by Robert Magnani December 1997
/O3/	Training material for Biogas Technician 2011
/O4/	Email confirmation for PFT from GS dated 2014-11-20
/O5/	IPCC 2006 Emissions from Livestock & Manure Management Volume 4 Chapter 10
/O6/	International Journal of Database Theory and Application Vol. 4 No.1 March 2011

Reference	Document
/O7/	Letters to provinces on training dated 2013-03 Training plan for 2013 and 2014

Table 7-2: Background investigation and assessment documents

Reference	Document
/CPM/	TÜV NORD JI / CDM CP Manual (incl. CP procedures and forms)
/EB69/	CDM EB 69 Report Annex 3: Standard for application of the global warming potentials to clean development mechanism project activities and programmes of activities for the second commitment period of the Kyoto Protocol
/EB77/	CDM EB 77 Meeting Report version 01.0
/GS/	Gold Standard version 2.1
/GSM/	Technologies and practices to displace decentralized thermal energy consumption, version 1.0 (TPDDTEC)
/GSP/	Gold Standard Passport Version 3.1 dated 2012-09-25
/GSR/	GS MPI Issuance Review dated 2013-02-26
/GSS/	Guidelines for Sampling and Surveys for CDM Project Activities and Programme Of Activities, EB 69, Annex 5
/GST/	Gold Standard Toolkit version 2.1
/IPCC/	Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories: 1. Non-CO_2 Stationery Combustion 2. Emissions from Livestock and Manure Management (Chapter 10) 3. IPCC Second Assessment Report – Climate Change 1995: A Report of the Intergovernmental Panel on Climate Change
/PDD/	GS Registered Project Design Document Version 3.1 dated 2012-09-24
/PLEAD/	Tool “Project and leakage emissions from anaerobic digesters” version 01.0.0 EB 66 Annex 32
/PS/	Project Standard Version 07
/SSS/	Standard for Sampling and Surveys for CDM Project Activities and Programme Of Activities, EB 69, Annex 4
/VAL/	Sustainability Validation Report, by TUV Rheinland, Version 02.2 dated 2012-10-25 (Report No. 01 997 9105066812-GS)

Reference	Document
/VER/	1. Sustainability Verification Report for 1st monitoring period of 1st crediting period by TUV Rheinland Version 01.4 dated 2013-02-21 (Report No. 01 996 9105066812-GS) 2. Issuance review report for 1st monitoring period of 1st crediting period issued by GS (for period: 28/06/2010-31/12/2011)
/VVS/	CDM Validation and Verification Standard (Version 06)

Table 7-3: Websites used

Reference	Link	Organisation
/dna-HP/	http://www.noccop.org.vn/	DNA of Vietnam
/dna-SP/	http://www.government.nl/ministries/ienm/organisation	DNA of Netherlands
/gs/	http://www.CDMgoldstandard.org/	CDM Gold Standard
/unfccc/	http://cdm.unfccc.int	UNFCCC
/ipcc/	www.ipcc-nggip.iges.or.jp	IPCC publications
/ss/	http://www.raosoft.com/samplesize.html	Raosoft

Table 7-4: List of interviewed persons

Reference	MoI[1]		Name	Organisation / Function
/IM01/	V	☒ Mr. ☐ Ms	Hoang Thanh Ha	Nexus / Senior Carbon Project Officer
	V	☒ Mr. ☐ Ms	Eric Buysman	Nexus / Consultant
/IM02/	V	☐ Mr. ☒ Ms	Dagmar Zwebe	SNV Vietnam / Sector Leader on Renewable Energy
/IM03/	V	☒ Mr. ☐ Ms	Le Anh Duc	Biogas Project Management Unit (PMU) / Project Officer
	V	☒ Mr. ☐ Ms	Vo Trong Thanh	Biogas Project Management Unit (PMU) / Project Coordinator
	V	☒ Mr. ☐ Ms	Nguyen Minh Hung	Biogas Project Management Unit (PMU) / Project Officer

/IM04/	Bac Ninh province			
	V	☒ Mr. ☐ Ms	Ngo Dang Sao	Bac Ninh Province, Que Vo district, Ngoc Xa commune, Long Khe village / Mason
	V	☒ Mr. ☐ Ms	Le Van Tan	Bac Ninh Province, Que Vo district / Que Vo District Technician
	V	☒ Mr. ☐ Ms	Than Trung Hieu	Bac Ninh Province Department of Agriculture Extension / Officer
	Hai Duong province			
	V	☒ Mr. ☐ Ms	Pham Dinh Me	Hai Duong province, Nam Sach district / Mason
	V	☒ Mr. ☐ Ms	Nguyen Danh Ha	Hai Duong province Department of Agriculture Extension / Officer
	V	☒ Mr. ☐ Ms	Nguyen Tuan Dung	Hai Duong province / Provincial Technician
	Hung Yen province			
	V	☒ Mr. ☐ Ms	Nguyen Van Vinh	Hung Yen province / Provincial Mason
	V	☒ Mr. ☐ Ms	Do Trong Thao	Hung Yen province / Provincial Technician / Department of Agriculture Extension Officer
	V	☒ Mr. ☐ Ms	Nguyen Van Quyet	Hung Yen province / Technician / Department of Agriculture Extension Officer
	Ha Nam province			
	V	☒ Mr. ☐ Ms	Lai Mai Vinh	Ha Nam province / Provincial Mason
	V	☒ Mr. ☐ Ms	Tran Trong Thong	Ha Nam province / Provincial Mason
	V	☒ Mr. ☐ Ms	Dao Ngoc Nong	Ha Nam province / Agriculture Extension Department / Provincial Technician / Officer
	Vinh Phuc province			
	V	☒ Mr. ☐ Ms	Le Van Yen	Vinh Phuc province / Tuong Duong district / An Hoa commune / Mason

	V	☐ Mr. ☒ Ms	Nguyen Thi Huong Lan	Vinh Phuc province, Department of Agriculture Extension / Officer
	Hanoi city			
	V	☒ Mr. ☐ Ms	Nguyen The Quan	Hanoi, My Duc district, Dai Hung commune / Officer
	V	☒ Mr. ☐ Ms	Tran Van Dien	Hanoi, My Duc disitrct / Mason
	V	☒ Mr. ☐ Ms	Nguyen Van Lap	Hanoi, Department of Agriculture Extension / Technician
	Hay Tay province			
	V	☒ Mr. ☐ Ms	Nguyen Dinh Kham	Ha Tay province, Ung Hoa district / Technician
	V	☐ Mr. ☒ Ms	Nguyen Thi Hang	Ha Tay province, Ung Hoa district, District Department of Economics / Officer
	V	☒ Mr. ☐ Ms	Thai Van Thanh	Ha Tay province, Ung Hoa district, Phuong Tu commune, Hau Xa village / Villager Leader

List of households visited: /LHH/

No.	MoI[1]	Plant Code	Household Name	Location (Province, District, Commune, Village)
Bac Ninh province				
1	V	BNI-QV-NH-1086	Nguyễn Thị Biển	Bac Ninh province, Que Vo district, Nhan Hoa commune, Long Khe village
2	V	BNI-QV-NX-644	Hoàng Ngọc Yến	Bac Ninh province, Que Vo district, Ngoc Xa commune, Long Khe village
3	V	BNI-QV-NX-1255	Ngô Văn Tiến	Bac Ninh province, Que Vo district, Ngoc Xa commune, Long Khe village
4	V	BNI-QV-NX-1246	Hoàng Ngọc Trục	Bac Ninh province, Que Vo district, Ngoc Xa commune, Long Khe village
5	V	BNI-QV-NX-1245	Trần Văn Hinh	Bac Ninh province, Que Vo district, Ngoc Xa commune, Long Khe village
6	V	BNI-QV-NX-1244	Trần Văn Trương	Bac Ninh province, Que Vo district, Ngoc Xa commune, Long Khe village

No.	MoI[1]	Plant Code	Household Name	Location (Province, District, Commune, Village)
7	V	BNI-QV-NX-737	Nguyễn Thị Chính	Bac Ninh province, Que Vo district, Ngoc Xa commune, Long Khe village
8	V	BNI-QV-NX-1193	Hoàng Ngọc Việt	Bac Ninh province, Que Vo district, Ngoc Xa commune, Long Khe village
9	V	BNI-QV-NX-969	Hoàng Văn Giai	Bac Ninh province, Que Vo district, Ngoc Xa commune, Long Khe village
10	V	BNI-QV-NX-1083	Trần Văn Xê	Bac Ninh province, Que Vo district, Ngoc Xa commune, Long Khe village
11	V	BNI-QV-NX-1087	Trần Văn Điều	Bac Ninh province, Que Vo district, Ngoc Xa commune, Long Khe village
12	V	BNI-QV-NX-860	Hoàng Thị Lý	Bac Ninh province, Que Vo district, Ngoc Xa commune, Long Khe village
13	V	BNI-QV-NX-634	Hoàng Ngọc Sao	Bac Ninh province, Que Vo district, Ngoc Xa commune, Long Khe village
Hai Duong province				
14	V	HDU-NS-AB-80	Phạm Đình Chí	Hai Duong province, Nam Sach district, An Binh commune, Da Dinh village
15	V	HDU-NS-AB-14	Nguyễn Huy Sinh	Hai Duong province, Nam Sach district, An Binh commune, Da Dinh village
16	V	HDU-NS-AB-010	Nguyễn Huy Ga	Hai Duong province, Nam Sach district, An Binh commune, Da Dinh village
17	V	HDU-NS-AB-08	Nguyễn Đình Hải	Hai Duong province, Nam Sach district, An Binh commune, Da Dinh village
18	V	HDU-NS-AB-005	Lê Minh Sơn	Hai Duong province, Nam Sach district, An Binh commune, Da Dinh village
19	V	HDU-NS-AB-006	Vũ Đình Mẫu	Hai Duong province, Nam Sach district, An Binh commune, Da Dinh village
20	V	HDU-NS-AB-007	Lê Duy Hanh	Hai Duong province, Nam Sach

No.	MoI[1]	Plant Code	Household Name	Location (Province, District, Commune, Village)
				district, An Binh commune, Da Dinh village
21	V	HDU-NS-AB-008	Lê Thị Hạt	Hai Duong province, Nam Sach district, An Binh commune, Da Dinh village
22	V	HDU-NS-AB-003	Lê Đình Hợp	Hai Duong province, Nam Sach district, An Binh commune, Da Dinh village
23	V	HDU-NS-AB-002	Phạm Đình Mẽ	Hai Duong province, Nam Sach district, An Binh commune, Da Dinh village
24	V	HDU-NS-AB-89	Phạm Đình Phường	Hai Duong province, Nam Sach district, An Binh commune, Da Dinh village
25	V	HDU-NS-AB-35	Nguyễn Huy Thuật	Hai Duong province, Nam Sach district, An Binh commune, Da Dinh village
26	V	HDU-NS-AB-162	Nguyễn Đình Hà	Hai Duong province, Nam Sach district, An Binh commune, Da Dinh village
Hung Yen province				
27	V	HYE-TPHY-TN-428	Vũ Minh Chính	Hung Yen province, Hung Yen city, Trung Nghia commune, Dao Dang village
28	V	HYE-TPHY-TN-450	Vũ Viết Long	Hung Yen province, Hung Yen city, Trung Nghia commune, Dao Dang village
29	V	HYE-TPHY-TN-426	Trần Văn Của	Hung Yen province, Hung Yen city, Trung Nghia commune, Dao Dang village
30	V	HYE-TPHY-TN-405	Trần Viết Dũng	Hung Yen province, Hung Yen city, Trung Nghia commune, Dao Dang village
31	V	HYE-TPHY-TN-430	Trần Tiến Vĩnh	Hung Yen province, Hung Yen city, Trung Nghia commune, Dao Dang village

No.	Mol[1]	Plant Code	Household Name	Location (Province, District, Commune, Village)
32	V	HYE-TPHY-TN-432	Trần Đăng Lân	Hung Yen province, Hung Yen city, Trung Nghia commune, Dao Dang village
33	V	HYE-TPHY-TN-431	Trần Ngọc Mỹ	Hung Yen province, Hung Yen city, Trung Nghia commune, Dao Dang village
34	V	HYE-TPHY-TN-276	Nguyễn Thị Ngọc	Hung Yen province, Hung Yen city, Trung Nghia commune, Dao Dang village
35	V	HYE-TPHY-TN-275	Nguyễn Viết Tích	Hung Yen province, Hung Yen city, Trung Nghia commune, Dao Dang village
36	V	HYE-TPHY-TN-287	Trần Hữu Nguyện	Hung Yen province, Hung Yen city, Trung Nghia commune, Dao Dang village
37	V	HYE-TPHY-TN-096	Nguyễn Viết Dụ	Hung Yen province, Hung Yen city, Trung Nghia commune, Dao Dang village
38	V	HYE-TPHY-TN-438	Vũ Đình Vụ	Hung Yen province, Hung Yen city, Trung Nghia commune, Dao Dang village
39	V	HYE-TPHY-TN-166	Trần Huy Phúc	Hung Yen province, Hung Yen city, Trung Nghia commune, Dao Dang village
40	V	HYE-TPHY-TN-139	Nguyễn Viết Thành	Hung Yen province, Hung Yen city, Trung Nghia commune, Dao Dang village
41	V	HYE-TPHY-TN-129	Vũ Đình Chính	Hung Yen province, Hung Yen city, Trung Nghia commune, Dao Dang village
Ha Nam province				
42	V	HNA-LN-NK-454	Đỗ Văn Vượng	Ha Nam province, Ly Nhan district, Nhan Khang commune, Village No.2
43	V	HNA-LN-NK-453	Nguyễn Phan Hưng	Ha Nam province, Ly Nhan district, Nhan Khang commune, Village No.2
44	V	HNA-LN-NK-309	Đỗ Thị Huy	Ha Nam province, Ly Nhan district,

No.	MoI[1]	Plant Code	Household Name	Location (Province, District, Commune, Village)
				Nhan Khang commune, Village No.2
45	V	HNA-LN-NK-412	Trần Thị Tình	Ha Nam province, Ly Nhan district, Nhan Khang commune, Village No.2
46	V	HNA-LN-NK-386	Nguyễn Thị Lập	Ha Nam province, Ly Nhan district, Nhan Khang commune, Village No.2
47	V	HNA-LN-NK-384	Nguyễn Văn Lan	Ha Nam province, Ly Nhan district, Nhan Khang commune, Village No.2
48	V	HNA-LN-NK-339	Nguyễn Văn Lực	Ha Nam province, Ly Nhan district, Nhan Khang commune, Village No.2
49	V	HNA-LN-NK-364	Nguyễn Thanh Bình	Ha Nam province, Ly Nhan district, Nhan Khang commune, Village No.2
50	V	HNA-LN-NK-616	Đinh Văn Sách	Ha Nam province, Ly Nhan district, Nhan Khang commune, Village No.2
51	V	HNA-LN-NK-550	Nguyễn Thị Bé	Ha Nam province, Ly Nhan district, Nhan Khang commune, Village No.2
52	V	HNA-LN-NK-743	Đinh Văn Quỳnh	Ha Nam province, Ly Nhan district, Nhan Khang commune, Village No.2
53	V	HNA-LN-NK-628	Nguyễn Thị Mậu	Ha Nam province, Ly Nhan district, Nhan Khang commune, Village No.2
54	V	HNA-LN-NK-775	Nguyễn Văn Tiến	Ha Nam province, Ly Nhan district, Nhan Khang commune, Village No.2
55	V	HNA-LN-NK-772	Lê Thị Thanh Huyền	Ha Nam province, Ly Nhan district, Nhan Khang commune, Village No.2
56	V	HNA-LN-NK-858	Trần Văn Hồng	Ha Nam province, Ly Nhan district, Nhan Khang commune, Village No.2
Vinh Phuc province				
57	V	VPH-TD-AH-101	Nguyễn Văn Đạo	Vinh Phuc province, Tam Duong district, An Hoa commune, Noi Dien village
58	V	VPH-TD-AH-122	Lê Đức Dưỡng	Vinh Phuc province, Tam Duong district, An Hoa commune, Noi Dien village

No.	Mol[1]	Plant Code	Household Name	Location (Province, District, Commune, Village)
59	V	VPH-TD-AH-218	Phạm Thị Yến	Vinh Phuc province, Tam Duong district, An Hoa commune, Noi Dien village
60	V	VPH-TD-AH-175	Nguyễn Thị Bích	Vinh Phuc province, Tam Duong district, An Hoa commune, Noi Dien village
61	V	VPH-TD-AH-183	Nguyễn Văn Xuân	Vinh Phuc province, Tam Duong district, An Hoa commune, Noi Dien village
62	V	VPH-TD-AH-213	Nguyễn Văn Thơm	Vinh Phuc province, Tam Duong district, An Hoa commune, Noi Dien village
63	V	VPH-TD-AH-216	Nguyễn Thị Cành	Vinh Phuc province, Tam Duong district, An Hoa commune, Noi Dien village
64	V	VPH-TD-AH-202	Ngô Sỹ Tuân	Vinh Phuc province, Tam Duong district, An Hoa commune, Noi Dien village
65	V	VPH-TD-AH-192	Lê Xuân Tuyên	Vinh Phuc province, Tam Duong district, An Hoa commune, Noi Dien village
66	V	VPH-TD-AH-398	Nguyễn Đức Dục	Vinh Phuc province, Tam Duong district, An Hoa commune, Noi Dien village
67	V	VPH-TD-AH-277	Nguyễn Đức Lăng	Vinh Phuc province, Tam Duong district, An Hoa commune, Noi Dien village
68	V	VPH-TD-AH-279	Nguyễn Văn Then	Vinh Phuc province, Tam Duong district, An Hoa commune, Noi Dien village
69	V	VPH-TD-AH-282	Nguyễn Ngọc Hùng	Vinh Phuc province, Tam Duong district, An Hoa commune, Noi Dien village
70	V	VPH-TD-AH-320	Bùi Thị Hường	Vinh Phuc province, Tam Duong district, An Hoa commune, Noi Dien village
71	V	VPH-TD-AH-333	Ngô Thị Hồng	Vinh Phuc province, Tam Duong

No.	MoI[1]	Plant Code	Household Name	Location (Province, District, Commune, Village)
				district, An Hoa commune, Noi Dien village
Ha Tay province/Hanoi city				
72	V	HTA-MD-ĐH-228	Lưu Thế Biểu	Ha Tay province, My Duc district, Hung Dai commune, Trinh Tiet village
73	V	HTA-MD-ĐH-273	Đào Minh Ngọ	Ha Tay province, My Duc district, Hung Dai commune, Trinh Tiet village
74	V	HTA-MD-ĐH-261	Bùi Thị Bạo	Ha Tay province, My Duc district, Hung Dai commune, Trinh Tiet village
75	V	HTA-MD-ĐH-218	Đào Văn Thiện	Ha Tay province, My Duc district, Hung Dai commune, Trinh Tiet village
76	V	HTA-MĐ-ĐH-317	Lưu Phước Bình	Ha Tay province, My Duc district, Hung Dai commune, Trinh Tiet village
77	V	HTA-MĐ-ĐH-313	Kiều Thị Kim Thanh	Ha Tay province, My Duc district, Hung Dai commune, Trinh Tiet village
78	V	HTA-MD-DH-066	Trần Thị Hiền	Ha Tay province, My Duc district, Hung Dai commune, Trinh Tiet village
79	V	HTA-MD-DH-064	Lưu Văn Hoà	Ha Tay province, My Duc district, Hung Dai commune, Trinh Tiet village
80	V	HTA-MD-DH-065	Hoàng Thị Khán	Ha Tay province, My Duc district, Hung Dai commune, Trinh Tiet village
81	V	HTA-MD-DH-113	Nguyễn Thế Quân	Ha Tay province, My Duc district, Hung Dai commune, Trinh Tiet village
82	V	HNO-MĐ-DH-611	Nguyễn Văn Bình	Ha Noi city, My Duc district, Hung Dai commune, Trinh Tiet village
83	V	HTA-UH-PT-213	Lê Văn Thanh	Ha Tay province, Hung Hoa district, Phuong Tu commune, Hau Xa village
84	V	HTA-UH-PT-209	Lê Văn Quang	Ha Tay province, Hung Hoa district, Phuong Tu commune, Hau Xa village
85	V	HTA-UH-PT-056	Thái Văn Long	Ha Tay province, Hung Hoa district, Phuong Tu commune, Hau Xa village
86	V	HTA-UH-PT-099	Lê Thị Ly	Ha Tay province, Hung Hoa district,

No.	MoI[1]	Plant Code	Household Name	Location (Province, District, Commune, Village)
				Phuong Tu commune, Hau Xa village
87	V	HTA-UH-PT-164	Lê Thị Tuyên	Ha Tay province, Hung Hoa district, Phuong Tu commune, Hau Xa village
88	V	HNO-UH-PT-511	Nguyễn Văn Bằng	Ha Tay province, Hung Hoa district, Phuong Tu commune, Hau Xa village
89	V	HNO-UH-PT-452	Nguyễn Thành Huyên	Ha Tay province, Hung Hoa district, Phuong Tu commune, Hau Xa village
90	V	HNO-UH-PT-443	Thái Thị Hiền	Ha Tay province, Hung Hoa district, Phuong Tu commune, Hau Xa village

List of households interviewed by telephone calls:/LHH/

No.	MoI[1]	Plant Code	Household Name	Location (Province, District, Commune, Village)
1	T	BDI-HA-ÂĐ-839	Nguyễn Thị Thu Hà	Binh Dinh province, Hoai An district, An Duc commune, Vinh Hoa village
2	T	BDI-HA-ÂĐ-840	Nguyễn Thị Thu Thức	Binh Dinh province, Hoai An district, An Duc commune,Gia Duc village
3	T	BDI-HA-ÂĐ-841	Trần Minh Lẽ	Binh Dinh province, Hoai An district, An Duc commune,Gia Duc village
4	T	BDI-HA-ÂĐ-835	Nguyễn Thị Thuý	Binh Dinh province, Hoai An district, An Duc commune,Gia Tri village
5	T	BDI-HA-ÂN-837	Nguyễn Hùng	Binh Dinh province, Hoai An district, An Nghia commune, Binh Son village
6	T	BDI-HA-ÂN-842	Nguyễn Trọng Vinh	Binh Dinh province, Hoai An district, An Nghia commune, Nhon Son village
7	T	BDI-HA-ÂTT-852	Trần Thị Thắm	Binh Dinh province, Hoai An district, An Tuong Tay commune, Tan Thanh village
8	T	BDI-HA-ÂTT-853	Nguyễn Nông	Binh Dinh province, Hoai An district, An Tuong Tay commune, Phu Khuong village
9	T	BDI-HA-ÂTT-854	Nguyễn Thị Lẹ	Binh Dinh province, Hoai An district,

No.	MoI[1]	Plant Code	Household Name	Location (Province, District, Commune, Village)
				An Tuong Tay commune, Ha Tay village
10	T	BDI-HA-ÂTT-855	Hoàng Thị Kim Liên	Binh Dinh province, Hoai An district, An Tuong Tay commune, Tan Thinh village
11	T	BTR-BĐ-LĐ-16	Trần Văn Ơn	Ben Tre province, Binh Dai district, Long Dinh commune, Long Quoi village
12	T	BTR-BĐ-LH-14	Phùng Thị Ngọc Duyên	Ben Tre province, Binh Dai district, Long Hoa commune, Long Thanh village
13	T	BTR-BĐ-PT-08	Trần Dũng Sĩ	Ben Tre province, Binh Dai district, Phu Thuan commune, Phu Long village
14	T	BTR-BĐ-PT-03	Lê Văn Lực	Ben Tre province, Binh Dai district, Phu Thuan commune, Phu Thanh village
15	T	BTR-BĐ-PT-23	Đặng Hoàng Phong	Ben Tre province, Binh Dai district, Phu Thuan commune, Phu Long village
16	T	BTR-BĐ-PT19	Châu Văn Hường	Ben Tre province, Binh Dai district, Phu Thuan commune, Phu Thanh village
17	T	TGI-CT-HĐ-646	Nguyễn Văn Phương	Tien Giang province, Chau Thanh district, Huu Dao commune, Huu Hoa village
18	T	TGI-CT-HĐ-653	Nguyễn Hữu Phước	Tien Giang province, Chau Thanh district, Huu Dao commune, Huu Binh village
19	T	TGI-CG-BN-849	Trương Văn Đảnh	Tien Giang province, Cho Gao district, Binh Ninh commune, Hoa My village
20	T	TGI-CG-BN-927	Văn Thị Vàng	Tien Giang province, Cho Gao district, Binh Ninh commune, Hoa Loi Tieu village
21	T	TGI-CG-BP-881	Nguyễn Thị Ngọc Nhiên	Tien Giang province, Cho Gao district, Binh Phan commune, Binh Tho Thuong village

No.	MoI[1]	Plant Code	Household Name	Location (Province, District, Commune, Village)
22	T	DNA-NT-PĐ-018	Chiêm Đức Phương	Dong Nai province, Nhon Trach district, Phu Dong commune, Ben Dinh village
23	T	DNA-NT-PA-002	Phạm Văn Chung	Dong Nai province, Nhon Trach district, Phuoc An commune, Quoi Thanh village
24	T	DNA-NT-VT-014	Nguyễn Ngọc Phúc	Dong Nai province, Nhon Trach district, Vinh Thanh commune, Hoa Binh village
25	T	DNA-NT-VT-042	Nguyễn Đình Trung	Dong Nai province, Nhon Trach district, Vinh Thanh commune, Hoa Binh village
26	T	TGI-GD-PĐ-041	Trần Văn Quảng	Dong Nai province, Nhon Trach district, Phu Dong commune, Ben Dinh village
27	T	AGI-CP-KH-98	Hà Văn Ửng	An Giang province, Chau Phu district, Khanh Hoa commune, Khanh Thuan village
28	T	AGI-PT-PB-110	Tô Hồng Hà	An Giang province, Phu Tan district, Phu Binh commune, Binh Tay 1 village
29	T	AGI-TC-TA-36	Bùi Văn Dũng	An Giang province, Tan Chau district, Tan An commune, Tan Hoa B village
30	T	AGI-CP-MP-221	Trần Quốc Chí	An Giang province, Chau Phu district, My Phu commune, My An village
31	T	AGI-CP-OLV-137	Cao Văn Tâm	An Giang province, Chau Phu district, O Long Vi commune, Long Thien village
32	T	QNG-NH-TCC-000769	Nguyễn Nguyên	Quang Ngai province, Nghia Hanh district, Cho Chua town, Phu Binh Trung village
33	T	QNG-NH-TCC-000767	Bùi Thị Kim Loan	Quang Ngai province, Nghia Hanh district, Cho Chua town, Phu Binh Dong village
34	T	QNG-NH-TCC-000777	Huỳnh Văn Thường	Quang Ngai province, Nghia Hanh district, Hanh Dung commune, An Tan village

No.	MoI[1]	Plant Code	Household Name	Location (Province, District, Commune, Village)
35	T	QNG-NH-TCC-000783	Ngô Thượng Nghĩa	Quang Ngai province, Nghia Hanh district, Hanh Phuoc commune, Hoa Tho village
36	T	QNG-NH-TCC-000786	Nguyễn Văn Bé	Quang Ngai province, Nghia Hanh district, Hanh Phuoc commune, Hoa Vinh village
37	T	TNG-DH-BC-726	Mông Văn Em	Thai Nguyen province, Dinh Hoa district, Bao Cuong commune, Na Linh village
38	T	TNG-DT-KP-515	Trần Văn Long	Thai Nguyen province, Dai Tu district, Ky Phu commune, Xom Ca village
39	T	TNG-PB-NL-900	Dương Văn Tâm	Thai Nguyen province, Phu Binh district, Nha Long commune, Mit village
40	T	TNG-PB-TH-952	Nguyễn Văn Hường	Thai Nguyen province, Phu Binh district, Tan Hoa commune, U village
41	T	TNG-PB-TH-649	Phạm Văn Phượng	Thai Nguyen province, Phu Binh district, Tan Hoa commune, Gian village
42	T	THO-TG-CS-355	Trần Văn Hải	Thanh Hoa province, Tinh Gia district, Cac Son commune, Que Son village
43	T	THO-TG-CS-331	Hồ Văn Đông	Thanh Hoa province, Tinh Gia district, Cac Son commune, Que Son village
44	T	THO-TG-CS-387	Trần Thị Hằng	Thanh Hoa province, Tinh Gia district, Cac Son commune, Lam Son village
45	T	THO-TH-TT-882	Nguyễn Văn Thanh	Thanh Hoa province, Thieu Hoa district, Thieu Thanh commune, Thanh Thuong village
46	T	THO-TH-TT-910	Nguyễn Văn Động	Thanh Hoa province, Thieu Hoa district, Thieu Thanh commune, Thanh Bao village
47	T	THO-TH-TT-912	Ngô Văn Trung	Thanh Hoa province, Thieu Hoa district, Thieu Thanh commune, Thanh Tien village
48	T	THO-TH-TT-883	Nguyễn Văn Bút	Thanh Hoa province, Thieu Hoa district, Thieu Thanh commune, Thanh

No.	MoI[1]	Plant Code	Household Name	Location (Province, District, Commune, Village)
				Thuong village
49	T	THO-TH-TT-884	Nguyễn Văn Định	Thanh Hoa province, Thieu Hoa district, Thieu Thanh commune, Thanh Thuong village
50	T	THO-TH-TT-886	Trịnh Xuân Tôn	Thanh Hoa province, Thieu Hoa district, Thieu Thanh commune, Thanh Giang village

1) Means of Interview: (**T**elephone, **E**-Mail, **V**isit)

ANNEX

A1: Verification Protocol

A2: Statements of Competence of involved Personnel

ANNEX 1: VERIFICATION PROTOCOL

Table A-1: GHG calculation procedures and management control testing / detailed audit testing of residual risk areas and random testing

Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks	Additional verification testing	Conclusions and Areas Requiring Improvement (including *Forward Action Requests*)
Raw data generation				
• Installation of measuring equipment • Dysfunction of installed equipment • Maloperation by operational personnel • Downtimes of equipment • Exchange of equipment • Change of measurement equipment characteristic • Insufficient accuracy • Change of technology • Accuracy of values	• Installation of modern and state of the art equipment • Process control automation • Internal data review • Regular visual inspect-ions of installed equip-ment • Only skilled and trained personnel operates the relevant equipment • Daily raw data checks • Immediate exchange of dysfunctional equipment • Stand-by duty is organized	• Inadequate installation / operation of the monitoring equipment • Inadequate exchange of equipment • Change of personnel • Undetected measurement errors • Inappropriateness of Management system procedures w.r.t. monitoring plan requirements (e.g. substitute value strategies) • Non-application of management system procedures • Insufficient accuracy • Inappropriate QA/QC	• Site – visit • Check of equipment • Check of technical data sheets • Check of suppliers information / guarantees • Check of calibration records, if applicable • Check of maintenance records • Counter-check of raw data and commercial data • Check of CDM management system • Check of CDM related procedures	• **See Table A-2**

Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks	Additional verification testing	Conclusions and Areas Requiring Improvement (including *Forward Action Requests*)
supplied by Third Parties	• Training • Internal audit procedures • Internal check of QA/QC measures of involved Third Parties	measures of Third Parties	• Application of CDM management system procedures • Check of trainings • Check of responsibilities • Check of QA/QC documentation / evidences of involved Third Parties	
Raw data collection and data aggregation				
• Wrong data transfer from raw data to daily and monthly aggregated reporting forms • IT Systems • Spread sheet programming • Manual data transmission • Data protection • Responsibilities	• Cross-check of data • Plausibility checks of various parameters. • Appropriate archiving system • Clear allocation of responsibilities • Application of CDM Management system procedures • Usage of standard software solutions	• Unintended usage of old data that has been revised • Incomplete documentation • Ex-post corrections of records • Ambiguous sources of information • Non-application of management system procedures • Manual data transfer mistakes	• Check of data aggregation steps • Counter-calculation • Data integrity checks by means of graphical data analysis and calculation of specific performance figures • Check of management system certification • Check of data archiving system	• **See Table A-2**

Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks	Additional verification testing	Conclusions and Areas Requiring Improvement (including *Forward Action Requests*)
	(Spreadsheets) • Limited access to IT systems • Data protection procedures	• Unintended change of spread sheet programming or data base entries • Problems caused by updating/upgrading or change of applied software	• Check of application of Management system procedures	
Other calculation parameters				
• Emission factors, oxidation factors, coefficients	• The values and data sources applied are defined in the PDD and monitoring plan	• Unintended or intended Modification of calculation parameters • Wrong application of values • Misinterpretations of the applied methodology and/ or the PDD • Missing update of applicable regulatory framework (e.g. IPCC values)	• Update-check of regulatory framework • Countercheck of the applied MP in the MR against the methodology and the PDD	• **See Table A-2**
Calculation Methods				

Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks	Additional verification testing	Conclusions and Areas Requiring Improvement (including *Forward Action Requests*)
• Applied formulae • Miscalculation • Mistakes in spread-sheet calculation	• Advanced calculation and reporting tools • A CDM coordinator is in charge of the CDM related calculations • Usage of tested / counterchecked Excel spreadsheets • Involvement of external consultants	• The danger of miscal-culation can only be minimized.	• Countercheck on the basis of own calculation. • Spread sheet walk-trough. • Plausibility checks • Check of plots	• **See Table A-2**
Monitoring reporting				
• Data transfer to the author of the monitoring report • Data transfer to the monitoring report • Unintended use of outdated versions	• An experienced CDM consultant is responsible for monitoring reporting. • CDM QMS procedures are defined	• The danger of data transfer mistakes can only be minimized • Inappropriate application of QMS procedures	• Counter check with evidences provided. • Audit of procedure application	• **See Table A-2**

Table A-2: (Project specific) Periodic Verification Checklist

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
A. Description of the project activity				
***A.1.* Purpose and general description of the project activity** *Check if the MR includes the following:* - *Purpose of the PA and the measures taken to reduce GHG emissions* - *Brief description of the installed technology and equipment* - *Relevant dates for the project activity (e.g. construction, commissioning, continued operation periods etc.)* - *Total emission reductions achieved in this monitoring period*	/MR/	The verification team has checked section the MR and confirms that the information provided is complete and correct with regards to the following: ☒ Purpose of the PA and the measures taken to reduce GHG emissions ☒ Brief description of the installed technology and equipment ☐ Relevant dates for the project activity (e.g. construction, commissioning, continued operation periods etc ☐ Total emission reductions achieved in this monitoring period In this context the following findings have been identified: Refer CAR A2 raised.	~~CAR A2~~	OK
***A.2.* Location of project activity** *Check if the MR reflects correctly the following:* - *Host Party(ies)* - *Region / State / Province etc.* - *City / Town / Community etc.* - *Physical / geographical location (e.g. Latitude and Longitude)*	/MR/ /PDD/ /IM01/	The verification team has checked the MR and confirms by means of comparison with the information given in the PDD and information gathered during the site visit that the information provided is complete and correct with regards to the following: ☒ Host Party(ies) ☐ Region / State / Province ☐ City / Town / Community	~~CAR A3~~	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
		☐ Physical / Geographical location In this context no findings have been identified: Refer CAR A3 raised.		
A.3. **Parties and Project Participants** *Check if the MR includes all PPs:* - *All PPs as displayed on the GS website*	/MR/ /gs/	The verification team has checked the MR as well as the GS website and confirms that: ☒ all PPs as displayed on the project related GS website are correctly listed In this context no findings have been identified:	OK	OK
A.4. **Reference of applied methodology** *Check if the MR correctly describes / includes the following:* - *Reference to the applicable version of the methodology* - *Reference to the applicable version(s) of relevant methodological tools*	/MR/ /PDD/ /gs/	The verification team has checked the MR and confirms by means of comparison with the information given in the PDD and displayed on the UNFCCC/ GS website that the information provided is complete and correct with regards to the following: ☐ Number, title and version of the applicable GSF Methodology ☒ Name and version of applicable GSF methodological tools In this context the following findings have been identified: Refer CAR A1 raised.	~~CAR A1~~	OK
A.5. **Crediting period of project activity** *Check if the MR correctly includes the following:* - *Start date of the crediting period.* - *Length and type of the crediting period*	/MR/ /gs/	The verification team has checked the MR and confirms by means of comparison with the information displayed on the GS website that the information provided is complete and correct with regards to the following: ☒ Start date of the crediting period.	OK	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
		☒ Type and length of the crediting period In this context no findings have been identified:		
A.6. **Publication of the Verification Work Plan and monitoring report**	/gs/	The verification work plan has been uploaded to the GS Registry on 2014-10-27.	OK	OK
B. Implementation of project activity				
B.1. **Description of implemented registered project activity** *Check if the MR correctly describes / includes the following:* - *Implementation status of the PA* - *Detailed description of installed technology(ies) / technical processes and equipment applied*	/MR/ /PDD/ /GSP/ /IM01/	The verification team has checked the MR and confirms by means of comparison with the information given in the PDD and the GS Passport[/GSP/], the project standard and information gathered during the site visit that: ☐ the description of the implementation status of the PA is in line with the applicable provisions of the Gold Standard Requirements and Toolkit ☐ an appropriate description of the installed technology(ies), technical process and equipment has been included In this context no findings have been identified: Refer CAR B1 and CL B2 raised.	~~CAR B1~~ ~~CL B2~~	OK OK
B.1.1. Initial project implementation *Assess whether the project has been implemented and operated as per the registered PDD and are all physical features of the project in place?* *Further focus on the potential phase wise implementation and check the reporting on the*	/MR/ /PDD/ /IM01/	The verification team has checked the implemented project activity and the MR and confirms by means of comparison with the information given in the PDD, the applicable Gold Standard Requirements and Toolkit and information gathered during the site visit that: ☒ the project has been implemented and operated as per the registered PDD and the GS Passport and all physical	OK	OK

Checklist Item (incl. guidance for the verification team)	Refe-rence	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
corresponding status and starting dates accordingly. *Check if the project is still in compliance with the applicability conditions of the methodology.*		features of the project are in place ☒ the project has been implemented phase wise and corresponding evidence has been provided ☒ the project is still in compliance with the applied methodology In this context no findings have been identified:		
B.1.2. Technical equipment changes *Check if relevant technical equipment of the project activity has been exchanged or modified during the monitoring period. Further ensure that consistent notations of key equipment (meters etc.) in PDD, MR and calculation spreadsheet are applied.* *Consider e.g. interviews with operational personnel, QMS records, maintenance records, instrument specifications.* *In case of changes, check whether the project is still in line with the registered PDD and assure that these changes have been considered in the monitoring report and the emission reduction calculation.*	/MR/ /PDD/ /GSP/ /GST/ /IM01/	The verification team has checked the implemented project activity and the MR and confirms by means of comparison with the information given in the PDD, the applicable Gold Standard Requirements and Toolkit and information gathered during the site visit and interviews that: ☒ no technical equipment has been exchanged or modified during the monitoring period ☒ the notations of key equipment are consistently applied in the project documentation In this context no findings have been identified:	OK	OK
B.1.3. Operation of the project activity *Check if relevant operation modes of the project activity have been exchanged or modified during the monitoring period.* *Consider e.g. interviews with operational personnel, operation log sheets, data management system*	/MR/ /GSP/ /GST/ /PDD/	The verification team has checked the implemented project activity and the MR and confirms by means of comparison with the information given in the PDD, the applicable Gold Standard Requirements and Toolkit and information gathered during the site visit and interviews that: ☒ no relevant operation modes of the project activity have been exchanged or modified during the monitoring period	OK	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
records. *In case of changes, check whether the project is still in line with the registered PDD and assure that these changes have been considered in the monitoring report and the emission reduction calculation.*		☒ the following changes have been adopted during the monitoring period, however the project is still in line with the registered PDD:		
B.1.4. Incidents *Identify if there have been any significant incidents, deviant operation modes and / or downtimes of the equipment?* *Consider e.g. interviews with operational personnel, operational log sheets, analysis of performance data.*	/MR/ /onsite/	The verification team has checked the implemented project activity and the MR and confirms by means of comparison with the information given in the PDD, the applicable Gold Standard Requirements and Toolkit and information gathered during the site visit and interviews that: ☒ no significant incidents, deviant operation modes and / or downtimes of the equipment happened during the monitoring period ☐ the following incidents, deviant operation modes and / or downtimes of the equipment happened during the monitoring period:	OK	OK
B.1.5. Legislation Find out – esp. in the context of methodological requirements - whether relevant legislation with effect on the project activity in the host country has been changed. Assess, in case of changes, whether consequences for the PA with regard to relevant GS requirements have been accounted for. In case of changes data sources shall be referenced.	/MR/ /IM01/	The verification team has checked the host country legislation and confirms by means of comparison with the implemented project that: ☒ no relevant legislation with effect on the project activity in the host country has been changed In this context no findings have been identified.	OK	OK

Checklist Item (incl. guidance for the verification team)	Refe-rence	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
B.1.6. Open issues from GS validation *Check (esp. in case of 1st periodic verification) whether there are any open issues indicated in the validation report (e.g. FAR)?*	/VAL/	☐ There were no open issues addressed in the validation report ☒ All open issues from the validation have been appropriately addressed. ☐ The following issues related to the validation have not yet been appropriately addressed:	OK	OK
B.1.7. Open issues from previous verification *Check in case of further periodic verifications whether there are any open issues indicated in previous verification reports (FAR).*	/VER/ /GSR/	☐ There were no open issues addressed in the previous verification report ☐ All open issues from the previous verification have been appropriately addressed. ☒ The following issues related to the previous verification have not yet been appropriately addressed: Refer CL B3 raised.	~~CL B3~~	OK
C. Description of monitoring system				
***C.1.* Monitoring Plan – PDD and GS Passport Compliance** *Check if the monitoring plan is in accordance with the monitoring plan contained in the registered GS PDD (or any accepted revised MP).* *Please check esp. if* - *all parameters stated in the MP of the registered PDD have been monitored and updated as applicable* - *the monitoring equipment has been controlled*	/MR/ /PDD/ /GSP/	By means of comparison of the MR with the registered GS PDD (or any revisions thereof) the verification team has checked whether the MP is in compliance with the registered GS PDD and GS Passport. The outcome is as follows: ☒ The MP is completely in accordance with the last registered/approved version of the PDD / MP / GS Passport. In this context no findings have been identified:	OK	OK

<table>
<tr><th>Checklist Item
(incl. guidance for the verification team)</th><th>Refe-rence</th><th>Verification Team Comments
(Means and results of assessment)</th><th>Draft Concl.</th><th>Final Concl.</th></tr>
<tr><td>and calibrated as per the MP
- the monitoring results are consistently recorded as per the approved frequency
- QA/QC procedures have been applied in accordance with the MP</td><td></td><td></td><td></td><td></td></tr>
<tr><td>C.2. Monitoring Plan – Meth Compliance
Check if the monitoring plan is in accordance with the applied methodology.
In case the methodology references applicable tools it has to be ensured that the MP is also compliant with those tools.
Also please specify if monitoring aspects have been identified that are not specified in the methodology but may enhance the level of accuracy and completeness of the monitoring plan – this esp. applies for SSC PAs.</td><td>/MR/
/PDD/
/GST/
/AT/
/PLEAD/</td><td>By means of comparison of the MR with the applied Gold Standard methodology and related tools the verification team has checked whether the MP is in compliance with the MP related requirements of the applied methodology. The outcome is as follows:
☒ The MP is completely in accordance with the applied methodology by the GS project (last registered/approved version of the GS PDD)
☐ The MP is completely in accordance with the applied tools which the methodology references. A breakdown of the referenced tools is as follows:
<table>
<tr><td>1</td><td>Title (of the tool)</td><td>Gold Standard Toolkit</td></tr>
<tr><td></td><td>Version</td><td>2.1</td></tr>
<tr><td></td><td>MP compliance</td><td>☒ full compliance
☐ findings have been raised
☐ N/A (for MP)</td></tr>
<tr><td>2</td><td>Title (of the tool)</td><td>Tool for the demonstration and assessment of additionality</td></tr>
</table></td><td>OK</td><td>OK</td></tr>
</table>

Checklist Item (incl. guidance for the verification team)	Refe-rence	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		<table><tr><td></td><td>Version</td><td>6.1</td></tr><tr><td></td><td>MP compliance</td><td>☐ full compliance ☐ findings have been raised ☒ N/A (for MP)</td></tr><tr><td>3</td><td>Title (of the tool)</td><td>Tool Project and leakage emissions from anaerobic digesters</td></tr><tr><td></td><td>Version</td><td>01.0.0</td></tr><tr><td></td><td>MP compliance</td><td>☒ full compliance ☐ findings have been raised ☐ N/A (for MP)</td></tr></table> In this context no findings have been identified:		
C.3. **Management System** *Check if the GHG data monitoring system can be assessed as appropriate.* *In case reference is made to a (certified) company quality management system, check if all GHG related monitoring procedures have been fully integrated in the project participant's quality management system.* *In case of a stand-alone system, check how the GHG management system has been implemented and effectiveness is ensured.*	/MR/ /GSP/ /PDD/	*Description:* The monitoring system is described in Section C of the MR including monitoring and survey methods applied. 1. Quality control measures 2. Carbon monitoring survey 3. Usage survey A project database which is established and managed by the project management unit office in Hanoi. *Verifier´s action:* The project database, survey procedures and forms have been	~~CAR C1~~	OK

Checklist Item (incl. guidance for the verification team)	Refe-rence	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		reviewed by the verification team. The verification team as interviewed relevant district and provincial technicians to confirm the quality control and monitoring procedures are implemented appropriately. *Conclusion:* The management system was set up as a stand-alone system to monitor the biogas program. Refer CAR C1 raised		
***C.4.* Roles and Responsibilities** *Check if all roles and positions of each person in the GHG data management process are clearly defined and implemented as stated in the monitoring plan. Please consider the complete data trail from raw data generation to submission of the final data.* *In case of changes, assure that the implemented monitoring procedures have not been affected.*	/MR/ /PDD/	*Description:* Section C, described the monitoring system which includes monitoring methods applied for: 1. Quality control measures 2. Carbon monitoring survey 3. Usage survey *Verifier´s action:* Section C of MR was reviewed and the roles and responsibilities are not defined. *Conclusion:* Refer CAR C2 raised	~~CAR C2~~	OK
***C.5.* Emergency procedures for the monitoring system** *Check, as appropriate, whether relevant emergency procedures for the monitoring system have been included in the MR and assess whether these*	/MR/ /PDD/ /IM01//IM02/	*Description:* There is no information about how emergency procedures are implemented in the MR. *Verifier´s action:*	~~CAR C1~~	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
procedures have been implemented, when required	/IM03/	The verification team has interviewed the representatives of Nexu-Carbon for Development, SNV Vietnam and Biogas Project Management Unit in visited provinces on how the emergency procedures are implemented for the program. There is no information about how emergency procedures are implemented in the MR. *Conclusion:* Refer CAR C1 raised.		
C.6. **Data archive and data protection** *Check whether all records of monitoring parameters are archived according to the monitoring plan.* *Assess further whether appropriate measures have been taken in order to avoid unintended or intended manipulation or loss of the measured data.*	/MR/ /PDD/ /IM01/	*Description:* There is no information about how data archiving and data protection in the MR. *Verifier´s action:* There is no information about how data archiving and data protection in the MR. *Conclusion:* Refer CAR C1 raised.	~~CAR C1~~	OK
D. Data and parameters				
D.1. **Data and Parameters fixed ex ante and ex post**				
D.1.1. Compliance with registered PDD and the applied methodology (ex-ante) *Check whether the value applied is in compliance with the registered PDD and the applied methodology*	/MR/ /PDD/	By means of comparison of the MR with the registered PDD (or any revisions thereof) the verification team confirms that: ☐ all ex ante data and parameters are in compliance with the registered PDD and the applied methodology or any	~~CAR D1~~ ~~CAR D2~~	OK OK

Checklist Item (incl. guidance for the verification team)	Refe-rence	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
or any other tool.		other tool. In this context the following findings have been identified: Refer CAR D1 and CAR D2 raised.		
D.1.2. Compliance with registered PDD and the applied methodology (ex post) *Check whether the value applied is in compliance with the registered PDD and the applied methodology or any other tool.*	/MR/ /PDD/	By means of comparison of the MR with the registered PDD (or any revisions thereof) the verification team confirms that: ☐ all ex post and parameters are in compliance with the registered PDD and the applied methodology or any other tool. In this context the following findings have been identified: Refer CAR D3 raised.	~~CAR D3~~	OK
***D.2.* Data and Parameters monitored for ER**				
D.2.1. $f_{NRB,y}$		**Fraction of non-renewability**		
a) Measurement / Determination method *Describe how the monitoring parameter was measured / determined.* *Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.* *Assess whether the measurement / determination method is in line with the registered monitoring plan and the applied methodology.*	/MR/ /PDD/ /ER/	*Description:* The data is a fixed value from the baseline study for each crediting period. For this crediting period the fraction for non-renewability for woody biomass is 67%. The data is applied to calculate the portion of project CO_2 emission from the biomass fuel consumption in the baseline scenario. *Verifier´s action:* The data was from the baseline study for each crediting period and fixed for the first crediting period as reported in the GS	OK	OK

Checklist Item (incl. guidance for the verification team)	Refe-rence	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		registered PDD annex 3 was reviewed. The data in the ER spreadsheet was verified. *Conclusion:* The parameter is monitored in accordance to the GS registered PDD.		
b) Accuracy and QA/QC Procedure *In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.* *Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out by competent personnel.*	/MR/ /PDD/ /ER/ /IM01/ /IM03/	*Description:* The fraction applied is derived from the baseline study. No instruments used to measure the data *Verifier´s action:* The value applied is cross-checked with GS registered PDD and is correctly applied in ER calculation. QA/QC procedure is implemented. Project personnel and consultants were interviewed. *Conclusion:* The data applied is consistent with the baseline study data.	OK	OK
c) Correctness *Determine whether the value given in the sustainability monitoring report is correct or determined in a conservative manner.* *In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.*	/MR/ /ER/ /PDD/	☒ Correct ☐ Not correct (initial assessment) *Description:* The value applied is taken from the baseline study data reported in Annex 3 of GS registered PDD. *Verifier´s action:* The data applied in ER calculations is cross-checked with GS registered PDD for correctness.	OK	OK

Checklist Item (incl. guidance for the verification team)	Refe-rence	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.		*Conclusion:* The value applied is applied correctly in the ER calculations..		
D.2.2. $P_{p,y}$		**Quantity of fuel that is consumed in the baseline scenario in year y**		
a) Measurement / Determination method *Describe how the monitoring parameter was measured / determined.* *Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.* *Assess whether the measurement / determination method is in line with the registered monitoring plan and the applied methodology.*	/MR/ /ER/ /PDD/ /GSM/ /SDB1/	*Description:* The data is based on the baseline study for quantity of fuel consumed in the baseline scenario. According to the applied methodology, a survey for this parameter data will be conducted at least once every 2 years or more frequently. The data applied for this monitoring period is based on the KPT monitoring survey results conducted from January to April 2014. The data is applied for calculating project emission from fuel used during project scenario. *Verifier´s action:* The KPT survey result data was verified. The data in the ER spreadsheet was checked and applied correctly for PE calculations. *Conclusion:* The parameter is monitored in accordance to the GS registered PDD.	OK	OK
b) Accuracy and QA/QC Procedure	/MR/	*Description:*	OK	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs. *Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out by competent personnel.*	/ER/ /SDB1/ /C1/ /O1/ /IM01/ /IM03/	The data applied was based on the KPT survey results conducted from January to April 2014. The usage of firewood is measured by a calibrated weighing scale. *Verifier´s action:* The data applied in the ER calculation was cross-checked with survey results conducted for consistency. QA/QC procedure is implemented. Project personnel and consultants were interviewed. Calibration report for the weighing scale is verified and valid for the monitoring period. *Conclusion:* It can be concluded, the data applied is correct.		
c) Correctness *Determine whether the value given in the sustainability monitoring report is correct or determined in a conservative manner.* *In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.* *In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.*	/MR/ /ER/ /SDB1/	☒ Correct ☐ Not correct (initial assessment) *Description:* The data applied as based on the KPT survey results conducted from January to April 2014. *Verifier´s action:* The data applied in the ER calculation was cross-checked against the survey results for correctness. *Conclusion:* The data applied is considered as correct.	OK	OK
D.2.3. $P_{h,y}$		**Quantity of fuel that is consumed in the project scenario in**		

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
		year y		
a) Measurement / Determination method *Describe how the monitoring parameter was measured / determined.* *Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.* *Assess whether the measurement / determination method is in line with the registered monitoring plan and the applied methodology.*	/MR/ /ER/ /PDD/ /GSM/ /SDB1/	*Description:* The data applied for this monitoring period is based on the KPT monitoring survey conducted from January to April 2014 for the quantity of fuel consumed by the households in the monitoring period. According to the applied methodology, a survey for this parameter data will be conducted at least once every 2 years or more frequently. The data is applied to determine project emission for fuel use in the project scenario. *Verifier´s action:* The KPT survey results are verified. The data in the ER spreadsheet was checked and applied correctly for PE calculations. *Conclusion:* The parameter is monitored in accordance to the GS registered PDD..	OK	OK
b) Accuracy and QA/QC Procedure *In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have*	/MR/ /ER/ /SDB1/ /C1/ /O1/	*Description:* The data applied was based on the KPT survey results conducted from January to April 2014. The usage of firewood is measured by a calibrated weighing scale. *Verifier´s action:*	OK	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
been made for calculating ERs. *Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out by competent personnel.*	/IM01/ /IM03/	The data applied in the ER calculation was cross-checked with survey results conducted and found to be consistent. QA/QC procedure is implemented. Project personnel and consultants were interviewed. Calibration report for the weighing scale is verified and valid for the monitoring period. *Conclusion:* It can be concluded, the data applied is correct.		
c) Correctness *Determine whether the value given in the sustainability monitoring report is correct or determined in a conservative manner.* *In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.* *In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.*	/MR/ /PDD/ /ER/ /SDB1/	☒ Correct ☐ Not correct (initial assessment) *Description:* The data applied as based on the KPT survey conducted from January to April 2014. *Verifier´s action:* The data applied in the ER calculation was cross-checked against the survey results for correctness. *Conclusion:* The data applied is considered as correct.	OK	OK
D.2.4. $U_{p,y}$		**Percentage of bio-digesters in use in monitoring period y**		
a) Measurement / Determination method *Describe how the monitoring parameter was measured / determined.* *Check if relevant equipment has been exchanged*	/MR/ /PDD/ /ER/ /SDB2/	*Description:* The data is is calculated using the usage survey results conducted from January to April 2014. The cumulative total number of bio-digesters installed as at	OK	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements. *Assess whether the measurement / determination method is in line with the registered monitoring plan and the applied methodology.*	/F1/	2013-06-30 for this current monitoring period is 106,171 units. The number of bio-digesters remains in operation for this monitoring period is 90,589 units. Therefore, the rate of bio-digesters in operation for this monitoring period was 90.134%. The effective usage rate applied in the ER calculations is 85.32%. *Verifier´s action:* The data was cross-checked with the usage survey results to confirm that the data applied to calculate the usage rate in operation. The data applied in ER calculation is cross-checked to verify the results of the number of units in operation. *Conclusion:* The parameter is monitored in accordance to the GS registered PDD.		
b) Accuracy and QA/QC Procedure *In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.* *Describe whether all applicable QA/QC procedures*	/MR/ /PDD/ /ER/ /SDB2/ /IM01/ /IM03/	*Description:* The data applied is calculated using the usage survey results conducted from January to April 2014. No instrument is used to measure this data. *Verifier´s action:* The data applied in the ER calculation was cross-checked with survey results conducted for consistency. QA/QC procedure is implemented. Project personnel and	OK	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
are met. Assess further if the calibration of the monitoring equipment has been carried out by competent personnel.		consultants were interviewed. *Conclusion:* The data applied is correct.		
c) Correctness *Determine whether the value given in the sustainability monitoring report is correct or determined in a conservative manner.* *In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.* *In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.*	/MR/ /SDB2/ /ER/	☒ Correct ☐ Not correct (initial assessment) *Description:* The data is calculated using the usage survey results conducted from January to April 2014. *Verifier´s action:* The data applied in the ER calculation was cross-checked against the survey results for correctness. *Conclusion:* The data applied is considered as correct.	OK	OK
D.2.5. $N_{p,y}$		**Number of biogas plants commissioned**		
a) Measurement / Determination method *Describe how the monitoring parameter was measured / determined.* *Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.* *Assess whether the measurement / determination method is in line with the registered monitoring plan*	/MR/ /PDD/ /ER/	*Description:* The total accumulative number of biogas plants commissioned until the end of this monitoring period as at 2013-06-30 was 106,171 units based on the project program database. The newly commissioned units for this monitoring period from 2012-01-01 to 2013-06-30 were 17,118s. *Verifier´s action:* The data was cross-checked with the database for the number of units commissioned as at 2013-06-30 and number of newly units commissioned during this MP.	OK	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
and the applied methodology.		The ER spreadsheet was checked to verify the number of units stated is according to the database. *Conclusion:* The parameter is monitored in accordance to the GS registered PDD.		
b) Accuracy and QA/QC Procedure *In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.* *Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out by competent personnel.*	/MR/ /PDD/ /ER/ /O1/ /IM01/ /IM03/	*Description:* The data was based on the number of units commissioned as at 2013-06-30. No instrument is used to measure the data. *Verifier´s action:* The data applied in the ER spreadsheet was cross-checked with the database. QA/QC procedure is implemented. Project personnel and consultants were interviewed. *Conclusion:* The data applied is correct.	OK	OK
c) Correctness *Determine whether the value given in the sustainability monitoring report is correct or determined in a conservative manner.* *In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should*	/MR/ /ER/	☒ Correct ☐ Not correct (initial assessment) *Description:* The data is based on the total number of units commissioned as at 2013-06-30. *Verifier´s action:* The data in the ER spreadsheet was verified with the database for correctness.	OK	OK

Checklist Item (incl. guidance for the verification team)	Refe-rence	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
be given. *In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.*		*Conclusion:* The data applied is correct.		
D.2.6. $MS_{(T,S,k)}$		**Fraction of livestock category T's manure fed into the bio-digester S, in climate zone k**		
a) Measurement / Determination method *Describe how the monitoring parameter was measured / determined.* *Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.* *Assess whether the measurement / determination method is in line with the registered monitoring plan and the applied methodology.*	/MR/ /PDD/ /ER/ /SDB1/	*Description:* The fraction of manure fed in the biodigesters for the respective animal category is based on the CMS survey results conducted from January to April 2014. *Verifier´s action:* The CMS survey results were verified. The data applied in the ER spreadsheet was cross-checked with the CMS survey results for the temperate and warm zones. *Conclusion:* The parameter is monitored in accordance to the GS registered PDD.	OK	OK
b) Accuracy and QA/QC Procedure *In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.*	/MR/ /ER/ /SDB1/ /O1/ /IM01/ /IM03/	*Description:* The data applied is based on the CMS survey results conducted from January to April 2014. No instrument is used to measure the data. *Verifier´s action:* The data applied in the ER calculation was cross-checked with survey results conducted and found to be consistent.	OK	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out by competent personnel.		QA/QC procedure is implemented. Project personnel and consultants were interviewed. *Conclusion:* The data applied is correct.		
c) Correctness *Determine whether the value given in the sustainability monitoring report is correct or determined in a conservative manner.* *In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.* *In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.*	/MR/ /PDD/ /ER/ /SDB1/	☒ Correct ☐ Not correct (initial assessment) *Description:* The data is based the CMS survey results. *Verifier´s action:* The data applied in the ER calculation was cross-checked against the survey results for correctness. *Conclusion:* The data applied is considered correct.	OK	OK
D.2.7. $MS_{(P,S,k)}$		**Fraction of livestock category *T*'s manure not fed into the bio-digester *S*, in climate zone *k***		
a) Measurement / Determination method *Describe how the monitoring parameter was measured / determined.* *Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.*	/MR/ /PDD/ /ER/ /SDB1/	*Description:* The fraction of manure not fed in the biodigesters is based on the CMS survey results conducted from January to April 2014: *Verifier´s action:* The CMS survey results are verified. The data applied in the ER spreadsheet was cross-checked with the CMS survey results for the temperate and warm zones.	OK	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
Assess whether the measurement / determination method is in line with the registered monitoring plan and the applied methodology.		*Conclusion:* The parameter is monitored in accordance to the GS registered PDD.		
b) Accuracy and QA/QC Procedure *In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.* *Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out by competent personnel.*	/MR/ /PDD/ /ER/ /SDB1/ /O1/ /IM01/ /IM03/	*Description:* The data applied was based on the CMS survey results conducted from January to April 2014. No instrument is used to measure the data. *Verifier´s action:* The data applied in the ER calculation was cross-checked with survey results conducted and found to be consistent. QA/QC procedure is implemented. Project personnel and consultants were interviewed. *Conclusion:* The data applied is correct.	OK	OK
c) Correctness *Determine whether the value given in the sustainability monitoring report is correct or determined in a conservative manner.* *In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.* *In case of mistakes / deviations pl. provide details*	/MR/ /PDD/ /ER/ /SDB1/	☒ Correct ☐ Not correct (initial assessment) *Description:* The data is derived from the CMS survey results. *Verifier´s action:* The data applied in the ER calculation was cross-checked against the survey results for correctness. *Conclusion:* The data applied is considered correct.	OK	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
and descriptions of the CARs raised.				
D.2.8. N(T)		**Number of animals of livestock category T**		
a) Measurement / Determination method *Describe how the monitoring parameter was measured / determined.* *Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.* *Assess whether the measurement / determination method is in line with the registered monitoring plan and the applied methodology.*	/MR/ /PDD/ /ER/ /SDB1/	*Description:* The data is derived from the CMS survey results conducted from January to April 2014. *Verifier´s action:* The CMS survey results are verified. The data applied in the ER spreadsheet was cross-checked with the CMS survey results for the temperate and warm zones *Conclusion:* The parameter is monitored in accordance to the GS registered PDD.	OK	OK
b) Accuracy and QA/QC Procedure *In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.* *Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out by competent personnel.*	/MR/ /PDD/ /ER/ /SDB1/ /O1/ /IM01/ /IM03/	*Description:* The data applied is based on the CMS survey results conducted from January to April 2014. No instrument is used to measure the data. *Verifier´s action:* The data applied in the ER calculation was cross-checked with survey results conducted for consistency. QA/QC procedure is implemented. Project personnel and consultants were interviewed. *Conclusion:*	OK	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
		The data applied is correct.		
c) Correctness *Determine whether the value given in the sustainability monitoring report is correct or determined in a conservative manner.* *In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.* *In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.*	/MR/ /PDD/ /ER/ /SDB1/	☒ Correct ☐ Not correct (initial assessment) *Description:* The data has been calculated from the CMS survey results. *Verifier´s action:* The data applied in the ER calculation was cross-checked against the survey results for correctness. *Conclusion:* The data applied is considered correct.	OK	OK
D.2.9. PL		**Physical leakage of the bio-digester**		
a) Measurement / Determination method *Describe how the monitoring parameter was measured / determined.* *Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.* *Assess whether the measurement / determination method is in line with the registered monitoring plan and the applied methodology.*	/MR/ /PDD/ /ER/ /GSM	*Description:* The value applied is a default value from the applied methodology. *Verifier´s action:* The methodology is reviewed to cross-check on the default value. The data applied in the ER spreadsheet is verified as correct. *Conclusion:* The parameter is monitored in accordance to the GS registered PDD.	OK	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
b) Accuracy and QA/QC Procedure *In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.* *Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out by competent personnel.*	/MR/ /ER/ /GSM /IM01/ /IM03/	*Description:* The value applied is a default from the applied methodology. No instrument is used to measure the data *Verifier´s action:* The data in the ER spreadsheet was verified for consistency. QA/QC procedure is implemented. Project personnel and consultants were interviewed. *Conclusion:* The data applied is correct.	OK	OK
c) Correctness *Determine whether the value given in the sustainability monitoring report is correct or determined in a conservative manner.* *In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.* *In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.*	/MR/ /ER/ /GSM	☒ Correct ☐ Not correct (initial assessment) *Description:* The value applied is a default from the applied methodology. *Verifier´s action:* The data applied in the ER calculation was cross-checked for correctness. *Conclusion:* The value applied is considered correct.	OK	OK
D.2.10. $EF_{awms,T,}$		**Animal waste methane emission factor by average temperatures**		
a) Measurement / Determination method	/MR/	*Description:*	OK	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
Describe how the monitoring parameter was measured / determined. *Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.* *Assess whether the measurement / determination method is in line with the registered monitoring plan and the applied methodology.*	/PDD/ /ER/ /O5/ /ipcc/	The data applied is calculated using default data derived from 2006 IPCC volume 4 Guidelines for National Greenhouse Gas Inventories, chapter 10, tables 10A-4 to 10A-7 for Asia region and average annual temperature of the temperate and warm zones of the provinces. *Verifier´s action:* 2006 IPCC volume 4 Guidelines for National Greenhouse Gas Inventories, chapter 10, tables 10A-4 to 10A-7 were reviewed for the default data applied in the calculation. The annual average temperature of the provinces for both temperate and warm zones was cross-checked. http://www.vietnamtourism.com/e_pages/country/overview.asp The data applied in the ER spreadsheet was verified for both temperate and warm zones. *Conclusion:* The parameter is monitored in accordance to the GS registered PDD.		
b) Accuracy and QA/QC Procedure *In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.*	/MR/ /PDD/ /ER/ /ipcc/ /IM01/ /IM03/	*Description:* The data is calculated using 2006 IPCC default and local average temperature data No instrument is used to measure the data. No instrument is used. *Verifier´s action:* The data in the ER spreadsheet was verified and cross	OK	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out by competent personnel.		checked with 2006 IPCC default and local data applied in the calculation. QA/QC procedure is implemented. Project personnel and consultants were interviewed. *Conclusion:* The data is calculated correctly.		
c) Correctness *Determine whether the value given in the sustainability monitoring report is correct or determined in a conservative manner.* *In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.* *In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.*	/MR/ /PDD/ /ER/ /ipcc/	☒ Correct ☐ Not correct (initial assessment) *Description:* The data is calculated using 2006 IPCC default and local data. *Verifier´s action:* The data applied in the ER calculation was cross-checked for correctness. *Conclusion:* The data callculated is considered correct.	OK	OK
D.2.11. $PE_{bio-slurry}$		**Emissions from anaerobic disposal of bio-slurry**		
a) Measurement / Determination method *Describe how the monitoring parameter was measured / determined.* *Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the*	/MR/ /PDD/ /ER/ /SDB1/ /IM01/ /IM02/	*Description:* The data is calculated using the CMS survey multiplied with the number of installed bio-digester for both temperature and warm zones.. The data was derived from the CMS survey results conducted from January to April 2014. *Verifier´s action:*	~~CAR D3~~	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
frequency of measurements as per the requirements. *Assess whether the measurement / determination method is in line with the registered monitoring plan and the applied methodology.*	/LHH/	The CMS survey data was verified. The data applied in the ER spreadsheet was cross-checked with the CMS survey results for the temperate and warm zones *Conclusion:* The parameter is monitored in accordance to the GS registered PDD. Refer to CAR D3 raised.		
b) Accuracy and QA/QC Procedure *In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.* *Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out by competent personnel.*	/MR/ /ER/ /SDB1/ /O1/ /IM01/ /IM03/	*Description:* The data is calculated used data from CMS survey results conducted from January to April 2014. No instrument is used to measure the data. *Verifier´s action:* The data applied in the ER calculation was cross-checked with survey results conducted and found to be consistent. QA/QC procedure is implemented. Project personnel and consultants were interviewed *Conclusion:* The data applied is correct Refer CAR D3 raised.	~~CAR D3~~	OK
c) Correctness *Determine whether the value given in the sustainability monitoring report is correct or*	/MR/ /PDD/ /ER/	☒ Correct ☐ Not correct (initial assessment) *Description:* The data has been calculated using data from the CMS survey	~~CAR D3~~	OK

Checklist Item (incl. guidance for the verification team)	Refe-rence	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
determined in a conservative manner. *In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.* *In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.*	/SDB1/	results. *Verifier´s action:* The data applied in the ER calculation was cross-checked against the survey results for correctness. *Conclusion:* The data applied is considered correct.. Refer CAR D3 raised.		
***D.3.* Parameters monitored for Sustainability Development**				
D.3.1. No. 1 - Air quality		**Reduction in fuel (wood, agricultural residues, kerosene and coal) consumption (kg of fuel reduced/year)**		
a) Measurement / Determination method *Describe how the monitoring parameter was measured / determined.* *Assess whether the measurement / determination method is in line with the registered passport, applied toolkit and PDD. .*	/MR/ /ER/ /GSP/ /GST/ /onsite/ /SDB2/ /SI1/ /LHH/	*Description:* The chosen parameter for this indicator is the reduction of fuel consumption using firewood and agricultural residues. During this monitoring period, the reductions achieved as follows: Fuel | Baseline | MPII | Reduction Firewood | 1,920.6kg/y | 277.4kg/y | 1,643.3kg/y Agriculture residues | 685.6kg/y | 101.2kg/y | 584.4kg/y LPG | 35.4kg/y | 5.23kg/y | 30.18kg/y The data was based on the KPT survey results conducted. *Verifier´s action:*	OK	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
		The verification team has checked the KPT survey data and cross-checked with data applied in ER spreadsheet During the onsite interviews of the 140 randomly selected households, the responses indicate biogas is the main fuel for cooking with less usage of firewood, charcoal and LPG. All respondents said that they only used firewood and LPG during special events where they needed to cook more food and those have small businesses. *Conclusion:* The monitoring of this SD indicator is in accordance with the GS Passport.		
b) Correctness and Scoring *Determine whether the monitoring method/value given in the sustainability monitoring report is correct or determined in a conservative manner.* *In case of conservative approaches used in lieu of the monitoring as per registered passport detailed assessment of the conservativeness of the approach used should be given.* *Score in accordance to Toolkit Annex I* *In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.*	/MR/ /ER/ /SDB1/ /PDD/ /GST/ /SI1/ /LHH/	☒ Correct ☐ Not correct (initial assessment) *Description:* The data is derived from the Kitchen Performance Test (KPT) survey conducted from January to April 2014. *Verifier´s action:* The KPT survey results were reviewed and cross checked with the onsite interview for 140 randomly selected households. *Conclusion:* The data of the survey is considered correct. However refer to CAR SD1 raised. *Score:* The verification team concluded on a score of positive impact	~~CAR SD1~~	OK

Checklist Item (incl. guidance for the verification team)	Refe-rence	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		(+) as per the Toolkit Annex I.		
D.3.2. No. 2 - Soil condition		**Usage of bio-slurry**		
a) Measurement / Determination method *Describe how the monitoring parameter was measured / determined.* *Assess whether the measurement / determination method is in line with the registered passport, applied toolkit and PDD. .*	/MR/ /ER/ /GST/ /GSP/ /SDB1/ /SI2/ /LHH/	*Description:* The indicator measured the percentage of households using bio-slurry as fertilizers. The data was derived from the Carbon Monitoring Survey (CMS). *Verifier´s action:* The CMS survey data was reviewed and cross-checked with the data applied in the ER spreadsheet. A cross-check was conducted with the interview results for the 140 randomly selected households on the usage of bio-slurry by a few households for their rice fields and vegetables garden. *Conclusion:* The monitoring of this SD indicator is in accordance with the GS Passport. However refer to CAR SD2 raised.	~~CAR SD2~~	OK
b) Correctness and Scoring *Determine whether the monitoring method/value given in the sustainability monitoring report is correct or determined in a conservative manner.* *In case of conservative approaches used in lieu of the monitoring as per registered passport detailed assessment of the conservativeness of the approach*	/MR/ /ER/ /SDB1/ /GSP/ /GST/ /SI2/	☐ Correct ☒ Not correct (initial assessment) *Description:* The data was derived from the CMS data survey. *Verifier´s action:* The CMS survey data was reviewed and cross-checked with the applied in the ER spreadsheet for correctness.	~~CAR SD2~~	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
used should be given. *Score in accordance to Toolkit Annex I* *In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.*		*Conclusion:* The data from the survey is determined correctly. However refer to CAR SD2 raised. *Score:* The percentage of households using bio slurry as fertilizers for this monitoring period has decreased when compared with the MPI. However, when compared with the baseline situation, there is usage of bio-slurry by the households for this monitoring period. Therefore, the score for this SD parameter is positive (+).		
D.3.3. No. 3 - Biodiversity		**Cumulative savings of wood (ton/year)**		
a) Measurement / Determination method *Describe how the monitoring parameter was measured / determined.* *Assess whether the measurement / determination method is in line with the registered passport, applied toolkit and PDD. .*	/MR/ /GSP/ /ER/ /SDB1/ /SI3/	*Description:* The cumulative savings of wood as at 2013-06-30 for this monitoring period is 148,869 tons. The cumulative savings of firewood was calculated based on the KPT data survey from PFT results. The reduction in the usage of savings from firewood for 1 year multiplied with the number of biodigesters installed up to 2013-06-30 for the current monitoring period. *Verifier´s action:* The data applied in the ER spreadsheet was cross-checked with the CMS surveyed data. *Conclusion:*	OK	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
		The monitoring of this SD indicator is in accordance with the GS Passport.		
b) Correctness and Scoring *Determine whether the monitoring method/value given in the sustainability monitoring report is correct or determined in a conservative manner.* *In case of conservative approaches used in lieu of the monitoring as per registered passport detailed assessment of the conservativeness of the approach used should be given.* *Score in accordance to Toolkit Annex I* *In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.*	/MR/ /ER/ /GSP/ /SDB1/ /SI3/	☒ Correct ☐ Not correct (initial assessment) *Description:* The data is calculated using the CMS surveyed data. *Verifier´s action:* The data applied in the ER spreadsheet is cross-checked with surveyed data results for correctness. *Conclusion:* The data of the survey is considered as correct. *Score:* The savings of firewood has increased to 148,869 ton as at 2013-06-30 from 84,879 ton as at 2011-12-31 and from zero in the baseline situation. Therefore, the score for this SD parameter is positive (+).	OK	OK
D.3.4. No. 4 - Quality of Employment		**Number of masons and technicians participating in the trainings**		
a) Measurement / Determination method *Describe how the monitoring parameter was measured / determined.* *Assess whether the measurement / determination method is in line with the registered passport, applied toolkit and PDD. .*	/MR/ /GSP/ /ER/ /SI4/	*Description:* The number of masons and technicians participating in trainings for this monitoring period was 116 and 85 respectively for this monitoring period as at 2013-06-30. *Verifier´s action:* The project database for the trained masons and technicians	~~CAR SD3~~	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
		were reviewed. *Conclusion:* The monitoring of this SD indicator is in accordance to the GS Passport. However refer to CAR SD3 raised.		
b) Correctness and Scoring *Determine whether the monitoring method/value given in the sustainability monitoring report is correct or determined in a conservative manner.* *In case of conservative approaches used in lieu of the monitoring as per registered passport detailed assessment of the conservativeness of the approach used should be given.* *Score in accordance to Toolkit Annex I* *In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.*	/MR/ /ER/ /SI4/ /GSP/	☒ Correct ☐ Not correct (initial assessment) *Description:* The data is the number of masons and technicians trained during the monitoring period. *Verifier´s action:* The project database and certificates were checked for correctness and applied correctly in the ER spreadsheet.. *Conclusion:* The data can be confirmed for correctness. However refer to CAR SD3 raised *Score:* As compared with situation at 2011-12-31, the number of trained masons and technicians for the current monitoring period has increased from the first monitoring period from 922 to 1,038 for masons and 622 to m707 for technicians. The score for this parameter for the current monitoring period is positive (+).	~~CAR SD3~~	OK
D.3.5. No. 5 - Livelihood of the poor		**Number of people having access to an improved waste**		

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
		management system		
a) Measurement / Determination method *Describe how the monitoring parameter was measured / determined.* *Assess whether the measurement / determination method is in line with the registered passport, applied toolkit and PDD. .*	/MR/ /GSP/ /SDB1/ /SDB2/ /ER/	*Description:* The number of people having access to an improved waste management system as at 2013-06-30 was 474,335. The data was derived from the usage survey conducted from January to April 2014 for the number of digester in operation by aged group and data from the CMS survey conducted at the same period. In the CMS survey, a total of 340 households with 1,519 people for both zones was surveyed to obtain the average number of people per household was 4.5 The total number of digester commissioned as at 2013-06-30 multiplied by the percentage in used based on the usage survey to obtain the number of units in operation for the monitoring period was 95,697. The number of units in operation multiplied with the average number of people per household is the total number of people has access to improved waste management system. *Verifier´s action:* The usage and CMS survey results were reviewed. The data applied in the ER spreadsheet to determine the number of people benefitted the improved waste management system was cross-checked with the usage and CMS survey data results. *Conclusion:*	~~CAR SD4~~	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
		The monitoring of this SD indicator is in accordance with the GS Passport. However refer CAR SD4 raised.		
b) Correctness and Scoring *Determine whether the monitoring method/value given in the sustainability monitoring report is correct or determined in a conservative manner.* *In case of conservative approaches used in lieu of the monitoring as per registered passport detailed assessment of the conservativeness of the approach used should be given.* *Score in accordance to Toolkit Annex I* *In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.*	/MR/ /GSP/ /GST/ /ER/ /SDB1/ /SDB2/	☐ Correct ☒ Not correct (initial assessment) *Description:* The data was derived from the usage survey conducted from January to April 2014 for the number of digester in operation by aged group and data from the CMS survey conducted at the same period. *Verifier´s action:* The usage and CMS survey results were reviewed. The data applied in the ER spreadsheet to determine the number of people benefitted the improved waste management system was cross-checked with the usage and CMS survey data results for correctness. *Conclusion:* Refer CAR SD4 raised. *Score:* As compared with the situation as at 2011-12-31, the number of people having access to an improved waste management system has increased from 436,962 to 474,335 as at 2013-06-30. In the baseline scenario, there is no similar waste management system built, hence the score for this current monitoring period	~~CAR SD4~~	OK

Checklist Item (incl. guidance for the verification team)	Refe-rence	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		is positive (+).		
D.3.6. No. 6 - Access to affordable and clean energy services		**Total amount of energy replaced by biogas (MJ/hh/year)**		
a) Measurement / Determination method *Describe how the monitoring parameter was measured / determined.* *Assess whether the measurement / determination method is in line with the registered passport, applied toolkit and PDD. .*	/MR/ /ER/ /GSP/ /SDB1/ /SI6/ /LHH/	*Description:* The data was based on the KPT survey conducted for PFT in measuring the amount of fuels displaced by biogas by the householders under the programme data *Verifier´s action:* The KPT survey database was checked and reviewed during the onsite visit. During the onsite interviews with 140 randomly selected households, all the households use biogas as the main fuel for their daily cooking. Thus displaced the usage of firewood, agriculture residues and LPG. The data in the ER spreadsheet was cross-checked with the survey data. *Conclusion:* The monitoring of this SD indicator is in accordance with the GS Passport.	OK	OK
b) Correctness and Scoring *Determine whether the monitoring method value given in the sustainability monitoring report is correct or determined in a conservative manner.* *In case of conservative approaches used in lieu of the monitoring as per registered passport detailed*	/MR/ /GSP/ /ER/ /SDB1/ /LHH/	☒ Correct ☐ Not correct (initial assessment) *Description:* The data was based on the KPT survey conducted for PFT in measuring the amount of fuels displaced by biogas by the householders under the programme data	OK	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
assessment of the conservativeness of the approach used should be given. *Score in accordance to Toolkit Annex I* *In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.*		*Verifier´s action:* The data applied in the ER spreadsheet was cross-checked with the survey data for correctness. *Conclusion:* The amount of energy displaced by the biogas has been correctly determined. *Score:* The total amount of energy displaced by biogas for this monitoring period as at 2013-06-30 was 33,839 MJ/hh/y as compared with baseline situation was zero. Hence the score for this parameter is positive (+)		
D.3.7. No. 7 - Technology transfer and technological self-reliance		**Number of masons trained in the construction of KT1 or KT2 bio-digesters**		
a) Measurement / Determination method *Describe how the monitoring parameter was measured / determined.* *Assess whether the measurement / determination method is in line with the registered passport, applied toolkit and PDD. .*	/MR/ /ER/ /GSP/ /SI7/ /SI4/	*Description:* A total number of 1,038 masons were trained in the construction of KT1 or KT2 biodigesters as at 2013-06-30. The number of masons trained during this monitoring period is 116. The data was derived from the project database. The number of trained masons was kept track and monitored by the provincial program management unit and the central program office located in Hanoi. *Verifier´s action:*	OK	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
		The project database was reviewed and verified during the onsite visit to cross-checked on the data reported and applied correctly in the ER spreadsheet. *Conclusion:* The monitoring of this SD indicator is in accordance with the GS Passport.		
b) Correctness and Scoring *Determine whether the monitoring method value given in the sustainability monitoring report is correct or determined in a conservative manner.* *In case of conservative approaches used in lieu of the monitoring as per registered passport detailed assessment of the conservativeness of the approach used should be given.* *Score in accordance to Toolkit Annex I* *In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.*	/MR/ /GSP/ /ER/ /F1/	☒ Correct ☐ Not correct (initial assessment) *Description:* The data was derived from the records database for the number of masons trained in the construction of KT1 and KT2 biodigesters. *Verifier´s action:* The project database was reviewed and verified during the onsite visit for correctness. *Conclusion:* The data could be confirmed as correct. *Score:* The number masons trained has increased from 922 as at 2011-12-31 to 1,038 as at 2013-06-30 with an increase of 116 for this monitoring period. In the baseline scenario, there was no trained masons, therefore, the score for this SD indicator is positive (+).	OK	OK
***D.4.* Sampling**				

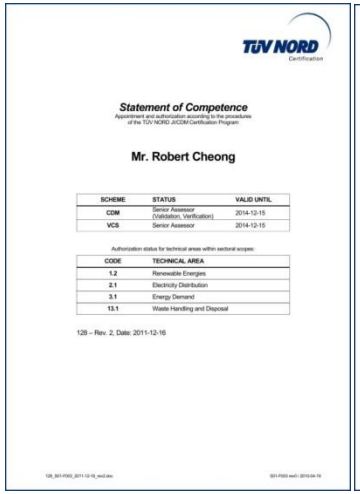
Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
a) Implementation of sampling plan *Check whether the PP has applied a sampling approach to determine the monitored values (as per section D.2 above).* *If this is the case, please provide an assessment whether the PPs have correctly and sufficiently described the implemented sampling plan including* - *Description of the implemented sampling design* - *Collected data* - *Analysis of collected data* - *Demonstration on whether the required confidence/precision has been met.*	/MR/ /GSP/ /PDD/ /SSS/ /GSS/ /O2/ /S1/ /S2/	☒ A sampling approach has been taken by the PP due to large number of implemented biodigesters. *Description:* The PP has conducted CMS / KPT and Usage survey using a sampling approach is accordance to GS, UNFCCC guidelines and sampling guide by Mr. Robert Magnani. *Verifier´s action:* The CMS and KPT surveys were conducted from January to April 2014 which includes Baseline Fuel Test and Performance Field Test (PFT) and the survey results were applied to the current monitoring period. The verification team has checked on the sampling plan for US is 210 households and CMS / KPT is 340 households with an addition of 10% been included to ensure the level of assurance and the number of households is representative. Thus, considered appropriate. The data collected were reviewed and cross checked during the onsite field inspection on the selected households to confirm the correctness. *Conclusion:* The number of households in the sample plan is assessed as representative and in accordance to GS and UNFCCC requirements However, refer CAR D4, CAR D5 and CL D6.	~~CAR D4~~ ~~CAR D5~~ ~~CL D6~~	OK OK OK
b) Sampling during verification	/MR/	☒ A sampling approach has been applied by the VT for	OK	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
In case the VT has applied a sampling approach in the course of the verification the approach shall be described for each parameter.	/GSP/ /PDD/ /ss/	selected the household for the field inspection and interview. *Description:* According to GS recommendation, the sampling plan of 90/30 a sample size of 100 households will be sufficient to ensure the number of households interviewed is representative. The verification team has selected a sample size of 140 households in different villages, districts & provinces in Vietnam. *Conclusion:* The verification team has cross checked with the below link to ensure the sample size of 140 households is sufficient. http://www.raosoft.com/samplesize.html The statistical tool is applied accepted widely and also for GS751 MPII verification. Therefore, the reliability of this statistical tool could be confirmed. With the number of households, the sample size for 95% with CI of 10%, 96 households will be sufficient. Therefore, the sample size of 140 randomly selected households by the VT is sufficient to meet GS sampling requirements.		
E. Calculation of Emission reductions				
***E.1.* Traceability** *Assess if the calculation is fully traceable. In case of complex calculations an Excel calculation spread-*	/MR/ /ER/	The verification team has checked the emission reduction calculation and confirms that: ☐ the calculation is fully traceable	~~CL E1~~ ~~CL E2~~	OK OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
sheet shall be used. All applied formulae must be visible.		☒ all applied formulae are visible In this context the following finding has been identified: Refer CL E1, CL E2, CL E3, CAR E8 and CL E9 raised	~~CL E3~~ ~~CAR E8~~ ~~CL E9~~	OK OK OK
E.2. **Parameter consistency** *Assess whether all internal and external parameters and data used for calculation are applied consistently in the monitoring report and the calculation spreadsheet?* *Consider only the correct data exchange between the monitoring report and the calculation spreadsheet (if any). Further ensure the consistency of notations for all parameters in the PDD, MR and calculation spreadsheet.*	/MR/ /ER/	The verification team has checked the emission reduction calculation and the MR and confirms that: ☐ all parameter notations are consistent in the project documentation ☒ all internal and external parameters and data used for calculation are consistently applied In this context the following findings have been identified: Refer CAR D3 raised.	~~CAR D3~~	OK
E.3. **Correctness of calculation** *Check if the applied formulae and methods for calculating baseline emissions, project emissions and leakage are in accordance with the monitoring plan and / or the approved methodology.* *Assess whether the provided calculations are complete and reflect all requirements of the monitoring plan.* *Check especially that no standard or old values have been used for calculation where calculations based on up-to-date data is required.*	/MR/ /PDD/ /ER/	The verification team has checked the emission reduction calculation and the MR and confirms that: ☒ all applied formulae for calculating baseline emissions, project emissions and leakage are in accordance with the monitoring plan ☐ the provided calculations are complete In this context the following findings have been identified: Refer CL E3, CAR E4, CAR E5 and CAR E6 raised.	~~CL E3~~ ~~CAR E4~~ ~~CAR E5~~ ~~CAR E6~~	OK OK OK OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
E.4. **Emission reductions table** *Check if the MR includes a summary table of the emission reductions calculation specifiying separately* - *Total baseline emissions* - *Total project emissions:* - *Total leakage* - *Total emission reductions.* *Assess whether the values are correct or need to be revised as a consequence of issues identified above.*	/MR/ /ER/	☒ The MR includes a summary table of the emission reductions calculation. ☒ The summary table specified the total baseline, project and leakage emissions as well as the total emission reductions separately. ☐ The values as specified in the ER summary table are correct; no issues have been identified during the verification which require changes in the ER calculation. ☐ During the verification issues with impact on the ER calculation have been identified. Thus subject to the closure of above listed findings the summary needs to be revised. In this context the following additional findings have been identified: Refer CAR E7 raised.	~~CAR E7~~	OK
E.5. **Comparison with ex-ante determined emission reductions** *Check if the MR includes a comparison of actual values of the monitoring period with the estimations in the registered PDD.* *Check further whether in case of an increase an appropriate explanation is included in the MR.* *Assess in case of a significant increase whether this is due to technical or organisational changes within or outside the control of the PP which might require a notification / approval of changes.*	/MR/ /ER/ /PDD/	The verification team has checked the MR and confirms that: ☒ the MR includes a comparison of actual emission reductions with the estimations of the registered PDD ☐ the increase has been appropriately explained In this context no findings have been identified:	OK	OK

ANNEX 2: STATEMENTS OF COMPETENCE OF INVOLVED PERSONNEL



TÜV NORD Certification

Statement of Competence

Appointment and authorization according to the procedures of the TÜV NORD JI/CDM Certification Program

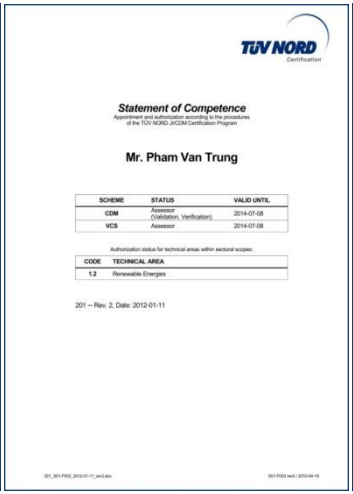
Mr. Robert Cheong

SCHEME	STATUS	VALID UNTIL
CDM	Senior Assessor (Validation, Verification)	2014-12-15
VCS	Senior Assessor	2014-12-15

Authorization status for technical areas within sectoral scopes:

CODE	TECHNICAL AREA
1.2	Renewable Energies
2.1	Electricity Distribution
3.1	Energy Demand
13.1	Waste Handling and Disposal

128 – Rev. 2, Date: 2011-12-16



TÜV NORD Certification

Statement of Competence

Appointment and authorization according to the procedures of the TÜV NORD JI/CDM Certification Program

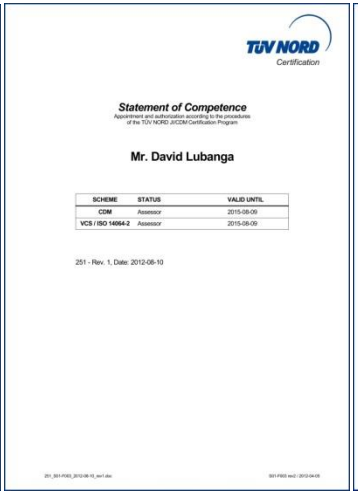
Mr. Pham Van Trung

SCHEME	STATUS	VALID UNTIL
CDM	Assessor (Validation, Verification)	2014-07-08
VCS	Assessor	2014-07-08

Authorization status for technical areas within sectoral scopes:

CODE	TECHNICAL AREA
1.2	Renewable Energies

201 – Rev. 2, Date: 2012-01-11



TÜV NORD Certification

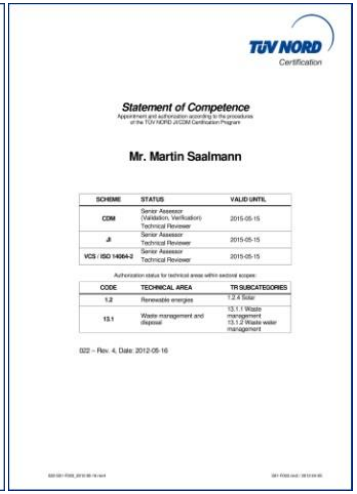
Statement of Competence

Appointment and authorization according to the procedures of the TÜV NORD JI/CDM Certification Program

Mr. David Lubanga

SCHEME	STATUS	VALID UNTIL
CDM	Assessor	2015-08-09
VCS / ISO 14064-2	Assessor	2015-08-09

251 - Rev. 1, Date: 2012-08-10



TÜV NORD Certification

Statement of Competence

Appointment and authorization according to the procedures of the TÜV NORD JI/CDM Certification Program

Mr. Martin Saalmann

SCHEME	STATUS	VALID UNTIL
CDM	Senior Assessor (Validation, Verification) Technical Reviewer	2015-05-15
JI	Senior Assessor Technical Reviewer	2015-05-15
VCS / ISO 14064-2	Senior Assessor Technical Reviewer	2015-05-15

Authorization status for technical areas within sectoral scopes:

CODE	TECHNICAL AREA	TR SUBCATEGORIES
1.2	Renewable energies	1.2.4 Solar
13.1	Waste management and disposal	13.1.1 Waste management 13.1.2 Waste water management

022 – Rev. 4, Date: 2012-05-16