



Verification and certification report form for CDM programme of activities
(version 01.0)

Complete this form in accordance with the "Attachment. Instructions for filling out the verification and certification report form for CDM programme of activities" at the end of this form.

VERIFICATION AND CERTIFICATION REPORT

Title of the programme of activities (PoA)	Nepal Biogas Support Program-PoA	
UNFCCC reference number of the PoA	UNFCCC ID: 9572 TN P-No. : 8000460171 – 16/075	
Version number(s) of the PoA-DD(s) applicable to this report	14	
Version number of the verification and certification report	1.0	
Completion date of the verification and certification report	14/12/2016	
Monitoring period number	2 nd Monitoring Period	
Duration of this monitoring period	01/08/2014 to 31/07/2015 (including both days)	
Number and version number of the monitoring report to which this report applies	Number: 1.0 Version: 03.0	
Coordinating/managing entity (CME)	Alternative Energy Promotion Centre (AEPC)	
Host Party(ies)	Host Party(ies) of the PoA	Is this a host Party to a CPA covered in this report?(yes/no)
	Nepal	Yes
Sectoral scope(s)	Scope: 1 / Technical Area: 1.2	
Selected methodology(ies)	AMS-I.E version 04, "Switch from Non-Renewable Biomass for Thermal Applications by the User"	
Selected standardized baseline(s)	Not Applicable	
Total estimated GHG emission reductions or net GHG removals for this monitoring period in the included CPA(s) covered in this report	326,734 tCO ₂ e	
Total certified GHG emission reductions or net GHG removals for this monitoring period for the included CPA(s) covered in this report	312,353 tCO ₂ e	
Name of DOE	TÜV NORD CERT GmbH (TÜV NORD)	
Name, position and signature of the		

approver of the verification and certification report	Stefan Winter Final Approver
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SECTION A. Executive summary

Alternative Energy Promotion Centre (AEPC) has commissioned the TÜV NORD JI/CDM Certification Program to carry out the 2nd periodic verification of the CDM Programme of Activities (CDM-PoA):

“Nepal Biogas Support Program-PoA”

with regard to the relevant requirements for CDM PoAs.

This verification covers the period from 01/08/2014 to 31/07/2015 (including both days).

The PoA involves the implementation of biogas applications at individual households in Nepal. The programme of activities reduces GHG emissions due to displacing firewood by biogas from animal waste and human excreta. Only the replacement of non-renewable biomass is counted as emission reduction under CDM for this project. This verification covers CPA-1, CPA-2, CPA-3, CPA-4 and CPA-5.

Target group under the BSP are rural households who currently use non-renewable biomass (firewood). The BSP is centrally managed by Alternative Energy Promotion Centre (AEPC) with the support of Biogas Sector Partnership Nepal (BSP-NEPAL), the implementing agency of the AEPC. AEPC is a public entity that executes all renewable/alternative energy programmes in Nepal including this POA.

Details of the PoA location are given in table A-1 below:

Table A-1: Project Location

No.	Project Location
Host Country	Nepal
Region:	Various locations across Nepal
Project location address:	Nepal
Latitude:	North 26.20 degree to North 30.45 degree
Longitude:	East 80.07 degree to East 88.20 degree

Basic technical details of the PoA are summarized in table A-2.

Table - A-1: Technical data of CPA-1, CPA-2, CPA-3, CPA-4, CPA-5

Parameter	Unit	Value
Biogas digester model		GGC 2047
digester capacity	m ³	2, 4, 6, 8 and 10
digester type		closed underground container made of concrete or other materials

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

- all operations of the CPAs are implemented and installed as planned and described in the validated component project activities design document.
- the monitoring plan is in accordance with the applied approved CDM methodology, i.e., AMS-I.E ver. 04.0
- the equipment essential for measuring parameters required for calculating emission reductions are calibrated appropriately.
- the monitoring system is in place and functional. The CPA has generated GHG emission reductions.

As the result of the 2nd periodic verification, the verifier confirms that 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: **312,353 tCO₂e**

SECTION B. Verification team, technical reviewer and approver

B.1. Verification team members

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)	Involvement in			
						Desk review	On-site inspection	Interview(s)	Verification findings
1.	Team Leader/ Technical Expert	EI	G	Ezhilarasu	TUV India Private Limited	x	x	x	x
2.	Verifier	EI	Parmar	Indrapal	TUV India Private Limited	x			x
3.	Verifier	EI	Patel	Pankaj	TUV India Private Limited	x			

B.2. Technical reviewer and approver of the verification and certification report

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)
1.	Technical reviewer	IR	Winter	Stefan	TÜV NORD CERT GmbH
2.	Approver	IR	Winter	Stefan	TÜV NORD CERT GmbH

SECTION C. Means of verification

C.1. 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 last revision of the PoA-DD including the monitoring plan^{/PoA-DD/},
- the last revisions of the CPA-DD
- the last revision of the CPA validation report^{/VAL/},
- the monitoring report, including the claimed emission reductions for the PoA^{/VER/},
- the emission reduction calculation spreadsheet^{/XLS/}.

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

C.2. On-site inspection

Duration of on-site inspection: 06/06/2016 to 14/06/2016				
No.	Activity performed on-site	Site location	Date	Team member
1.	Opening meeting	Nepal	06/06/2016	G. Ezhilarasu
2	On-site inspection/ Interview with PP Representative and Operation Staff/ Discussion with End users	Nepal	06/06/2016 To 13/06/2016	G. Ezhilarasu
3	Documents check	Nepal		G. Ezhilarasu
4	Discussion on findings	Nepal	14/06/2016	G. Ezhilarasu
5	Close Meeting	Nepal	14/06/2016	G. Ezhilarasu

C.3. Interviews

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Rijal	Neelam Sharma	Program Officer AEPC	06-06-2016 to 14-06-2016	Project Implementation MR, CER sheets Sampling Monitoring Aspects, logistics, Communications with Biogas end users and Biogas companies Focal point for verification	G Ezhilarasu
2	Porhkel	Prem Kumar	Program Officer AEPC	06-06-2016, 11-06-2016 to 14-06-2016	Sampling , Internal quality Documentation, Sampling Record keeping Customer complaints	G Ezhilarasu
3	Rana	B Thapa	Program Manager AEPC	14-06-2016	Finance obligations, Down times, training schedules, sampling, repairs Government policies	G Ezhilarasu
4	Prakash	Aryal	Senior Officer AEPC			
5	Suraj	Regmi	Program Officer AEPC			
6	Somanth	Bastola	Managing Director DUV	07-06-2016	Construction, Agreements, complaint management Repairs, User trainings, spares availability, interactions with the end users, scheduled inspections	G Ezhilarasu
7	Khaga	Raj	Technician DUV			
8	Madhav	Lamsal	Branch Manager RGG	08-06-2016		
9	Om	Bdr Rane	Senior Supervisor RGG			
10	Umesh	Wasti	Managing partner SID	10-06-2016		
11	Dinesh	Kumar Mandal	Managing Director Jay	11-06-2016		
12	Om Narayan	Shrestha	Managing Director KAM	12-06-2016		
13	Bimal	Mokan	Local Representative ANB	13-06-2016		
14	Various End Users (109 households)		Sampled and non-sampled house holds	06-06-2016 to 13-06-2016	Status of Biogas and its usage, Energy ladder for cooking, Problems faced for maintenance and availability of trained personnel, down times, (if any), reasons for non-	G Ezhilarasu

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
					usage, cattle availability , household numbers, spares availability etc	

C.4. Sampling approach

C.4.1 Sampling during monitoring

☐	No sampling approach has been used by the PP to determine the monitored parameters												
☒	A sampling approach has been taken for the following monitored parameter(s):												
	Parameter	Sampling approach ¹⁾	Sampling Type ²⁾	Population					Sample Size				
	P	StRS	PS	CPA1	CPA2	CPA3	CPA4	CPA5	CPA1	CPA2	CPA3	CPA4	CPA5
				20000	19927	19959	19970	19842	90	90	90	90	90

¹⁾ Sampling Approaches:

SiRS: Simple Random Sampling
 StRS: Stratified Random Sampling
 SS: Systematic Sampling
 CS: Cluster Sampling
 MSS: Multi-stage Sampling

²⁾ Sampling Types:

PS: Parameter Sampling

C.4.2 Sampling approaches during verification

☐	No sampling approach has been used by the VT to verify the monitored parameters												
☒	A sampling approach has been applied by the VT for the following monitored parameter(s):												
	Parameter	Sampling approach ¹⁾	Sampling Type ²⁾	Population					Sample Size				
	P	SiRs	AS	CPA1	CPA2	CPA3	CPA4	CPA5	CPA1	CPA2	CPA3	CPA4	CPA5
				90	90	90	90	90	21	18	21	15	12

¹⁾ Sampling Approaches:

SiRS: Simple Random Sampling
 StRS: Stratified Random Sampling
 SS: Systematic Sampling
 CS: Cluster Sampling
 MSS: Multi-stage Sampling

²⁾ Sampling Types:

AS: Acceptance Sampling
 PS: Parameter Sampling
 COM: Full data check at higher data aggregation levels and sampling at original data levels

During the on-site verification, a sampling approach has been used to verify the reported values for the monitored parameters of P. The verification team sampled the biogas digesters.

The sampling approach is conducted according to the “Guidelines for Sampling and Surveys for CDM Project Activities and Programme Activities” and the “Standard for Sampling and Surveys for CDM Project Activities and Programme Activities” current at the time. Simple random sampling

method has been applied most ideal for verification of sampled parameters however, due to the size of the population and PP's respective calculated minimum sample sizes, acceptance sampling has been adopted for verification.

The verification team followed the notes in Appendix 5 of the Guideline: Sampling and surveys for CDM project activities and programmes of activities (version 04.0), esp. taking a sample of the PPs sample.

Using the equation as provided in the monitoring plan for the CPA-DD, a minimum sample of 49 for each CPA is calculated. However, as per applicable monitoring plan a sample size of 54 for each CPA is required. PP took 90 samples for each of the 5 CPAs to arrive at the share of digesters operational.

The Verification team analysed the webhosted monitoring report and on the basis of the data provided in it took the district and VDC level samples of the PP for the purpose of acceptance sampling. A sample of 45 (10% of the PP sample) was determined for acceptance sampling, with an Acceptable Quality Level of about 5.5%.

Accordingly VT handpicked the VDC with highest samples one each for hill and Terai regions for each CPA and super imposed those VDC on the map of Nepal to prepare the site visit plan. In order to minimise the travel distance and time, 2 VDC (which are far from the other VDCs) are removed and instead two VDC with second highest number of households sampled by the PP are selected for the site visit. Also one VDC to represent the remote hill was also included and there by the VT visited 11 VDC during the site visit. In all the VDCs the VT randomly picked the sampled households by the PP as well as 2-3 non sampled households for the verification. Altogether 109 households are visited (87 sampled and 22 non-sampled).

The DOE has accepted the results as presented in the monitoring survey reports, and recorded in the monitoring report with a reasonable level of confidence.

Sample Size Calculation

According to "Best practices examples focusing on sample size and reliability calculations", the following equation is applied for sample size calculation.

$$n \geq \frac{z^2 \times N \times V}{(N - 1) \times \text{precision}^2 + z^2 \times V}$$

Where:

$$V = \frac{p \times (1 - p)}{p^2}$$

n	Number of elements to be sampled.
N	Total number of elements in the population, (see table below for each of the parameters)
p	Proportion: Set to 0.5 based on the very conservative estimation that 50% of the values checked are found to be incorrect.
z	Constant referring to the level of confidence (for this case 1.645 for 90% as per Guideline for Sampling and Surveys Appendix 1 §9 for SSC project activities).
precision	Required precision (for this case 10%=0.1 as per Guideline for Sampling and Surveys Appendix 1 §9 for SSC project activities).

C.5. Clarification requests, corrective action requests and forward action requests raised

Areas of verification findings	No. of CL	No. of CAR	No. of FAR
General			
Compliance of the monitoring report with the monitoring report form	0	0	0
Remaining forward action requests from validation and/or previous verification	0	0	0
Specific-case CPA(s) considered for verification and covered in this report	2	0	0
Programme of activities	0	0	0

Compliance of the programme implementation with the registered PoA-DD	0	0	0
Implementation and operation of the management system	0	0	0
Post-registration changes	0	0	0
Temporary deviations from the registered monitoring plan, monitoring methodology or standardized baseline	0	0	0
Corrections	0	0	0
Inclusion of a monitoring plan in a registered PoA-DD (including its generic CPA-DD(s))	0	0	0
Permanent changes to the monitoring plan as described in the registered PoA-DD, applied methodology, or applied standardized baseline	0	0	0
Changes to the programme design of the registered PoA-DD (including corresponding changes to project design of the generic CPA-DD(s)) and updates to the eligibility criteria for inclusion of specific-case CPAs in the PoA	0	0	0
Types of changes specific to afforestation and reforestation activities	0	0	0
Component project activity(ies)	0	0	0
Compliance of the CPA implementation with the included CPA design document	0	0	0
Post-registration changes	0	0	0
Temporary deviations from registered monitoring plan, applied methodology or applied standardized baseline	0	0	0
Corrections	0	0	0
Changes to the start date of the crediting period	0	0	0
Inclusion of a monitoring plan to an included CPA-DD	0	0	0
Permanent changes to the monitoring plan as described in the included CPA-DD, applied methodology, or applied standardized baseline	0	0	0
Changes to the programme design of the included CPA-DD	0	0	0
Types of changes specific to afforestation and reforestation component project activities	0	0	0
Compliance of the monitoring plan with the monitoring methodology including applicable tool and standardized baseline	0	0	0
Compliance of monitoring activities with the registered monitoring plan	0	0	0
Data and parameters fixed ex ante or at renewal of crediting period	0	0	0
Data and parameters monitored	0	1	0
Implementation of sampling plan	0	1	0
Compliance with the calibration frequency requirements for measuring instruments	0	0	0
Assessment of data and calculation of emission reductions or net removals	0	0	0
Calculation of baseline GHG emissions or baseline net GHG removals by sinks	0	0	0
Calculation of project GHG emissions or actual net GHG removals by sinks	0	0	0
Calculation of leakage GHG emissions	0	0	0
Summary of calculation of GHG emission reductions or net GHG removals by sinks	0	0	0
Comparison of actual GHG emission reductions or net GHG removals by sinks with estimates in included specific-case CPA	0	0	0

• Remarks on difference from estimated value in registered PDD	0	0	0
Others (please specify)	0	0	0
Total	2	2	0

SECTION D. Internal quality control

Before the submission of the final verification report a technical review of the whole verification procedure was carried out. The technical reviewers are competent GHG auditors where at least one is being appointed for the scope this project falls under. The technical reviewers are 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 have been confirmed or revised. Furthermore reporting improvements might have been achieved.

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

After this step the submission for requesting for issuance is conducted

SECTION E. Verification opinion

Alternative Energy Promotion Centre (AEPC) has commissioned the TÜV NORD JI/CDM Certification Program to carry out the 2nd periodic verification of the project: "Nepal Biogas Support Program-PoA", with regard to the relevant requirements for CDM Programme of Activities. The POA reduces GHG emissions due to the installation of biogas digesters and therewith the replacement of non-renewable biomass.

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 CDM methodology, i.e., AMS-I.E Switch from Non-Renewable Biomass for Thermal Applications by the User (version 04)
- 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.
- 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: **312,353** t CO_{2e}

SECTION F. Certification statement

As a duly accredited DOE, TÜV NORD CERT confirms that the POA

"Nepal Biogas Support Program-PoA"

registered under

UNFCCC-No. : 9572

has achieved emission reductions in accordance with all applicable requirements for registered CDM project activities during the current monitoring period

MP-No.: 2

from: 01/08/2014

to: 31/07/2015

(including both days) as follows:

Emission reductions: **312,353** t CO_{2e}.

Coimbatore, 14/12/2016



Mr. G Ezhilarasu
Team leader

SECTION G. Verification findings - General**G.1. Compliance of the monitoring report with the monitoring report form**

Means of verification	A draft monitoring report was submitted to the verification team by the project participants. The DOE has made this report publicly available prior to the start of the verification activities. No comments were received. By means of the UNFCCC website it has been checked whether the latest applicable MR template CDM-PoA-MR-FORM has been used. Further it has been checked whether the latest instructions for filling out the MR template have been followed. Every section has been checked against the respective guidance. The following sources of information have been used in this context: • /MR/ • /MRT/ • /unfccc/	
Findings	☒	The latest reporting template CDM-PoA-MR-FORM as listed on the UNFCCC website has been used for the Monitoring Report to be uploaded.
	☒	The latest instructions for filling out the MR have been followed. No adverse finding has been identified in the course of this verification.
	☐	The respective requirements have widely been complied with; however; the following issues needed to be addressed in this context:
Conclusion	☒	No CARs/CLs have been raised in this context. No correction was required in the context. The project is in line with the respective requirements.
	☐	The raised CARs/CLs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.
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G.2. Remaining forward action requests from validation and/or previous verification

During the validation the validating DOE might have raised issues that could not be closed or resolved during the validation stage. For this purpose FARs might have been raised. Likewise FARs might have been raised in the course of previous verifications.

In the course of this verification the latest version of the CPA-DD^{/CPA-DD/} and the CPA validation report^{/VAL/}, have been checked in order to identify any remaining forward action requests. For the current monitoring period the following applies:

(i) Open issues from validation:

☒	There were no open issues which have been addressed in the latest version of the validation report.
☐	All open issues from the validation have been appropriately addressed in the context of previous verifications.
☐	All issues related to the validation have been appropriately addressed in the course of the current monitoring period (for details please refer to appendix 4)
☐	The following issues related to the validation have not yet been appropriately addressed (for details please refer to appendix 4):
	- N/A

(ii) Open issues from previous verifications:

☐	N/A – as this is the first monitoring period for this CDM project activity.
☒	There were no open issues which have been addressed in the previous verification report
☐	All issues related to the previous verification have been appropriately addressed in the course of the current monitoring period (for details please refer to appendix 4)

☐	The following issues related to the previous verification have not yet been appropriately addressed (for details please refer to appendix 4):
-	N/A

G.3. Specific-case CPA(s) considered for verification and covered in this report

Reference number of the specific-case CPA included in the PoA as of the end of this monitoring period	Is the specific-case CPA considered for this verification? (yes/no)	Version number of the registered PoA-DD to which the specific-case CPA complies with	Confirmation that a request for issuance including the specific-case CPA has been published for the previous monitoring period (Y/N)
9572-0001	Yes	Rev.14 dated 05/09/2014	Y
9572-0002	Yes	Rev.06 dated 31/01/2014	Y
9572-0003	Yes	Rev.06 dated 31/01/2014	Y
9572-0004	Yes	Rev.06 dated 31/01/2014	Y
9572-0005	Yes	Rev.06 dated 31/01/2014	N

SECTION H. Verification findings – Programme of activities

H.1. Compliance of the programme implementation with the registered programme design document

Means of verification	By means of an in-depth review of the PoA-DD in its latest form – as downloaded from the UNFCCC project site - and the checks carried out during the on-site visit an assessment has been carried out whether the project has been implemented and operated in line with the latest approved version of the PoA-DD and whether all physical features of the project are in place. The following has been checked: implemented technology, project equipment as well as monitoring equipment. /CR//PCR//BSPDB//BUB/ Interviews with operational personnel have been carried out, QMS records, maintenance records were checked in this context. Special focus has further been laid to determine whether a potential phase wise implementation^{/CR/} has occurred within the crediting period or any delays with respect to the starting dates have occurred. Further it has been checked whether any observed deviations from the registered project design have been correctly addressed as PRCs. The following sources of information have been used in this context: • /PoA-DD/ • /CPA-DD/ • /MR/ • /VVS/ • /XLS/ • /QMS/ • /PRC/ • /unfccc/	
Findings	☒	The project has been implemented as described in the latest version of the PoA-DD as well as in section B.1 of the monitoring report. No deviations thereof have been identified in the course of this verification.
	☐	The following deviations from the registered / approved project design and or the project description in the MR have been identified in the course of this verification (for further details please refer to section E.4): - N/A
	☐	In this context the following CARs, CLs have been raised: -
	<i>In case of phased implementation:</i>	

	☒	N/A
	☐	The phased implementation has correctly and in sufficient detail been described in the latest version of the PoA-DD.
	☐	The description in section 3.1 of the MR differs in content or the level of detail from the latest version of the PoA-DD. However, the description in the MR is correct and reflects the situation during the site inspection.
	☐	The project description in the PoA-DD/MR is not deemed sufficient. The detailed implementation timeline is as follows: N/A or add as appropriate
Conclusion	Verification team has checked the contract signed between AEPC and BSP Nepal for conducting the service of national service provider for installation of biogas plant in households across rural areas of Nepal. The second monitoring period of this POA includes CPA-1, CPA-2, CPA-3, CPA-4 and CPA-5. The construction date of these bio-digesters starts from database maintained by BSP Nepal for all the Bio-digesters^{/BSPDB/}. The construction date is also referred as the operational date is checked from the construction progress report issued by BSP Nepal to AEPC^{/CRI/}. The same was checked during the site visit and the random check from the database. Further based on the physical inspection of biogas plants and interviews with the technology suppliers, contractors and household it was confirmed that the technology employed in the project is as same as in the registered CDM POA-DD and CPA-DD. In addition, individual households were interviewed during the site visit to confirm the owners name, size of the plant, operational date and operational status of the plant, ID number and other fuel used apart from the Biogas. This is also is in line with the biogas user survey report conducted by surveying agency. Verification team confirms that the implementation and operation of the registered PoA and included CPAs has been conducted in accordance with the description contained in the registered PoA-DD and CPA-DDs; There is no deviation or the proposed or actual changes in the implementation or operation of the registered PoA and CPA comply with the requirements of the Project standard.	

H.2. Implementation and operation of the management system

Means of verification	The verification team carried out onsite visits for the CPAs and interviewed key personnel and several households. Interviewees included the CME and project developer. It was established that the programme management system has been implemented and operated as described the registered PoA-DD and CPA-DDs are consistent with the PoA-DD and CPA-DDs. - To make sure the monitoring procedure working properly, a monitoring structure was established. Two organizations were working on the monitoring work of this PoA. AEPC is local authority and is CME in charge of all tasks related to CDM and PoA, including determining the households to be included in the sampling survey using a simple random approach, submits the household references to the local data collectors, and the whole process of data management. - The data collection and management process is operated as below: - A central online platform was established and the CME could use the platform to determine the households to be included in the sampling using a simple random approach and submits the household references to the local data collectors. - Well trained local officers of AEPC visited the households. Data collected was uploaded to the platform after the site visit. Using this platform, data could be transferred back to the CME for the calculation
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	of the emission reduction. 3. Data collected would be then analysed by an automatic database system, and outcome of the sampling survey would be used to calculate the emission reduction of each CPA during a certain monitoring period. Monitoring report could be prepared base on the data acquired. - During on-site inspection, data management system was checked by the verification team. Operation manual of the data management system was supplied to the verification team. Therefore, verification team is able to confirm that the data management system were properly designed and operated, and operation manual was well followed. - Both platforms, the web-interface for the local data collectors as well as the emission reduction calculation software are saved in a backup system regularly.
Findings	There is no CAR/CL raised in this section.
Conclusion	In conclusion, based on document review, and stakeholder interview, together based on verification team local and sectoral expertise, verification team confirms that: The implementation and operation of the management system included CDM CPA in the registered PoA-DD and CPA-DDs are consistent with the PoA-DD and CPADDs.

H.3. Post-registration changes

H.3.1. Temporary deviations from the registered monitoring plan, monitoring methodology or standardized baseline

It has been checked whether Temporary deviations from the registered monitoring plan (TDfrMP) or Temporary deviations from monitoring methodology or standardized baseline (TDfMM) have been applied during this monitoring period. The result is summarized in the table below.

☒	No Temporary deviations from the registered monitoring plan (TDfrMP) or Temporary deviations from monitoring methodology or standardized baseline (TDfMM).have been submitted to the UNFCCC prior to the current monitoring period.		
☐	The following TDfrMP or TDfMM have been approved or are under approval by the UNFCCC		
	1	Title	
		Status	☐ under approval; ☐ approved (approval No.:)
		Appr.date	
		Ref. No.	
	2	Title	
		Status	☐ under approval; ☐ approved (approval No.:)
		Appr.date	
		Ref.No.	
☒	During the verification of the current MP no need for a TDfrMP or TDfMM has been identified. The monitoring plan is in accordance with the approved methodology applied by the PA		
☐	An approval of the following TDfrMP or TDfMM is to be requested from the EB for the current MP as appendix 1 of the project standard does not apply. Please refer to the related PRC report submitted along with this issuance request for further details w.r.t. the assessment of the PRC.		
	1	Issue:	
	2	Issue:	
☐	The following TDfrMP or TDfMM for which appendix 1 of the PS is applicable have been applied:		

	1	Issue:	
	2	Issue:	

H.3.2. Corrections

It has been checked whether any corrections to project information or parameters fixed at validation have been approved during this monitoring period or submitted with this monitoring report. The result is summarized in the table below.

☒	During the verification of the current MP no need for corrections has been identified.		
☐	The following corrections have been applied:		
	1	Issue:	
	It is confirmed that the updated / corrected information is an accurate reflection of the actual project information and that the corrected parameters are in accordance with the applied methodology and the monitoring plan.		
	☐ A related post registration change has been submitted prior to the issuance request. The approval has been received on DD/MM/YYYY via approval number PRC-XXXX-XXX.		
	☐ A related post registration change is submitted along with this issuance request. Please refer to the related PRC report submitted along with this issuance request for further details w.r.t. the assessment of the PRC.		

H.3.3. Inclusion of a monitoring plan in a registered PoA-DD (including its generic CPA-DD(s))

☒	N/A - as this monitoring plan was part of the registered PoA-DD /CPA-DD
☐	In line with PS § 281 or § 282 the PP has forwarded a monitoring plan to the DOE for validation. No prior approval of the monitoring plan was required as the PP in line with PS § 282 wished to submit the monitoring plan together with the request for issuance for the first monitoring period. Please refer to the related PRC report submitted along with this issuance request for further details w.r.t. the assessment of the PRC..
☐	In line with § 282 the PP submitted a monitoring plan prior to the submission of the request for issuance for validation to the DOE. A DOE has assessed the monitoring plan in line with related VVS requirements and submitted a related PRC report for prior approval. The approval has been received on DD/MM/YYYY via approval number PRC-XXXX-00Z.

H.3.4. Permanent changes to the monitoring plan as described in the registered PoA-DD, applied methodology, or applied standardized baseline

It has been checked whether any permanent changes from the registered monitoring plan (PCfrMP) or applied methodologies (PCfMM) including standardized baselines (PCfSB) have been approved prior or during this monitoring period or submitted with this monitoring report. The result is summarized in the table below.

☒	No PCfrMP, PCfMM or PCfSB have been submitted to the UNFCCC prior to the current monitoring period		
☐	The following PCfrMP, PCfMM or PCfSB have been approved or are under approval by the UNFCCC		
	1	Title	

	Status	☐ under approval; ☒ approved	
	Appr.date		
	Ref. No.		
☒	During the verification of the current MP no need for a PCfrMP, PCfMM or PCfSB has been identified. The monitoring plan is in accordance with the approved methodology applied by the PA		
☐	An approval of the following PCfrMP, PCfMM or PCfSB is to be requested from the EB for the current MP as appendix 1 of the project standard does not apply.		
	1	Issue:	
	2	Issue:	
☐	The following PCfrMP, PCfMM or PCfSB for which appendix 1 of the PS is applicable have been applied:		
	1	Issue:	
	2	Issue:	

H.3.5. Changes to the programme design of the registered PoA-DD (including corresponding changes to project design of the generic CPA-DD(s)) and updates to the eligibility criteria for inclusion of specific-case CPAs in the PoA

It has been checked whether any changes to the project design (CoPD) have been approved prior or during this monitoring period or submitted with this monitoring report. The result is summarized in the table below.

☒	No CoPD has been submitted to the UNFCCC prior to the current monitoring period		
☐	The following CoPD have been approved or are under approval by the UNFCCC		
	1	Title	
		Status	☐ under approval; ☐ approved
		Appr.date	
		Ref. No.	
☒	During the verification of the current MP no need for a CoPD has been identified. The monitoring plan is in accordance with the approved methodology applied by the PA		
☐	An approval of the following CoPD is to be requested from the EB for the current MP as appendix 1 of the project standard does not apply.		
	1	Issue:	
	2	Issue:	
☐	The following CoPD for which appendix 1 of the PS is applicable have been applied:		
	1	Issue:	
	2	Issue:	

H.3.6. Types of changes specific to afforestation and reforestation activities

☒	N/A - as this monitoring plan was part of the registered CPA-DD
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SECTION I. Verification findings – Component project activity(ies)**I.1. Compliance of the CPA implementation with the included CPA design document**

Means of verification	Verification team by means of an on-site inspection and interviews, assessed that all physical features (technology, project equipment, and monitoring system) of the included CPAs in the registered CPA-DDs are in place and that the project participants or the coordinating/managing entity have operated the CPAs as per the registered/approved CPA-DDs. The MR has been checked and compared to the PoA-DD and CPA-DDs.
Findings	N/A
Conclusion	It can be confirmed that the CPAs have been implemented in accordance with the CPA-DDs. CPA-1 to CPA-5 were also confirmed to be fully operational in accordance with the registered CPA-DDs. No specific monitoring equipment had to be installed according to the monitoring plan. The information provided in the monitoring report correctly states the implementation and operational status of the project activity.

I.2. Post-registration changes**I.2.1. Temporary deviations from registered monitoring plan, applied methodology or applied standardized baseline**

It has been checked whether Temporary deviations from the registered monitoring plan (TDfrMP) or Temporary deviations from monitoring methodology or standardized baseline (TDfMM) have been applied during this monitoring period. The result is summarized in the table below.

☒	No Temporary deviations from the registered monitoring plan (TDfrMP) or Temporary deviations from monitoring methodology or standardized baseline (TDfMM). have been submitted to the UNFCCC prior to the current monitoring period.		
☐	The following TDfrMP or TDfMM have been approved or are under approval by the UNFCCC		
	1	Title	
		Status	☐ under approval; ☐ approved (approval No.:)
		Appr. date	
		Ref. No.	
	2	Title	
		Status	☐ under approval; ☐ approved (approval No.:)
		Appr. date	
		Ref. No.	
☒	During the verification of the current MP no need for a TDfrMP or TDfMM has been identified. The monitoring plan is in accordance with the approved methodology applied by the PA		
☐	An approval of the following TDfrMP or TDfMM is to be requested from the EB for the current MP as appendix 1 of the project standard does not apply. Please refer to the related PRC report submitted along with this issuance request for further details w.r.t. the assessment of the PRC.		
	1	Issue:	
	2	Issue:	
☐	The following TDfrMP or TDfMM for which appendix 1 of the PS is applicable have been applied:		
	1	Issue:	
	2	Issue:	

I.2.2. Corrections

During the course of first periodic verification was requested with the UNFCCC CDM executive board through a PRC which was accepted by CDM executive board on 22nd June 2015.

It has been checked whether any corrections to project information or parameters fixed at validation have been approved during this monitoring period or submitted with this monitoring report. The result is summarized in the table below.

☐	During the verification of the current MP no need for corrections has been identified.	
☒	The following corrections have been applied:	
1	Issue:	It was noted that there have been some cross posting of ecological zones in the spreadsheet communicated during the registration of the PoA/CPA inclusion. A correction in relation to the distribution of biogas digesters across different ecological zones in CPA-1
The CPA-DD has been revised accordingly: (New) version No.: 15 Revision date: 05/09/2014		
It is confirmed that the updated / corrected information is an accurate reflection of the actual project information and that the corrected parameters are in accordance with the applied methodology and the monitoring plan.		
☒ A related post registration change has been submitted prior to the issuance request. The approval has been received. on DD/MM/YYYY via approval number PRC-XXX-XXX. ☐ A related post registration change is submitted along with this issuance request. Please refer to the related PRC report submitted along with this issuance request for further details w.r.t. the assessment of the PRC.		

I.2.3. Changes to the start date of the crediting period

Not applicable

I.2.4. Inclusion of a monitoring plan to an included CPA-DD

☒	N/A - as this monitoring plan was part of the included CPA-DD
☐	In line with PS § 281 or § 282 the PP has forwarded a monitoring plan to the DOE for validation. No prior approval of the monitoring plan was required as the PP in line with PS § 282 wished to submit the monitoring plan together with the request for issuance for the first monitoring period. Please refer to the related PRC report submitted along with this issuance request for further details w.r.t. the assessment of the PRC.
☐	In line with § 282 the PP submitted a monitoring plan prior to the submission of the request for issuance for validation to the DOE. A DOE has assessed the monitoring plan in line with related VVS requirements and submitted a related PRC report for prior approval. The approval has been received on DD/MM/YYYY via approval number PRC-XXXX-00Z.

I.2.5. Permanent changes to the monitoring plan as described in the included CPA-DD, applied methodology, or applied standardized baseline

It has been checked whether any permanent changes from the registered monitoring plan (PCfrMP) or applied methodologies (PCfMM) including standardized baselines (PCfSB) have been

approved prior or during this monitoring period or submitted with this monitoring report. The result is summarized in the table below.

☒	No PCfrMP, PCfMM or PCfSB have been submitted to the UNFCCC prior to the current monitoring period		
☐	The following PCfrMP, PCfMM or PCfSB have been approved or are under approval by the UNFCCC		
	1	Title	
		Status	☐ under approval; ☐ approved
		Appr.date	
		Ref. No.	
☒	During the verification of the current MP no need for a PCfrMP, PCfMM or PCfSB has been identified. The monitoring plan is in accordance with the approved methodology applied by the PA		
☐	An approval of the following PCfrMP, PCfMM or PCfSB is to be requested from the EB for the current MP as appendix 1 of the project standard does not apply.		
	1	Issue:	
	2	Issue:	
☐	The following PCfrMP, PCfMM or PCfSB for which appendix 1 of the PS is applicable have been applied:		
	1	Issue:	
	2	Issue:	

1.2.6. Changes to the programme design of the included CPA-DD

It has been checked whether any changes to the project design (CoPD) have been approved prior or during this monitoring period or submitted with this monitoring report. The result is summarized in the table below.

☒	No CoPD has been submitted to the UNFCCC prior to the current monitoring period		
☐	The following CoPD have been approved or are under approval by the UNFCCC		
	1	Title	
		Status	☐ under approval; ☐ approved
		Appr.date	
		Ref. No.	
	2	Title	
		Status	☐ under approval; ☐ approved
		Appr.date	
		Ref.No.	
☒	During the verification of the current MP no need for a CoPD has been identified. The monitoring plan is in accordance with the approved methodology applied by the PA		
☐	An approval of the following CoPD is to be requested from the EB for the current MP as appendix 1 of the project standard does not apply.		
	1	Issue:	

	2	Issue:	
☐	The following CoPD for which appendix 1 of the PS is applicable have been applied:		
	1	Issue:	
	2	Issue:	

I.2.7. Types of changes specific to afforestation and reforestation component project activities

☒	N/A - as this monitoring plan was part of the registered PoA-DD
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I.3. Compliance of monitoring plan with the monitoring methodology including applicable tool and standardized baseline

Means of verification	The PoA-DD and CPA-DDs were reviewed against the methodology and any applicable tools applied.
Findings	There is no CAR/CL raised in this section.
Conclusion	The verification team is able to confirm that the monitoring plan contained in the registered CPA-DDs is in accordance with the approved methodology applied by the project activity. The monitoring plan is in accordance with the approved methodology applied by the component project activity and as provided in the CPA-DDs. The verification took conforms to the § 386 to § 388 of VVS version 09.

Means of verification	By means of comparison of the MR with (i) the applied CDM methodology (ii) all applicable CDM Meth tools and (iii) if applicable, a standardized baseline the verification team has checked whether the MP is in compliance with the MP related requirements of the applied methodology/tools/SB. The following sources of information have been used in this context: • /MR/ • /AMSII/ • /unfccc/			
Findings	☒	The MP is completely in accordance with the approved methodology applied by the CDM project (last registered/approved version of the CPA-DD)		
	☐	The breakdown of MP accordance of the referenced tools is as follows:		
		1	Title (of the tool)	
		Version		
		MP compliance	☐ full compliance ☐ findings have been raised ☒ N/A (for MP)	
	☐	The breakdown of MP accordance of the applicable SB is as follows:		
1		Title (of the SB)	-	
		Version		
		MP compliance		
☐	In this context the following CARs, CLs, FARs have been raised:			
	-			
Conclusion	☒	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.		
	☐	The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.		

	The applied methodology is consistent with the versions on the UNFCCC website. No tools have been applied. No standardised baseline is applied.
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I.4. Compliance of monitoring activities with the registered monitoring plan

I.4.1. Data and parameters fixed ex ante or at renewal of crediting period

Means of verification	By means of comparison of the MR and the ER calculation with the latest version of the revised and approved CPA-DD, the verification team has checked whether all parameters fixed ex-ante or at renewal of the crediting period have been applied correctly. Further it has been checked whether the GWP for the respective period have been correctly applied. The following sources of information have been used in this context: • /MR/ • /XLS/ • /PoA-DD/ • /CPA-DD/ • /PS/ • /VVS/ • /unfccc/	
Findings	☒	The MR and the ER calculation have considered the parameters fixed ex-ante correctly, no deviations have been observed.
	☐	The following deviations from the parameters fixed ex-ante or at renewal of crediting period have been identified in the course of this verification: - N/A
	☐	In this context the following CARs, CLs, FARs have been raised: -
Conclusion	☒	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.
	☐	The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.
		The data and parameters listed in the section G.1 of MR was cross checked with the applied methodology, registered CPA-DD, ER and found consistent. The following data and parameters fixed ex ante were checked by the verification team to be in line with registered CPA-DD (s): - Net calorific value of the non-renewable biomass that is substituted; NCV_{biomass} - Emission factor for the projected fossil fuel consumption in the baseline; EF_{projected_fossil fuel} - Fraction of biomass used in the absence of the project activity in year y that can be established as non-renewable biomass using nationally approved methods; fNRB,y - Quantity of woody biomass that is substituted or displaced in tonnes per year and appliance; Q_{NRBrepl} - Number of digesters in each size category (in m³) and region (Terai, Hill and, if available, Remote Hill or Mountain) implemented under the CPA; N_{s,r} (for CPA-1, CPA-2, CPA-3, CPA-4, CPA-5)

I.4.2. Data and parameters monitored

Means of verification	According to PS (version 09.0), VVS(version 09.0), sample standard/guideline and
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	applied methodologies included the applied tools, the verification team reviewed the MR, PoA-PDD and included CPA-DDs, crosschecked against the other available data and documents, verified whether monitored parameters in accordance with all relevant applicable requirements in the PS; whether the MR list all data and parameters to be monitored, as required by the applied methodology and whether the data and parameters obtained in a reasonable way, whether the sample plan conducted accordingly, the source and the applied value of the monitored parameter is acceptable, whether the equipment used and calibrated according to the registered monitoring plan included in the registered PoA-DD and CPA-DDs, whether the parameters monitored explain the operational and management structure, responsibilities and institutional arrangement for data collection/archiving, QA/QC procedures.																		
Findings	For details please refer to appendix 5																		
Conclusion	☐ ☒ No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements. The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4. During the verification all relevant monitoring parameters (as listed in chapter B.7.1 of the registered CPA-DD) 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. There is only one parameter required to be monitored which is “The share of digesters operational “; P as per registered monitoring plan in POA-DD and CPA-DD (s). This monitoring parameter is calculated as the weighted average value across all ecological zones as sourced from the annual biogas users’ survey. CPA wise results of BUS survey are as follows: <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">CPA</th><th style="text-align: left;">Value(s) of monitored parameter</th><th style="text-align: left;">Source of data</th></tr> </thead> <tbody> <tr> <td>CPA-1</td><td>98.98%</td><td>BUS Report 2014/15: CPA-1</td></tr> <tr> <td>CPA-2</td><td>96.16%</td><td>BUS Report 2014/15: CPA-2</td></tr> <tr> <td>CPA-3</td><td>97.21%</td><td>BUS Report 2014/15: CPA-3</td></tr> <tr> <td>CPA-4</td><td>95.33%</td><td>BUS Report 2014/15: CPA-4</td></tr> <tr> <td>CPA-5</td><td>98.32%</td><td>BUS Report 2014/15: CPA-5</td></tr> </tbody> </table> Verification team checked the Biogas User Survey (BUS) report for each CPA and confirms that the values are correct.	CPA	Value(s) of monitored parameter	Source of data	CPA-1	98.98%	BUS Report 2014/15: CPA-1	CPA-2	96.16%	BUS Report 2014/15: CPA-2	CPA-3	97.21%	BUS Report 2014/15: CPA-3	CPA-4	95.33%	BUS Report 2014/15: CPA-4	CPA-5	98.32%	BUS Report 2014/15: CPA-5
CPA	Value(s) of monitored parameter	Source of data																	
CPA-1	98.98%	BUS Report 2014/15: CPA-1																	
CPA-2	96.16%	BUS Report 2014/15: CPA-2																	
CPA-3	97.21%	BUS Report 2014/15: CPA-3																	
CPA-4	95.33%	BUS Report 2014/15: CPA-4																	
CPA-5	98.32%	BUS Report 2014/15: CPA-5																	

1.4.3. Implementation of sampling plan

Means of verification	The verification team has been checked whether the PPs have applied a sampling approach to determine the monitored values. Further it has been checked whether the PPs have correctly applied the implemented sampling plan including (i) description of the implemented sampling design (ii) collected data (iii) analysis of collected data (iv) demonstration on whether the required confidence/precision has been met. The following sources of information have been used in this context: • /MR/ • /XLS/ • /FMR/ • /WBT/ • /PoA-DD/ • /CPA-DD/
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Findings	☐	The PPs have not applied sampling approaches for the parameters monitored.
	☐	The PPs have applied sampling approaches for the following parameters monitored.
	☒	Parameter: P Name: The share of digesters operational Description on how the sampling efforts and survey comply with the validated sampling plan: The Biogas Users Survey (BUS) intends to monitor the key parameters that were envisaged as monitoring parameters while designing the Program of Activities for individual CPA(s). For the second periodic CDM POA verification all five CPA's are included. Such parameter mainly includes identification of non-operational biogas plants. A Summary of the Biogas Users Survey (BUS) for 2014-15 conducted for CPA-1, CPA-2, CPA-3, CPA-4 and CPA-5 is given below: • CPA-1 (2014-15): Biogas Users' survey for CPA-1 covers a total sample of 90 households from all 20,000 households (20,000 biogas plants installed in the CPA-1). • CPA-2 (2014-15): Biogas Users' survey for CPA-2 covers a total sample of 90 households from all 19,927 households (19,927 biogas plants installed in the CPA-2). • CPA-3 (2014-15): Biogas Users' survey for CPA-3 covers a total sample of 100 households from all 19,959 households (19,959 biogas plants installed in the CPA-3). • CPA-4 (2014-15): Biogas Users' survey for CPA-4 covers a total sample of 89 households from all 19,970 households (19,970 biogas plants installed in the CPA-4). • CPA-5 (2014-15): Biogas Users' survey for CPA-5 covers a total sample of 100 households from all 19,842 households (19,842 biogas plants installed in the CPA-5). Sample size was determined using stratified random sampling in consistent with "Guidelines for sampling and surveys for CDM project activities and programme of activities, Version 02.0 (EB 69 Annex 5)" for biogas plants under CPA-1 to CPA-5. The sampling was performed within the level of precision of 10% and a confidence level of 90%. This is in conformance with §10 of Standard for sampling and surveys for CDM project activities and programme of activities (EB69, Annex 4). The minimum sample sizes required for conducting the present Biogas User Surveys have been estimated with a margin of error not exceeding 10 percent of the population mean. This is in accordance with §10 of EB69 Annex 4. The verification team has checked the sampling approach through the onsite visit interview and also by going through the methodology followed by the surveying entity i.e. Square One Research and Training. The sampling method used in all the BUS Survey is in compliance with the "General Guidelines for Sampling and Surveys for Small-Scale CDM Project Activities" EB 50, in effect at the time of the survey design. The approach is also consistent with EB 69, Annex 5. The samples are allocated in two different ways to maintain the representativeness. First, samples are allocated proportionally to ecological belts and development regions based on proportion of biogas installed in these two areas and Secondly, sample are allocated to size of biogas (2, 4, 6, 8, 10 m³). Second, samples were allocated proportionately to the cluster and later the distribution of samples among different sizes of the digester was ensured. It almost represents the proportion of biogas digester implemented under the CPA (s) of the POA. The verification team checked the BUS report to confirm the correctness of the samples for all CPA's involved in the current monitoring period. The sample size is calculated from the total population of biogas units with 90/10 confidence/precision level. The same was matched with EB 69 Annex 5. The sampling plan is assessed as part of the BUS report for all the CPA's

		i.e. CPA-1; CPA-2; CPA-3; CPA-4 and CPA-5. The survey report of 2014-2015^{/xxx/} carried out by an independent agency, Square One Research and Training is checked by the verification team. It has been confirmed that the surveys have been done as per EB guidelines i.e. Guidelines for sampling and surveys for CDM project activities and programme of activities, version 02 (EB69, Annex 5). The results for the CPA's included in the current monitoring period are as follows: <table border="1"> <thead> <tr> <th>CPA</th> <th>Total number of plants</th> <th>Total number of sample (n)</th> </tr> </thead> <tbody> <tr> <td>CPA-1</td> <td>20,000</td> <td>90</td> </tr> <tr> <td>CPA-2</td> <td>19,927</td> <td>90</td> </tr> <tr> <td>CPA-3</td> <td>19,959</td> <td>90</td> </tr> <tr> <td>CPA-4</td> <td>19,970</td> <td>90</td> </tr> <tr> <td>CPA-5</td> <td>19,842</td> <td>90</td> </tr> </tbody> </table> Verification team noted that all biogas digesters sold are registered under BSP Nepal database and their performance is monitored through field surveys of a random sample of the installed households. The biogas production of biogas plants is not metered. Through a sample survey, the number of systems out of order has been determined and the performance ratio is calculated by taking the percentage of the sold biogas digesters that are still operating. This is in compliance with the requirements of registered PoA-DD and CPA-DD hence was accepted by DOE.	CPA	Total number of plants	Total number of sample (n)	CPA-1	20,000	90	CPA-2	19,927	90	CPA-3	19,959	90	CPA-4	19,970	90	CPA-5	19,842	90
CPA	Total number of plants	Total number of sample (n)																		
CPA-1	20,000	90																		
CPA-2	19,927	90																		
CPA-3	19,959	90																		
CPA-4	19,970	90																		
CPA-5	19,842	90																		
Conclusion	☒	In this context the following CARs, CLs, FARs have been raised: CAR 1																		
	☐	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.																		
	☒	The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.																		
		The sample plan is reasonable to conduct and the implementation is well performed and results of the sample survey can be accepted. The implementation of sample plan is in line with the VVS (version 09.0), sample standard/guideline and applied methodologies included the applied tools.																		

I.5. Compliance with the calibration frequency requirements for measuring instruments

Means of verification	Not applicable. As there is no monitoring equipment applied in this POA. Therefore, no calibration of equipment is installed which is in line with the requirements of the validated CPA-DD. The following sources of information have been used in this context: • /MR/ • /XLS/ • /POA-DD/	
Findings	Not applicable	
Conclusion	☒	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.
	☐	The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.
		-

I.6. Assessment of data and calculation of emission reductions or net removals

I.6.1. Calculation of baseline GHG emissions or baseline net GHG removals by sinks

Means of verification

During the verification the calculation of baseline GHG emissions has been checked. In detail the following has been verified:

- Transparency*: It has been checked whether the calculation of baseline emissions is fully traceable and, where used, the Excel calculation provides all calculation formulae.
- Parameter consistency*: It has been checked whether all internal and external parameters and data used for the calculation are applied consistently in the monitoring report and the calculation spreadsheet.
- Correctness*: It has been checked whether the applied formulae and methods for calculating baseline emissions are in accordance with the monitoring plan and the approved methodology.
- Completeness*: It has been checked whether all calculations are complete and without omissions.

The following sources of information have been used in this context:

- /MR/
- /PoA-DD/
- /CPA-DD/
- /XLS/

The equations for baseline emissions, as provided in the monitoring report and confirmed with the registered CPA-DDs and the applied methodology are:

$$ER_y = B_y \cdot f_{NRB,y} \cdot NCV_{biomass} \cdot EF_{projected, fossilfuel}$$

Where,

ER_y = Emissions Reductions during the year y
B_y = Quantity of woody biomass that is substituted or displaced
f_{NRB,y} = fraction of non-renewable biomass
NCV_{biomass} = Net calorific value of the non-renewable woody biomass that is substituted
EF_{projected, fossilfuel} = Emission factor for substitution of non-renewable woody biomass by similar consumers.

with:

$$B_y = N_{sr} \times P \times Q_{NRB repl.}$$

Where,

N_{sr} = the number of appliances
P = Performance of digesters as the share of digesters implemented that is actually operational, determined through survey methods (%)
Q_{NRB repl.} = Average quantity of biomass replaced per appliance and year

Therefore, emission reduction are calculated to be :

	ER _y (t CO ₂ e)	ER _y (t CO ₂ e), adjusted due to earthquake
CPA-1	65,923	65,726
CPA-2	63,808	63,427
CPA-3:	64,611	62,106
CPA-4	63,396	61,127
CPA-5	60,691	59,967
Total	318,429	312,353

However after the BUS survey for this monitoring period (2014/2015) an Earth quake struck Nepal on 25/04/2015 and for the down time during the period from 25/04/2015 to end of this monitoring period the PP took the BUS survey results of third bus survey (2015/2016) for the next monitoring and accordingly adjusted the emission reduction calculation for this monitoring report.

VT checked the downtimes through the percentage of affected digesters by earth quake from the bus survey and the calculations and apportioning done in the ER

		sheets. The total biogas digesters that were non-operational as per the bus survey of 2015/2016 is 32 out of the 450 samples for all five CPAs which works out be 7.11%. But out of 109 samples checked by the VT during the site visit only 6 were non-operational due to earthquake, which accounts for 5.5%. Thus the revised emission reduction due to the downtimes accounted for earthquake for each CPA is calculated by project proponent is considered as conservative.
Findings	☒	The calculation of the baseline emissions was found to be fully compliant with the above stated principles. The calculations of baseline GHG emissions or baseline net GHG removals have been carried out in accordance with the formulae and methods described in the registered monitoring plan, the applied methodology and, where applicable, the applied standardized baseline. Any assumptions used in emission or removal calculations have been justified. Appropriate emission factors, IPCC default values, GWPs and other reference values have been correctly applied. No errors, miscalculations, omissions, misstatements or incomplete information has been identified.
	☐	The verification team has identified mistakes in the baseline emissions calculation or the underlying calculation approaches.
	☒	In this context the following CARs, CLs, FARs have been raised:
		CAR 1
Conclusion	☐	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.
	☒	The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.
		The verification checked and recalculated the ER calculation sheet and confirms that the sheet is reproducible and calculation was correctly applied. The confirmed value of baseline emissions is correctly reported in monitoring report and emission reduction sheet. Therefore, it is concluded by verification team that the emission reductions have been calculated in accordance with the monitoring plan and the applied methodology, and it was determined that the data processing and emission reductions calculations resulted in real and measurable emission reductions. All assumptions, emission factors and default values have been justified and the information has been cross checked with other sources.

1.6.2. Calculation of project GHG emissions or actual net GHG removals by sinks

Means of verification		During the verification the calculation of project GHG emissions has been checked. In detail the following has been verified: • <i>Transparency</i>: It has been checked whether the calculation of project emissions is fully traceable and, where used, the Excel calculation provides all calculation formulae. • <i>Parameter consistency</i>: It has been checked whether all internal and external parameters and data used for the calculation are applied consistently in the monitoring report and the calculation spreadsheet. • <i>Correctness</i>: It has been checked whether the applied formulae and methods for calculating project emissions are in accordance with the monitoring plan and the approved methodology. • <i>Completeness</i>: It has been checked whether all calculations are complete and without omissions. The following sources of information have been used in this context: • /MR/ • /CPA-DD/ • /XLS/.
Findings	☒	As per applied methodology project emissions are not applicable for this POA.
	☐	The verification team has identified mistakes in the project emissions calculation or the underlying calculation approaches.
	☐	In this context the following CARs, CLs, FARs have been raised:

Conclusion	☒	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.
	☐	The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.

1.6.3. Calculation of leakage GHG emissions

Means of verification		During the verification the calculation of leakage has been checked. In detail the following has been verified: • <i>Transparency</i>: It has been checked whether the calculation of leakage is fully traceable and, where used, the Excel calculation provides all calculation formulae. • <i>Parameter consistency</i>: It has been checked whether all internal and external parameters and data used for the calculation are applied consistently in the monitoring report and the calculation spreadsheet. • <i>Correctness</i>: It has been checked whether the applied formulae and methods for calculating project emissions are in accordance with the monitoring plan and the approved methodology. • <i>Completeness</i>: It has been checked whether all calculations are complete and without omissions. The following sources of information have been used in this context: • /MR/ • /CPA-DD/ • /XLS/ • /AMSII/
Findings	☒	The calculation of the leakage was found to be fully compliant with the above stated principles. The calculations of leakage GHG emissions or actual net GHG removals have been carried out in accordance with the formulae and methods described in the registered monitoring plan, the applied methodology and, where applicable, the applied standardized baseline. Any assumptions used in emission or removal calculations have been justified. Appropriate emission factors, IPCC default values, GWPs and other reference values have been correctly applied. No errors, miscalculations, omissions, misstatements or incomplete information have been identified.
	☐	The verification team has identified mistakes in the project emissions calculation or the underlying calculation approaches.
	☐	In this context the following CARs, CLs, FARs have been raised:
Conclusion	☒	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.
	☐	The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.
		The CME has opted to apply the adjustment factor of 0.95 for leakage emission as an alternative to conduct a leakage assessment. This is in line with the applied methodology.

1.6.4. Summary of calculation of GHG emission reductions or net GHG removals by sinks

Means of verification	During the verification no mistakes in the ER calculation were identified. Verification team has checked the ER calculation^{ER/} was prepared by the CME/PP/CPA implementer. All raised issues were addressed appropriately so that all corresponding CARs could be closed out. According to VVS (version 09.0), a complete set of data for the specified monitoring
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	period is verified. Information provided in the monitoring report has been crosschecked with other sources as listed in appendix-3. Calculations of GHG emissions have been verified whether carried out in accordance with the formulae and methods described in the registered monitoring plan, the applied methodology and, where applicable, the applied standardized baseline. Any assumptions used in emission or removal calculations have been justified. Whether the appropriate emission factor, IPCC default values, GWP and other reference values have been correctly applied.
Findings	There is no CAR/CL raised in this section.
Conclusion	

Means of verification	The verification team has checked if the MR includes a summary table of the emission reductions calculation specifying separately - Total baseline emissions, - Total project emissions, - Total leakage, - Total emission reductions. Section E.4 of MR demonstrate the summary of GHG emission reductions for the monitoring period and calculated according to the applied methodology as follows: $ER_y = B_y \cdot f_{NRB,y} \cdot NCV_{biomass} \cdot EF_{projected, fods silfu} \cdot 0.95$ It has been assessed whether the values are correct or need to be revised as a consequence of issues identified during the desktop reviews and onsite assessments. Findings have been raised and all monitored parameters have been duly verified. The following sources of information have been used in this context: • /MR/ • /XLS/ • /CPA-DD/ • /PoA-DD/ • /AMSII/	
Findings	☒	Section E.4 of the MR includes in 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 requires changes in the ER calculation.
	☐	During the verification issues with impact on the ER calculation have been identified.
Conclusion	☒	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.
	☐	The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.
		The summary table in the MR has been filled correctly and the values are in line with the related emissions reduction spreadsheet. Verification team confirms that appropriate methods and formulae for calculating baseline emissions, projects emissions and leakage have been followed. Validation team is of the opinion that all assumptions, emissions factors and default values that were applied in calculations have been justified. Thus it is confirmed by verification team that the emission reduction (ER) calculation is overall correct.

Specific-case CPA	BE _v or baseline net GHG removals by sinks (tCO ₂ e)	PE _v or actual net GHG removals by sinks (tCO ₂ e)	Leakage (tCO ₂ e)	ER _v or net GHG removals by sinks (tCO ₂ e)		
				up to 31 December 2012	from 1 January 2013 onwards	entire monitoring period
CPA 9572-0001	69,393.61	0	3,469.68	N/A	65,923	65,923
CPA 9572-0002	67,166.43	0	3,358.32	N/A	63,808	63,808
CPA 9572-0003	68,012.32	0	3,400.62	N/A	64,611	64,611
CPA 9572-0004	66,733.12	0	3,336.66	N/A	63,396	63,396
CPA 9572-0005	63,885.58	0	3,194.28	N/A	60,691	60,691
Total	335,191	0	16,760	N/A	318,429	318,429

As the earthquake which struck Nepal on 25/04/2015 had an impact on the operations of the Biogas digesters, accordingly the emission reductions are revised conservatively as shown in the below table.

With :

ER_y (t CO₂ e), adjusted due to earthquake = ER_y * (1 – non-operational digesters (%) / 365 * 98 days)

Specific-case CPA	ER _y or net GHG removals by sinks (tCO ₂ e)	Percentage of digesters non-operational after earthquake struck	downtimes of non-operational digesters (days)	ER _y (t CO ₂ e), adjusted due to earthquake
CPA 9572-0001	65,923	1.11%	98	65,726
CPA 9572-0002	63,808	2.22%	98	63,427
CPA 9572-0003	64,611	14.44%	98	62,106
CPA 9572-0004	63,396	13.33%	98.00	61,127
CPA 9572-0005	60,691	4.44%	98	59,967
Total	318,429			312,353

1.6.5. Comparison of actual GHG emission reductions or net GHG removals by sinks with estimates in included specific-case CPA

Means of verification	The verification team has checked if the MR includes a comparison of actual values of the monitoring period with the estimations in the registered CPA-DD. It has further checked which of the below listed cases is applicable for the calculated ER of the current monitoring period.	
Findings	☒	Case 1: The ex-ante estimated value for the whole POA was found to be proportionally higher than the ex-post determined value. No further action is deemed required.
	☐	Case 2: The ex-ante estimated value fits very good to the actually monitored value. No further justification is deemed required.

Conclusion	☐	Case 3: The ex-ante estimated value was found to be proportionally lower than the ex-post determined value.
	☐	In this context the following CARs, CLs, FARs have been raised:
	☒	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.
	☐	The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.

Specific-case CPA reference number	Value estimated in ex ante calculation in the included specific-case CPA-DD(s)	Actual values achieved by the specific-case CPA(s) during this monitoring period
CPA 9572-0001	61,889	65,726
CPA 9572-0002	66,236	63,427
CPA 9572-0003	66,329	62,106
CPA 9572-0004	66,397	61,127
CPA 9572-0005	65,883	59,967
Total	326,734	312,353

I.6.6. Remarks on difference from estimated value in registered PDD

Means of verification	On the basis of the above comparison of actual values of the monitoring period with the estimations in the registered CPA-DD (E.8.5) the verification team has checked whether (in case 3) an appropriate explanation is included in the MR.	
Findings	☒	No further justification or explanation is deemed required as actual emissions of this MP do not exceed significantly the ex-ante calculated emission reductions (applicable for case 1 and 2).
	☐	For case 3: The PP has provided a related justification in the MR. The reasons for the increase are as follows: - N/A
	☐	In this context the following CARs, CLs, FARs have been raised:
Conclusion	☒	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.
	☐	The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.
	The MR includes a comparison of the calculated actual emission reductions with the ex-ante calculated values in the registered PoA-DD and CPA-DDs. The calculated value was found to be approximately near to the ex-post determined value, thus no further justification was required (except for the CPA-1). However, this marginal variation is due to change in the operational status of the Biodigesters in CPA-1 2014/15. Verification team has checked the results of the all four Biogas Users' Survey reports conducted for these CPA's for the current monitoring period to confirm that the emission reduction as presented for CPA-1, CPA-2, CPA-3, CPA-4 and CPA-5 are correct and accurate. As the overall emission reductions are less than the estimation in the DDs for an equivalent duration of the monitoring period, no further explanation is required. Therefore, it is confirmed that the increase of ER has been explained reasonably.	

Appendix 1. Abbreviations

Abbreviations	Full texts
APEC	Alternative Energy Promotion Centre
BSP	Biogas Support Program
BUS	Biogas User Survey
CA	Corrective Action / Clarification Action
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
CME	Coordinating and Managing Entity
CO ₂	Carbon dioxide
CO ₂ eq	Carbon dioxide equivalent
CL	Clarification Request
CPA	Component Project Activity
DVerR	Draft Verification Report
ER	Emission Reduction
FAR	Forward Action Request
GHG	Greenhouse gas (es)
MP	Monitoring Plan
MR	Monitoring Report
NRB	Non Renewable Biomass
PA	Project Activity
PCP	Project Cycle Procedure
POA-DD	Programme of Activities Design Document
PP	Project Participant
PS	Project Standard
QA/QC	Quality Assurance / Quality Control
UNFCCC	United Nations Framework Convention on Climate Change
VVS	Validation and Verification Standard
XLS	Emission Reduction Calculation Spread Sheet
HH	Household
NRB	Non Renewable Biomass
BSP	Biogas Support Program
AEPC	Alternate Energy Promotion Council
BSP-NEPAL	Biogas Support Program – Nepal

Appendix 2. Competence of team members and technical reviewers

TUV NORD Certification		
Statement of Competence Appointment and authorization according to the procedures of the TÜV NORD J/CCDM Certification Program		
Mr. Ezhilarasu G.		
SCHEME	STATUS	VALID UNTIL
CDM	Senior Assessor (Validation, Verification)	2017-02-06
VCS / ISO 14064-2	Senior Assessor	2017-02-06
Authorization status for technical areas within sectoral scopes:		
CODE	TECHNICAL AREA	
1.2	Renewable Energies	
3.1	Energy Demand	
13.1	Waste Handling and Disposal	
130 - Rev. 3, Date: 2014-02-07		
130_261-VA060-F20_2014-02-07_rev3.doc		

TUV NORD Certification		
Statement of Competence Appointment and authorization according to the procedures of the TÜV NORD J/CCDM Certification Program		
Mr. Indrapal Parmar		
SCHEME	STATUS	VALID UNTIL
CDM	Lead Assessor (Validation, Verification)	2015-01-06
VCS / ISO 14064-2	Lead Assessor	2015-01-06
Authorization status for technical areas within sectoral scopes:		
CODE	TECHNICAL AREA	TR SUBCATEGORIES
1.2	Renewable Energies	
191 - Rev. 4, Date: 2015-01-07		
191_501-VA060-F20_2015-01-07_rev4.doc		

Appendix 3. Documents reviewed or referenced

No.	Author	Title	References to the document	Provider
1	CME	Contract for the operation of the AEPC/NRREP NSP/RSC signed between AEPC and BSP Nepal for conducting the service of National Service provider for AEPC includes annex detailed work plan including financial proposal.	/AEPC/	CME
2	CME	Database maintained by BSP Nepal for all the Bio-digesters including CPA-1 to CPA-5	/BSPDB/	CME
3	CME	Biogas User's Survey for the year 2014-15 for CPA-1 to CPA-5. Biogas User's Survey for the year 2015-16 for CPA-1 to CPA-5.	/BUS/	CME
4	CME	- Biogas plant owners/user's booklet issued by AEPC. - Plant Handover form signed by Biodigester owner.	/BUB/	CME
5	CME	- Construction progress report issued by BSP Nepal to AEPC ref. no. BSPN/SA&D/2013/059 dated 05 August 2014. - Plant completion progress report by BSP Nepal	/CRI/	CME
6	CME	Emission reduction right transfer/sales agreement between Biodigester owner and Construction company.	/ERS/	CME
7	CME	- Emission reduction sheet w.r.t to MR dated 01/02/2016 version 1.0. - Emission reduction sheet w.r.t to MR dated 09/09/2016 version 2.0 - Emission reduction sheet w.r.t to MR dated 14/12/2016 version 3.0	/ER/	CME
8	CME	ISO certificate for ISO 9001:2008 issued dated 08/12/2012. Valid till 07/12/2015.	/ISO/	CME
9	CME	ISO based internal Monitoring i.e. Field Trip Report Quality Control and Monitoring Department by BSP Nepal on sample basis for the Biodigester installed.	/IMS/	CME
10	CME	- Monitoring report of the POA project titled "Nepal Biogas Support Program-PoA" dated 01/02/2016 version 1.0. - Monitoring report of the POA	/MR/	CME

No.	Author	Title	References to the document	Provider																		
		project titled “Nepal Biogas Support Program-PoA” dated 09/09/2016 version 2.0. Monitoring report of the POA project titled “Nepal Biogas Support Program-PoA” dated 14/12/2016 version 3.0 Details of the CPA's included in the current monitoring period is given as: <table><tr><th>Ref</th><th>CPA Title</th><th>Inclusion date</th></tr><tr><td>9572-0005</td><td>Nepal Biogas Support Program – CPA 5: 19,842 digesters</td><td>25 Aug 14</td></tr><tr><td>9572-0004</td><td>Nepal Biogas Support Program - CPA 4: 19,970 digesters.</td><td>08 May 14</td></tr><tr><td>9572-0003</td><td>Nepal Biogas Support Program - CPA 3: 19,959 digesters.</td><td>08 May 14</td></tr><tr><td>9572-0002</td><td>Nepal Biogas Support Program - CPA 2: 19,927 digesters</td><td>08 May 14</td></tr><tr><td>9572-0001</td><td>Nepal Biogas Support Program-CPA 1: 20,000 digesters.</td><td>31 Jan 13</td></tr></table>	Ref	CPA Title	Inclusion date	9572-0005	Nepal Biogas Support Program – CPA 5: 19,842 digesters	25 Aug 14	9572-0004	Nepal Biogas Support Program - CPA 4: 19,970 digesters.	08 May 14	9572-0003	Nepal Biogas Support Program - CPA 3: 19,959 digesters.	08 May 14	9572-0002	Nepal Biogas Support Program - CPA 2: 19,927 digesters	08 May 14	9572-0001	Nepal Biogas Support Program-CPA 1: 20,000 digesters.	31 Jan 13		
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9572-0002	Nepal Biogas Support Program - CPA 2: 19,927 digesters	08 May 14																				
9572-0001	Nepal Biogas Support Program-CPA 1: 20,000 digesters.	31 Jan 13																				
11	CME	Organisation Chart for the personnel involved in the GHG monitoring system.	/ORG/	CME																		
12	DOE	Still and video photographic evidences during the site visit	/Photo/	DOE																		
13	CME	Plant Completion report (generated by Oracle software) by BSP Nepal which includes GPS co-ordinates, technical details of digesters; details of end user/owner, construction date, total cost, subsidy no.; plant code/unique ID.	/PCR/	CME																		

CDM-MR-FORM

No.	Author	Title	References to the document	Provider									
14	CME	Quality Standard manual prepared by BSP Nepal for the construction of Biodigester in Nepal dated 2010 (Given to the companies and or end user)	/QCI/	CME									
15	CME	Survey Questionnaire used by survey agency for the BUS Survey for CPA-1 CPA-2 CPA-3 CPA-4 and CPA-5.	/SUR/	CME									
16	CME	Training provided by AEPC person and consultant team (responsible for BUS Survey) to the enumerators (Annex-4 of the BUS Survey Report).	/TRG/	CME									
17	CME	Quality Standard manual prepared by BSP Nepal for the construction of Biodigester in Nepal dated 2010 (Given to the companies and or end user)	/TSI/	CME									
18	UNFCCC	AMS-I.E. Switch from Non-Renewable Biomass for Thermal Applications by the User, version 04	/AMS/	UNFCCC									
19	DOE	TÜV NORD JI / CDM CP Manual (incl. CP procedures and forms)	/CPM/	DOE									
20	CME	Revised CPA-DD and revised emission reduction sheet ver.15 dated 05/09/2014 for CPA no.1 w.r.t post registration changes (PRC)	/CPA-1/	CME									
21	IPCC	1. 1996 IPCC Guidelines for National Greenhouse Gas Inventories: work book 2. 2006 IPCC Guidelines for National Greenhouse Gas Inventories: work book	/IPCC/	IPCC									
22	KP	Kyoto Protocol (1997)	/KPI/	KP									
23	UNFCCC	Decision 3/CMP. 1 (Marrakesh – Accords)	/MA/	UNFCCC									
24	UNFCCC	Monitoring Report Form (CDM-MR-FORM), Version 4.0	/MRT/	UNFCCC									
25	CME	Registered POA-DD and included CPA-DDs for CDM project: “Nepal Biogas Support Program-PoA” , UNFCCC PoA project reference no 9572 <table><tr><th>Ref</th><th>CPA Title</th><th>Inclusion date</th></tr><tr><td>9572-0004</td><td>Nepal Biogas Support Program - CPA 4: 19,970 digesters.</td><td>08 May 14</td></tr><tr><td>9572-0003</td><td>Nepal Biogas Support Program - CPA 3: 19,959 digesters.</td><td>08 May 14</td></tr></table>	Ref	CPA Title	Inclusion date	9572-0004	Nepal Biogas Support Program - CPA 4: 19,970 digesters.	08 May 14	9572-0003	Nepal Biogas Support Program - CPA 3: 19,959 digesters.	08 May 14	/PoA/	UNFCCC
Ref	CPA Title	Inclusion date											
9572-0004	Nepal Biogas Support Program - CPA 4: 19,970 digesters.	08 May 14											
9572-0003	Nepal Biogas Support Program - CPA 3: 19,959 digesters.	08 May 14											

CDM PROJECT FORM																					
No.	Author	Title			References to the document	Provider															
		9572-0002	Nepal Biogas Support Program - CPA 2: 19,927 digesters	08 May 14																	
		9572-0001	Nepal Biogas Support Program- CPA 1: 20,000 digesters.	31 Jan 13																	
26	UNFCCC	CDM Project Standard (Version 9.0)			/PSI/	UNFCCC															
27	UNFCCC	Clean development mechanism project cycle procedure (Version 09.0)			/PCPI/	UNFCCC															
28	UNFCCC	- Standard for “Sampling and surveys for CDM project activities and programmes of activities” (version 04.1) - Guidelines for sampling and surveys for CDM project activities and programme of activities (version 03.0)			/SSI/	UNFCCC															
29	CME	- Validation report for CDM PoA: “Nepal Biogas Support Program-PoA”, UNFCCC PoA project reference no 9572 dated 31/01/2014. - Validation reports for all CPAs included in the current monitoring period, Details of the CPA's is given below: <table><tr><th>Ref</th><th>CPA Title</th><th>Inclusion date</th></tr><tr><td>9572-0004</td><td>Nepal Biogas Support Program - CPA 4: 19,970 digesters.</td><td>08 May 14</td></tr><tr><td>9572-0003</td><td>Nepal Biogas Support Program - CPA 3: 19,959 digesters.</td><td>08 May 14</td></tr><tr><td>9572-0002</td><td>Nepal Biogas Support Program - CPA 2: 19,927 digesters</td><td>08 May 14</td></tr><tr><td>9572-0001</td><td>Nepal Biogas Support</td><td>31 Jan 13</td></tr></table>			Ref	CPA Title	Inclusion date	9572-0004	Nepal Biogas Support Program - CPA 4: 19,970 digesters.	08 May 14	9572-0003	Nepal Biogas Support Program - CPA 3: 19,959 digesters.	08 May 14	9572-0002	Nepal Biogas Support Program - CPA 2: 19,927 digesters	08 May 14	9572-0001	Nepal Biogas Support	31 Jan 13	/VAL/	UNFCCC
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9572-0002	Nepal Biogas Support Program - CPA 2: 19,927 digesters	08 May 14																			
9572-0001	Nepal Biogas Support	31 Jan 13																			

No.	Author	Title			References to the document	Provider
			Program- CPA 1: 20,000 digesters.			
30	CME	Previous Verification Documents (MR, ER sheets Final Verification Report)			/VER/	UNFCCC
31	UNFCCC	CDM Validation and Verification Standard (Version 09.0)			/VVS/	UNFCCC

Appendix 4. Clarification requests, corrective action requests and forward action requests

Table 2. Remaining FAR from validation and/or previous verification

FAR ID	NA	Section no.	Date: DD/MM/YYYY
Description of FAR			
CME response			Date: DD/MM/YYYY
Documentation provided by the CME			
DOE assessment			Date: DD/MM/YYYY

Table 3. CL from this verification

CL ID	CL 1	Section no.	Generic Editorial	Date: 27/07/2016
Description of CL				
1.	Version number of the applied methodology is missing on page 1 and section A.1.1 of the monitoring report			
2.	Technical description of the Biogas Model GGC 2047 is missing in section A.1 of the MR. Further, the details (start/end date; numbers of digesters etc) of the corresponding CPAs 1-5 is missing.			
3.	Name of CME contact person in section A.2 of the appendix-1 is not consistent.			
4.	Statement given in section D and D.1 i.e. "Nepal Biogas Support Program – PoA has implemented 7 CPAs so far...." has to be elaborated/clarified w.r.t CPAs included in the current monitoring period			
5.	As depicted in table in D.1 of the MR, number of digester installed in Mountain or Remote Hill for CPA-1 is left blank. Clarify?			
6.	In most of the places the phrase "will be" is used, is there any pending activities? please clarify.			
7.	In Section H.3 of the MR reference of the applied methodology applicable for leakage calculation is missing			
CME response				Date: : 09/09/2016
1.	The version number of the applied methodology is version 04, which has been corrected in the relevant sections identified by the DOE.			
2.	Technical description of the Biogas Model GGC 2047 is now included in section A.1 of the MR. Further a table (table-1) is inserted in section A.1 that provides detail on each of the five CPAs included in the PoA and this verification.			

3.	The name of contact person in section A.2 and appendix-1 are now consistent with each other. At both the places, Mr. Rana Bahadur Thapa has been mentioned as contact person.
4.	The statement pointed out by the DOE in section D and D.1 of the MR, have been appropriately revised to address the context of current monitoring period.
5.	The number of digester installed in Mountain or Remote Hill region was left blank as there are no digesters of 10 m3 size installed in this region. In order to have clear understanding "0" has been inserted at the appropriate place in table in D.1.
6.	There are not any pending activities in the projects implemented under the PoA. Rephrasing has been at the appropriate places.
7.	Section H.3 of the MR now has accounted leakage factor (0.95) in the equation as required by para 10 (a) of the approved methodology AMS-I.E (version 05)
Documentation provided by the CME	
The documentation provided by the CME for all the clarifications stated above is the revised Monitoring Report (please refer to "9572_MR_BiogasPoACPA#1-CPA#5_v2_02092016").	
DOE assessment	
Date: 27/11/2016	
1.	The version number of the applied methodology is version 04, which has been corrected in the first page and Section A.1.1 of the revised MR. The MR has been checked against the UNFCCC website.
2.	The Technical description of the Biogas Model GGC 2047 is now included in section A.1 of the revised MR which is in line the technical specifications of Biogas digesters as per approval given by the government of Nepal.
3.	The name of contact person in section A.2 and appendix-1 are now consistent with each other in the revised MR hence.
4.	The web hosted MR was giving reference to 7 CPAs which were implemented as part of this PoA, however for this current monitoring period only 5 CPAs are considered and in the revised MR, the PP mentioned that only 5 CPAs are considered, and it is consistent.
5.	The number of digester installed in Mountain or Remote Hill region was left blank as there are no digesters of 10 m3 size installed in this region in the webhosted MR, however as per the filling guidelines it is now filled as "0" and not left blank, hence accepted.
6.	The completed activities which were written in future tense in the webhosted MR is corrected with actual state of the project hence.
7.	As per para 10 (a) of the applicable methodology AMS-I.E , the accounted leakage factor (0.95) has been added to the equation in section H.3 of the revised MR. The MR has been checked against the CPA-DD, POA-DD and applied methodology. .
Conclusion Tick the appropriate checkbox	
☐ Additional action should be taken (finding remains open) ☒ The finding is closed	

CL ID	CL 2	Section no.	Documents Requested	Date: 27/07/2016
Description of CL				
Provide the missing evidence to the verification team:				
1.	Biogas User's Survey for the year for 2014-15 applicable for CPA-1 to CPA-5.			
2.	Construction progress report issued by BSP Nepal to AEPC			
3.	Plant completion progress report by BSP Nepal			
4.	Sample copy of emission reduction right transfer/sales agreement between Bio digester owner and Construction company for CPA-5			
5.	ISO certificate for ISO 9001:2008 issued dated 08/12/2012. Valid till 07/12/2015.			

6.	ISO based internal Monitoring i.e. Field Trip Report Quality Control and Monitoring Department by BSP Nepal on sample basis for the Bio digester installed.
7.	Plant Completion report (generated by Oracle software) by BSP Nepal which includes GPS co-ordinates, technical details of digesters; details of end user/owner, construction date, total cost, subsidy no.; plant code/unique ID.
8.	Survey Questionnaire used by survey agency for the BUS Survey for CPA-1 CPA-5.
9.	Training provided by AEPC person and consultant team (responsible for BUS Survey) to the enumerators (Annex-4 of the BUS Survey Report)
CME response	
Date: 09/09/2016	
1.	Biogas User's Survey for the year for 2014-15 applicable for CPA-1 to CPA-5.
2.	Construction progress report issued by BSP Nepal to AEPC
3.	Plant completion progress report by BSP Nepal
4.	Sample copy of emission reduction right transfer/sales agreement between Biodigester owner and Construction company for CPA-5
5.	ISO certificate for ISO 9001:2008 issued dated 08/12/2012. Valid till 07/12/2015.
6.	ISO based internal Monitoring i.e. Field Trip Report Quality Control and Monitoring Department by BSP Nepal on sample basis for the Biodigester installed.
7.	Plant Completion report (generated by Oracle software) by BSP Nepal which includes GPS co-ordinates, technical details of digesters; details of end user/owner, construction date, total cost, subsidy no.; plant code/unique ID.
8.	Survey Questionnaire used by survey agency for the BUS Survey for CPA-1 CPA-5.
9.	Training provided by AEPC person and consultant team (responsible for BUS Survey) to the enumerators (Annex-4 of the BUS Survey Report)
Documentation provided by the CME	
1.	Please see the following supporting documents for the Biogas Users' Survey reports. SD#1 BUS 2015 CDM CPA1 6th July SD#2 BUS 2015 CDM CPA2 6th July SD#3 BUS 2015 CDM CPA3 6th July SD#4 BUS 2015 CDM CPA4 6th July SD#5 BUS 2015 CDM CPA5 6th July
2.	A copy of the construction progress reports submitted by BSP-N is provided with this package. Please see the following set of supporting documents SD#6 Construction Progress Reports.
3.	Please see Sample copies of emission reduction right transfer agreement between AEPC and biogas users for CPA-5 in the following supporting document. SD#7 ER right transfer
4.	ISO certificate and internal monitoring report are provided in the following supporting documents. SD#8 ISO Certificate SD#9 Audit Report BSP
5.	Please see the sample copies of oracle software generated plant completion report in the following supporting document. SD#10 Plant completion report-Oracle
6.	Quality standards for the biogas construction is provided in the following supporting document SD#11 Quality Standard
7.	Sample of survey questionnaires filled in during the survey is presented in the following supporting document. SD#12 Field in Questionnaire
8.	The evidence of training is presented in the Biogas Users' Survey reports. Please see the following supporting documents. SD#1 BUS 2015 CDM CPA1 6th July SD#2 BUS 2015 CDM CPA2 6th July SD#3 BUS 2015 CDM CPA3 6th July SD#4 BUS 2015 CDM CPA4 6th July SD#5 BUS 2015 CDM CPA5 6th July
DOE assessment	
Date: 27/11/2016	
1.	Biogas Users' Survey: 2015 for all the five CPAs done by M/s Square One Research and Training, Nepal is submitted
2.	The construction progress statement data base company is submitted along with the subsidy disburse statement to the Biogas company's (which indicates the completion reports) are submitted
3.	As above the completion report is subsidy disbursement (subsidy will be released after the

completion)	
4.	CER rights transfer from the end user - Son Kumari Bhandari of Kaski through the biogas company R G G to AEPC for CPA-5 is Submitted
5.	Latest ISO Re-Certificate no ET/ISO/1606/1238 dated June 20, 2016 by euro tech to BSP Nepal is submitted
6.	Internal Monitoring i.e. Field Trip Report Quality Control and Monitoring Department by BSP Nepal on sample basis for the Bio digester installed dated 24/05/2016 is submitted
7.	The complete data base of the extracted from ORACLE software for CPA 1 to CPA5 is submitted
8.	Survey Questionnaire used by survey agency for the BUS Survey for CPA-1 CPA-5 is submitted.
9.	Training provided by AEPC person and consultant team (responsible for BUS Survey) to the enumerators is already in the submitted BUS Survey reports and BUS survey reports are verified in this regard.
Conclusion <i>Tick the appropriate checkbox</i>	☐ Additional action should be taken (finding remains open) ☒ The finding is closed

Table 4. CAR from this verification

CAR ID	CAR 1	Section no.	G.2 and G.3	Date: 27/07/2016
Description of CAR				
1. The proportion of the biogas digesters operational during the second monitoring period is higher than in the first monitoring period 2. During the site visit some of the biogas digesters are affected due to the earthquake, and some are abandoned due to the destruction of house/ kitchen, please clarify how this is included in the ER calculations. 3. The sample size calculation is not transparently provided in the MR / ER sheets. 4. The data base is not submitted				
CME response				Date: 27/10/2016
1. Yes, the proportion of the biogas digesters operational during the second monitoring period is higher than the biogas digesters operational during the first monitoring period. This is because, the downtimes noted during the Biogas Users' Survey are temporary in nature and is not the complete stoppage. However, in order to account the downtimes noted during the survey, digesters with temporary stoppage found on the day of survey is treated as the non-operational digester for the entire monitoring period. For the successive monitoring period, the sample is drawn without excluding the "non-operational" digester from the previous MP. Therefore the percentage of digesters operational in the later year might be higher than the operational percentage of digesters in previous year. However, it is not always the case which is evident from the percentage of digesters operational for CPA-2 and CPA-4 where the percentage of digesters operational in second MP is less than that in first MP. 2. The emission reduction monitoring survey was completed before the earthquake struck Nepal. Therefore the impact of the earthquake on houses and kitchen (or even the biogas digester) was not covered by the survey. Therefore it has not been adjusted in the current verification. However, in course of the ongoing verification, survey for the third MP (for FY 2015/16) has been completed. The results from the survey for third MP are therefore used to account the impact of the earthquake in the second monitoring period. From calculation, a total of 6,076 tCO2 e (around 2%) is reduced from the originally calculated 318,429 tCO2 e emissions reductions for the PoA. 3. Section G.3 of the MR presents the calculation of the sample size. However, since the transparency of sample size calculation is concerned, a spreadsheet depicting the detail sample size calculation is submitted with this package of response. The sample size calculated for the monitoring period remains on the sample size required for the annual monitoring surveys as stipulated in the annex 4 of the registered PoA DD.The total sample size required as per the formula used is 49; however, additional 41 samples (total 90) were taken for the survey to ensure the representation and conservativeness. The sample size calculator is provided with this package of response. 4. The database of five CPAs has been submitted to the DOE through this response package.				
Documentation provided by the CME				
1. Supporting document regarding transparent sample size calculations and the database for the CPAs is provided in the following supporting documents. a. SD#13 Sample Calculation b. SD#14 9572-001-CPA Database c. SD#15 9572-002-CPA Database d. SD#16 9572-003-CPA Database e. SD#17 9572-004-CPA Database f. SD#18 9572-005-CPA Database				

2. Revised Emissions Reduction Calculation Spreadsheet with adjustments made for the earthquake impact on biogas digesters. Please refer to revised emission reduction calculation spread sheet (9572_ERspreadsheet_v2_CPA#1-CPA#5_21102016).	
DOE assessment	Date: 27/11/2016
1. The Bus survey reports for the previous monitoring period checked by the VT to verify the PPs claim. In the first monitoring the major reasons for non-operational biogas digesters during the survey is due to non-availability of cattle (cattle dead / cattle sold), Minor repairs like pipe broken, valve / nipple struck, temporary migration for work. So this confirms that the biogas digesters are non-operational due to temporary reasons and it is not permanently abandoned. Hence accepted. 2. A major earth quake struck Nepal on 25/04/2015 and for the down time during the period from 25/04/2015 to end of this monitoring period the PP took the BUS survey results of third survey for the next monitoring and accordingly adjusted 6,076 tCO₂e for this monitoring report. The VT checked the downtimes through the percentage of digesters affected by earth quake from the bus survey and the calculations and apportioning done in the ER sheets as appropriate. The total biogas digesters that were non-operational as per the bus survey of 2015-16 is 32 out of the 450 samples for all the five CPAs which works out be 7.11%. But out of 109 samples checked by the VT during the site visit only 6 where non-operational due to earthquake (5.5%). Hence accepted. 3. The PP took the sample size of 90 digesters for each CPA. Also presented the calculation used to arrive at the number samples required for each CPA. The samples required for each CPA is 49, however the PP increased the samples by 41 to make it 90. The sample size calculations are in line with the annex -4 of the registered PoA DD. Hence OK 4. The complete data base is submitted for verification Hence OK CAR is closed.	
Conclusion <i>Tick the appropriate checkbox</i>	☐ Additional action should be taken (finding remains open) ☒ The finding is closed

CAR ID	CAR 1	Section no.	G.1 and G.2	Date: 27/07/2016
Description of CAR				
1. In section G.2 of the MR description of the monitoring parameter is complete w.r.t registered/issued MR further, QA/QC procedure is incomplete specifically for outcome of this survey based on performance report. 2. In Section G.3 of the MR version number of the applicable Guideline for sampling and survey is missing. Further, clarification is requested w.r.t to calculation of required sample size (n) for each CPA in the current monitoring period compared to approach used in previous MR. 3. Also please clarify why there is mismatch in number of digesters given in previous MR and in the present number,				
CME response				Date: 09/09/2016
1. The QA/QC procedure mentioned in section G.2 of the MR has been revised to make it consistent with the QC/QC procedure as stipulated in the registered PoA and the respective CPAs. Since the QA/QC procedure stipulates that the monitoring after the guarantee period shall depend on solely on the annual biogas users' survey, the internal monitoring reports are not applicable for the biogas plants included in CPA-1, CPA-2, CPA-3, and CPA-4 as the guarantee period for these digesters is already over by February 2015. However, for the biogas plants included in FY 2071/72 (2014/15), the proportion of the biogas digesters operational as revealed by internal monitoring and BUS report is almost same. Rather, the BUS survey reveals lesser number of biogas plants operational and therefore the value from the BUS report has been used for ER calculation. A copy of internal monitoring report (QCM report) is submitted to the DOE through this response package. 2. The version number of the applicable guideline for the sampling and survey has been added in the section G.3 of the MR. Regarding the calculation of the sample size, the same approach has been used in the current and previous BUS assignment. In response to CAR 1 issued by the DOE above (please see CME response 1), the approach of sample size used for the current monitoring has been discussed. 3. The number of digesters is corrected and it is now consistent and in line with the database.				

Documentation provided by the CME	
1. Internal QCM report has been provided as the following supporting document. SD#19 QCM Report	
DOE assessment	Date: 27/11/2016
1. The QA/QC procedure given in the revised MR is in line with the registered PoA –DD and CPA –DDs. The Performance reports for the digesters installed in 2014-15 indicate a higher proportion of bio digesters as operational and when compared with the BUS- reports. So the usage of BUS survey results is conservative and it is as per QA- QC procedure as mentioned in the PoA –DD 2. The sample size calculation presented in the revised MR is in line with the registered POA DD annex 4. Also the same approach is used now as well in the previous monitoring period. The sample size calculation is correct hence OK 3. The revised MR number of digesters for each CPA for the all the different ecological zone is consistent with previous MR. Hence Ok CAR is closed	
Conclusion <i>Tick the appropriate checkbox</i>	☐ Additional action should be taken (finding remains open) ☒ The finding is closed

Table 5. FAR from this verification

FAR ID	NA	Section No.	Date: DD/MM/YYYY
Description of FAR			
CME response			Date: DD/MM/YYYY
Documentation provided by the CME			
DOE assessment			Date: DD/MM/YYYY
Conclusion <i>Tick the appropriate checkbox</i>	☐ Additional action should be taken (finding remains open) ☒ The finding is closed		

Appendix 5. Monitored Parameters

Table A-5: Periodic Verification Checklist – Monitored Parameters

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
A. P%		The share of digesters operational (based on the total number implemented using non-renewable biomass).		
a) Measurement / Determination method (VVS, §§ 389-393) Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)). 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 of the PDD and the applied methodology.	/IM01/ /POA-DD/ /AMS/ /DB/ /BUS/ /IMR/	<i>Description:</i> As per the POA-DD section E.7 and CPA-DD for all CPA's the Percentage of digesters implemented that is operational will be monitored annually on sample basis. The same is reported in Annual Biogas Users' Survey. As verified from the Biogas Users' Survey/BUS/ for the year 2014-15 submitted by the PP, it was confirmed that the Percentage of digesters implemented that is operational is calculated. <i>Verifier's action:</i> The Bus Survey Reports are checked along with the MR and ER calculation sheets. During the site visit the VT took 109 samples and found that 6 digesters were non-operational due to earth quake and 3 digesters were not working <i>Conclusion:</i> CAR 1 was raised	CAR 1	OK
b) Accuracy and QA/QC Procedure (VVS, §§ 394-400) 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.		<i>Description:</i> Not applicable as no measuring equipment is used to determine the parameter P <i>Verifier's action:</i> <i>Conclusion:</i>		

CDM-PoA-VCR-FORM

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<i>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.</i> <i>Include calibration dates and information in validity of the installed monitoring equipment in the table in Annex 2.</i>				
c) Correctness (VVS, §§ 389-393) <i>Determine whether the value given in the monitoring report is correct or determined in a conservative manner.</i> <i>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.</i> <i>In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.</i>	/IM01/ /POA-DD/ /AMS/ /DB/ /BUS/ /MR/	☐ Correct ☒ Not correct (initial assessment) <i>Description:</i> The Bus survey was basis for the estimating the share of bio digesters that were operational during the monitoring period. However during the monitoring period an earthquake struck Nepal and the bus survey was conducted before that. <i>Verifier's action:</i> Desk review of registered POA-DD, CPA-DD and webhosted MR. Final report on annual biogas users' survey conducted for all the CPA's included in the current monitoring period were checked <i>Conclusion:</i> CAR 1 was raised	~~CAR 1~~	OK

Appendix 6. Calibration dates and validity of installed monitoring equipment

Table A-6: Periodic Verification Checklist – Calibration details

Monitoring equipment	Related monitoring parameter as per applicable registered monitoring plan	Serial number	Type	Accuracy or accuracy class	Previous calibration (last calibration before start of this monitoring period)	Calibration date(s) during this monitoring period	Validity of calibration(s)	Delay in calibration: yes/no	Period of delayed calibration
N/A for this PoA								☐ No ☐ Yes	From: To: