



Verification and certification report form for Gold Standard programme of activities (Version 04.0)

BASIC INFORMATION

Title and GS ID of the programme of activities (PoA)	Nepal Biogas Support Program-PoA GS3110 UNFCCC PoA ID: 9572	
Version number(s) of the PoA-DD(s) to which this report applies	GS 3109/CPA-1: version 03 GS 3113/CPA-2: Version 04 GS 3114/CPA-3: Version 04 GS 3116/CPA-4: Version 04 GS 3556/CPA-5: Version 11 GS 6393/CPA-6: Version 08.2 GS 6394/CPA-7: Version 08.2 GS 10739/CPA-10: version 03.1	
Version number of the verification and certification report	4.2	
Completion date of the verification and certification report	13/02/2025	
Monitoring period number and duration of this monitoring period	CPA-1: 03 CPA-2: 02 CPA-3: 02 CPA-4: 02 CPA-5: 02 CPA-6: 01 CPA-7: 01 CPA-10: 03 01/01/2022 to 31/12/2022	
Number and version number of the monitoring report to which this report applies	CPA-1: 03 CPA-2: 02 CPA-3: 02 CPA-4: 02 CPA-5: 02 CPA-6: 01 CPA-7: 01 CPA-10: 03 Version number of monitoring report: 02.2; dated 11/02/2025	
Coordinating/managing entity (CME)	Alternative Energy Promotion Centre (AEPC)	
Host Parties	Host Parties of the PoA	Is this a host Party to a CPA covered in this report? (yes/no)
	Nepal	Yes

Applied methodologies and standardized baselines	AMS.I.E. Switch from Non-Renewable Biomass for Thermal Applications by the User (version 09)		
Mandatory sectoral scopes	Sectoral Scope 1: Energy industries (renewable - / non-renewable sources)		
Conditional sectoral scopes, if applicable	NA		
Estimated amount of GHG emission reductions or GHG removals for this monitoring period in the included CPAs covered in this report	421,520 tCO ₂ e		
Certified amount of GHG emission reductions or GHG removals for this monitoring period for the included CPAs covered in this report	Amount before 1 January 2013	Amount from 1 January 2013 until 31 December 2020	Amount from 1 January 2021
	0	0	381,686 tCO ₂ e
Name and UNFCCC GS ID of the VVB	Carbon Check (India) Private Limited (E-0052)		
Name, position and signature of the approver of the verification and certification report	 Amit Anand, CEO		

SECTION A. Executive summary

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atmosfair gGmbH has appointed the VVB, Carbon Check (India) Private Ltd on behalf of CME (Alternative Energy Promotion Centre (AEPIC) to perform verification of the GS PoA "Nepal Biogas Support Program-PoA" (GS ID: 3110) in Nepal (hereafter referred to as "Programme of Activities or PoA") for the CPAs titled "Nepal Biogas Support Program - CPA 1: 20,000 digesters" (GS ID: 3109), "Nepal Biogas Support Program - CPA 2: 19,927 digesters" (GS ID: 3113), "Nepal Biogas Support Program - CPA 3: 19,959 digesters" (GS ID: 3114), "Nepal Biogas Support Program - CPA 4: 19,970 digesters" (GS ID: 3116), "Nepal Biogas Support Program - CPA 5: 19,842 digesters" (GS ID: 3566), "Nepal Biogas Support Program- CPA 6: 18,504 digesters (GS ID: 6393), "Nepal Biogas Support Program- CPA 7: 18,392 digesters (GS ID: 6394), "Nepal Biogas Support Program - CPA 10: 10,589 digesters" (GS ID 10739). The other CPAs are not reported in this batch of the monitoring report (batch 2 of 2). The PoA aims at implementing household biogas applications. These applications displace firewood and fossil fuels with biogas from animal waste and human excreta. The different sizes of the digesters that would be included in the programme would be of 2, 4, 6, 8 and 10 m³. The programme uses only one design i.e. GGC 2047 model.

Biogas plants constructed under this PoA comprise of three major components; the inlet, the digester and the outlet, aligned in a straight line. All these structures are prepared of masonry walls of bricks or stones, depending upon the material availability. The digester unit is a underground chamber where the mixture of animal dung and water is fed into where the microbial activity takes place. The microbes act upon the dung (the substrate) under anaerobic conditions to release methane and carbon dioxide. The methane released from the digester is collected at the dome which is connected to gas hose pipe fitted at turret at the center of the dome. Biogas collected at the dome dispensed to biogas stove through this gas hose pipe via turret. Once the gas pressure is sufficient in dome, it exerts pressure to the slurry in the digester and slurry is released from the outlet.

The Verification team confirms the contractual relationship signed on 31/08/2023 between the VVB, Carbon Check (India) Private Ltd (hereafter CCIPL), and the client, atmosFair gGmbH/03/ The team assigned to the verification meets the Carbon Check (India) Private Ltd internal procedures including the GS4GG requirements and ISO 14064 requirements for the team composition and competence. The verification team has conducted a thorough contract review as per ISO 14065 and Carbon Check procedures and requirements. The contract with the client and further contract reviewing process also confirm the level of assurance of the verification and objectives, scope, and criteria of the verification. The level of assurance for this verification is reasonable in line with the §9.6.2 of the GS Validation and verification standard v1.0 dated 06/03/2024 /B01-6/. The objective, scope and criteria are detailed below.

The verification has been performed as per the requirements described in the applicable GHG scheme requirements and constitutes the review and completion of the following steps:

- Conflict of interest review;
- Selection of verification team;
- Initial interaction with the Client;
- Development of the verification plan;
- Desk review of the validation report, MR, and other relevant documents including documents related to the project activity in emission reductions
- Review of the applied monitoring methodology AMS I.E V0.9 /B02/;
- Review of any CMP and EB decisions, clarifications, and guidance;
- On-site assessment (12/09/2023 to 15/09/2023)
- Resolution of CARs and CLs raised during verification
- Confirmation that any FARs raised during validation or previous validation have been addressed by the Project Participant.
- Follow-up interaction with the client and other project personnel for supplemental information and corrective action as necessary; and
- Issuance of Verification Report after internal technical review.

The project activity was correctly implemented according to the selected monitoring methodology /B02/ monitoring plan and the registered PDD. /B04/ While collected monitoring data allowed for the verification of the amount of achieved GHG emission reductions. Through the review and on-site visit, the verification team confirms that the project has resulted in 161,180 tCO₂ emission reductions during the current monitoring period. Carbon Check (India) Private Limited (CCIPL) as a VVB is therefore pleased to issue a positive verification opinion expressed in the attached Certification statement.

The objective of this verification was to verify and certify emission reductions reported for the “Nepal Biogas Support Program-PoA”, in a geographically distinct area within Nepal for the period 01/01/2022 – 31/12/2022.

The purpose of verification is to review the monitoring results and verify that the monitoring methodology was implemented according to the monitoring plan and monitoring data and used to confirm the reductions in anthropogenic emissions by sources, is sufficient, definitive and presented in a concise and transparent manner. CCIPL's objective is to perform a thorough, independent assessment of the registered programme of activities.

The verification is not meant to provide any consulting towards the project participants/coordinating managing entity. However, stated requests for clarifications and/or corrective actions may have provided input for improvement of the programme design.

In particular, the monitoring plan, monitoring report and the project's compliance with relevant UNFCCC and host Party criteria are verified in order to confirm that the component project/s has/have been implemented in accordance with the previously registered/included component project design and conservative assumptions, as documented. It is also confirmed if the monitoring plan is in compliance with the CPA-DDs and the approved monitoring methodology.

Scope:

The scope of the verification is:

- To verify the project implementation and operation with respect to the registered CPA-DDs
- To verify the implemented monitoring plan with the registered CPA-DDs and applied baseline and monitoring methodology.
- To verify that the actual monitoring systems and procedures are in compliance with the monitoring systems and procedures described in the monitoring plan.
- To evaluate the GHG emission reduction data and express a conclusion with a reasonable level of assurance about whether the reported GHG emission reduction data is free from material misstatement.
- To verify that reported GHG emission data is sufficiently supported by evidence.

The verification shall ensure that the reported emission reductions are complete and accurate in order to be certified.

The verification comprises a review of the monitoring report covering the monitoring period from 01/01/2022 – 31/12/2022 and based on the revised CPA-DDs including the monitoring plan, emission reduction calculation spread-sheet, monitoring methodology and all related evidence provided by project participant.

- The verification team assigned by the VVB concludes that the registered PoA-DD /B04/, CPA-DDs for CPAs, GS ID:**3109** (CPA01), GS ID:**3113** (CPA02), GSID:**3114** (CPA 03), GS ID **3116** (CPA 04), GS ID **3566** (CPA 05) GS ID: 6393 (CPA06) GS ID: 6394 (CPA07) and GS ID **10739** (CPA 10) are as described in the CPA-DDs /B04/ and monitoring report /01/, meets all relevant requirements of the UNFCCC for CDM project activities including article 12 of the Kyoto Protocol and paragraph 62 of CDM M&P, the modalities and procedures for CDM (Marrakesh Accords) and the subsequent decisions by the COP/MOP and CDM

Executive Board. The verification has been conducted in-line with the VVS requirements
Version 03.0 /B01-1/.

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 VVB or outsourced entity)	Involvement in			
						Desk/document review	On-site inspection	Interview(s)	Verification findings
1.	Team Leader/ Technical Expert/ Verifier	IR	Choudhary	Aparna ¹	CC IPL	X	X	X	X
2.	Local Expert	ER	Karmacharya	Prasan	CC IPL		X	X	
3.	Assessor	IR	Rajput	Jaya ²	CC IPL	X	X	X	X
4.	Assessor	IR	Bijani	Vishal	CC IPL	X			X
5.	Team Leader/ Technical Expert/ Verifier	IR	Kadam	Campal	CC IPL	X			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 VVB or outsourced entity)
1.	Technical reviewer	IR	C	Indumathi	CC IPL
2.	Approver	IR	Anand	Amit	CC IPL

SECTION C. Application of materiality in conducting the verification

C.1. Consideration of materiality in planning the verification

No.	Risk that could lead to material errors, omissions or misstatements	Assessment of the risk		Response to the risk in the verification plan and/or sampling plan
		Risk level	Justification	
1.	Human error in the quantification of emissions (which may be more likely to occur if personnel are unfamiliar with, or not well trained regarding, emissions processes or data recording).	Low	Being second monitoring period of the second crediting period, the CME is familiar with the monitoring system and reporting requirements. Therefore, there is less likelihood to have human error in the quantification of emissions. The monitoring period is only one year. Hence, the risk level is low.	<i>During the onsite interview, the audit team has interviewed the personnel of the monitoring team and checked all records to confirm whether the monitoring plan has been well implemented. The recording of monitoring parameters used for determining the project's baseline emissions are used from monitoring survey report, statistically approved sampling plan and project installation database. The verification team shall review the whole</i>

¹ Last working day 11/02/2025

² Last working day 07/01/2025

				data set of records and crosschecked against relevant options. The verification team shall interview the staffs of the monitoring team and check the relevant records to confirm whether the data collection procedure and QA/QC procedure have been well implemented.
2.	Undue reliance on a poorly designed information system, which may have few effective quality controls.	Low	The CME has already established a well-organized monitoring team, monitoring plan, including data collection procedure and QA/QC procedure consistent with registered monitoring plan. The main data parameter to be monitored is operation status of biogas systems which is done through sampling by AEPC. In addition, PP manages entire project database to locate and monitor as and when required. Therefore, less likelihood that poor flow of required data can be witnessed. Hence, the risk level is low.	During the onsite interview, the audit team has interviewed the personnel of the monitoring team and checked all records to confirm whether the monitoring plan has been well implemented. The recording of monitoring parameters used for determining the project's baseline emissions are used from monitoring survey report, statistically approved sampling plan and project installation database. The verification team shall review the whole data set of records and crosschecked against relevant options. The verification team shall interview the staffs of the monitoring team and check the relevant records to confirm whether the data collection procedure and QA/QC procedure have been well implemented.
3.	Manual adjustment of otherwise automatically recorded activity levels	N/A	There is no data parameter which needs to adjust manually. Therefore, no risk identified.	During the onsite interview, the audit team has interviewed the personnel of the monitoring team and checked all records to confirm whether any data parameters required manual adjustment. The recording of monitoring parameters used for determining the project's baseline emissions are used from monitoring survey report, statistically approved sampling plan and project installation database. The verification team shall review the whole data set of records and crosschecked against relevant options. The verification team shall interview the staffs of the monitoring team and check the relevant records to confirm whether the data collection procedure and QA/QC

				<i>procedure have been well implemented.</i>
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C.2. Consideration of materiality in conducting the verification

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The threshold of materiality was evaluated based on §13 of “Guideline: Application of materiality in verifications” (version 02.0) /B07/ and § 305 of CDM VVS for PoA (version 03.0) /B01-1/. It was concluded that the materiality threshold applicable to the project activity based on actual emission reductions achieved is 5% of 381,686 tCO₂e: 19,084tCO₂e.

In line with Guidelines for Application of materiality in verifications, /B06/ a reasonable level of assurance is defined for the verification of the project by complete verification of all the monitoring records (measurement records, invoices and calibration certificates) was done by the verification team and compared with the values indicated in the emission reduction spreadsheet./02/ Carbon Check (India) Private Limited (CC IPL) confirms with a reasonable level of assurance in line with §9.6.2 of GS Validation and Verification Standard v1.0 dated 06/03/2023 /B01-6/ that the claimed emission reductions or removals are free from material errors, omissions or misstatements.

The verification has been performed through a desk review and site visit including interviews with relevant personnel. The risks identified were mitigated by complete verification of the monitoring survey records, interviews with the household survey participants and inspection of biogas plants as done by the verification team and compared with the values indicated in the emission reduction spread sheet/04/.

In conducting the verification, VVB took cognizance of §13-17 of the “Guideline: Application of materiality in verifications” (version 02.0) /B07/ and based on the input of data from different sources checked through review of records during onsite visit and desk review. Some mistakes were identified and subsequently finding were raised. These findings are detailed in Appendix 4 and they were successfully closed. Therefore, related identified mistakes as listed in findings in Appendix 4 to this report have been determined to be immaterial.

Based on the assessment carried out, CC IPL confirms with a reasonable level of assurance that the claimed emission reductions are free from material errors, omissions or misstatements.

SECTION D. Means of verification

D.1. Desk/document review

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The verification was performed primarily based on the review of the Monitoring report /01/, emission reduction worksheet /02/ and supporting documentation. This process included review of data and information presented to verify their completeness and review of the monitoring plan and monitoring methodology. Documents reviewed or referenced during the verification are listed in Appendix 3 below.

D.2. On-site inspection

Duration of on-site inspection: 12/09/2023 to 15/09/2023				
No.	Activity performed on-site	Site location	Date	Team member
1.	An assessment of the implementation and operation of the registered project activity as per the registered/ included PoA-DD/ CPA-DDs.	Nepal	12/09/2023 to 15/09/2023	Aparna Choudhary Prasan Karmacharya Jaya Rajput
2.	A review of information flows for generating, aggregating and reporting the monitoring parameters	Nepal	12/09/2023 to 15/09/2023	Aparna Choudhary Prasan Karmacharya Jaya Rajput
3.	Interviews with relevant personnel to determine whether the operational and data collection procedures are implemented in accordance with the monitoring plan in the registered/ included PoA-DD/ CPA-DDs.	Nepal	12/09/2023 to 15/09/2023	Aparna Choudhary Prasan Karmacharya Jaya Rajput
4.	A cross check between information provided in the monitoring report and data from other sources such as plant	Nepal	12/09/2023 to 15/09/2023	Aparna Choudhary Prasan Karmacharya Jaya Rajput

	logbooks, inventories, purchase records or similar data sources			
5.	A check of the monitoring process including performance during the monitoring period and observations of monitoring practices against the requirements of the registered/ included PoA-DD/ CPA-DDs and the selected methodology and corresponding tool(s), where applicable	Nepal	12/09/2023 to 15/09/2023	Aparna Choudhary Prasan Karmacharya Jaya Rajput
6.	A review of calculations and assumptions made in determining the GHG data and emission reductions	Nepal	12/09/2023 to 15/09/2023	Aparna Choudhary Prasan Karmacharya Jaya Rajput
7.	An identification of quality control and quality assurance procedures in place to prevent or identify and correct any errors or omissions in the reported monitoring parameters	Nepal	12/09/2023 to 15/09/2023	Aparna Choudhary Prasan Karmacharya Jaya Rajput

D.3. Interviews

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Niraula	Gopi	Constructor	12/09/2023 to 15/09/2023	Installation of the stoves, maintenance activities	Aparna Choudhary Prasan Karmacharya Jaya Rajput
2.	Pokhrel	Sanjayaraj	Constructor	12/09/2023 to 15/09/2023	Installation of the stoves, maintenance activities	Aparna Choudhary Prasan Karmacharya Jaya Rajput
3.	Limbu	Indra	Constructor	12/09/2023 to 15/09/2023	Installation of the stoves, maintenance activities	Aparna Choudhary Prasan Karmacharya Jaya Rajput
4.	Sunuwar	Om Bahadur	Biogas (SGC)	12/09/2023 to 15/09/2023	Installation of the stoves, maintenance activities	Aparna Choudhary Prasan Karmacharya Jaya Rajput
5.	Amar	Abinash	AEPC	12/09/2023 to 15/09/2023	Details of survey, methodology, survey results, QA/QC procedure etc.	Aparna Choudhary Prasan Karmacharya Jaya Rajput
6.	Shreshta	Shreejan Ram	AEPC	12/09/2023 to 15/09/2023	MR preparation, CDM and GS requirements, Emission reduction calculations, methodology applicability, start date justification, Project Design, ownership details, carbon credit sharing arrangements, monitoring and reporting arrangements,	Aparna Choudhary Prasan Karmacharya Jaya Rajput

					QA/QC procedures, baseline assessment, project technology etc.	
7	Neupane Rijal	Renu	End User; UNO00291	12/09/2023 to 15/09/2023	End user feedback	Aparna Choudhary Prasan Karmacharya Jaya Rajput
8	Ghimire	Tikaram	End User; MGC00580			Aparna Choudhary Prasan Karmacharya Jaya Rajput
9	Khatriwada	Goma Devi	End User; PAR00422			Aparna Choudhary Prasan Karmacharya Jaya Rajput
10	Khatri	Dikmaya Neupane	End User; MGC02419			Aparna Choudhary Prasan Karmacharya Jaya Rajput
11	Baral	Birendra Kumar	End User; MBN00307			Aparna Choudhary Prasan Karmacharya Jaya Rajput
12	Dahal	Kumar Pd.	End User; MBN00353			Aparna Choudhary Prasan Karmacharya Jaya Rajput
13	Bhujel	Kabiraj	End User; MUB00186			Aparna Choudhary Prasan Karmacharya Jaya Rajput
14	Niraula	Kalpana	End User; MBN01597			Aparna Choudhary Prasan Karmacharya Jaya Rajput

Through the above-mentioned activities the verification team confirmed the following Gold Standard project aspects in relation to the project activity:

- The implementation and operation of the project activity is as described in the monitoring plan in the registered PDD/B04/
- The operational and data collection procedures are implemented as per the monitoring plan in the PDD/B04/
- The information flow for generating, grouping and reporting of the monitored parameters
- Procedures to avoid double counting are in place.

D.4. Sampling approach

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PP's sampling approach:

PP has proposed stratified random sampling plan using 90/10 as confidence / precision. This is in line with the applied methodology /B02/. The sample size for each parameter is determined following guidelines for Sampling and Surveys for CDM Project activities and Programme of Activities Ver. 4.0 (EB86, Annex 4) /B06/. The monitoring parameters monitored through the sampling plan are:

- Biogas performance - The share of operational biogas plants (P - Proportion parameter)
- Displacement if Non-renewable biomass (Mean Value parameters)
- 3.9.1 Mortality rate attributed to household and ambient air pollution
- 7.1.2 Proportion of population with primary reliance on clean fuels and technology
- 3.9.3 Mortality rate attributed to unintentional poisoning
- 3.9.2 Mortality rate attributed to unsafe water, unsafe sanitation and lack of hygiene (exposure to unsafe Water, Sanitation and Hygiene for All (WASH) services)

Safeguarding Principle 4.3.8 The sample size calculated for each CPA is provided below:

CDM-PoA-VCR-FORM

#	CPA-1	CPA-2	CPA-3	CPA-4	CPA-5	CPA-6	CPA-7	CPA-10
Sample Calculated (Mean value Parameters)	20	20	14	14	28	30	20	15
Sample Calculated (Proportional Parameters)	34	39	21	25	17	34	34	54
Conservative sample No	34	39	21	25	28	34	34	54
<i>Minimum sample for Terai</i>	<i>18</i>	<i>20</i>	<i>9</i>	<i>11</i>	<i>14</i>	<i>19</i>	<i>18</i>	<i>22</i>
<i>Minimum sample for Hill</i>	<i>15</i>	<i>18</i>	<i>11</i>	<i>13</i>	<i>13</i>	<i>14</i>	<i>15</i>	<i>31</i>
<i>Minimum Sample for Remote Hill</i>	<i>1</i>	<i>1</i>	<i>1</i>	<i>1</i>	<i>1</i>	<i>1</i>	<i>1</i>	<i>1</i>
Minimum sample stipulated in PoA-DD	75	75	75	75	75	75	75	75
Sample Taken for the Survey	100	100	100	100	100	100	100	100
<i>Sample in Terai</i>	<i>52</i>	<i>50</i>	<i>45</i>	<i>45</i>	<i>50</i>	<i>56</i>	<i>52</i>	<i>42</i>
<i>Sample in Hill</i>	<i>44</i>	<i>46</i>	<i>51</i>	<i>51</i>	<i>46</i>	<i>40</i>	<i>44</i>	<i>54</i>
<i>Sample in Remote Hill</i>	<i>4</i>	<i>4</i>	<i>4</i>	<i>4</i>	<i>4</i>	<i>4</i>	<i>4</i>	<i>4</i>

The sample size for the mean value parameter was less than 30 and thus in accordance with the §14 of the sampling standard, version 09 /B06/, t-distribution was used for the sample size. The sample size thus determined is 08. Thus, the sample size used by the CME for CPA-1 of 100 is deemed sufficient to meet the sampling requirements. /11/

PP has desired to attain 90/10 confidence/precision for the parameters under consideration. The precision values have been cross checked with the PP's precision calculation sheet,/11/ and has been found appropriate with CDM Standard: Sampling and surveys for CDM project activities and programmes of activities (version 09.0) /B06/

CCIPL's verification sampling approach:

As per §25 of the Standard: Sampling and surveys for CDM project activities and programmes of activities (version 09.0) /B06/, the verification team has to verify whether the project participant have implemented the sampling and surveys according to the sampling plan in the registered monitoring plan. The verification includes determining:

- a) Whether the required confidence/precision has been met;
- b) Whether the selected sample was representative of the population.

In line with §26 of the Sampling Standard (version 09.0) /B06/, the verification team has applied a sampling approach for onsite surveys as part of verification. Since PP had applied a sampling approach, the verification team has chosen acceptance sampling for monitoring parameters in accordance with §28 of the sampling standard (version 09.0) /B06/.

As PP has performed monitoring of 4 CPAs collectively, VVB has also performed verification together and hence a collective approach of sample selection is opted. CCIPL has considered §30 and §31 of "Standard for Sampling and surveys for CDM project activities and programmes of activities, Version 09.0" for determining the sampling size to be visited by VVB /B06/. In case of the current verification, the emission reduction is 381,686 tCO₂e for this MP, the verification team determined the sample size for acceptance sampling by evaluating the following, using its own professional judgment and guidance in the Standard 'Sampling and surveys for CDM project activities and programme of activities' version 09.0 /B06/: Considering Acceptable Quality Level (AQL): 0.5% Unacceptable Quality Level (UQL): 20% and producer risk of 5% and consumer risk of 20% a sample size of 08 was required as per Table 2 in the referred Standard /B06/. Acceptance number (c) thus determined for the sample size is 08. CCIPL verified a total of 08 samples from 800 samples (1 sample for each CPA) to verify the project activity for the operational status of the biogas plants and 08 samples from 800 samples to verify the average annual consumption of woody biomass. The biogas details (unique serial number, date of installation, name of user and address) were also checked and found to be consistent with that reported in the project database. No inconsistency was observed for any of the 08 samples

with respect to the operation status and mean type parameters reported in the User Survey Reports/03/. (See section D.3 of this report)

The parameters which are subjected to sampling are mentioned below:

Parameter	Frequency
BC _{PJ,HH,y}	Biennial
B _y	Biennial
Users' perception on reduction in indoor air pollution	Biennial
Reduction in health problem	Biennial
User's perception in Time saving for the cooking (reduce exposure to indoor air pollution)	Biennial
Time saving (Fuel wood collection)	Biennial
Users perception in reduction of chemical fertilizers	Biennial
Improved access to sanitation services	Biennial
Trainings to Masons	Biennial
Impact on Crop Productivity	Biennial

Double counting Assessment

The project is registered with CDM as well and has successfully transitioned to GS. PP is claiming for only GSVERs. Moreover, the verification team through secondary research concludes that PoA, is not registered with any other standard.

The project does not contradict Nepal's national policy on climate change impact or the NDC of Nepal.

D.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	--	CAR 02	--
Remaining forward action requests from validation and/or previous verifications	--	--	FAR 01
CPAs considered for verification and covered in this report	--	--	--
Programme of activities			
Compliance of the programme implementation with the registered PoA-DD		--	--
Implementation and operation of the management system	--	--	--
Post-registration changes			
• Corrections	--	--	--
• Inclusion of a monitoring plan	--	--	--
• Permanent changes to the registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines, or other methodological regulatory documents ³	--	--	--
• Changes to the programme design	--	--	--
• Addition of CPA inclusion template	--	--	--
• Change of coordinating/managing entity	--	--	--
• Changes specific to afforestation and reforestation activities	--	--	--
Component project activities			
Compliance of the CPA implementation with the included CPA design document		--	--

³ Other standards, methodologies, methodological tools and guidelines (to be) applied in accordance with the applied(selected) methodologies are collectively referred to as the other (applied) methodological regulatory documents).

Post-registration changes			
• Temporary deviations from registered monitoring plan, applied methodologies, standardized baselines or other methodological regulatory documents	--	--	--
• Corrections	--	--	--
• Changes to the start date-of the crediting period	--	--	--
• Inclusion of a monitoring plan	--	--	--
• Permanent changes to the registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines, or other methodological regulatory documents	--	--	--
• Changes to the project design	--	--	--
• Changes specific to afforestation and reforestation activities	--	--	--
Compliance of the registered monitoring plan with applied methodologies and standardized baselines	--	--	--
Compliance of monitoring activities with the registered monitoring plan			
• Data and parameters fixed ex ante or at renewal of crediting period	--	--	--
• Data and parameters monitored			
• Implementation of sampling plan			--
Compliance with the calibration frequency requirements for measuring instruments			--
Assessment of data and calculation of emission reductions or net removals			
• Calculation of baseline GHG emissions or baseline net GHG removals by sinks		CAR 03	--
• Calculation of project GHG emissions or actual net GHG removals by sinks			--
• Calculation of leakage GHG emissions			
• Summary of calculation of GHG emission reductions or net GHG removals by sinks	--	--	--
• Comparison of actual GHG emission reductions or net GHG removals by sinks with estimates in included CPA			
• Remarks on difference from estimated value in included CPA			
Assessment of reported sustainable development co-benefits			
Global stakeholder consultation			
Others (please specify) Missing Documents		CAR 01	
Total		03	

SECTION E. Verification findings

E.1. General

E.1.1. Compliance of the monitoring report with the monitoring report form

Means of verification	DR, I
Findings	There are no findings on this section of the VR.
Conclusion	PP has used the GS4GG template Monitoring Report, version 1.1./B01-02/ The verification team confirms that the latest available version of the monitoring report template has been used by the PP and the MR is in compliance with the monitoring report form and related template guide Monitoring Report, version 1.1. /B01-02/

E.1.2. Remaining forward action requests from validation and/or previous verifications

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Based on the review of the previous verification report, 1 FARs was raised which needed to be addressed during this verification and has been addressed in appendix 4.

E.1.3. CPAs considered for verification and covered in this report

Title and GS ID of the CPA included in the PoA as of the end of this monitoring period	Is the CPA considered for this verification? (yes/no)	The date when the CPA was included	Version of the PoA-DD	Confirmation that a request for issuance including the CPA has been published for the previous monitoring period (Y/N)
Nepal Biogas Support Program- CPA 1: 20,000 digesters (3109)	Yes	04/08/2020	Version 17.0	Y
Nepal Biogas Support Program - CPA 2: 19,927 digesters (3113)	Yes	05/05/2021	Version 17.0	Y
Nepal Biogas Support Program - CPA 3: 19,959 digesters (3114)	Yes	05/05/2021	Version 17.0	Y
Nepal Biogas Support Program - CPA 4: 19,970 digesters (3116)	Yes	05/05/2021	Version 17.0	Y
Nepal Biogas Support Program - CPA 5: 19,842 digesters (3566)	Yes	05/05/2021	Version 17.0	Y
Nepal Biogas Support Program - CPA 6: 18,504 digesters (6393)	Yes	08/07/2022	Version 17.0	Y
Nepal Biogas Support Program – CPA 7: 18,392 digesters (6394)	Yes	08/07/2022	Version 17.0	Y
Nepal Biogas Support Program - CPA 10: 10,589 digesters (10739)	Yes	18/05/2020	Version 17.0	Y

E.2. Programme of activities**E.2.1. Compliance of the programme implementation with the registered programme design document**

Means of verification	DR, I			
Findings	CL01 had been raised in this regard and has been resolved.			
Conclusion	CC IPL by means of an onsite visit and document review, assessed that all physical features (technology, project equipment, and monitoring and metering equipment) of the included CPAs in the approved PoA-DD/B04/ are in place and that the coordinating/managing entity has operated the PoA and the CPAs as per the approved PoA-DD and the approved CPA-DDs/B04/. The PoA aims at implementing household biogas applications. The technologies used in this CPA are household biogas digesters with a sludge and gas holding capacity range of up to 10 m ³ . The different sizes of the digesters that would be included in the programme would be of 2, 4, 6, 8 and 10 m ³ . The programme uses only one design i.e. GGC 2047 model. The total number of biogas implemented in each CPA are provided below:			
	Ref	Number of Digesters	Construction Start Date	Construction End Date

	CPA-1, GS ID:3109	19,999	22/06/2007	18/03/2009
	CPA-2, GS ID:3113	19,927	19/03/2009	09/03/2010
	CPA-3,GS ID:3114	19,959	10/03/2010	19/02/2011
	CPA-4, GS ID:3116	19,970	20/02/2011	28/02/2012
	CPA-5, GS ID:3566	19,842	29/02/2012	23/05/2013
	CPA-6, GS ID: 6393	18,504	24/05/2013	04/04/2014
	CPA-7, GS ID: 6394	18,392	05/04/2014	31/12/2014
	CPA-10, GS ID:10739	10,589	13/07/2018	19/10/2019
Verification team confirms that the programme has been implemented as per the approved revised PoA-DD. This confirms the compliance of § 338(a), § 340 and § 345 of CDM VVS for PoAs, version 03.0 /B01-1/.				

E.2.2. Implementation and operation of the management system

Means of verification	DR, I
Findings	There are no findings on this section of the VR.
Conclusion	The PoA management system including the record-keeping system has been explained in the approved PoA-DD /B04/. During the course of verification, verification team based on the review of the provided documents and onsite visit interviews/observations has assessed this management system. This included the organisational structure, roles and responsibilities, data collection, transfer and aggregation procedures, training of personnel /09/, data storage and archiving and emergency procedures for the monitoring system. As per the Public Procurement Act/Regulation of Nepal, a third party is responsible for monitoring and maintenance of biogas. The third party will follow the monitoring and maintenance of biogas plants, and AEPC is responsible for making MR. The stakeholders of the project has been given in the section C of the MR. VVB through the document review, i.e., Biogas survey, project database, grievance records and on site interviews confirms the role of stakeholders informed. Based on onsite visit interviews with the personnel of AEPC involved in the project monitoring and data collection, inspection of monitoring database & equipment used and document review, CCIPL can confirm that the responsibilities and authorities for monitoring and reporting are appropriate and effective for the project type and hence in accordance with the monitoring plan of the approved PoA-DD /B04/ and the applied monitoring methodology /B02/. The verification team confirms that the monitoring management system of the GS PoA is in place, with the responsibilities properly identified and in place. This confirms the compliance of § 338 (a) and § 345 (b) (iv) of CDM VVS PoAs, version 03.0 /B01-1/.

E.2.3. Post-registration changes

E.2.3.1. Corrections

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Not Applicable.

E.2.3.2. Inclusion of a monitoring plan

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Not Applicable.

E.2.3.3. Permanent changes to the registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines, or other methodological regulatory documents

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Not Applicable.

E.2.3.4. Changes to the programme design

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Not Applicable.

E.2.3.5. Addition of CPA inclusion template

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Not Applicable.

E.2.3.6. Change of coordination/managing entity

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Not Applicable.

E.2.3.7. Changes specific to afforestation and reforestation activities

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Not Applicable.

E.3. Component project activities**E.3.1. Compliance of the CPA implementation with the included CPA design document**

Means of verification	DR, I	
Findings	CL02 had been raised in this regard and has been resolved.	
Conclusion	The implementation status of the PoA and the component project activities is:	
	Co-ordinating and Managing entity/Project Participants:	Atmosfair gGmbH /Alternative Energy Promotion Centre (AEPC)
	Title of the PoA:	Nepal Biogas Support Program-PoA
	GS ID	GS3110
	Applied Baseline and monitoring methodology:	AMS I. E., version 9
	Title of the CPA:	Nepal Biogas Support Program- CPA 1: 20,000 digesters
	CPA-1 GS ID:	3109
	CPA implementer	Alternative Energy Promotion Centre (AEPC)
	Project Scale:	Small scale
	Location of the CPAs:	Nepal
	CPA crediting period:	31/01/2020 – 30/01/2027
	Reported monitoring Period verified in this verification:	01/01/2022 to 31/12/2022
	Title of the CPA:	Nepal Biogas Support Program- CPA 2: 19,927 digesters
	CPA-2 GS ID:	3113
	CPA implementer	Alternative Energy Promotion Centre (AEPC)
	Project Scale:	Small scale
	Location of the CPAs:	Nepal
	CPA crediting period:	08/05/2021 – 07/05/2028
	Reported monitoring Period verified in this verification:	01/01/2022 to 31/12/2022
	Title of the CPA:	Nepal Biogas Support Program- CPA 3: 19,959 digesters

CPA-3 GS ID:	3114
CPA implementer	Alternative Energy Promotion Centre (AEPC)
Project Scale:	Small scale
Location of the CPAs:	Nepal
CPA crediting period:	08/05/2021 – 07/05/2028
Reported monitoring Period verified in this verification:	01/01/2022 to 31/12/2022

Title of the CPA:	Nepal Biogas Support Program- CPA 4: 19,970 digesters
CPA-4 GS ID:	3116
CPA implementer	Alternative Energy Promotion Centre (AEPC)
Project Scale:	Small scale
Location of the CPAs:	Nepal
CPA crediting period:	08/05/2021 – 07/05/2028
Reported monitoring Period verified in this verification:	01/01/2022 to 31/12/2022

Title of the CPA	Nepal Biogas Support Program- CPA 5: 19,842 digesters
CPA-5 GS ID:	3566
CPA implementer	Alternative Energy Promotion Centre (AEPC)
Project Scale:	Small scale
Location of the CPAs:	Nepal
CPA crediting period:	25/08/2021 – 24/08/2028
Reported monitoring Period verified in this verification:	08/05/2022 to 31/12/2022

Title of the CPA	Nepal Biogas Support Program- CPA 6: 18,504 digesters
CPA-6 GS ID:	GS ID: 6393
CPA implementer	Alternative Energy Promotion Centre (AEPC)
Project Scale:	Small scale
Location of the CPAs:	Nepal
CPA crediting period:	08/07/2022 – 07/07/2029
Reported monitoring Period verified in this verification:	08/05/2022 to 31/12/2022

Title of the CPA	Nepal Biogas Support Program- CPA 7: 18,392 digesters
CPA-7 GS ID:	GS ID: 6394
CPA implementer	Alternative Energy Promotion Centre (AEPC)
Project Scale:	Small scale
Location of the CPAs:	Nepal
CPA crediting period:	08/07/2022 – 07/07/2029
Reported monitoring Period verified in this verification:	08/07/2022 to 31/12/2022

Title of the CPA:	Nepal Biogas Support Program - CPA 10: 10,589 digesters
CPA-10 GS ID:	10739
CPA implementer	Alternative Energy Promotion Centre (AEPC)
Project Scale:	Small scale
Location of the CPAs:	Nepal
CPA crediting period:	18/05/2020 – 17/05/2027
Reported monitoring Period verified in this verification:	01/01/2022 to 31/12/2022

Each CPA involves implementation of household biogas applications. These applications displace firewood and fossil fuels with biogas from animal waste and human excreta. The biogas is used as a fuel for cooking, therefore the displacement of non-renewable biomass (NRB) is counted as emission reduction under the Clean Development Mechanism (CDM) and Gold Standard (GS). Target group under the PoA are households with at least one head of cattle (generally cows or buffalos) who currently use non-renewable biomass (firewood) for cooking purpose. The different sizes of the digesters that are included in the programme are of 2, 4, 6, 8 and 10 m³. The programme uses only one design i.e. GGC 2047 model.

AEPC maintains the record of installed biogas digesters. Each biogas installed under different CPAs is identified with its unique dome gas pipe number and hence the uniqueness of the identity is maintained for each digester. Since all the digesters implemented under all CPAs of the PoA are centrally maintained, possibility of the double counting of the digesters between and within CPAs is avoided. The details of each size of the biogas plant with the location (Terai, Hill and Remote Hill) is identified in the MR/01/. The registration procedure of the BSP database avoids double counting of digesters and the registration of digesters that have not been commissioned. The commissioning date is the basis for subsidy disbursement.

Each CPA under the PoA involves the implementation of household biogas digesters in the host country, Nepal. The exact digester location could be verified from the monitored database /12/ and sample end user records of each CPA.

The component project activities were implemented, and equipment installed as described in the included CPA DDs /B04/. The actual project activity is in line with the included CPA-DDs /B04/. Alternative Energy Promotion Centre (AEPC) is the CPA implementer/programme activity implementer for the CPAs.

The information (including data and variables) provided in the MR /01/ is in line with the details provided in the approved CPA-DDs /B04/.

CCIPL's verification team considers the project description of the project contained in the approved revised PoA-DD and the approved CPA-DDs /B04/ to be complete and accurate. The approved CPA-DDs/B04/ comply with the relevant methodology, tools, forms and guidance at the time of CPA-DDs/B04/ submission for registration/inclusion.

In accordance with § 340 of CDM VVS for PoA, version 03 /B01-1/, the verification team confirms that there is no information (data and variables) in the current monitoring period that are different from that stated in the approved revised CPA-DDs/B04/ which has caused an increase in the estimates of GHG emission reductions.

Verification team has assessed the project in order to check any proposed or actual changes to the project design in accordance with § 267 of CDM VVS for PoAs, version 03.0/B01/. In the opinion of CCIPL, there is no change to the project design. CCIPL's verification team confirms that the CPAs are implemented within the boundary of the PoA as described in the approved revised PoA-DD/B04/ and the implementation and operation of the project activity has been conducted in accordance with the description contained in the approved revised PoA-DD/B04/ and included approved revised CPA-DDs/B04/.

As part of the onsite visit, the verification team was able to confirm that the component project implementation is in accordance with the project description contained in the approved revised CPA-DDs /B04/. The verification team took cognizance of §338, § 339 and § 340 of the CDM VVS for PoA, version 03 /B01-1/.

E.3.2. Post-registration changes**E.3.2.1. Temporary deviations from the registered monitoring plan, applied methodologies, standardized baselines or other methodological regulatory documents**

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Not Applicable.

E.3.2.2. Corrections

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Not Applicable.

E.3.2.3. Changes to the start-date of the crediting period

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Not Applicable.

E.3.2.4. Inclusion of a monitoring plan

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Not Applicable.

E.3.2.5. Permanent changes to the registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines, or other methodological regulatory documents

>>

Not Applicable.

E.3.2.6. Changes to the project design

>>

Not Applicable.

E.3.2.7. Changes specific to afforestation and reforestation activities

>>

Not Applicable.

E.3.3. Compliance of the registered monitoring plan with applied methodologies and standardized baselines

Means of verification	DR, I
Findings	There are no findings on this section of the VR.
Conclusion	The verification team is able to confirm that the monitoring plan contained in the approved CPA-DDs /B04/ is in accordance with the approved methodology applied by the project activity, i.e. AMS-I.E., version 09 /B02/. The monitoring plan is in accordance with the approved methodology, AMS-I.E., version 09 /B02/, applied by the component project activities and as provided in the approved revised CPA-DDs /B04/. The verification took cognizance of § 341 to § 343 of CDM VVS for PoAs, version 03.0 /B01-1/.

E.3.4. Compliance of monitoring activities with the registered monitoring plan**E.3.4.1. Data and parameters fixed ex ante or at renewal of crediting period**

Means of verification	DR, I
Findings	There are no findings on this section of the VR.
Conclusion	The verification team confirms that the Data and parameters fixed ex-ante are in compliance with the monitoring plan contained in the approved CPA-DDs /B04/. Detailed assessment of each parameter has been provided in Appendix-5.

The verification took cognizance of §344, §345 (c) and §357 of CDM VVS for PoAs, version 03.0 /B01-1/.

E.3.4.2. Data and parameters monitored

Means of verification	DR, I
Findings	CL03 had been raised in this regard and has been resolved. FAR01 has been raised in this regard and shall be checked at the time of the next periodic verification.
Conclusion	The verification team confirms that the Data and parameters monitored are in compliance with the monitoring plan contained in the approved CPA-DDs/B04/. A complete assessment of each of the monitored parameters has been provided in Appendix-6 of the verification report. The verification took cognizance of § 344, § 345 (c), § 355 and § 357 of CDM VVS for PoAs, version 03.0 /B01-1/.

E.3.4.3. Implementation of sampling plan

Means of verification	DR, I																																				
Findings	No findings have been raised																																				
Conclusion	The sampling plan implemented by the CME is in accordance with the applied approved monitoring methodology /B02/ and the approved PoA-DD, approved CPA-DDs /B04/. The CME has appropriately performed Stratified Random Sampling procedure in line with the applied methodology and best suited for this type of project. As the approved revised PoA-DD /B04/ mentions the option for Stratified Random Sampling procedure, it is acceptable to the verification team. The sampling survey has been carried out by the well-trained people in the AEPC, training certificates of the personnel have been provided to the verification team /09/. PP's sampling approach: PP has proposed stratified random sampling plan using 90/10 as confidence / precision. This is in line with the applied methodology /B02/. The sample size for each parameter is determined following guidelines for Sampling and Surveys for CDM Project activities and Programme of Activities Ver. 4.0 (EB86, Annex 4) /B06/. The monitoring parameters monitored through the sampling plan are: g) Biogas performance - The share of operational biogas plants (B_y -Proportion parameter) h) Average annual consumption of woody biomass (BC_{PJ,HH,y} - Mean Value parameters) The sample size calculated for each CPA is provided below:																																				
	<table><tr><th>Particulars</th><th>CPA-1</th><th>CPA-2</th><th>CPA-3</th><th>CPA-4</th><th>CPA-5</th><th>CPA-6</th><th>CPA-7</th><th>CPA-10</th></tr><tr><td>Sample Calculated (Mean value Parameters)</td><td>20</td><td>20</td><td>14</td><td>14</td><td>28</td><td>30</td><td>20</td><td>15</td></tr><tr><td>Sample Calculated (Proportional Parameters)</td><td>34</td><td>39</td><td>21</td><td>25</td><td>17</td><td>34</td><td>34</td><td>54</td></tr><tr><td>Conservative sample No</td><td>34</td><td>39</td><td>21</td><td>25</td><td>28</td><td>34</td><td>34</td><td>54</td></tr></table>	Particulars	CPA-1	CPA-2	CPA-3	CPA-4	CPA-5	CPA-6	CPA-7	CPA-10	Sample Calculated (Mean value Parameters)	20	20	14	14	28	30	20	15	Sample Calculated (Proportional Parameters)	34	39	21	25	17	34	34	54	Conservative sample No	34	39	21	25	28	34	34	54
	Particulars	CPA-1	CPA-2	CPA-3	CPA-4	CPA-5	CPA-6	CPA-7	CPA-10																												
	Sample Calculated (Mean value Parameters)	20	20	14	14	28	30	20	15																												
Sample Calculated (Proportional Parameters)	34	39	21	25	17	34	34	54																													
Conservative sample No	34	39	21	25	28	34	34	54																													

<i>Minimum sample for Terai</i>	18	20	9	11	14	19	18	22
<i>Minimum sample for Hill</i>	15	18	11	13	13	14	15	31
<i>Minimum Sample for Remote Hill</i>	1	1	1	1	1	1	1	1
Minimum sample stipulated in PoA-DD	75	75	75	75	75	75	75	75
Sample Taken for the Survey	100	100	100	100	100	100	100	100
<i>Sample in Terai</i>	52	50	45	45	50	56	52	42
<i>Sample in Hill</i>	44	46	51	51	46	40	44	54
<i>Sample in Remote Hill</i>	4	4	4	4	4	4	4	4

The sample size for the mean value parameter was less than 30 and thus in accordance with the §14 of the sampling standard, version 09/**B06**/, Student's t-distribution was used for the sample size. The sample size thus determined is 13. Thus, the sample size used by the CME for CPA-1 of 100 is deemed sufficient to meet the sampling requirements.

CC IPL's verification sampling approach:

As per §25 of the Standard: Sampling and surveys for CDM project activities and programmes of activities (version 09.0) **/B06/**, the verification team has to verify whether the project participant have implemented the sampling and surveys according to the sampling plan in the registered monitoring plan. The verification includes determining:

- c) Whether the required confidence/precision has been met;
- d) Whether the selected sample was representative of the population.

In line with §26 of the Sampling Standard (version 09.0) **/B06/**, the verification team has applied a sampling approach for onsite visit surveys as part of verification. Since PP had applied a sampling approach, the verification team has chosen acceptance sampling for monitoring parameters in accordance with §28 of the sampling standard (version 09.0) **/B06/**.

CC IPL has considered §30 and §31 of "Standard for Sampling and surveys for CDM project activities and programmes of activities, Version 09.0" for determining the sampling size to be visited by VVB **/B06/**. In case of the current validation & verification, the estimated emission reduction is 381,686 tCO_{2e}, the verification team determined the sample size for acceptance sampling by evaluating the following, using its own professional judgment and guidance in the Standard 'Sampling and surveys for CDM project activities and programme of activities' version 09.0 **/B06/**: Considering Acceptable Quality Level (AQL): 0.5% Unacceptable Quality Level (UQL): 20% and producer risk of 5% and consumer risk of 20% a sample size of 08 was required as per Table 2 in the referred Standard **/B06/**. Acceptance number (c) thus determined for the sample size is 08. CC IPL verified a total of 08 samples from 800 samples (100 samples per CPA) to verify the project activity for the operational

	status of the stoves and 08 samples from 800 samples to verify the average annual consumption of woody biomass. The biogas details (unique serial number, date of installation, name of user and address) were also checked and found to be consistent with that reported in the project database. No inconsistency was observed for any of the 800 samples with respect to the operation status and mean type parameters reported in the Biogas User Survey Reports/03/. The detailed assessment of sampling for verification of project activity is provided in Appendix -7.
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E.3.5. Compliance with the calibration frequency requirements for measuring instruments

Means of verification	DR, I
Findings	There are no findings on this section of the VR.
Conclusion	The CPAs of the PoA do not involve any monitoring instruments that require calibration; hence no further assessment is done.

E.3.6. Assessment of data and calculation of emission reductions or net removals

E.3.6.1. Calculation of baseline GHG emissions or baseline net GHG removals by sinks

Means of verification	DR, I
Findings	There are no findings on this section of the VR.
Conclusion	In line with the requirement of § 356 and § 357 of CDM VVS for PoAs, version 03.0/B01-1/, the verification team has reviewed the monitoring report and ER spread sheet to check the arithmetic calculation of the emission reductions. In accordance with the §20 of the AMS-I.E. version 09/B02/, the emission reductions for the CPAs of the PoA are calculated as: $BE_y = B_y \times f_{NRB,y} \times NCV_{biomass} \times EF_{projected_fossilfuel}$ Where: BE_y Baseline Emissions during the year y (tCO₂e) P_y Quantity of woody biomass that is substituted or displaced in tonnes (tonnes/year) $f_{NRB,y}$ Fraction of woody biomass used in the absence of the project activity in year y that can be established as non renewable biomass using survey methods (Fixed Ex-ante = 86.1%) $NCV_{biomass}$ Net calorific value of the non-renewable woody biomass that is substituted IPCC default for wood fuel: 0.0156 TJ/tonne) $EF_{projected_fossilfuel}$ Emission factor for substitution of non renewable woody biomass by similar consumers. Use a value of 63.7 tCO₂/TJ The parameter B_y is calculated as per the equation below: $P_y = N_{HH} \times P_y \times (BC_{BL,HH,y} - BC_{PJ,HH,y})$ Where: N_{HH} Number of digesters installed in the Project P_y Percentage of digesters implemented that is operational in year y $BC_{BL,HH,y}$ Average annual consumption of woody biomass per household before the start of the project activity $BC_{PJ,HH,y}$ Average annual consumption of woody biomass per household in the pre-project devices during the project activity The verification team confirms that the calculation of baseline emission (421,520 tCO₂e) and emission reductions (381,686 tCO₂e) is in accordance with the applied

	methodological equation and the approved CPA-DDs/B06/. Calculations have been checked and confirmed from the ER spread sheet /04/. The verification took cognizance of § 356 of CDM VVS for PoAs, version 03.0 /B01-1/.
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E.3.6.2. Calculation of project GHG emissions or actual net GHG removals by sinks

Means of verification	DR, I
Findings	There are no findings on this section of the VR.
Conclusion	There are no project emissions identified in the monitoring methodology /B02/ and the approved revised CPA-DDs / B06/ .

E.3.6.3. Calculation of leakage GHG emissions

Means of verification	DR, I
Findings	
Conclusion	A leakage factor of 5% has been considered as per the methodology AMS I.E. version 9/B02/. Verification team confirms that all parameters are used correctly in the calculations, all results are verifiable and transparent, all assumptions are described and based on verifiable evidence and calculations are done in accordance with the pre-defined formulae from approved CPA-DDs /B06/.

E.3.6.4. Summary of calculation of GHG emission reductions or net GHG removals by sinks

Means of verification	DR, I
Findings	--
Conclusion	Verification team confirms that all parameters are used correctly in the calculations, all results are verifiable and transparent, all assumptions are described and based on verifiable evidence and calculations are done in accordance with the pre-defined formulae from approved CPA-DDs /B04/. The total number of ERs achieved during the monitoring period is 381,686 tCO₂e. In summary, verification team confirms that actual emission reduction is lower than the estimate of the approved CPA-DDs/B04/ for the current monitoring period. The verification took cognizance of § 356 of CDM VVS PoAs, version 03.0 /B01-1/.

Title and GS ID of the CPA	Baseline emissions or baseline net GHG removals by sinks (tCO ₂ e)	Project emissions or actual net GHG removals by sinks (tCO ₂ e)	Leakage (tCO ₂ e)	Net Benefit
				Amount achieved in the entire monitoring period
Nepal Biogas Support Program- CPA 1: 19,000 digesters (3109)	61,017	0	3,050	57,967
Nepal Biogas Support Program - CPA 2: 19,927 digesters (3113)	57,718	0	2,885	54,833
Nepal Biogas Support Program - CPA 3: 19,959 digesters (3114)	62,133	0	3,106	59,027
Nepal Biogas Support Program - CPA 4: 19,970 digesters (3116)	68,646	0	3,432	65,214
Nepal Biogas Support Program - CPA 5: 19,842 digesters (3566)	63,259	0	3,162	60,097
Nepal Biogas Support Program - CPA 6: 18,504 digesters (6393)	27,695	0	1,384	26,311
Nepal Biogas Support Program - CPA 7: 18,392 digesters (6394)	28,781	0	1,439	27,342

Nepal Biogas Support Program - CPA 10: 10,589 digesters (10739)	32,521	0	1,626	30,895
Total	401,770	0	20,084	381,686

SDG	B a s e l i n e	Project estimate	L e a k a g e	Net Benefit
SDG 03 3.9.1 Mortality rate attributed to household and ambient air pollution (Average annual consumption of woody biomass per household in the preproject devices during the project activity) (t/HH/year)	0	CPA-1: 0.55 CPA-2: 0.54 CPA-3: 0.51 CPA-4: 0.49 CPA-5: 0.55 CPA-6: 0.48 CPA-7: 0.51 CPA-10: 0.51	0	CPA-1: 0.55 CPA-2: 0.54 CPA-3: 0.51 CPA-4: 0.49 CPA-5: 0.55 CPA-6: 0.48 CPA-7: 0.51 CPA-10: 0.51
3.9.1 Mortality rate attributed to household and ambient air pollution (Quantity of woody biomass that is	0	CPA-1: 71,315.59 CPA-2: 67,459.87 CPA-3: 72,620.74 CPA-4: 80,232.47 CPA-5: 73,936.27 CPA-6: 32,369.97 CPA-7: 33,639.07 CPA-10: 38,009.98	0	CPA-1: 71,315.59 CPA-2: 67,459.87 CPA-3: 72,620.74 CPA-4: 80,232.47 CPA-5: 73,936.27 CPA-6: 32,369.97 CPA-7: 33,639.07 CPA-10: 38,009.98

substituted or displaced) (Ton)																																																																																																									
3.9.1 Mortality rate attributed to household and ambient air pollution (Net calorific value of the non-renewable biomass that is substituted) (TJ/tonne)	0	0.0156		0	0.0156																																																																																																				
3.9.1 Mortality rate attributed to household and ambient air pollution (Users' perception on reduction in indoor air pollution) - %	0	CPA-1: 96.25% CPA-2: 100% CPA-3: 98.77% CPA-4: 98.85% CPA-5: 97.59% CPA-6: 100% CPA-7: 95.24% CPA-10: 97.50%		0	CPA-1: 96.25% CPA-2: 100% CPA-3: 98.77% CPA-4: 98.85% CPA-5: 97.59% CPA-6: 100% CPA-7: 95.24% CPA-10: 97.50%																																																																																																				
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3.9.3 Mortality rate attribute d to unintenti onal poisonin g (Users	0	CPA-1: Farmyard manure: 27.32% Bioslurry: 100%, Urea: 36.11%, DAP: 36.84% Potash: 0.00% CPA-2: Farmvard manure: 22.49%	0	CPA-1: Farmyard manure: 27.32% Bioslurry: 100%, Urea: 36.11%, DAP: 36.84% Potash: 0.00% CPA-2: Farmvard manure: 22.49%																																																																								

percepti on in reductio n of chemica l fertilizer s)-%		Bioslurry: 100%, Urea: 44.44%, DAP: 52.94% Potash: 0.00%	Bioslurry: 100%, Urea: 44.44%, DAP: 52.94% Potash: 0.00%							
		CPA-3: Farmyard manure: 27.37% Bioslurry: 100% Urea: 34.38% DAP: 50.00% Potash: 42.11%	CPA-3: Farmyard manure: 27.37% Bioslurry: 100% Urea: 34.38% DAP: 50.00% Potash: 42.11%							
		CPA-4: Farmyard manure: 21.64% Bioslurry: 100% Urea: 39.39% DAP: 47.37% Potash: 40.00%	CPA-4: Farmyard manure: 21.64% Bioslurry: 100% Urea: 39.39% DAP: 47.37% Potash: 40.00%							
		CPA-5 Farmyard manure: 21.62% Bioslurry: 100% Urea: 46.15% DAP: 44.00% Potash: 20.00%	CPA-5 Farmyard manure: 21.62% Bioslurry: 100% Urea: 46.15% DAP: 44.00% Potash: 20.00%							
		CPA-6 Farmyard manure: 19.35% Bioslurry: 100% Urea: 38.46% DAP: 46.15% Potash: 0.00%	CPA-6 Farmyard manure: 19.35% Bioslurry: 100% Urea: 38.46% DAP: 46.15% Potash: 0.00%							
		CPA-7 Farmyard manure: 29.07% Bioslurry: 100% Urea: 42.00% DAP: 30.43% Potash: 50.00%	CPA-7 Farmyard manure: 29.07% Bioslurry: 100% Urea: 42.00% DAP: 30.43% Potash: 50.00%							
7.1.2 Proporti on of populati on with primary reliance on clean fuels and technolo gy (Users' percepti on on	0	CPAs	% HH perceived reduction in firewood collection time for	0	CPAs	% HH perceived reduction in firewood collection time for				
			Men		Women	Children		Men	Women	Children
		CPA-1	13.75		98.75	5.00	CPA-1	13.75	98.75	5.00
		CPA-2	17.11		96.05	1.32	CPA-2	17.11	96.05	1.32
		CPA-3	37.04		36.30	0.00	CPA-3	37.04	36.30	0.00
		CPA-4	31.03		98.85	9.20	CPA-4	31.03	98.85	9.20
CPA-5	36.14	98.80	3.61	CPA-5	36.14	98.80	3.61			
CPA-6	35.44	98.73	1.27	CPA-6	35.44	98.73	1.27			
CPA-7	35.71	96.43	5.95	CPA-7	35.71	96.43	5.95			
CPA-10	41.25	100	0.00	CPA-10	41.25	100	0.00			

time saving due to project for firewood collection)					
7.1.2 Proportion of population with primary reliance on clean fuels and technology (Trainings to Masons)	0	35		0	35

E.3.6.5. Comparison of actual GHG emission reductions or net GHG removals by sinks with estimates in included CPA

Means of verification	DR, I			
Findings	There are no findings on this section of the VR.			
Conclusion	SDG 13 (GHG emissions)	CPA	Estimated	Actual (tCO _{2e})
		1	61,017 tCO _{2e}	57,967 tCO _{2e}
		2	57,718 tCO _{2e}	54,833 tCO _{2e}
		3	62,133 tCO _{2e}	59,027 tCO _{2e}
		4	68,646 tCO _{2e}	65,214 tCO _{2e}
		5	63,259 tCO _{2e}	60,097 tCO _{2e}
		6	27,695 tCO _{2e}	26,311 tCO _{2e}
		7	28,781 tCO _{2e}	27,342 tCO _{2e}
		10	32,521 tCO _{2e}	30,895 tCO _{2e}
	3.9.1 Mortality rate attributed to household and ambient air pollution (Average annual consumption of woody	1	0.54	0.55
		2		0.54
		3		0.51
		4		0.49
		5		0.55
		6		0.48
7		0.51		
10		0.51		

	biomass per household in the pre-project devices during the project activity) (t/HH/year)																											
	3.9.1 Mortality rate attributed to household and ambient air pollution (Quantity of woody biomass that is substituted or displaced) (Ton)	1	80,096	71315.59																								
		2	79,807.64	67459.87																								
		3	79,935.80	72620.74																								
		4	79,979.85	80232.47																								
		5	79,467.21	73936.27																								
		6	74,108.52	32369.97																								
		7	73,659.96	33639.07																								
		10	47,650.50	38009.98																								
	3.9.1 Mortality rate attributed to household and ambient air pollution (Net calorific value of the non-renewable biomass that is substituted) (TJ/tonne)	--	0.0156	0.0156																								
	3.9.1 Mortality rate attributed to household and ambient air pollution (Users' perception on reduction in indoor air pollution)- %	--	100	100																								
	3.9.1 Mortality rate attributed to household and ambient air pollution (Users' perception on reduction in health problem)-%	--	100	<table> <tr> <th rowspan="2">CPAs</th><th colspan="4">% HH perceived reduction in</th></tr> <tr> <th>Eye infection</th><th>Respiratory diseases</th><th>Cough</th><th>Fire related injury</th></tr> <tr> <td>CPA-1</td><td>96.25</td><td>92.50</td><td>92.50</td><td>91.25</td></tr> <tr> <td>CPA-2</td><td>98.68</td><td>98.68</td><td>97.37</td><td>93.42</td></tr> <tr> <td>CPA-3</td><td>91.36</td><td>83.95</td><td>72.84</td><td>74.07</td></tr> </table>	CPAs	% HH perceived reduction in				Eye infection	Respiratory diseases	Cough	Fire related injury	CPA-1	96.25	92.50	92.50	91.25	CPA-2	98.68	98.68	97.37	93.42	CPA-3	91.36	83.95	72.84	74.07
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				CPA-4	93.10	90.80	86.21	80.46
				CPA-5	97.59	93.98	93.98	90.36
				CPA-6	88.61	89.87	89.87	88.61
				CPA-7	96.43	96.43	96.43	96.43
				CPA-10	92.50	87.50	86.25	86.25
The actual ERs are less than the estimated, and being a conservative value, this is deemed to be appropriate by the VVB. The verification team took cognizance of § 356 of CDM VVS for PoAs, version 03.0 /B01-1/.								

E.3.6.6. Remarks on difference from estimated value in included CPA

Means of verification	DR, I
Findings	There are no findings on this section of the VR.
Conclusion	Verification team confirms that actual emission reduction is lower than the estimated values for the reported monitoring period. The total ERs for the monitoring period are 381,686 tCO₂e and the ex-ante ERs for the monitoring period were 421,520 tCO₂e. The total ERs for the monitoring period is less than the estimated ex-ante. The emission reductions for CPA1 and CPA10 are available for the complete year and thus the seasonal variation is taken into consideration. The actual values for CPA1, CPA2, CPA3, CPA5, CPA6, CPA7 CPA10 are less than the ex-ante estimates. However, for CPA5, CPA6, and CPA7 the monitoring period is less than a year and thus seasonal variation is not considered. The actual values for CPA4 are slightly higher than the ex-ante estimates. The total emission reductions for all CPAs is lower than the ex-ante estimated values. The verification took cognizance of § 270 and § 271 of the CDM Project Standard for the PoAs version 03/B01-2/ and § 340 of the VVS for the PoAs version 03/B01-1/.

E.3.7. Assessment of reported sustainable development co-benefits

Means of verification	DR, I		
Findings	There are no findings on this section of the VR.		
Conclusion	SDGs	Value reported in this monitoring period	VVB's assessment
	3.9.1 Mortality rate attributed to household and ambient air pollution (Users' perception on reduction in indoor air pollution)-%	CPA-1: 96.25% CPA-2: 100% CPA-3: 98.77% CPA-4: 98.85% CPA-5: 97.59% CPA-6: 100% CPA-7: 95.24% CPA-10: 97.50%	As per user survey the sample end users reported positive feedback related to health and illness compared to baseline scenario. The monitoring procedure is as per registered monitoring plan

			and verification team also interviewed end users who confirmed positive feedback related to health and illness.
	SDG 3.9.1 Mortality rate attributed to household and ambient air pollution (Users' perception on reduction in health problem)	CPA-1: Eye infection: 96.24%, Respiratory disease: 92.50% Cough: 92.50% Fire related Injury: 91.25% CPA-2: Eye infection: 98.68%, Respiratory disease: 98.68% Cough: 97.37% Fire related Injury: 93.42% CPA-3: Eye infection: 91.36% Respiratory disease: 83.95% Cough: 72.84% Fire related Injury: 74.07% CPA-4: Eye infection: 93.10% Respiratory disease: 90.80% Cough: 86.21% Fire related Injury: 80.46% CPA-5: Eye infection: 97.59% Respiratory disease: 93.98% Cough: 93.98% Fire related Injury: 90.36% CPA-6: Eye infection: 88.61% Respiratory disease: 89.87% Cough: 89.87% Fire related Injury: 88.61% CPA-7: Eye infection: 96.43% Respiratory disease: 96.43% Cough: 96.43% Fire related Injury: 96.43% CPA-10:	As per user survey the sample end users reported positive feedback related to health and illness compared to baseline scenario. The monitoring procedure is as per registered monitoring plan and verification team also interviewed end users who confirmed positive feedback related to health and illness.

		Eye infection: 92.50% Respiratory disease: 87.50% Cough: 86.25% Fire related Injury: 86.25%																																					
	SDG 3.9.1 Mortality rate attributed to household and ambient air pollution (User's perception in Time saving for the cooking (reduce exposure to indoor air pollution))	<table><thead><tr><th>% response for</th><th>Men</th><th>Women</th><th>Children</th></tr></thead><tbody><tr><td>CPA-1</td><td>12.50</td><td>96.25</td><td>5.00</td></tr><tr><td>CPA-2</td><td>27.63</td><td>85.53</td><td>1.32</td></tr><tr><td>CPA-3</td><td>29.63</td><td>91.36</td><td>2.47</td></tr><tr><td>CPA-4</td><td>31.03</td><td>94.25</td><td>1.15</td></tr><tr><td>CPA-5</td><td>27.71</td><td>100</td><td>6.02</td></tr><tr><td>CPA-6</td><td>34.18</td><td>98.73</td><td>0.00</td></tr><tr><td>CPA-7</td><td>40.48</td><td>98.81</td><td>3.57</td></tr><tr><td>CPA-10</td><td>31.25</td><td>98.75</td><td>3.75</td></tr></tbody></table>	% response for	Men	Women	Children	CPA-1	12.50	96.25	5.00	CPA-2	27.63	85.53	1.32	CPA-3	29.63	91.36	2.47	CPA-4	31.03	94.25	1.15	CPA-5	27.71	100	6.02	CPA-6	34.18	98.73	0.00	CPA-7	40.48	98.81	3.57	CPA-10	31.25	98.75	3.75	As per user survey the sample end users reported positive feedback related to health and illness compared to baseline scenario. The monitoring procedure is as per registered monitoring plan and verification team also interviewed end users who confirmed positive feedback related to health and illness.
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CPA-10	31.25	98.75	3.75																																				
SDG 3.9.2 Mortality rate attributed to unsafe water, unsafe sanitation and lack of hygiene (exposure to unsafe Water, Sanitation and Hygiene for All (WASH) services) (Users' perception on connection of toilet to biogas)	CPA-1: 51.25% CPA-2: 71.05% CPA-3: 54.32% CPA-4: 71.26% CPA-5: 78.31% CPA-6: 74.68% CPA-7: 47.62% CPA-10: 92.50%	As per user survey the sample end users reported positive feedback related to health and illness compared to baseline scenario. The monitoring procedure is as per registered monitoring plan and verification team also interviewed end users who confirmed positive feedback related to health and illness.																																					
SDG 3.9.3 Mortality rate attributed to unintentional poisoning (Users perception in	CPA-1: Farmyard manure: 27.32% Bioslurry: 100%, Urea: 36.11%, DAP: 36.84% Potash: 0.00%	As per user survey the sample end users reported positive feedback related to use of chemical fertiliser and																																					

	reduction of chemical fertilizers):	CPA-2: Farmyard manure: 22.49% Bioslurry: 100%, Urea: 44.44%, DAP: 52.94% Potash: 0.00% CPA-3: Farmyard manure: 27.37% Bioslurry: 100% Urea: 34.38% DAP: 50.00% Potash: 42.11% CPA-4: Farmyard manure: 21.64% Bioslurry: 100% Urea: 39.39% DAP: 47.37% Potash: 40.00% CPA-5: Farmyard manure: 21.62% Bioslurry: 100% Urea: 46.15% DAP: 44.00% Potash: 20.00% CPA-6: Farmyard manure: 19.35% Bioslurry: 100% Urea: 38.46% DAP: 46.15% Potash: 0.00% CPA-7: Farmyard manure: 29.07% Bioslurry: 100% Urea: 42.00% DAP: 30.43% Potash: 50.00% CPA-10: Farmyard manure: 18.91% Bioslurry: 100% Urea: 47.62% DAP: 54.55% Potash: 50.00%	using more bio-slurry compared to baseline scenario. The monitoring procedure is as per registered monitoring plan and verification team also interviewed end users who confirmed positive feedback related to fertiliser use.																		
	SDG 7.1.2 Proportion of population with primary reliance on clean fuels and technology (Users' perception on time saving due to project for firewood collection)	<table> <tr> <th rowspan="2">CPAs</th><th colspan="3">% HH perceived reduction in firewood collection time for</th></tr> <tr> <th>Men</th><th>Women</th><th>Children</th></tr> <tr> <td>CPA-1</td><td>13.75</td><td>98.75</td><td>5.00</td></tr> <tr> <td>CPA-2</td><td>17.11</td><td>96.05</td><td>1.32</td></tr> <tr> <td>CPA-3</td><td>37.04</td><td>36.30</td><td>0.00</td></tr> </table>	CPAs	% HH perceived reduction in firewood collection time for			Men	Women	Children	CPA-1	13.75	98.75	5.00	CPA-2	17.11	96.05	1.32	CPA-3	37.04	36.30	0.00
CPAs	% HH perceived reduction in firewood collection time for																				
	Men	Women	Children																		
CPA-1	13.75	98.75	5.00																		
CPA-2	17.11	96.05	1.32																		
CPA-3	37.04	36.30	0.00																		

		CPA-4	31.03	98.85	9.20	monitoring plan and verification team also interviewed end users who confirmed positive feedback related to time saved in collecting firewood.
		CPA-5	36.14	98.80	3.61	
		CPA-6	35.44	98.73	1.27	
		CPA-7	35.71	96.43	5.95	
		CPA-10	41.25	100	0.00	
	SDG 2) 7.1.2 Proportion of population with primary reliance on clean fuels and technology (Trainings to Masons)	35				As per the training records /09/, training have been provided for the construction and installation of biogas plants. The monitoring procedure is as per registered monitoring plan and verification team also interviewed end masons. (See section D.3 of this report)
	Grievance: The verification team checked the grievance mechanism, and it was confirmed that no grievances were received during the monitoring period. This was confirmed from the review of the Grievances provided in the GS MR/01/ and also during onsite visit interviews by the verification team. The CME have a Grievance Redressal Mechanism (GRM). The Grievance Redressal committee collects givenaces through telephone calls or direct complaints at project office. During the site visit the households indicated that the during the warranty period the biogas companies were responsible for repair works and attended well. The majority of grievances were minor repair works by the local trained personnel along with the spare parts. The same is verified from the continuous grievance input database maintained. Thus, the CME is having a grievance addressable mechanism to respond to the stakeholders concern. Legal Contests and Disputes: The verification team interviewed the CME to check if there are any legal contests and disputes with regards to the PoA and it was confirmed that there are no legal contests and disputes. Also, confirmed in the monitoring report/02/.					

E.3.8. Global stakeholder consultation

Means of verification	N/A (this is not first MP)
------------------------------	----------------------------

Findings	There are no findings on this section of the VR.
Conclusion	The verification took cognizance of § 368 of CDM VVS for the PoAs, version 03 /B01-1/.

SECTION F. Internal quality control

>>

The final verification report has passed a technical review before being submitted to the Gold Standard. A technical reviewer qualified in accordance with the CCIPL's qualification scheme for CDM validation and verification has performed the technical review.

SECTION G. Verification opinion

>>

Carbon Check (India) Private Ltd. has performed verification for the second (2nd) periodic verification of the second PoA period of the registered GS Programme of Activities "Nepal Biogas Support Program-PoA" and GSID 3110 for the CPAs titled "Nepal Biogas Support Program - CPA 1: 20,000 digesters" (**GS ID: 3109**), "Nepal Biogas Support Program - CPA 2: 19,927 digesters" (**GS ID: 3113**), "Nepal Biogas Support Program - CPA 3: 19,959 digesters" (**GS ID: 3114**), "Nepal Biogas Support Program - CPA 4: 19,970 digesters" (**GS ID: 3116**), "Nepal Biogas Support Program - CPA 5: 19,842 digesters" (**GS ID: 3566**), "Nepal Biogas Support Program - CPA 6: 18,504 digesters" (**GS ID: 6393**), "Nepal Biogas Support Program - CPA 7: 18,392 digesters" (**GS ID: 6394**) and "Nepal Biogas Support Program - CPA 10: 10,589 digesters" (**GS ID: 10739**) have been reported in the monitoring report. The verification team assigned by the VVB concludes that the Component Project Activities as described in the approved CPA-DDs: CPA-DD for **3109**: (version 16 dated 03/11/2019); CPA-DD for **3113**: (version 6 dated 03/05/2021); CPA-DD for **3114**: (version 6 dated 03/05/2021); CPA-DD for **3116**: (version 6 dated 04/05/2021); CPA-DD for **3566**: (version 6 dated 04/05/2021); CPA-DD for **10739**: (version 2 dated 16/05/2020); and the Monitoring report (version 03, dated 09/12/2022), meet all relevant requirements of the GS4GG project activities including article 12 of the Kyoto Protocol and paragraph 62 of CDM M & P, the modalities and procedures for CDM (Marrakesh Accords) and the subsequent decisions by the COP/MOP and CDM Executive Board. The verification has been conducted in-line with the CDM VVS for programme of activities requirements, version 03.0 /B01-1/.

Verification methodology and process:

The Verification team confirms the contractual relationship/13/ signed on 02/08/2023 between the VVB, Carbon Check (India) Private Ltd. and Project Participant atmosfair gGmbH. The team assigned to the verification meets the Carbon Check (India) Private Ltd.'s internal procedures including the UNFCCC requirements for the team composition and competence. The verification team has conducted a thorough contract review as per UNFCCC and Carbon Check procedures and requirements.

The verification has been performed as per the requirements described in the CDM VVS for programme of activities, version 03.0 and constitutes the review and completion of the following steps:

- Reviewing the approved PoA-DD (version 03, dated 31/01/2020), approved CPA DDs [CPA-DD for **3109**: (version 16 dated 03/11/2019); CPA-DD for **3113**: (version 6 dated 03/05/2021); CPA-DD for **3114**: (version 6 dated 03/05/2021); CPA-DD for **3116**: (version 6 dated 04/05/2021); CPA-DD for **3566**: (version 6 dated 04/05/2021); GS ID: 6393: (version 6 dated 23/06/2022); GS ID: 6394: (version 6 dated 23/06/2022); CPA-DD for **10739**: (version 2 dated 16/05/2020)], including the monitoring plan and the corresponding validation reports;
- Desk review of the validation report, MR and other relevant documents including documents related to the component project activities in emission reductions;
- Review of the applied monitoring methodology (AMS-I.E., version 09);
- Review of any CMP and EB decisions, clarifications and guidance;
- Onsite assessment and follow up interviews (12/09/2023 – 15/09/2023);

- Resolution of CARs and CLs raised during verification.
- Issuance of Verification Report

The component project activities were correctly implemented according to the selected monitoring methodology, monitoring plan and the approved CPA-DDs/B04/. The monitoring system was installed, maintained in a proper manner, while collected monitoring data allowed for the verification of the amount of achieved GHG emission reductions. Through the review and onsite audit interviews, the verification team confirms that the PoA has resulted in the 381,686 tCO₂e emission reductions during the second (2nd) monitoring period.

During the reported monitoring period CPA 1, CPA 2, CPA 3, CPA 4, CPA 5, CPA 6, CPA7 and CPA10 were eligible for the claim of emission reductions. Emission reductions have been reported for all the eligible CPAs in the Monitoring report. The emission reductions have been claimed only for CPA 1, CPA 2, CPA 3, CPA 4, CPA 5, CPA 6, CPA7 and CPA10 (**GS ID: 3109, 3113, 3114, 3116, 3566**, GS ID: 6393, GS ID: 6394 and **10739**):

Verified emission reductions (CPA 1): 57,967 tCO₂e
 Verified emission reductions (CPA 2): 54,833 tCO₂e
 Verified emission reductions (CPA 3): 59,027 tCO₂e
 Verified emission reductions (CPA 4): 65,214 tCO₂e
 Verified emission reductions (CPA 5): 60,097 tCO₂e
 Verified emission reductions (CPA 6): 26,311 tCO₂e
 Verified emission reductions (CPA 7): 27,342 tCO₂e
 Verified emission reductions (CPA 10): 30,895 tCO₂e

The break-up of emission reduction up to 31st December 2012 and 1st January 2013 to 31st December 2020 and 1st January 2021 onwards as verified during the course of verification are as below:

Item	Emission reductions up to 31 December 2012	Emission reductions from 1 January 2013 to 31 December 2020	Emission reductions from 1 January 2021 onwards
Emission reductions (tCO ₂ e)	0	0	381,686

CC IPL as a VVB is therefore pleased to issue a positive verification opinion expressed in the Certification statement provided in section H of this report.

SECTION H. Certification statement

Carbon Check (India) Private Ltd, the VVB, has performed the verification of the registered Programme of Activities "GSID 3110", "Nepal Biogas Support Program-PoA" in Nepal. The aim of the PoA is implementation of household biogas applications in Nepal. The component project activities of the Programme of Activity are designed to generate emission reductions by implementation of household biogas applications in Nepal. The baseline of the PoA considers only non-renewable biomass replaced through household biogas applications. Only households previously using non-renewable biomass are eligible to the PoA.

The CME and the CPA implementer are responsible for the collection of data in accordance with the monitoring plan and the reporting of GHG emissions reductions from the component project activities. It is VVB's responsibility to express an independent verification statement on the reported GHG emission reductions from the component projects. The VVB VVBs not express any opinion on the selected baseline scenario or on the validated and approved PoA-DD, approved CPA-DDs/B04/. The verification is carried out in-line with the VVS requirements, version 03 /B01-1/.

The verification was performed to identify the compliance of the component projects with the implementation and monitoring requirements, and to verify the actual amount of achieved emission reductions, through obtaining evidence and information during onsite visit assessment that included i) checking whether the provisions of the monitoring methodology and the monitoring plan were consistently and appropriately applied and ii) the collection of evidence supporting the reported data. The verification is based on:

- Approved PoA-DD version 03 dated 31/01/2020/B04/;
- Approved CPA-DD/s included in the registered PoA and its monitoring plan/B04/.
- Approved monitoring methodology AMS-I.E., “Switch from Non-Renewable Biomass for Thermal Applications by the User”, version 09;
- Validation report /B06/ for the PoA and CPA/s;
- Verification reports for the previous verification (MP1)/B08/;
- Monitoring report(s) for the previous verification (MP01)/B08/.

This statement covers verification period from 01/01/2022 to 31/12/2022 (including both the days).

The VVB had raised 00 clarifications requests and 03 corrective action requests, all of which have been resolved by the CME.

The VVB considers necessary to give reasonable assurance that reported GHG emission reductions were calculated correctly on the basis of the approved baseline and the monitoring methodology and the monitoring plan contained in the approved CPA-DDs are fairly stated.

The VVB, hereby certifies that the project activity, achieved emission reductions by sources of GHG equal to 381,686 tCO₂e and all monitoring requirements have been fulfilled and is substantiated by an audit trail that contains evidence and records. The break-up of emission reduction up-to 31/12/2012, 01/01/2013 to 31/12/2020 and 01/01/2022 onwards as verified during the course of verification are as below:

Item	Emission reductions up to 31 December 2012	Emission reductions from 1 January 2013 to 31 December 2020	Emission reductions from 1 January 2021 onwards
Emission reductions (t CO ₂ e)	0	0	381,686

Appendix 1. Abbreviations

Abbreviations	Full texts
AEPC	Alternative Energy Promotion Centre
AQL	Acceptable Quality Limit
BSP-Nepal	Biogas Sector Partnership Nepal
BUS	Biogas User Survey
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
CAR	Corrective Action Request
CC IPL	Carbon Check (India) Private Ltd.
CER	Certified Emission Reduction
CL	Clarification Request
CME	Co-ordinating and Managing entity
CPA	Component Project Activity
CPA-DD	Component Project Activity Design Document
CO ₂	Carbon Dioxide
CO ₂ e	Carbon Dioxide Equivalent
CREF	Central Renewable Energy Fund
VVB	Designated Operational Entities
DP	Development Partners
DR	Document review
EB	CDM Executive Board
EF	Emission Factor
EI	External individual
ER	Emission reduction
FA	Final Approval
FAR	Forward Action Request
FVR	Final verification Report
GHG	Greenhouse gas(es)
GoN	Government of Nepal
GWh	Giga Watt Hour
I	Interview
IPCC	Intergovernmental Panel on Climate Change
IR	Internal resource
MWh	Mega Watt Hour
MP	Monitoring Period
MR	Monitoring Report
PoA	Programme of Activities
PoA-DD	Programme of Activities Design Document
PP	Project Participant
OSV	On Site Visit
QC/QA	Quality control /Quality assurance
RH	Remote Hill
RMP	Revised Monitoring Plan
TA	Technical Area
TR	Technical Review
UNFCCC	United Nations Framework Convention on Climate Change
UQL	Unacceptable Quality Limit
VVS	Validation and Verification Standard

Appendix 2. Competence of team members and technical reviewers



Carbon Check (India) Private Limited

Certificate of Competency

Ms. Aparna Choudhary

has been qualified as per CCIPL's internal qualification procedures in accordance with the requirements of CDM AS (V7.0), A 6.4 AS (V1.0) ISO/IEC14065:2020, ISO/IEC 17029:2019 and other applicable GHG programs:

for the following functions and requirements:

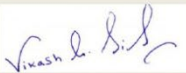
☒ Validator	☒ Verifier	☒ Team Leader	☒ Technical Expert
☐ Technical Reviewer	☐ Validator/Verifier (Trainee)	☐ Gender Expert	☐ Plastic Waste Expert
☐ CCB Expert	☐ Legal Expert	☐ Financial Expert	☐ Environmental, Health and Safety financial matters
☒ SDG Expert	☒ Expert Social aspect	☒ Expert Environment aspect	☐ Health Expert
☒ Regional Expert for India			

in the following Technical Areas:

☒ TA 1.1	☒ TA 1.2	☐ TA 2.1	☒ TA 3.1	☐ TA 4.1
☐ TA 4. n	☐ TA 5.1	☐ TA 5.2	☐ TA 7.1	☐ TA 8.1
☐ TA 9.1	☐ TA 9.2	☐ TA 10.1	☒ TA 13.1	☒ TA 13.2
☐ TA 14.1	☐ TA 15.1	☐ TA 16.1		

Issue Date

20th January 2025



Mr. Vikash Kumar Singh
Director - Compliance

Expiry Date

19th January 2026

Revision History of the document:

Revision date	Summary of changes
Dec 2023 ¹	Change in the template due to revision in TA and function
April 2024	Revision due to A6.4 Implementation
Jan 2025	Revised as per the latest organogram

CCIPL_FM 7.9 Certificate of Competency_V7.0_17012025

¹ Please refer to previous version of FM 7.9 for the revision history



Carbon Check (India) Private Limited

Certificate of Competency

Ms. Jaya Rajput

has been qualified as per CCIPL's internal qualification procedures in accordance with the requirements of CDM AS (V7.0), ISO/IEC 14065:2020, ISO/IEC 17029:2019 and other applicable GHG programs:

for the following functions and requirements:

- | | | | |
|--|--|--|---|
| ☒ Validator | ☒ Verifier | ☒ Team Leader | ☒ Technical Expert |
| ☐ Technical Reviewer | ☐ Health Expert | ☐ Gender Expert | ☐ Plastic Waste Expert |
| ☐ CCB Expert | ☐ Legal Expert | ☐ Financial Expert | ☐ Environmental, Health and Safety financial matters |
| ☐ SDG+ | ☐ Social no-harm(S+) | ☐ Environment no-harm(E+) | |
| ☒ Local Expert for India | | | |

in the following Technical Areas:

- | | | | | |
|----------------------------------|--|----------------------------------|--|----------------------------------|
| ☐ TA 1.1 | ☒ TA 1.2 | ☐ TA 2.1 | ☒ TA 3.1 | ☐ TA 4.1 |
| ☐ TA 4. n | ☐ TA 5.1 | ☐ TA 5.2 | ☐ TA 7.1 | ☐ TA 8.1 |
| ☐ TA 9.1 | ☐ TA 9.2 | ☐ TA 10.1 | ☐ TA 13.1 | ☐ TA 13.2 |
| ☐ TA 14.1 | ☐ TA 15.1 | ☐ TA 16.1 | | |

Issue Date

5th December 2023

Priya Suman

Ms. Priya Suman
Compliance Officer

Expiry Date

31st December 2024

Sanjay Agarwalla

Mr. Sanjay Kumar Agarwalla
Technical Director

Revision History of the document:

Revision date	Summary of changes
2022	Initial Adoption
Jan 2023	Annual revision
Dec 2023	Change in the template due to revision in TA and function

CCIPL_FM 7.9 Certificate of Competency_V4.0_112023

¹ Please refer to previous version of FM 7.9 for the revision history



Carbon Check (India) Private Limited

Certificate of Competency

Ms. Indumathi C

has been qualified as per CCIPL's internal qualification procedures in accordance with the requirements of CDM AS, A 6.4 AS/ ISO/IEC 14065:2020, ISO/IEC 17029:2019 and other applicable GHG programs:

for the following functions and requirements:

- | | | | |
|---|--|---|---|
| ☒ Validator | ☒ Verifier | ☒ Team Leader | ☒ Technical Expert |
| ☒ Technical Reviewer | ☐ Validator/Verifier (Trainee) | ☐ Gender Expert | ☒ Plastic Waste Expert |
| ☐ CCB Expert | ☐ Legal Expert | ☒ Financial Expert | ☐ Environmental, Health and Safety financial matters |
| ☒ SDG Expert | ☒ Expert Social aspect | ☒ Expert Environment aspect | ☐ Health Expert |
| ☒ Regional Expert for India and Sri Lanka | | | |

in the following Technical Areas:

- | | | | | |
|--|--|----------------------------------|---|---|
| ☒ TA 1.1 | ☒ TA 1.2 | ☐ TA 2.1 | ☒ TA 3.1 | ☐ TA 4.1 |
| ☐ TA 4. n | ☐ TA 5.1 | ☐ TA 5.2 | ☐ TA 7.1 | ☐ TA 8.1 |
| ☐ TA 9.1 | ☐ TA 9.2 | ☐ TA 10.1 | ☒ TA 13.1 | ☒ TA 13.2 |
| ☐ TA 14.1 | ☐ TA 15.1 | ☐ TA 16.1 | | |

Issue Date
20th January 2025

Expiry Date
19th January 2026

Mr. Vikash Kumar Singh
Director - Compliance

Revision History of the document:

Revision date	Summary of changes
Dec 2023 ¹	Change in the template due to revision in TA and function
April 2024	Revision due to A6.4 Implementation
Jan 2025	Revised as per the latest organogram.

CCIPL_FM 7.9 Certificate of Competency_V7.0_17012025

¹ Please refer to previous version of FM 7.9 for the revision history



Carbon Check (India) Private Limited

Certificate of Competency

Mr. Campal Deepak Kadam

has been qualified as per CCIPL's internal qualification procedures in accordance with the requirements of CDM AS (V7.0), A 6.4 AS (V1.0) ISO/IEC 14065:2020, ISO/IEC 17029:2019 and other applicable GHG programs:

for the following functions and requirements:

- | | | | |
|---|---|--|---|
| ☒ Validator | ☒ Verifier | ☒ Team Leader | ☒ Technical Expert |
| ☐ Technical Reviewer | ☐ Validator/Verifier (Trainee) | ☐ Gender Expert | ☐ Plastic Waste Expert |
| ☐ CCB Expert | ☐ Legal Expert | ☐ Financial Expert | ☐ Environmental, Health and Safety financial matters |
| ☐ SDG Expert | ☐ Expert Social aspect | ☐ Expert Environment aspect | ☐ Health Expert |
| ☒ Regional Expert for India | | | |

in the following Technical Areas:

- | | | | | |
|----------------------------------|--|----------------------------------|---|---|
| ☐ TA 1.1 | ☒ TA 1.2 | ☐ TA 2.1 | ☒ TA 3.1 | ☐ TA 4.1 |
| ☐ TA 4. n | ☐ TA 5.1 | ☐ TA 5.2 | ☐ TA 7.1 | ☐ TA 8.1 |
| ☐ TA 9.1 | ☐ TA 9.2 | ☐ TA 10.1 | ☒ TA 13.1 | ☒ TA 13.2 |
| ☐ TA 14.1 | ☐ TA 15.1 | ☐ TA 16.1 | | |

Issue Date

20th January 2025

Expiry Date

19th January 2026

Mr. Vikash Kumar Singh
Director-Compliance

Revision History of the document:

Revision date	Summary of changes
Dec 2023 ¹	Initial Adoption
April 2024	Revision due to A6.4 implementation
Jan 2025	Revised as per the latest organogram.

CCIPL_FM 7.9 Certificate of Competency_V7.0_17012025

¹ Please refer to previous version of FM 7.9 for the revision history



Carbon Check (India) Private Limited

Certificate of Competency

Mr. Vishal Bijani

has been qualified as per CCIPL's internal qualification procedures in accordance with the requirements of CDM AS (V7.0), A 6.4 AS (V1.0) ISO/IEC 14065:2020, ISO/IEC 17029:2019 and other applicable GHG programs:

for the following functions and requirements:

- | | | | |
|---|---|--|---|
| ☒ Validator | ☒ Verifier | ☐ Team Leader | ☒ Technical Expert |
| ☐ Technical Reviewer | ☐ Validator/Verifier (Trainee) | ☐ Gender Expert | ☐ Plastic Waste Expert |
| ☐ CCB Expert | ☐ Legal Expert | ☐ Financial Expert | ☐ Environmental, Health and Safety financial matters |
| ☐ SDG Expert | ☐ Expert Social aspect | ☐ Expert Environment aspect | ☐ Health Expert |
| ☒ Regional Expert for India | | | |

in the following Technical Areas:

- | | | | | |
|----------------------------------|--|----------------------------------|--|---|
| ☐ TA 1.1 | ☒ TA 1.2 | ☐ TA 2.1 | ☒ TA 3.1 | ☐ TA 4.1 |
| ☐ TA 4. n | ☐ TA 5.1 | ☐ TA 5.2 | ☐ TA 7.1 | ☐ TA 8.1 |
| ☐ TA 9.1 | ☐ TA 9.2 | ☐ TA 10.1 | ☐ TA 13.1 | ☒ TA 13.2 |
| ☐ TA 14.1 | ☐ TA 15.1 | ☐ TA 16.1 | | |

Issue Date

20th January 2025

Expiry Date

19th January 2026

Mr. Vikash Kumar Singh
Director-Compliance

Revision History of the document:

Revision date	Summary of changes
Nov 2024 ¹	Initial Adoption
Jan 2025	Revised as per the latest organogram.

CCIPL_FM 7.9 Certificate of Competency_V7.0_17012025

¹ Please refer to previous version of FM 7.9 for the revision history

Appendix 3. Documents reviewed or referenced

No.	Author	Title	References to the document	Provider
01	AEPC	Monitoring Report	Version 1. 22/03/2023 Version 02 25/11/2023 Version 2.2 11/02/2025	CME
02	AEPC	ER calculations sheet	Version 01	CME
03	AEPC	User Survey Report and the Survey responses for 1. CPA1 2. CPA2 3. CPA3 4. CPA4 5. CPA5 6. CPA6 7. CPA7 8. CPA10	2021/2022	CME
04	AEPC	Contract signed between AEPC and Biogas Maintenance and Repairer (Pashupati Biogas Tatha Nirman Company Pvt. Ltd.	Dated 07/09/2023	CME
05	AEPC	Sample Questionnaire for Biogas Users Households		CME
06	Gobargas Sahyog Karykaram	Technical Specification of Biogas plant	Dated 2010	CME
07	AEPC	Sample Carbon Waiver Agreement Between End User and the CME	-	CME
08	AEPC	Maintenance records		CME
09	AEPC	Training Records		CME
10	AEPC	Random number generator for sampling		CME
11	AEPC	Sampling Precision calculation sheet		CME
12	AEPC	Biogas plant database		CME
13	CC IPL	Counter-signed contract between CC IPL and PP	02/08/2023	
B01	UNFCCC	1. Validation and Verification Standard for PoAs, version 03.0 2. Project Standard for PoAs, version 03.0 3. Project Cycle Procedure for PoAs, version 03.0	http://cdm.unfccc.int/	Others
B02	UNFCCC	Applied baseline and monitoring methodology, AMS-I.E., version 09	http://cdm.unfccc.int/	Others
B03	UNFCCC	Instructions for filling out the monitoring report form for CDM programme of activities version 05.0	http://cdm.unfccc.int/	Others

CDM-PoA-VCR-FORM

B04	UNFCCC	Approved revised PoA-DD (version 03 dated 31/01/2020); CPA-DD for 3109 : (version 16 dated 03/11/2019); CPA-DD for 3113 : (version 6 dated 03/05/2021); CPA-DD for 3114 : (version 6 dated 03/05/2021); CPA-DD for 3116 : (version 6 dated 04/05/2021); CPA-DD for 3566 : (version 6 dated 04/05/2021); CPA-DD for 10739 : (version 2 dated 16/05/2020); and corresponding validation reports.	http://cdm.unfccc.int/	Others
B05	UNFCCC	1. Guidelines: Sampling and surveys for CDM project activities and programmes of activities, Version 04.0 2. "Guidelines for sampling and surveys for CDM project activities and programme of activities" Annex 5, EB 69, version 02.0	http://cdm.unfccc.int/	Others
B06	UNFCCC	1. Standard: Standard for sampling and surveys for CDM project activities and Programme of Activities, version 09.0 (used by VVB 2 2. Standard for sampling and surveys for CDM project activities and programme of activities, version 03.0 (used by the CME)	http://cdm.unfccc.int/	Others
B07	UNFCCC	Guideline: Application of materiality in verifications" version 02.0	http://cdm.unfccc.int/	Others
B08	UNFCCC	Monitoring Report and Verification Reports of the previous monitoring periods	http://cdm.unfccc.int/	Others

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

Table 1. Remaining FAR from validation and/or previous verifications

FAR ID	01	Section no.	-	Date: 22/11/2022
Description of FAR				
<i>PP shall Initiate CP renewal for CPA2, CPA3, CPA4 and CPA5. PP may loose credits due to delay in renewal of CP. VVB shall check at the time of next verification.</i>				
Project participant response				Date: 26/11/2023
<i>The Project Participant will check the status of crediting period renewal of CPA 2, CPA 3, CPA 4 and CPA 5 and plan for the crediting period renewal during next verification</i>				
Documentation provided by project participant				
VVB assessment				Date: 11/12/2023
<i>PP will check for CP renewal CPA2, CPA3, CPA4 and CPA5 and will plan accordingly.</i>				

Table 2. CL from this verification

CL ID	01	Section no.	3.1	Date:
Description of CL				
-				
Project participant response				Date:
Documentation provided by CME				
VVB assessment				Date:

Table 3. CAR from this verification

CAR ID	01	Section no.	3.1	Date: 20/11/2023
Description of CAR				
<i>SDG calculation spreadsheet has not been provided to the verification team to cross-check the results for SDG values reported.</i>				
CME response				Date: 26/11/2023
<i>The SDG Calculation spreadsheet is calculated under Emission Reduction spreadsheet separately in SDG Calculation1,2,3,4,5,6,7,10 sheet. Please see Emission Reduction spreadsheet</i>				
Documentation provided by CME				
1. 26. GS3110_ER Calculation sheet_Biogas PoA_CP-2_MP-3_V02				
VVB assessment				Date: 11/12/2022
<i>PP has provided the SDG Calculation spreadsheet is calculated under the Emission Reduction spreadsheet. CAR 01 is closed.</i>				

CAR ID	02	Section no.		Date: 20/11/2023
Description of CAR				

CDM-PoA-VCR-FORM

<i>PP is requested to address following inconsistency in line with the GS Monitoring Report template guideline v1.1:</i> <i>In table 1, sections A.2, B.1, D.2, D.3, E.2,E.4 and E.5 of the MR v1, the figures are not present with comma as per the para 16 of GS Monitoring Report template guideline v1.1, which states that “Figures above one thousand shall be formatted with a comma (for example 1,000,000), and decimals will be separated by a point (for example 1.35)”.</i> <i>In section table 2 and section A.1 of the MR v1, PP has not written dates in DD/MM/YYYY format comma as per the para 16 of GS Monitoring Report template guideline v1.1 which states that “All Dates must be in the following format: DD/MM/YYYY”</i>	
CME response	Date: 26/11/2022
<i>As per the para 16 of GS Monitoring Report template guideline V1.1, the figures in table 1, sections A.2, B.1, D.2, D.3, E.2,E.4 and E.5 of the MR v1 are presented with comma.</i> <i>The dates are revised and corrected in section table 2 and section A.1 of the MR v1 as per the dates format comma as per the para 16 of GS Monitoring Report template guideline v1.1.</i>	
Documentation provided by CME	
<i>25. GS3110_Biogas PoA_Monitoring Report_CP-2_MP-3_V02_Clean</i> <i>25. GS3110_Biogas PoA_Monitoring Report_CP-2_MP-3_V02_Clean</i>	
VVB assessment	Date: 11/12/2022
PP has revised the MR as per the comments raised. CAR 02 is closed.	

CAR ID	03	Section no.		Date: 20/11/2023
Description of CAR				
<i>PP is requested to address the following editorial error in the MR v1:</i> <i>In section E.1, in the following calculation PP has written 0.7924 instead of 0.7942 –</i> <i>By = 19,999 x 0.7924 x (5.04-0.55) = 71,315.59 tonne</i>				
CME response				Date: 26/11/2023
<i>The editorial error in section E.1 of MR v1 is revised and corrected as suggested. Please see Monitoring Report CP_2 MP_3</i>				
Documentation provided by CME				
<i>25. GS3110_Biogas PoA_Monitoring Report_CP-2_MP-3_V02_Clean</i>				
VVB assessment				Date: 11/12/2023
PP has revised the editorial error in the MR v02. CAR 03 is closed.				

Table 4. FAR from this verification

FAR ID	XX	Section No.		Date: DD/MM/YYYY
Description of FAR				
Project participant response				Date: DD/MM/YYYY
Documentation provided by project participant				
VVB assessment				Date: DD/MM/YYYY

Appendix 5. Data and parameters fixed ex ante

Data/Parameter	f_{NRBy} Fraction of woody biomass saved by the project activity during year y that can be established as non-renewable biomass
Default values used:	86.1 %
Purpose of data	Baseline emission calculation
Source and Verification of the source	Calculated as per "TOOL30: Calculation of the fraction of non-renewable biomass". Cross verified from the approved CPA-DDs/B04/.

Data/Parameter	EF_{projected fossil fuel} Emission factor for the projected fossil fuel consumption in the baseline
Default values used:	63.7 tCO ₂ /TJ
Purpose of data	Baseline emission calculation
Source and Verification of the source	AMS I.E., version 09/B02/

Data/Parameter	N_{HH} Number of households in the project activity in year y
Default values used:	CPA-1: 19,999 CPA-2: 19,927 CPA-3: 19,959 CPA-4: 19,970 CPA-5: 19,942 CPA-6: 18,504 CPA-7: 18,392 CPA-10: 10,589
Purpose of data	Baseline emission calculation
Source and Verification of the source	BSP Database/19/ and cross-verified from the ex-ante value in the CPA-DDs/B04/

Data/Parameter	BC_{BLHH,y} Average annual consumption of woody biomass per household before the start of the project activity
Default values used:	5.04 tonne/household/year
Purpose of data	Baseline emission calculation
Source and Verification of the source	Based on baseline user surveys for other projects and the value is determined ex-ante in the CPA-DDs/B04/

Appendix 6. Data and parameters monitored

Monitoring Parameter Requirement	Assessment/ Observation by the VVB
Data / Parameter: (as in monitoring plan of PDD):	NCV _{biomass}
Measuring frequency/Time Interval:	N/A
Reporting frequency:	N/A
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Details of monitoring equipment:	No monitoring equipment used to determine the average number of eaters per appliance.
Is accuracy of the monitoring equipment as stated in the PDD? If the PDD VVBs not specify the accuracy of the monitoring equipment, VVBs the monitoring equipment represent good monitoring practise?	Not Applicable since no equipment is used to determine the parameter.
Calibration frequency /interval: Is it monitoring methodology /CDM EB guidance / local or national standards / manufacturers specification	No equipment used hence the calibration requirement not applicable.
Is the calibration interval in line with the monitoring plan of the PDD? If the PDD VVBs not specify the frequency of calibration, VVBs the selected frequency represent good monitoring practise?	No equipment used hence the calibration requirement not applicable.
Company performing the calibration (internal or external calibration):	No equipment used hence the calibration requirement not applicable.
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	No equipment used hence the calibration requirement not applicable.
Is (are) calibration(s) valid for the whole reporting period?	No equipment used hence the calibration requirement not applicable.
If applicable, has the reported data been cross-checked with other available data?	Yes, the value of parameter has been cross checked with the methodology AMS-I.E., version 09/B02/ and the approved CPA-DDs/B04/.
How were the values in the monitoring report verified?	The values mentioned in the MR 0.0156 TJ/tonne have been cross checked with the methodology AMS-I.E., version 09/B02/ and the approved CPA-DDs/B04/. The parameter is a default value as per the methodology and thus VVBs not require any changes.
VVBs the data management (from data generation to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data management ensures correct transfer of data and reporting of emission reductions and all necessary QA/QC processes are in place. The appropriate QA/QC procedures have been followed for the monitoring parameter.
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the approved revised monitoring plan, has the most	NA. Full data is available for the monitoring period.

conservative assumption theoretically possible been applied or has a request for deviation been approved?	
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Monitoring Parameter Requirement	Assessment/ Observation by the VVB
Data / Parameter: (as in monitoring plan of PDD):	BC _{PJ,HH,y}
Measuring frequency/Time Interval:	Atleast once every two years (biennial)
Reporting frequency:	Atleast once every two years (biennial)
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Details of monitoring equipment:	No monitoring equipment used to determine the average number of eaters per appliance. Biogas User Survey is conducted on a sample of households. The sample size is determined to achieve 90% confidence interval and a 10% margin of error. During the survey, the estimates of the biogas users on the average annual consumption of woody biomass during the monitoring period is captured.
Is accuracy of the monitoring equipment as stated in the PDD? If the PDD VVBs not specify the accuracy of the monitoring equipment, VVBs the monitoring equipment represent good monitoring practise?	Not Applicable since no equipment is used to determine the parameter.
Calibration frequency /interval: Is it monitoring methodology /CDM EB guidance / local or national standards / manufacturers specification	No equipment used hence the calibration requirement not applicable.
Is the calibration interval in line with the monitoring plan of the PDD? If the PDD VVBs not specify the frequency of calibration, VVBs the selected frequency represent good monitoring practise?	No equipment used hence the calibration requirement not applicable.
Company performing the calibration (internal or external calibration):	No equipment used hence the calibration requirement not applicable.
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	No equipment used hence the calibration requirement not applicable.
Is (are) calibration(s) valid for the whole reporting period?	No equipment used hence the calibration requirement not applicable.
If applicable, has the reported data been cross-checked with other available data?	Yes, the value of parameter has been cross checked with the Biogas User Survey reports and the survey responses received/09/. The reported responses were cross-checked with the sample end users during the onsite visit by the verification team. The verification team interviewed a total of 08 households from different strata to cross-check the responses and determined that the responses provided in the Biogas User Survey report/09/ were consistent with the responses received from the end users by the verification team.
How were the values in the monitoring report verified?	The values mentioned in the MR have been cross checked with the Biogas User Survey report/09/ and the end users. The Surveys were carried out in June 2021. The reported values for the parameter during the reported monitoring period for CPA1 and CPA10 were

	found to be less than the previous monitoring period parameter is a default value as per the methodology and thus VVBs not require any changes. The values reported during the monitoring period are: CPA-1: 0.55 tonnes/household/year CPA-2: 0.54 tonnes/household/year CPA-3: 0.51 tonnes/household/year CPA-4: 0.49 tonnes/household/year CPA-5: 0.55 tonnes/household/year CPA-6: 0.51 tonnes/household/year CPA-7: 0.51 tonnes/household/year CPA-10: 0.51 tonnes/household/year The values were also found to be lesser than the ex-ante estimate of 0.54 tonnes/household/year. The reported value is same for CPA10 as compared to the previous monitoring period.
VVBs the data management (from data generation to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data management ensures correct transfer of data and reporting of emission reductions and all necessary QA/QC processes are in place. The monitoring personnel were trained prior to the monitoring surveys/09/. The appropriate QA/QC procedures have been followed for the monitoring parameter.
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the approved revised monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	NA. Full data is available for the monitoring period.

Monitoring Parameter Requirement	Assessment/ Observation by the VVB
Data / Parameter: (as in monitoring plan of PDD):	B _y
Measuring frequency/Time Interval:	Once in a year (annual)
Reporting frequency:	Once in a year (annual)
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Details of monitoring equipment:	No monitoring equipment used to determine the average number of eaters per appliance. Biogas User Survey is conducted on a sample of households to check the operational status of the biogas units. P_y is Proportion of Bio digesters operational estimated based on the sample survey. The sample size is determined to achieve 90% confidence interval and a 10% margin of error.
Is accuracy of the monitoring equipment as stated in the PDD? If the PDD VVBs not specify the accuracy of the monitoring equipment, VVBs the monitoring equipment represent good monitoring practise?	Not Applicable since no equipment is used to determine the parameter.
Calibration frequency /interval:	No equipment used hence the calibration requirement not applicable.

Is it monitoring methodology /CDM EB guidance / local or national standards / manufacturers specification	
Is the calibration interval in line with the monitoring plan of the PDD? If the PDD VVBs not specify the frequency of calibration, VVBs the selected frequency represent good monitoring practise?	No equipment used hence the calibration requirement not applicable.
Company performing the calibration (internal or external calibration):	No equipment used hence the calibration requirement not applicable.
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	No equipment used hence the calibration requirement not applicable.
Is (are) calibration(s) valid for the whole reporting period?	No equipment used hence the calibration requirement not applicable.
If applicable, has the reported data been cross-checked with other available data?	Yes, the value of parameter has been cross checked with the Biogas User Survey reports and the survey responses received/09/. The reported responses were cross-checked with the sample end users during the onsite visit by the verification team. The verification team interviewed a total of 08 households from different strata to cross-check the responses and determined that the responses and operational status provided in the Biogas User Survey report/09/ were consistent with the responses received from the end users by the verification team.
How were the values in the monitoring report verified?	The values mentioned in the MR have been cross checked with the Biogas User Survey report/09/ and the end users. The values reported during the monitoring period are: CPA-1: 71,315.59 tCO₂eq CPA-2: 67,459.87 tCO₂eq CPA-3: 72,620.74 tCO₂eq CPA-4: 80,232.47 tCO₂eq CPA-5: 73,936.27 tCO₂eq CPA-6: 32,369.97 tCO₂eq CPA-7: 33,639.07 tCO₂eq CPA-10: 38,009.98 tCO₂eq The ex-ante values have not been provided in the CPA-DDs/B04/. The value for CPA1, is higher as compared to the previous monitoring period.
VVBs the data management (from data generation to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data management ensures correct transfer of data and reporting of emission reductions and all necessary QA/QC processes are in place. The monitoring personnel were trained prior to the monitoring surveys/09/. The appropriate QA/QC procedures have been followed for the monitoring parameter.
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the approved revised monitoring plan, has the most conservative assumption theoretically	NA. Full data is available for the monitoring period.

possible been applied or has a request for deviation been approved?	
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SDG Indicator 3.9.1 Mortality rate attributed to household and ambient air pollution	Assessment/ Observation by the VVB
Data / Parameter: (as in monitoring plan of PDD):	Users' perception on reduction in indoor air pollution
Measuring frequency/Time Interval:	At least biennial
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Details of monitoring equipment:	No monitoring equipment used to determine the average number of eaters per appliance. Biogas User Survey is conducted on a sample of households to check the operational status of the biogas units.
Is accuracy of the monitoring equipment as stated in the PDD? If the PDD VVBs not specify the accuracy of the monitoring equipment, VVBs the monitoring equipment represent good monitoring practise?	Not Applicable since no equipment is used to determine the parameter.
Calibration frequency /interval: Is it monitoring methodology /CDM EB guidance / local or national standards / manufacturers specification	No equipment used hence the calibration requirement not applicable.
Is the calibration interval in line with the monitoring plan of the PDD? If the PDD VVBs not specify the frequency of calibration, VVBs the selected frequency represent good monitoring practise?	No equipment used hence the calibration requirement not applicable.
Company performing the calibration (internal or external calibration):	No equipment used hence the calibration requirement not applicable.
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	No equipment used hence the calibration requirement not applicable.
Is (are) calibration(s) valid for the whole reporting period?	No equipment used hence the calibration requirement not applicable.
If applicable, has the reported data been cross-checked with other available data?	Yes, the value of parameter has been cross checked with the Biogas User Survey reports and the survey responses received/09/. The reported responses were cross-checked with the sample end users during the onsite visit by the verification team. The verification team interviewed a total of 08 households from different strata to cross-check the responses and determined that the responses and operational status provided in the Biogas User Survey report/09/ were consistent with the responses received from the end users by the verification team.
How were the values in the monitoring report verified?	The values mentioned in the MR have been cross checked with the Biogas User Survey report/09/ and the end users. The values reported during the monitoring period are: CPA-1: 96.25% CPA-2: 100%

	CPA-3: 98.77% CPA-4: 98.85% CPA-5: 97.59% CPA-6: 100% CPA-7: 95.24% CPA-10: 97.50% The ex-ante values have not been provided in the CPA-DDs/B04/. The value for CPA3, is higher as compared to the previous monitoring period.
VVBs the data management (from data generation to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data management ensures correct transfer of data and reporting of emission reductions and all necessary QA/QC processes are in place. The monitoring personnel were trained prior to the monitoring surveys/09/. The appropriate QA/QC procedures have been followed for the monitoring parameter.
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the approved revised monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	NA. Full data is available for the monitoring period.

SDG Indicator 3.9.1 Mortality rate attributed to household and ambient air pollution	Assessment/ Observation by the VVB
Data / Parameter: (as in monitoring plan of PDD):	Reduction in health problem
Measuring frequency/Time Interval:	At least biennial
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Details of monitoring equipment:	No monitoring equipment used to determine the average number of eaters per appliance. Biogas User Survey is conducted on a sample of households to check the operational status of the biogas units.
Is accuracy of the monitoring equipment as stated in the PDD? If the PDD VVBs not specify the accuracy of the monitoring equipment, VVBs the monitoring equipment represent good monitoring practise?	Not Applicable since no equipment is used to determine the parameter.
Calibration frequency /interval: Is it monitoring methodology /CDM EB guidance / local or national standards / manufacturers specification	No equipment used hence the calibration requirement not applicable.
Is the calibration interval in line with the monitoring plan of the PDD? If the PDD VVBs not specify the frequency of	No equipment used hence the calibration requirement not applicable.

calibration, VVBs the selected frequency represent good monitoring practise?																																																		
Company performing the calibration (internal or external calibration):	No equipment used hence the calibration requirement not applicable.																																																	
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	No equipment used hence the calibration requirement not applicable.																																																	
Is (are) calibration(s) valid for the whole reporting period?	No equipment used hence the calibration requirement not applicable.																																																	
If applicable, has the reported data been cross-checked with other available data?	Yes, the value of parameter has been cross checked with the Biogas User Survey reports and the survey responses received/09/. The reported responses were cross-checked with the sample end users during the onsite visit by the verification team. The verification team interviewed a total of 08 households from different strata to cross-check the responses and determined that the responses and operational status provided in the Biogas User Survey report/09/ were consistent with the responses received from the end users by the verification team.																																																	
How were the values in the monitoring report verified?	The values mentioned in the MR have been cross checked with the Biogas User Survey report/09/ and the end users. The values reported during the monitoring period are: <table border="1"> <thead> <tr> <th rowspan="2">CPAs</th><th colspan="4">% HH perceived reduction in</th></tr> <tr> <th>Eye infection</th><th>Respiratory diseases</th><th>Cough</th><th>Fire related injury</th></tr> </thead> <tbody> <tr> <td>CPA-1</td><td>96.25</td><td>92.50</td><td>92.50</td><td>91.25</td></tr> <tr> <td>CPA-2</td><td>98.68</td><td>98.68</td><td>97.37</td><td>93.42</td></tr> <tr> <td>CPA-3</td><td>91.36</td><td>83.95</td><td>72.84</td><td>74.07</td></tr> <tr> <td>CPA-4</td><td>93.10</td><td>90.80</td><td>86.21</td><td>80.46</td></tr> <tr> <td>CPA-5</td><td>97.59</td><td>93.98</td><td>93.98</td><td>90.36</td></tr> <tr> <td>CPA-6</td><td>88.61</td><td>89.87</td><td>89.87</td><td>88.61</td></tr> <tr> <td>CPA-7</td><td>96.43</td><td>96.43</td><td>96.43</td><td>96.43</td></tr> <tr> <td>CPA-10</td><td>92.50</td><td>87.50</td><td>86.25</td><td>86.25</td></tr> </tbody> </table> The ex-ante values have not been provided in the CPA-DDs/B04/. The value for CPA3, is higher as compared to the previous monitoring period.	CPAs	% HH perceived reduction in				Eye infection	Respiratory diseases	Cough	Fire related injury	CPA-1	96.25	92.50	92.50	91.25	CPA-2	98.68	98.68	97.37	93.42	CPA-3	91.36	83.95	72.84	74.07	CPA-4	93.10	90.80	86.21	80.46	CPA-5	97.59	93.98	93.98	90.36	CPA-6	88.61	89.87	89.87	88.61	CPA-7	96.43	96.43	96.43	96.43	CPA-10	92.50	87.50	86.25	86.25
CPAs	% HH perceived reduction in																																																	
	Eye infection	Respiratory diseases	Cough	Fire related injury																																														
CPA-1	96.25	92.50	92.50	91.25																																														
CPA-2	98.68	98.68	97.37	93.42																																														
CPA-3	91.36	83.95	72.84	74.07																																														
CPA-4	93.10	90.80	86.21	80.46																																														
CPA-5	97.59	93.98	93.98	90.36																																														
CPA-6	88.61	89.87	89.87	88.61																																														
CPA-7	96.43	96.43	96.43	96.43																																														
CPA-10	92.50	87.50	86.25	86.25																																														
VVBs the data management (from data generation to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data management ensures correct transfer of data and reporting of emission reductions and all necessary QA/QC processes are in place. The monitoring personnel were trained prior to the monitoring surveys/09/. The appropriate QA/QC procedures have been followed for the monitoring parameter.																																																	
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the approved revised monitoring plan, has the most conservative assumption theoretically	NA. Full data is available for the monitoring period.																																																	

possible been applied or has a request for deviation been approved?		
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SDG Indicator 3.9.1 Mortality rate attributed to household and ambient air pollution	Assessment/ Observation by the VVB			
Data / Parameter: (as in monitoring plan of PDD):	User's perception in Time saving for the cooking (reduce exposure to indoor air pollution)			
Measuring frequency/Time Interval:	At least biennial			
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes			
Details of monitoring equipment:	No monitoring equipment used to determine the average number of eaters per appliance. Biogas User Survey is conducted on a sample of households to check the operational status of the biogas units.			
Is accuracy of the monitoring equipment as stated in the PDD? If the PDD VVBs not specify the accuracy of the monitoring equipment, VVBs the monitoring equipment represent good monitoring practise?	Not Applicable since no equipment is used to determine the parameter.			
Calibration frequency /interval: Is it monitoring methodology /CDM EB guidance / local or national standards / manufacturers specification	No equipment used hence the calibration requirement not applicable.			
Is the calibration interval in line with the monitoring plan of the PDD? If the PDD VVBs not specify the frequency of calibration, VVBs the selected frequency represent good monitoring practise?	No equipment used hence the calibration requirement not applicable.			
Company performing the calibration (internal or external calibration):	No equipment used hence the calibration requirement not applicable.			
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	No equipment used hence the calibration requirement not applicable.			
Is (are) calibration(s) valid for the whole reporting period?	No equipment used hence the calibration requirement not applicable.			
If applicable, has the reported data been cross-checked with other available data?	Yes, the value of parameter has been cross checked with the Biogas User Survey reports and the survey responses received/09/. The reported responses were cross-checked with the sample end users during the onsite visit by the verification team. The verification team interviewed a total of 08 households from different strata to cross-check the responses and determined that the responses and operational status provided in the Biogas User Survey report/09/ were consistent with the responses received from the end users by the verification team.			
How were the values in the monitoring report verified?	The values mentioned in the MR have been cross checked with the Biogas User Survey report/09/ and the end users. The values reported during the monitoring period are: <table border="1"> <tr> <td>CPAs</td> <td>% HH perceived reduction in cooking time for</td> </tr> </table>		CPAs	% HH perceived reduction in cooking time for
CPAs	% HH perceived reduction in cooking time for			

	CPA-1	Men	Women	Children
	CPA-1	12.50	96.25	5.0
	CPA-2	27.63	85.53	1.32
	CPA-3	29.63	91.36	2.47
	CPA-4	31.03	94.25	1.15
	CPA-5	27.71	100	6.02
	CPA-6	34.18	98.73	0.00
	CPA-7	40.48	98.81	3.57
	CPA-10	31.25	98.75	3.75
	The ex-ante values have not been provided in the CPA-DDs/B04/. The value for CPA3, is higher as compared to the previous monitoring period.			
VVBs the data management (from data generation to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data management ensures correct transfer of data and reporting of emission reductions and all necessary QA/QC processes are in place. The monitoring personnel were trained prior to the monitoring surveys/09/. The appropriate QA/QC procedures have been followed for the monitoring parameter.			
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the approved revised monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	NA. Full data is available for the monitoring period.			

SDG Indicator 7.1.2 Proportion of population with primary reliance on clean fuels and technology	Assessment/ Observation by the VVB
Data / Parameter: (as in monitoring plan of PDD):	Time saving (Fuel wood collection)
Measuring frequency/Time Interval:	At least biennial
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Details of monitoring equipment:	No monitoring equipment used to determine the average number of eaters per appliance. Biogas User Survey is conducted on a sample of households to check the operational status of the biogas units.
Is accuracy of the monitoring equipment as stated in the PDD? If the PDD VVBs not specify the accuracy of the monitoring equipment, VVBs the monitoring equipment represent good monitoring practise?	Not Applicable since no equipment is used to determine the parameter.
Calibration frequency /interval:	No equipment used hence the calibration requirement not applicable.

Is it monitoring methodology /CDM EB guidance / local or national standards / manufacturers specification																																								
Is the calibration interval in line with the monitoring plan of the PDD? If the PDD VVBs not specify the frequency of calibration, VVBs the selected frequency represent good monitoring practise?	No equipment used hence the calibration requirement not applicable.																																							
Company performing the calibration (internal or external calibration):	No equipment used hence the calibration requirement not applicable.																																							
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	No equipment used hence the calibration requirement not applicable.																																							
Is (are) calibration(s) valid for the whole reporting period?	No equipment used hence the calibration requirement not applicable.																																							
If applicable, has the reported data been cross-checked with other available data?	Yes, the value of parameter has been cross checked with the Biogas User Survey reports and the survey responses received/09/. The reported responses were cross-checked with the sample end users during the onsite visit by the verification team. The verification team interviewed a total of 08 households from different strata to cross-check the responses and determined that the responses and operational status provided in the Biogas User Survey report/09/ were consistent with the responses received from the end users by the verification team.																																							
How were the values in the monitoring report verified?	The values mentioned in the MR have been cross checked with the Biogas User Survey report/09/ and the end users. The values reported during the monitoring period are: <table border="1"> <thead> <tr> <th rowspan="2">CPAs</th><th colspan="3">% HH perceived reduction in firewood collect time for</th></tr> <tr> <th>Men</th><th>Women</th><th>Children</th></tr> </thead> <tbody> <tr> <td>CPA-1</td><td>13.75</td><td>98.75</td><td>5.00</td></tr> <tr> <td>CPA-2</td><td>17.11</td><td>96.05</td><td>1.32</td></tr> <tr> <td>CPA-3</td><td>37.04</td><td>36.30</td><td>0.00</td></tr> <tr> <td>CPA-4</td><td>31.03</td><td>98.85</td><td>9.20</td></tr> <tr> <td>CPA-5</td><td>36.14</td><td>98.80</td><td>3.61</td></tr> <tr> <td>CPA-6</td><td>35.44</td><td>98.73</td><td>1.27</td></tr> <tr> <td>CPA-7</td><td>35.71</td><td>96.43</td><td>5.95</td></tr> <tr> <td>CPA-10</td><td>41.25</td><td>100</td><td>0.00</td></tr> </tbody> </table> The ex-ante values have not been provided in the CPA-DDs/B04/.	CPAs	% HH perceived reduction in firewood collect time for			Men	Women	Children	CPA-1	13.75	98.75	5.00	CPA-2	17.11	96.05	1.32	CPA-3	37.04	36.30	0.00	CPA-4	31.03	98.85	9.20	CPA-5	36.14	98.80	3.61	CPA-6	35.44	98.73	1.27	CPA-7	35.71	96.43	5.95	CPA-10	41.25	100	0.00
CPAs	% HH perceived reduction in firewood collect time for																																							
	Men	Women	Children																																					
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CPA-10	41.25	100	0.00																																					
VVBs the data management (from data generation to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data management ensures correct transfer of data and reporting of emission reductions and all necessary QA/QC processes are in place. The monitoring personnel were trained prior to the monitoring surveys/09/. The appropriate QA/QC procedures have been followed for the monitoring parameter.																																							
In case only partial data are available because activity levels or non-activity	NA. Full data is available for the monitoring period.																																							

parameters have not been monitored in accordance with the approved revised monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	
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SDG Indicator 3.9.3 Mortality rate attributed to unintentional poisoning	Assessment/ Observation by the VVB
Data / Parameter: (as in monitoring plan of PDD):	Users perception in reduction of chemical fertilizers
Measuring frequency/Time Interval:	At least biennial
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Details of monitoring equipment:	No monitoring equipment used to determine the average number of eaters per appliance. Biogas User Survey is conducted on a sample of households to check the operational status of the biogas units.
Is accuracy of the monitoring equipment as stated in the PDD? If the PDD VVBs not specify the accuracy of the monitoring equipment, VVBs the monitoring equipment represent good monitoring practise?	Not Applicable since no equipment is used to determine the parameter.
Calibration frequency /interval: Is it monitoring methodology /CDM EB guidance / local or national standards / manufacturers specification	No equipment used hence the calibration requirement not applicable.
Is the calibration interval in line with the monitoring plan of the PDD? If the PDD VVBs not specify the frequency of calibration, VVBs the selected frequency represent good monitoring practise?	No equipment used hence the calibration requirement not applicable.
Company performing the calibration (internal or external calibration):	No equipment used hence the calibration requirement not applicable.
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	No equipment used hence the calibration requirement not applicable.
Is (are) calibration(s) valid for the whole reporting period?	No equipment used hence the calibration requirement not applicable.
If applicable, has the reported data been cross-checked with other available data?	Yes, the value of parameter has been cross checked with the Biogas User Survey reports and the survey responses received/09/. The reported responses were cross-checked with the sample end users during the onsite visit by the verification team. The verification team interviewed a total of 08 households from different strata to cross-check the responses and determined that the responses and operational status provided in the Biogas User Survey report/09/ were consistent with the responses received from the end users by the verification team.
How were the values in the monitoring report verified?	The values mentioned in the MR have been cross checked with the Biogas User Survey report/09/ and the

	end users. The values reported during the monitoring period are: <table><tr><th>CPAs</th><th colspan="5">% changes in use of chemical fertilizers and increase in use of bio-slurry</th></tr><tr><th></th><th>Farm Yard Manure</th><th>Bio-slurry</th><th>Urea</th><th>DAP</th><th>Potash</th></tr><tr><td>CPA-1</td><td>27.32</td><td>100</td><td>36.11</td><td>36.84</td><td>0.00</td></tr><tr><td>CPA-2</td><td>22.49</td><td>100</td><td>44.44</td><td>52.94</td><td>0.00</td></tr><tr><td>CPA-3</td><td>27.37</td><td>100</td><td>34.38</td><td>50.00</td><td>42.11</td></tr><tr><td>CPA-4</td><td>21.64</td><td>100</td><td>39.39</td><td>47.37</td><td>40.00</td></tr><tr><td>CPA-5</td><td>21.62</td><td>100</td><td>46.15</td><td>44.00</td><td>20.00</td></tr><tr><td>CPA-6</td><td>19.35</td><td>100</td><td>38.46</td><td>46.15</td><td>0.00</td></tr><tr><td>CPA-7</td><td>29.07</td><td>100</td><td>42.00</td><td>30.43</td><td>50.00</td></tr><tr><td>CPA-10</td><td>18.91</td><td>100</td><td>47.62</td><td>54.55</td><td>50.00</td></tr></table> The ex-ante values have not been provided in the CPA-DDs/B04/.	CPAs	% changes in use of chemical fertilizers and increase in use of bio-slurry						Farm Yard Manure	Bio-slurry	Urea	DAP	Potash	CPA-1	27.32	100	36.11	36.84	0.00	CPA-2	22.49	100	44.44	52.94	0.00	CPA-3	27.37	100	34.38	50.00	42.11	CPA-4	21.64	100	39.39	47.37	40.00	CPA-5	21.62	100	46.15	44.00	20.00	CPA-6	19.35	100	38.46	46.15	0.00	CPA-7	29.07	100	42.00	30.43	50.00	CPA-10	18.91	100	47.62	54.55	50.00
CPAs	% changes in use of chemical fertilizers and increase in use of bio-slurry																																																												
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CPA-7	29.07	100	42.00	30.43	50.00																																																								
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VVBs the data management (from data generation to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data management ensures correct transfer of data and reporting of emission reductions and all necessary QA/QC processes are in place. The monitoring personnel were trained prior to the monitoring surveys/09/. The appropriate QA/QC procedures have been followed for the monitoring parameter.																																																												
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the approved revised monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	NA. Full data is available for the monitoring period.																																																												

SDG Indicator 3.9.2 Mortality rate attributed to unsafe water, unsafe sanitation and lack of hygiene (exposure to unsafe Water, Sanitation and Hygiene for All (WASH) services)g	Assessment/ Observation by the VVB
Data / Parameter: (as in monitoring plan of PDD):	Improved access to sanitation services
Measuring frequency/Time Interval:	At least biennial
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Details of monitoring equipment:	No monitoring equipment used to determine the average number of eaters per appliance. Biogas User Survey is conducted on a sample of households to check the operational status of the biogas units.

Is accuracy of the monitoring equipment as stated in the PDD? If the PDD VVBs not specify the accuracy of the monitoring equipment, VVBs the monitoring equipment represent good monitoring practise?	Not Applicable since no equipment is used to determine the parameter.
Calibration frequency /interval: Is it monitoring methodology /CDM EB guidance / local or national standards / manufacturers specification	No equipment used hence the calibration requirement not applicable.
Is the calibration interval in line with the monitoring plan of the PDD? If the PDD VVBs not specify the frequency of calibration, VVBs the selected frequency represent good monitoring practise?	No equipment used hence the calibration requirement not applicable.
Company performing the calibration (internal or external calibration):	No equipment used hence the calibration requirement not applicable.
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	No equipment used hence the calibration requirement not applicable.
Is (are) calibration(s) valid for the whole reporting period?	No equipment used hence the calibration requirement not applicable.
If applicable, has the reported data been cross-checked with other available data?	Yes, the value of parameter has been cross checked with the Biogas User Survey reports and the survey responses received/09/. The reported responses were cross-checked with the sample end users during the onsite visit by the verification team. The verification team interviewed a total of 08 households from different strata to cross-check the responses and determined that the responses and operational status provided in the Biogas User Survey report/09/ were consistent with the responses received from the end users by the verification team.
How were the values in the monitoring report verified?	The values mentioned in the MR have been cross checked with the Biogas User Survey report/09/ and the end users. The values reported during the monitoring period are: CPA-1: 51.25% CPA-2: 71.05% CPA-3: 54.32% CPA-4: 71.26% CPA-5: 78.31% CPA-6: 74.68% CPA-7: 47.62% CPA-10: 92.50% The ex-ante values have not been provided in the CPA-DDs/B04/.
VVBs the data management (from data generation to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data management ensures correct transfer of data and reporting of emission reductions and all necessary QA/QC processes are in place. The monitoring personnel were trained prior to the monitoring surveys/09/. The appropriate QA/QC procedures have been followed for the monitoring parameter.

In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the approved revised monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	NA. Full data is available for the monitoring period.
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SDG Indicator 7.1.2 Proportion of population with primary reliance on clean fuels and technology	Assessment/ Observation by the VVB
Data / Parameter: (as in monitoring plan of PDD):	Trainings to Masons
Measuring frequency/Time Interval:	At least biennial
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Details of monitoring equipment:	No monitoring equipment used to determine the average number of eaters per appliance. Biogas User Survey is conducted on a sample of households to check the operational status of the biogas units.
Is accuracy of the monitoring equipment as stated in the PDD? If the PDD VVBs not specify the accuracy of the monitoring equipment, VVBs the monitoring equipment represent good monitoring practise?	Not Applicable since no equipment is used to determine the parameter.
Calibration frequency /interval: Is it monitoring methodology /CDM EB guidance / local or national standards / manufacturers specification	No equipment used hence the calibration requirement not applicable.
Is the calibration interval in line with the monitoring plan of the PDD? If the PDD VVBs not specify the frequency of calibration, VVBs the selected frequency represent good monitoring practise?	No equipment used hence the calibration requirement not applicable.
Company performing the calibration (internal or external calibration):	No equipment used hence the calibration requirement not applicable.
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	No equipment used hence the calibration requirement not applicable.
Is (are) calibration(s) valid for the whole reporting period?	No equipment used hence the calibration requirement not applicable.
If applicable, has the reported data been cross-checked with other available data?	Yes, the value of parameter has been cross checked with the Training report . The reported responses were cross-checked with the sample end users during the onsite visit by the verification team
How were the values in the monitoring report verified?	The values mentioned in the MR have been cross checked with the Training Report and the end users. The values reported during the monitoring period are: 35

	The ex-ante values have not been provided in the CPA-DDs/B04/.
VVBs the data management (from data generation to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data management ensures correct transfer of data and reporting of emission reductions and all necessary QA/QC processes are in place. The monitoring personnel were trained prior to the monitoring surveys/09/. The appropriate QA/QC procedures have been followed for the monitoring parameter.
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the approved revised monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	NA. Full data is available for the monitoring period.

SDG Indicator 3.9.2 Mortality rate attributed to unsafe water, unsafe sanitation and lack of hygiene (exposure to unsafe Water, Sanitation and Hygiene for All (WASH) services)g	Assessment/ Observation by the VVB
Data / Parameter: (as in monitoring plan of PDD):	Impact on Crop Productivity
Measuring frequency/Time Interval:	At least biennial
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Details of monitoring equipment:	No monitoring equipment used to determine the average number of eaters per appliance. Biogas User Survey is conducted on a sample of households to check the operational status of the biogas units.
Is accuracy of the monitoring equipment as stated in the PDD? If the PDD VVBs not specify the accuracy of the monitoring equipment, VVBs the monitoring equipment represent good monitoring practise?	Not Applicable since no equipment is used to determine the parameter.
Calibration frequency /interval: Is it monitoring methodology /CDM EB guidance / local or national standards / manufacturers specification	No equipment used hence the calibration requirement not applicable.
Is the calibration interval in line with the monitoring plan of the PDD? If the PDD VVBs not specify the frequency of calibration, VVBs the selected frequency represent good monitoring practise?	No equipment used hence the calibration requirement not applicable.
Company performing the calibration (internal or external calibration):	No equipment used hence the calibration requirement not applicable.
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	No equipment used hence the calibration requirement not applicable.

Is (are) calibration(s) valid for the whole reporting period?	No equipment used hence the calibration requirement not applicable.
If applicable, has the reported data been cross-checked with other available data?	Yes, the value of parameter has been cross checked with the Biogas User Survey reports and the survey responses received/09/. The reported responses were cross-checked with the sample end users during the onsite visit by the verification team. The verification team interviewed a total of 08 households from different strata to cross-check the responses and determined that the responses and operational status provided in the Biogas User Survey report/09/ were consistent with the responses received from the end users by the verification team.
How were the values in the monitoring report verified?	The values mentioned in the MR have been cross checked with the Biogas User Survey report/09/ and the end users. The values reported during the monitoring period are: % users perceived in increase in productivity due to bio-slurry use from Biogas: CPA-1: 91.14 % CPA-2: 76.06 % CPA-3: 94.94 % CPA-4: 89.29 % CPA-5: 91.25 % CPA-6: 94.94% CPA-7: 76.25% CPA-10: 98.73% The ex-ante values have not been provided in the CPA-DDs/B04/.
VVBs the data management (from data generation to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data management ensures correct transfer of data and reporting of emission reductions and all necessary QA/QC processes are in place. The monitoring personnel were trained prior to the monitoring surveys/09/. The appropriate QA/QC procedures have been followed for the monitoring parameter.
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the approved revised monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	NA. Full data is available for the monitoring period.

Appendix 7. Implementation of Sampling Plan

Parameter: By (Quantity of woody biomass that is substituted or displaced)	
Whether the parameter is a numeric mean value or proportion?	Proportion
Sample size calculated by CME /PP	CPA 1 – 34 CPA 2 – 39 CPA 3 – 21 CPA 4 – 25 CPA 5 – 28 CPA 6 – 34 CPA 7 – 34 CPA 10 – 54
Considered response rate	100%. CME was able to reach all the household as biogas plants are fixed installations.
Adjusted sample size after applying the considered response rate	100– CPA 1, 2, 3, 4, 5,6, 7 & 10
If the parameter of interest is numeric mean value and the calculated sample size is less than 30 then whether Student's t-distribution has been applied or not?	Not Applicable
Sample size after applying Student's t-distribution	Not Applicable
Sample size applied by PP for monitoring survey	100 – CPA 1, 2, 3, 4,5,6,7 & 10
No. of households sampled by the PP and whether minimum sample size as calculated has been achieved or not?	100 (Minimum 30 required as per the §14 of the sampling standard, version 09/ B06 /. The calculated sample size is also met.) – CPA 1, 2, 3, 4, 5, 6,7,10. The applied sample size is more than the calculated sample size and thus the minimum sample size as calculated has been achieved.
Applied confidence and precision level and whether the same have been met or not?	The applied confidence interval and precision level is 90/10 for CPA 1, 2, 3, 4, 5,6,7 & 10. The precision level has been achieved for the monitoring parameter.
How the CME conducted sampling surveys (to obtain the project participants' or the coordinating/managing entities' records)?	The sampling survey conducted by CME was based on and baseline user survey /09/ with the end-users of biogas plants. The same was verified by VT through the onsite visit and review of copies of biogas user survey questionnaires /05/.
Sample Size and acceptance number determined by VT	CC IPL verified a total of 08 samples (1 sample from each CPA) from 800 samples (100 samples per CPA) to verify the project activity for the operational status of the stoves and 08 samples from 100 samples to verify the average annual consumption of woody biomass. The verification team determined the sample size for acceptance sampling by evaluating the following, using its own professional judgment and guidance in the Standard 'Sampling and surveys for CDM project activities and programme of activities' version 09.0 / B06 /: Considering Acceptable Quality Level (AQL): 0.5% Unacceptable Quality Level (UQL): 20% and producer risk of 10% and consumer risk of 20% a sample size of 08 was required as per Table 2 in the referred Standard / B06 /. Acceptance number (c) thus determined for the sample size is 0.
How the VVB could obtain records for verification?	The verification team was able to access the Biogas User Survey report/09/. Sample households were interviewed by the VVB to confirm the results registered by the CME for the monitored sample.

Parameter: $BC_{PJ,HH,y}$ (Average annual consumption of woody biomass per household in the pre-project devices during the project activity, if it is found that pre-project devices were not completely displaced but continue to be used to some extent.)	
Whether the parameter is a numeric mean value or proportion?	Numeric mean value
Sample size calculated by CME /PP	CPA 1 – 34 CPA 2 – 39 CPA 3 – 21 CPA 4 – 25 CPA 5 – 28 CPA 6 – 34 CPA 7 – 34 CPA 10 – 54
Considered response rate	100%. CME was able to reach all the household as biogas plants are fixed installations.
Adjusted sample size after applying the considered response rate	100 – CPA 1, 2, 3, 4, 5, 6, 7 & 10.
If the parameter of interest is numeric mean value and the calculated sample size is less than 30 then whether Student's t-distribution has been applied or not?	Yes, t-distribution was applied by the CME to determine the sample size for the sample size calculated for CPA 1. The same was confirmed through the review of t-distribution calculation sheet /07/ and found acceptable by VT. The sample size thus calculated is 08 and thus the applied sample size is acceptable to the verification team. Thus, conditions in §14 of Standard: Sampling and surveys for CDM project activities and programmes of activities (version 09.0)/B06/ are met.
Sample size after applying Student's t-distribution	CPA 1: 08
Sample size applied by PP for Baseline User Survey	100 (Minimum 30 required as per the §14 of the sampling standard, version 09/B06/. The calculated sample size is also met.) – CPA 1, 2, 3, 4, 5, 6, 7 & 10.
No. of households sampled by the PP and whether minimum sample size as calculated has been achieved or not?	100 (Minimum 30 required as per the §14 of the sampling standard, version 09/B06/. The calculated sample size is also met.) – CPA 1, 2, 3, 4, 5, 6, 7 & 10. The applied sample size is more than the calculated sample size and thus the minimum sample size as calculated has been achieved.
Applied confidence and precision level and whether the same have been met or not?	The applied confidence and precision level is 90/10 for CPA 1, 2, 3, 4, 5, 6, 7 & 10.
How the CME conducted sampling surveys (to obtain the project participants' or the coordinating/managing entities' records)?	The parameter is determined on the basis of Biogas User Surveys conducted by the representatives of CME and CPA implementers.
Sample Size and acceptance number determined by VT	CC IPL verified a total of 08 samples from 900 samples to verify the project activity for the operational status of the stoves and 08 samples from 900 samples to verify the average annual consumption of woody biomass. The verification team determined the sample size for acceptance sampling by evaluating the following, using its own professional judgment and guidance in the Standard 'Sampling and surveys for CDM project activities and programme of activities' version 09.0 /B06/: Considering Acceptable Quality Level (AQL): 0.5% Unacceptable Quality Level (UQL): 20% and producer risk of 5% and consumer risk of 20% a sample size of 08 was required as per Table 2 in the referred Standard /B06/. Acceptance number (c) thus determined for the sample size is 1.

How the VVB could obtain records for verification?	The verification team was available to access the Biogas User Survey report/ 09/ . Sample households were interviewed by the VVB to confirm the results registered by the CME for the monitored sample.
Assessment by VT whether the CME's/PP's set of records is acceptable or not	No discrepant records were observed with the published MR /02/, ER sheet /04/ and Baseline User Survey records / 09/ . Thus, CME's set of records has been accepted in line with §33 of the Standard: Sampling and surveys for CDM project activities and programmes of activities (version 09.0) / B06/ .

Appendix 8. Assessment of Monitoring parameters monitored through sampling/surveys

Sl. No.	Checklist Questions	Assessment									
1.	VVBs the Monitoring Report apply sampling for determination of ex-post monitoring parameters?	Yes, there are ex-post monitoring parameters determined through the sampling effort.									
2.	Is the applied sampling plan in accordance with the sampling plan proposed in the registered PoA-DD/ PDD?	In the monitoring plan under the section D.7.2 of the approved PoA-DD, approved CPA-DDs /B04/ mentioned the detailed sampling plan for the ex-post monitoring parameters. The CME has appropriately performed stratified Random Sampling procedure in line with the applied methodology and best suited for this type of project. The monitoring parameters monitored through the sampling plan are: a) Biogas performance - The share of operational biogas plants (B_y - Proportion parameter) b) Average annual consumption of woody biomass ($BC_{PJ,HH,y}$ - Mean Value parameters) The required sample sizes were calculated prior to conducting the sample survey using the equations for stratified random sampling as per CDM requirements. As the approved PoA-DD, approved CPA-DDs /B04/ mentions the option for Stratified Random Sampling procedure, it is acceptable to the verification team. The monitoring sample was selected via random number generator for sampling/15/ in the BSP database/19/. Thus, the VT concludes that applied sampling plan/approach in accordance with the sampling plan/approach mentioned in the approved revised PoA-DD, approved revised CPA-DDs /B04/.									
3.	List the parameters determined through sampling and respective parameters of interest. [In situations where monitoring is based on data recording once at the time of implementation particularly for distribution projects, where there are large/dispersed number of project technology, the VV	Parameters determined through sampling and respective parameters of interest are: <table border="1"> <thead> <tr> <th>Parameter</th><th>Description of Parameter</th><th>Parameter of Interest</th></tr> </thead> <tbody> <tr> <td>B_y</td><td>The share of operational biogas plants</td><td>Proportion</td></tr> <tr> <td>$BC_{PJ,HH,y}$</td><td>Average annual consumption of woody biomass</td><td>Mean</td></tr> </tbody> </table> Parameters Date of commissioning of project device of type i and $NCV_{biomass}$ are monitored once. The date of commissioning of project device was also checked through the BSP Database/19/. The value of the $NCV_{biomass}$ is based on default available in the methodology AMS-I.E, version 09/B02/	Parameter	Description of Parameter	Parameter of Interest	B_y	The share of operational biogas plants	Proportion	$BC_{PJ,HH,y}$	Average annual consumption of woody biomass	Mean
Parameter	Description of Parameter	Parameter of Interest									
B_y	The share of operational biogas plants	Proportion									
$BC_{PJ,HH,y}$	Average annual consumption of woody biomass	Mean									

	team shall make the confirmation to assess its accuracy during the onsite verification through document review and where applicable through acceptance sampling.] [The assessment of implementation status of distribution projects or projects having dispersed and large number of components, it is pertinent that the VV Team shall assess that all physical features (technology, project equipment, and monitoring and metering equipment) of the included CPAs/projects as specified in the included CPA-DDs/PDD in cases where the households/users dropped out or voluntarily leave the project. In this particular case, it is important to assess CME/PP's QA/QC procedures with regards to handling of its database and where applicable consider those dropped out technology as a part of assessment of sampling requirements, including acceptance sampling by VVB.]	
4.	Is the sample size calculated in accordance with the formula presented in the registered PoA-DD/PDD?	Yes, the sample size calculated is in accordance with the formula presented in the approved revised PoA-DD/CPA-DDs.
5.	Are the assumptions used for calculation of sample size	Stratified random sampling was applied. The sample size calculated for each CPA is provided below:

	appropriate and correct? P.S.: Provide assessment on appropriateness of value of proportion (p), standard deviation (STDEV) or variance (v) used for calculation of sample size.	<table border="1"> <thead> <tr> <th>Particulars</th> <th>CPA-1</th> <th>CPA-2</th> <th>CPA-3</th> <th>CPA-4</th> <th>CPA-5</th> <th>CPA-6</th> <th>CPA-7</th> <th>CPA-10</th> </tr> </thead> <tbody> <tr> <td>Sample Calculated (Mean value Parameters)</td> <td>20</td> <td>20</td> <td>14</td> <td>14</td> <td>28</td> <td>30</td> <td>20</td> <td>15</td> </tr> <tr> <td>Sample Calculated (Proportional Parameters)</td> <td>34</td> <td>39</td> <td>21</td> <td>25</td> <td>17</td> <td>34</td> <td>34</td> <td>54</td> </tr> <tr> <td>Conservative sample No</td> <td>34</td> <td>39</td> <td>21</td> <td>25</td> <td>28</td> <td>34</td> <td>34</td> <td>54</td> </tr> <tr> <td><i>Minimum sample for Terai</i></td> <td><i>18</i></td> <td><i>20</i></td> <td><i>9</i></td> <td><i>11</i></td> <td><i>14</i></td> <td><i>19</i></td> <td><i>18</i></td> <td><i>22</i></td> </tr> <tr> <td><i>Minimum sample for Hill</i></td> <td><i>15</i></td> <td><i>18</i></td> <td><i>11</i></td> <td><i>13</i></td> <td><i>13</i></td> <td><i>14</i></td> <td><i>15</i></td> <td><i>31</i></td> </tr> <tr> <td><i>Minimum Sample for Remote Hill</i></td> <td><i>1</i></td> <td><i>1</i></td> <td><i>1</i></td> <td><i>1</i></td> <td><i>1</i></td> <td><i>1</i></td> <td><i>1</i></td> <td><i>1</i></td> </tr> <tr> <td>Minimum sample stipulated in PoA-DD</td> <td>75</td> <td>75</td> <td>75</td> <td>75</td> <td>75</td> <td>75</td> <td>75</td> <td>75</td> </tr> <tr> <td>Sample Taken for the Survey</td> <td>100</td> <td>100</td> <td>100</td> <td>100</td> <td>100</td> <td>100</td> <td>100</td> <td>100</td> </tr> <tr> <td><i>Sample in Terai</i></td> <td><i>52</i></td> <td><i>50</i></td> <td><i>45</i></td> <td><i>45</i></td> <td><i>50</i></td> <td><i>56</i></td> <td><i>52</i></td> <td><i>42</i></td> </tr> <tr> <td><i>Sample in Hill</i></td> <td><i>44</i></td> <td><i>46</i></td> <td><i>51</i></td> <td><i>51</i></td> <td><i>46</i></td> <td><i>40</i></td> <td><i>44</i></td> <td><i>54</i></td> </tr> <tr> <td><i>Sample in Remote Hill</i></td> <td><i>4</i></td> <td><i>4</i></td> <td><i>4</i></td> <td><i>4</i></td> <td><i>4</i></td> <td><i>4</i></td> <td><i>4</i></td> <td><i>4</i></td> </tr> </tbody> </table> The expected standard deviation, expected mean and expected proportion used for calculation of sample size is found to be appropriate. All assumptions for the calculation of sample size were used from the previous monitoring period. Please also refer to the assessment provided in point 2 above.	Particulars	CPA-1	CPA-2	CPA-3	CPA-4	CPA-5	CPA-6	CPA-7	CPA-10	Sample Calculated (Mean value Parameters)	20	20	14	14	28	30	20	15	Sample Calculated (Proportional Parameters)	34	39	21	25	17	34	34	54	Conservative sample No	34	39	21	25	28	34	34	54	<i>Minimum sample for Terai</i>	<i>18</i>	<i>20</i>	<i>9</i>	<i>11</i>	<i>14</i>	<i>19</i>	<i>18</i>	<i>22</i>	<i>Minimum sample for Hill</i>	<i>15</i>	<i>18</i>	<i>11</i>	<i>13</i>	<i>13</i>	<i>14</i>	<i>15</i>	<i>31</i>	<i>Minimum Sample for Remote Hill</i>	<i>1</i>	<i>1</i>	<i>1</i>	<i>1</i>	<i>1</i>	<i>1</i>	<i>1</i>	<i>1</i>	Minimum sample stipulated in PoA-DD	75	75	75	75	75	75	75	75	Sample Taken for the Survey	100	100	100	100	100	100	100	100	<i>Sample in Terai</i>	<i>52</i>	<i>50</i>	<i>45</i>	<i>45</i>	<i>50</i>	<i>56</i>	<i>52</i>	<i>42</i>	<i>Sample in Hill</i>	<i>44</i>	<i>46</i>	<i>51</i>	<i>51</i>	<i>46</i>	<i>40</i>	<i>44</i>	<i>54</i>	<i>Sample in Remote Hill</i>	<i>4</i>	<i>4</i>	<i>4</i>	<i>4</i>	<i>4</i>	<i>4</i>	<i>4</i>	<i>4</i>
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	6.	What are the sample sizes obtained for the parameters being monitored? Is the determined sample size deemed adequate for the parameter of interest being monitored? P.S.: If the sample size calculation returns a value of	Stratified random sampling was applied. The sample size calculated for each CPA is provided below: <table border="1"> <thead> <tr> <th>Particulars</th> <th>CPA-1</th> <th>CPA-2</th> <th>CPA-3</th> <th>CPA-4</th> <th>CPA-5</th> <th>CPA-6</th> <th>CPA-7</th> <th>CPA-10</th> </tr> </thead> <tbody> <tr> <td>Sample Calculated (Mean value Parameters)</td> <td>20</td> <td>20</td> <td>14</td> <td>14</td> <td>28</td> <td>30</td> <td>20</td> <td>15</td> </tr> <tr> <td>Sample Calculated (Proportion</td> <td>34</td> <td>39</td> <td>21</td> <td>25</td> <td>17</td> <td>34</td> <td>34</td> <td>54</td> </tr> </tbody> </table>	Particulars	CPA-1	CPA-2	CPA-3	CPA-4	CPA-5	CPA-6	CPA-7	CPA-10	Sample Calculated (Mean value Parameters)	20	20	14	14	28	30	20	15	Sample Calculated (Proportion	34	39	21	25	17	34	34	54																																																																																
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	less than 30 samples, a minimum sample size of 30 shall be chosen when the parameter of interest is a proportion. If the parameter of interest is a numeric mean value (i.e. not a proportion or percentage) the Student's t-distribution shall be used if the resulting sample size is less than 30. While assessing the sampling effort by the PP/CME particularly the sample size, the VV Team shall make sure the reliability criteria (confidence level and precision) should be as per the requirement of the applied methodology. Only when there is no specific guidance in the applied methodology for the sampling requirements, the confidence/precision as stated in the sampling standards should be considered. As a rule of thumb it is to be always kept in mind that the sampling requirements in the applied methodology shall take precedence.]	al Parameters)								
		Conservative sample No	34	39	21	25	28	34	34	54
		Minimum sample for Terai	18	20	9	11	14	19	18	22
		Minimum sample for Hill	15	18	11	13	13	14	15	31
		Minimum Sample for Remote Hill	1	1	1	1	1	1	1	1
		Minimum sample stipulated in PoA-DD	75	75	75	75	75	75	75	75
		Sample Taken for the Survey	100	100	100	100	100	100	100	100
		Sample in Terai	52	50	45	45	50	56	52	42
		Sample in Hill	44	46	51	51	46	40	44	54
		Sample in Remote Hill	4	4	4	4	4	4	4	4
		According to §14 of the Sampling Standard, version 09: "If the parameter of interest is a numeric mean value (i.e. not a proportion or percentage) the Student's t-distribution shall be used if the resulting sample size is less than 30." Thus, t-distribution is applied by CME for the mean type parameter of CPA1 and the calculated sample size (08) was found to be less than the applied sample size. As the actual sample size in all the cases was not less than either the calculated sample size or the minimum sample size as per the PoA-DD/CPA-DDs/B04/, the sample size covered by the CME was accepted.								
7.	Is the assumed response rate reasonable (appropriate and correct) for the determination of samples to be surveyed?	Yes, the assumed response rate is deemed reasonable (appropriate and correct) for the determination of samples to be surveyed for each of the parameter of interest.								
8.	Is the sample selected by PP for determination of the monitored parameters	Yes, the verification team, based on evidence for random number generator /15/ as provided by the CME, confirms that sample selected by the CME for determination of the monitored parameters are random. It can be considered as representative of the population.								

	unbiased (random) and representative?	
09.	Has minimum target level of precision been achieved based on estimates from the actual samples?	The precision determined based on the survey results is provided below: The precision level for the parameters is thus met in accordance with the PoA-DD/B04/ and CPA-DDs/B04/ and the applied methodology, AMS-I.E, version 09.
10.	In case the minimum target level of precision has not been achieved based on estimates from the actual samples, please specify the approach adopted by PP to reach the required precision and also justify the appropriateness of the adopted approach in accordance with the applied methodology or paragraph 18 of Sampling and surveys for CDM project activities and programmes of activities (Version 09.0).	The minimum target level of precision been achieved based on estimates from the actual samples for all the parameters.
11.	Has VT applied acceptance sampling to verify that the results of sampling efforts undertaken by PP for determination of ex-post parameters. If yes, please provide a detailed justification of the approach adopted including information on (but not limited to): (a) Selected AQL Level (b) Selected UQL Level (c) Selected Consumer Risk Level (d) Selected Producer Risk Level (e) Sample Size chosen for acceptance sampling	CC IPL has considered §30 and §31 of “Standard for Sampling and surveys for CDM project activities and programmes of activities, Version 09.0” for determining the sampling size to be visited by VVB /B04/. In case of the current validation & verification, the estimated emission reduction is 401,770 tCO_{2e}, the verification team determined the sample size for acceptance sampling by evaluating the following, using its own professional judgment and guidance in the Standard ‘Sampling and surveys for CDM project activities and programme of activities’ version 09.0 /B06/: Considering Acceptable Quality Level (AQL): 0.5% Unacceptable Quality Level (UQL): 20% and producer risk of 10% and consumer risk of 10% a sample size of 08 was required as per Table 2 in the referred Standard /B06/. Acceptance number (c) thus determined for the sample size is 0. CC IPL verified a total of 08 samples from 800 samples to verify the project activity for the operational status of the stoves and 08 samples from 800 samples to verify the average annual consumption of woody biomass. The biogas details (unique serial number, date of installation, name of user and address) were also checked and found to be consistent with that reported in the project database. No inconsistency was observed for any of the 800 samples with respect to the operation status and mean type parameters reported in the Biogas user Survey Reports/03/.

	(f) Acceptance number (c) Approach adopted by VT to in case value of greater than c discrepant records were observed in the sample	
12.	Are the procedures for the selected survey and data collection method unambiguously defined and do they adequately provide for minimizing non-sampling errors?	Verification team based on the onsite visit and review of documented procedure confirms that the selected survey and data collection method is unambiguously defined. This also adequately ensure minimizing non-sampling errors.
13.	Have potential sources of bias inherent in the selected data collection method, such as self-selection and under-coverage, been anticipated? Have mechanisms for mitigating these been considered?	Review of sampling records, documented procedure and onsite visit with the personnel involved in conducting the Surveys VVBs not any reveal sources of bias inherent in the selected data collection.
14.	Is the quality control and assurance strategy adequate?	Verification team based on review of provided supporting documents and onsite visit interviews confirms that the quality control and assurance strategy is adequate.
15.	Are the proposed skill sets, qualifications and experience of the personnel/institutions engaged to conduct the standardized tests/data collection exercise adequate?	Yes, the monitoring surveys have been conducted by qualified monitoring personnel. The training records/09/ were checked by the verification team. Furthermore, the personnel were also interviewed during the onsite visit. Through the interview of the personnel responsible for monitoring surveys, it was ascertained that the personnel are competent to carry out the surveys. Hence, the VT concludes that skill sets, qualifications and experience of the personnel/institutions engaged to conduct the data collection exercise are adequate.
16.	VVBs the PP have a process in place to ensure data quality is maintained to a high standard? This should include: a) Are the personnel trained and experienced? b) What is the level of supervision and guidance provided to staff? c) Is there a standardize	Verification team based on review of provided supporting documents and audit interviews confirms the following: ✓ the personnel involved in the surveys are trained and experienced. ✓ there exists a standardized system for data entry and analysis to produce final result. ✓ there exists a system or process in place to minimize the introduction of errors. ✓ there is a system in place to ensure all collected data is processed. ✓ there exists a quality check of data entered.

	d system for data entry and analysis to produce final result? d) Is there a system or process in place to minimize the introduction of errors? e) Is there a system in place to ensure all collected data is processed; f) Are quality checks performed on data entered, for example range checks, g) inconsistency checks, checking of subsamples of data by supervisors; h) is there a system to check for errors, record and report errors reported and document the remedial action taken; i) What is the level of security and type of backup processes to guarantee data integrity, for example methods to prevent fraud and accidental deletion?	
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Document information

<i>Version</i>	<i>Date</i>	<i>Description</i>
04.0	6 April 2021	Revision to: • Reflect the “Clarification: Regulatory requirements under temporary measures for post-2020 cases” (CDM-EB109-A01-CLAR).
03.0	31 May 2019	Revision to: • Ensure consistency with version 02.0 of the “CDM validation and verification standard for programmes of activities” (CDM-EB93-A08-STAN); • Make structural and editorial improvements.
02.0	29 December 2017	Revision to align with the requirements of the “CDM validation and verification standard for programme of activities” (version 01.0).
01.0	5 June 2015	Initial publication.
Decision Class: Regulatory Document Type: Form Business Function: Issuance Keywords: programme of activities, verifying and certifying		