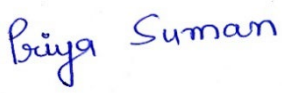
Verification and certification report form for Gold Standard project activities

BASIC INFORMATION	
Title and GS reference number of the project activity	Implementation of clean energy technology in rural areas of India-2 (GS 11656)
Scale of the project activity	☐ Large-scale ☒ Small-scale
Version number of the verification and certification report	03
Completion date of the verification and certification report	16/01/2025
Monitoring period number and duration of this monitoring period	03 01/10/2023-30/09/2024 (inclusive of both days)
Version number of the monitoring report to which this report applies	03 dated 18/12/2024
Crediting period of the project activity corresponding to this monitoring period	01/06/2021 to 31/05/2026
Project representative(s)	Greneity Infocom Service Private Limited
Host Party	India
Applied methodologies and standardized baselines	AMS-I.E. Switch from non-renewable biomass for thermal applications by the user - Version 12
Mandatory sectoral scopes	01
Conditional sectoral scopes, if applicable	13
Estimated amount of GHG emission reductions or GHG removals for this monitoring duration in the registered PDD	54,573 tCO_2e
Certified amount of GHG emission reductions or GHG removals for this monitoring period	53,820 tCO_2e
SDG Impacts:	1. SDG 3: Good health and wellbeing 2. SDG 7: Affordable and Clean Energy 3. SDG 8: Decent work and Economic Growth 4. SDG 13: Climate Action
Name and UNFCCC reference number of the VVB	E-0052: Carbon Check (India) Private Ltd.

Name, position and signature of the approver of the verification and certification report	 Priya Suman, Compliance Officer

SECTION A. Executive summary

Carbon Check (India) Private Ltd. (CCIPL) is performing the third periodic verification of the GS project “Implementation of clean energy technology in rural areas of India-2” (GS project id: GS 11656) for the period 01/10/2023 - 30/09/2024 (inclusive of both the dates). The project activity involves bundling of 11,085 household biogas plants in the state of Punjab, India, with capacity of $4m^3$. All 11,085 plants are commissioned in between June, 2021 and January, 2022.

According to the PDD /B03/ & MR /01/, the project activity "Implementation of clean energy technology in rural areas of India-2" aims to improve health and income of India by reducing time and money spent acquiring fuel for cooking and by providing local populations with improved access to clean water. The objective of this project activity is to replace the commonly used inefficient wood-fired mud stove technology with an efficient biogas-based cook stove that is both clean and sustainable.

This report summarises the findings of the verification of the project, performed on the basis of Gold standard for global goals (GS4GG), as well as criteria given to provide for consistent project operations, monitoring and reporting and the subsequent decisions by the Gold Standard. Verification is required for all registered GS project activities intending to confirm their achieved emission reductions and proceed with request for issuance of VERs. This report contains the findings and resolutions from the verification and a certification statement for the verified emission reductions.

Verification is the periodic independent review and ex-post determination of both quantitative and qualitative information by a Validation & verification body (VVB), of the monitored reductions in GHG emissions that have occurred as a result of the project activity during a defined monitoring period.

Certification is the written assurance by a validation & verification body (VVB) that, during a specific period, a project activity achieved the emission reductions as verified.

The objective of this verification was to verify and certify emission reductions reported for the “Implementation of clean energy technology in rural areas of India-2” in the host country “India” for the period 01/10/2023 to 30/09/2024 (including both the days).

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 project activity.

In particular, the monitoring plan, monitoring report and the project’s compliance with relevant GS 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 project design and conservative assumptions, as documented. It is also confirmed if the monitoring plan is in compliance with the registered PDD and the approved monitoring methodology.

Scope:

The scope of the verification is:

- To verify the project implementation and operation with respect to the registered PDD
- To verify the implemented monitoring plan with the registered PDD 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.

Verification process:

The verification comprises a review of the monitoring report /01/ over the monitoring period from 01/10/2023-30/09/2024 (inclusive) and based on the registered VPA-DD as part of the monitoring parameters and monitoring plan, emission reduction calculation spreadsheet, monitoring methodology, and all related evidence provided by project participants.

On-site interviews and inspections are also performed as part of the verification process.

Conclusion:

The verification team assigned by the validation & verification body (VVB) concludes that the monitoring report /01/, meet all relevant requirements of the Gold Standard as per the requirements of GS4GG. The verification has been conducted in-line with the GS4GG requirements.

The project activity was correctly implemented according to the selected monitoring methodology, monitoring plan and the registered PDD /B03/. 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. The following table provides the resulted emission reduction from the project as verified through the document review and on-site interviews by the verification team.

Vintage	**ER (tCO_2e)**
01/10/2023 – 31/12/2023	13,528 tCO_2e
01/01/2024 – 30/09/2024	40,292 tCO_2e
Total for the monitoring period	**53,820 tCO_2e**

CCIPL as a Validation & verification body (VVB) is therefore pleased to issue a positive verification opinion expressed in the attached Certification statement.

SECTION B. Verification team, technical reviewer and approver

B.1. Verification team member

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	Interviews	Verification findings
1.	Team Leader / Verifier /	IR	Suhail K	Muhammed	CCIPL	X	X	X	X
2.	Technical Expert	IR	Anand	Amit	CCIPL	X	X	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	CCIPL
2.	Approver	IR	Suman	Priya	CCIPL

Muhammed Suhail K: He is qualified as Team Leader /Technical Expert in TA 1.2 and 3.1 and involved in various validations and verifications under VCS, GCC and Gold Standard (GS) projects. He has also attended Several Gold Standard DOE webinar training courses including training on GS4GG. He has completed ISO 14064-1, 14064-2 and 14064-3 training successfully. He holds a Bachelor of Science degree in Environment and water management from University of Calicut and Master of Science degree in Environmental Science and technology from the Central University of Punjab.

Amit Anand: Qualified lead assessor and internal technical reviewer for offset projects validations and verifications under CDM, VCS and Gold Standard (GS) and actively been involved in the validation and verification or internal technical review of more than 20 offset projects. He is qualified as technical expert for TA 1.1, 1.2, 3.1, 8.1, 13.1,13.2, 14.,15.1 and 16.1 under CDM Sectoral Scope categorization He holds a Masters in Environment Management from Forest Research Institute, Dehradun and B.Sc Environmental Sciences from Ramjas College, in University of Delhi. He also has attended training in ISO 14001:2004 - Lead Auditor Training Course and for Social Carbon Standard Training. He was involved in the following Projects submitted to UNFCCC for Request for Registration and issuance: UNFCCC Project Reference Numbers: 7484, 7820, 7821, 7849, 7881, 7889, 8350, 9489, 0925, 6864, and 0177. He was also involved as validation and verification assessor in the following Gold Standard Projects: GS 1078, GS 976, GS 850, and GS 916 PoA (GS 1231 (VPA 01) GS 1029 (VPA 02), GS 1030(VPA 03), GS 1031(VPA 04).

He has also attended Several Gold Standard DOE webinar trainings including training on GS4GG.

Indumathi C: She is appointed Team Leader /Technical Expert for technical area TA 1.1, 1.2,3.1,13.1 & 13.2 and Technical Reviewer. She has actively been involved in the validation and verification or internal technical review of more than 200 GHG offset projects including projects with SDG components. She is having more than 13 years of experience, she is certified Energy Manager, Bureau of Energy Efficiency, Govt. of India. She carried out technical reviews for climate change mitigation projects under different carbon credit mechanisms (UNFCCC, Gold Standard and Voluntary Carbon Standard) for various sectors like renewable energy (solar, wind, hydro, biomass), energy efficiency (cook stoves) and waste to energy (biogas).

SECTION C. Means of verification

C.1. Desk/document review

The verification was performed primarily based on the review of the Monitoring report /01/ and the 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.

C.2. On-site inspection

Physical on-site inspection has been performed and the Team leader and the technical expert also the host country expert has conducted the on-site inspection. The Team leader Mr. Muhammed Suhail K and Technical expert Mr. Amit Anand (who is also the technical and host country expert) has conducted the on-site inspection. VVB has planned and carried out verification audit as per the Site Visit and Remote Audit Requirements and Procedures, version 2.0 dated 30.05.2023.

C.3. Interviews

An inspection and interview were performed, and the following activities were performed:

i. An assessment of the implementation and operation of the registered project activity as per the registered PDD;
ii. A review of information flows for generating, aggregating and reporting the monitoring parameters;
iii. Interviews with relevant personnel to determine whether the operational and data collection procedures are implemented in accordance with the monitoring plan in the PDD;
iv. A cross check between information provided in the monitoring report and data from other sources such as plant logbooks, inventories, purchase records or similar data sources;
v. A check of the monitoring equipment including calibration performance and observations of monitoring practices against the requirements of the PDD and the selected methodology and corresponding tool(s), where applicable;
vi. A review of calculations and assumptions made in determining the GHG data and emission reductions;
vii. 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.
viii. Verification of the monitoring of sustainable development indicators

The project representatives and stakeholders interviewed:

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
/01/	Garg	Shivani	Greneity Infocom Services	09/11/2024 & 10/11/2024	Project Design Organisation background Project Implementation plan Project start date and Project Location Project background information Baselinesurveys, KPT, FNRB calculation Baseline Scenario Baseline Identification and Additionality Monitoring and reporting documentation Qualification and Training Quality Assurance-	Muhammed Suhail & Amit Anand

					Management and operating system Social and Environmental Impacts Local Stakeholders meeting process Compliance with relevant laws Roles and responsibility Observations of established practices	
/02/	Singh	Rajveer	Greneity Infocom Services	09/11/2024 & 10/11/2024	Project Implementation and operation. Grievance handling. Maintenance	Muhammed Suhail & Amit Anand
/03/	Sharma	Arjun	Greneity Infocom Services	09/11/2024 & 10/11/2024	Project Implementation and operation. Grievance handling. Maintenance Monitoring plan	Muhammed Suhail & Amit Anand
/04/	Singh	Kirpal	PB/GRN/PAT/4/6562 (Patiala)	09/11/2024 & 10/11/2024	Monitoring Surveys	Muhammed Suhail & Amit Anand
/05/	Singh	Karan	PB/GRN/PAT/4/6720 (Patiala)	09/11/2024 & 10/11/2024	Monitoring Surveys	Muhammed Suhail & Amit Anand
/06/	Singh	Fateh	PB/GRN/PAT/4/6427 (Patiala)	09/11/2024 & 10/11/2024	Monitoring Surveys	Muhammed Suhail & Amit Anand
/07/	Singh	Hardit	PB/GRN/PAT/4/6725 (Patiala)	09/11/2024 & 10/11/2024	Monitoring Surveys	Muhammed Suhail & Amit Anand
/08/	Singh	Naranjan	PB/GRN/PAT/4/6887 (Patiala)	09/11/2024 & 10/11/2024	Monitoring Surveys	Muhammed Suhail & Amit Anand
/09/	Singh	Gurdeep	PB/GRN/PAT/4/6922 (Patiala)	09/11/2024 & 10/11/2024	Monitoring Surveys	Muhammed Suhail & Amit Anand
/10/	Singh	Maan	PB/GRN/ROP/4/8013 (Ropar)	09/11/2024 & 10/11/2024	Monitoring Surveys	Muhammed Suhail & Amit Anand
/11/	Singh	Avtar	PB/GRN/ROP/4/7992 (Ropar)	09/11/2024 & 10/11/2024	Monitoring Surveys	Muhammed Suhail & Amit Anand
/12/	Singh	Gagandeep	PB/GRN/ROP/4/8201	09/11/2024 & 10/11/2024	Monitoring Surveys	Muhammed Suhail & Amit Anand

			(Ropar)			
/13/	Singh	Harinder	PB/GRN/ ROP/4/8105 (Ropar)	09/11/2024 & 10/11/2024	Monitoring Surveys	Muhammed Suhail & Amit Anand
/14/	Singh	Kartar	PB/GRN/ ROP/4/8341 (Ropar)	09/11/2024 & 10/11/2024	Monitoring Surveys	Muhammed Suhail & Amit Anand

As per section 9.6 of the GS Validation and Verification Standard v1.0, States that "Materiality, as defined in ISO14064-3, shall be applied in the context of the GS Program. The materiality thresholds stipulated for the CDM shall be applicable."

As per the standard CDM validation and verification standard for project activities, version 03 "A DOE planning and conducting verification using the concept of materiality shall achieve a reasonable level of assurance that the reported GHG emission reductions or net anthropogenic GHG removals are free from material errors, omissions or misstatements.

An omission, misstatement, or erroneous reporting of information is material if it might lead, at an aggregated level, to an overestimation of the total emission reductions/removals achieved by a registered project equal to or higher than the following thresholds:
a. 0.5 per cent of the emission reductions/removals for project achieving a total emission reduction equal to or more than 500,000 tonnes of carbon dioxide equivalent per year;
b. 1 per cent of the emission reductions/removals for projects achieving a total emission reduction between 300,000 and 500,000 tonnes of carbon dioxide equivalent per year;
c. 2 per cent of the emission reductions/removals for large-scale project activities achieving a total emission reduction of 300,000 tonnes of carbon dioxide equivalent per year or less;
d. 10 per cent of the emission reductions/removals for microscale projects.

As per the GS PDD, the project is categorized as small-scale. Hence, the applied materiality threshold would be 2%.

Parameter	**How the PP conducted sampling surveys (to obtain the project participants' or the coordinating/managing entities' records)**	**How the VVB could obtain records for verification**	**Criteria for deciding what ultimately constitutes a discrepancy**
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. ($BC_{PJ,HH,y}$)	Sampling based survey (questionnaire survey/interviews)	Cross-check of a sample of project participants' samples (questionnaire, operation surveys/interviews) including but not limited to following: • Consistency between the information as contained in Survey sheet and revealed from the on-site inspection interviews • Baseline scenario of the household • Enquire/observe the pre-project/baseline	VVB results, accounting for duly justified differences.

		stove/s and its operation during the project scenario. • Enquire/observe parallel use of any other stove and their fuel • Enquire/observe source /storage of fuelwood/charcoal or any other fuel	
Number of households (biogas system) in the project activity in operational per year (N_{HH})	Sampling based survey (questionnaire survey/interviews)	Cross-check of a sample of project participants' samples (questionnaire, operation surveys/interviews) including but not limited to following: • Consistency between the information as contained in Survey sheet and revealed from the on-site inspection interviews • Baseline scenario of the household • Enquire/observe the pre-project/baseline stove/s and its operation during the project scenario. • Enquire/observe parallel use of any other stove and their fuel • Enquire/observe source /storage of fuelwood/charcoal or any other fuel.	VVB results, accounting for duly justified differences.

C.4. Sampling approach

As the target population is homogeneous, PP has proposed simple random sampling plan using 95/10 as confidence/precision. This is in line with the applied methodology /B03/. 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) /B04/.

In line with paragraph 26 of the Sampling Standard, the verification team has applied acceptance sampling approach through on-site interviews on the monitoring survey as part of verification. The project participant had applied sampling approach to the monitoring survey /09/, conducted by the representatives of project participant. The verification team has chosen acceptance sampling in accordance with paragraph 28 of the sampling standard /B04/.

Applying paragraph 39 (c) of the sampling standard, version 09 /B04/, a sample size of 11 households was chosen (with no discrepant records). A sample size of 11 was determined, based on an AQL of 0.5% and UQL of 20%; producer risk and consumer risk of 10 % each in determining the DOE's sample size Acceptance number (c) thus determined for the sample is 0. However, DOE interviewed 11 samples from the baseline survey done by project participants.

The information provided in the monitoring survey /09/, has been cross checked during the Onsite visit. As a part of acceptance sampling, the Verification team could confirm the monitoring survey data /10/ with no discrepant records. Thus, PP's set of records has been accepted in line with § 33 of the sampling standard, version 09 /B04/.

Parameter	Verification approach	Population (for VVB's sample)	VVB's Sample Size
Usage and Monitoring Survey	ASP	300	11

The details of the sample interviewed are listed in section C.3 (under the list of interviewed persons). No discrepancy was found in any of the 11 samples and thus c=0, i.e., no discrepant records were observed. Thus, PP's set of records has been accepted in line with §33 of the sampling standard (version 09.0) /B04/. For the impact parameters, questionnaire was prepared and was used during the survey by the PP. During the on-site interviews, the verification team cross-checked these sample documents, and no discrepancies were found in the impact parameters as well. Furthermore, the training & competency of the personnel, who conducted such test were checked. They were also interviewed to ensure that the process, method used, and their competency to confirm such standardised test were appropriately applied. The sampling technique to draw such samples were found adequate and the sample collectors were found competent to perform such task.

C.5. Clarification requests (CLs), corrective action requests (CARs) and forward action requests (FARs) raised

The VVB had raised 02 clarifications (CLs) and 05 corrective action requests (CARs) and satisfactorily closed.

SECTION D. Verification findings

D.1. Remaining forward action requests from validation and/or previous verifications

Not applicable

D.2. Compliance of the project implementation and operation with the registered project design document

Means of verification	Document Review, Interview
Findings	CAR 01 has been raised and resolved successfully. Please refer Appendix 4 below.
Conclusion	Verification team confirms that the latest available version of the monitoring report template has been used and the MR is in compliance with the monitoring report form and related monitoring report template guide. As verified from on-site interview and third-party survey report /10/, the audit team confirm the project implementation and operation complies with the project design document /B03/. The starting date of operation is

	10/06/2021 (commissioning of first biogas plant) which is confirmed from the registered PDD /B03/ and validation report /B03/. The Project activity involves bundling of 11,085 plants installed in rural areas of Punjab installed between June, 2021 to January, 2022, constructed & maintained by Green Mission Welfare society. The project boundary in the registered PDD /B03/ is in line with the actual project boundary. CCIPL confirms that the project biogas systems are operational through on-site visits and interviews with end users. Each biogas system has a unique identification number that was provided in the end user agreement and are correct according to the project database. Each biogas plant is also physically marked with its unique identification number. Along with the serial number, the biogas technology, end username, address, commissioning date etc. had also been noted which were found to be consistent on ground. It is noted that no changes have been observed or identified, that may impact the additionality. No addition of component nor extension of technology, no addition nor removal of project sites, no change of values of the actual operational parameter relevant to determination of emission reductions which are within the control of the PP; no change has been observed or identified that may impact the scale of the project activity or applicability of baseline and monitoring methodology AMS-I.E version 12 /B01/. The operational status of all project bio-digesters, impact on identified SDGs from 01/10/2023 to 30/09/2024 has been taken into consideration. Verification team based on review of MR /01/ and registered PDD confirms that the households/end users relinquish their right of carbon credits. Furthermore, the bio digester plants implemented under the project is uniquely identified, thus avoiding any potential double counting. PP has ensured each of the bio digesters have their UID on them, which will prevent any kind of double counting. Further, it has been observed that same districts with same size of bio digesters are not repeated in the different projects. This was confirmed during the validation and verification site visits undertaken by VVB. Further, PP has provided an undertaking that same project is not developed under any other carbon scheme. Verification team has checked the information in the monitoring report /01/ and compared it against the registered PDD /B03/ and found to be consistent. Verification team confirms that: a) The project activity is implemented as per registered PDD/B03/. b) The actual operation of the proposed CDM project activity is in line with the registered/revised PDD /B03/. c) It has reviewed the registered PDD /B03/ including the monitoring plan, the applied monitoring methodology and found that the final MR/01/ for this monitoring period is in line with all the above-mentioned documents. Verification team of CCIPL based on review of records and on-site interviews confirms an effective grievance addressal mechanism is in place and however, no major grievances were reported during the monitoring period/12/, the minor issues reported and addressed has been discussed in the MR, VVB has confirmed the same from the on-site visit.

	In summary, the monitoring period is reasonable, and the operation of the project activity is in accordance with the registered/revised PDD /B04/.

D.3. Post-registration changes

D.3.1. Temporary deviations from the registered monitoring plan, applied methodologies, standardized baselines or other methodological regulatory documents[1]

Not applicable

D.3.2. Corrections

Not applicable

D.3.3. Changes to the start date of the crediting period

Not applicable

D.3.4. Inclusion of a monitoring plan

Not applicable

D.3.5. Permanent changes from registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines or other methodological regulatory documents

Not applicable

D.3.6. Changes to the project design

Not applicable

D.3.7. Changes specific to afforestation and reforestation project activities

Not applicable

D.4. Compliance of the registered monitoring plan with applied methodologies, applied standardized baselines, and other applied methodological regulatory documents

Means of verification	Document Review, Interview
Findings	No findings in this section.
Conclusion	The verification team has checked the actual monitoring plan against the registered monitoring plan and monitoring methodology and applicable tools. Furthermore, the verification team has checked monitoring system by means of comparison with the information given in the monitoring plan and monitoring methodology. The monitoring plan is completely in accordance with the approved methodology /B01/ applied by the registered PDD/B03/.

D.5. Compliance of monitoring activities with the registered monitoring plan

D.5.1. Data and parameters fixed ex ante or at renewal of crediting period

Means of verification	Document Review, Interview

[1] 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).

Findings	No findings in this section.
Conclusion	Verification team confirms that the data and parameters fixed ex ante are in compliance with the registered PDD /B03/ and monitoring plan. Please refer to the Annex 1 for assessment of each parameter.

D.5.2. Data and parameters monitored

Means of verification	Document Review, Interview
Findings	CL01 has been raised and resolved successfully. Please refer Appendix 4 below.
Conclusion	The verification team confirms that the data and parameters monitored are in compliance with the registered PDD /B03/ and the monitoring plan.

Parameter	Value	Assessment
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 ($BC_{PJ,HH,y}$) tonne/household/year	0.074t/household/year	A third-party survey was carried out to estimate the usage of firewood after the installation of the biogas plants. Survey was to assess the parameter in accordance to the Guidelines for sampling and surveys for CDM project activities and programmes of activities (Ver04.0, CDM-EB67-A06 GUID) issued by UNFCCC was used. Total 300 samples were surveyed. As report /10/ it was found 7% of sampled population used firewood for an average of 5 days during this monitoring period, this is due to factors such as the (winter season, habitual behaviour, issue with pipeline and mass gatherings) altogether. The value for the parameter is calculated using the below method; $BC_{PJ,HH,y}$ = [{($BC_{BL,HH,y}$/365) X Average No. of days of firewood consumption in the monitoring (survey results) X Total no. of household used firewood }/ Total no. of household used firewood]. With regards to the monitoring survey outlier, the number of days of firewood usage ranges from 4-7 and average is coming to 5. **Days** **Count** 4 6

			5 10 6 4 7 1 It is evident from the above table that out of 21 samples only 1 value i.e 7 could be considered as an outlier but the same will not be considered as conservative and will result in higher emission reductions. This is also included in the monitoring survey result sheet which is included in ER calculation sheet. The value found to be conservative. Hence acceptable. VVB during on- site visit the same has been confirmed. During the onsite visit it is found that all the biogas plants were fully operational. Further, during the interviews with the end users as well as the PP's field team it is found that the plants are operational. VVB has checked the technical life of the biogas digester, and it is around 20 year and in line with PDD. As this is only the 4th year of operation compared to its technical lifetime, the operational rate seems acceptable. Therefore, the value as per survey report reported in ER sheet is considered correct.
	Number of households (biogas system) in the project activity in operational per year ($N_{HH,y}$)	11,085	The parameter is monitored through third party survey /10/. The survey identified sampled households as per UNFCCC guideline. As per survey results, out total 300 samples were surveyed all the samples were found in operation on the time of survey. Therefore, the effective number of biogas systems in operation during the monitoring period is 11,085 (100%).
	SDG 3 – (Good health and well-	11,085	Improvement in health and decrease in illness will be

	being) Improvement in health and decrease in illness		assessed through interview with end users due to project implementation. Users opinion on indoor air quality due to biogas usage has been collected during third party monitoring survey. As per the survey 100% users give a positive response on improvement in health. The verification team during on-site audit has interviewed the biogas uses and the over results were confirmed.
	SDG 7 – (Affordable and clean energy) Access to affordable and clean energy services	11,085	The parameter is monitored through third party survey /10/. The survey identified sampled households as per UNFCCC guideline. As per survey results, out total 300 samples were surveyed all the biogas plants were found operation at the time of survey. The verification team during on-site audit all the samples were operational. Therefore, PP's monitoring result is accepted.
	SDG 8–- Unemployment rate, by sex, age and persons with disabilities Quantitative employment and income generation	10 permanent employments. 2 training per year	Verified the employment records /11/ and confirmed that 10 permanent is created by the project activity. Further, team has check the records of training programme /04/ and found 2 trainings were conducted during the monitoring period. The trainings conducted during the monitoring period to improve the skills of the local technicians, so as to improve the quality of the monitoring activities. VVB has assessed the training records including the topics covered during the training

			activity /04/. The training covers ways to increase the effectiveness and efficiency of all biogas plants, safe handling & operation of biogas plants along with Do's and Don'ts of the related to biogas plant operation. Further, VVB has interviewed the local technician related to the same.

PP has maintained monitoring service records; grievance register and operations logbook. No grievance has been raised during the monitoring period. However, only minor operational issues were raised by the users; however, all the issues were rectified with-in maximum 24 hours. PD has conducted regular maintenance checks of the biogas plants. The same is confirmed during the onsite interviews with the local technician and end users. Further, VVB has checked the biogas maintenance/service records/12/. It has been noted that all the issues were reported is registered in the logbook/12/. The service details of the same is also noted in the logbook. Since, the project is in its 4th year of operation and the technical lifetime of the project is more than 20 years, only minor issues like burner blockage, water accumulated in the pipelines etc are being reported. These issues can be resolved very easily. The evidence found acceptable and appropriate. There were no issues related to non- usage of biogas units.

It is confirmed that the verification team assessed the data / information flow from the point of monitoring to emission reduction calculation and found no gap in the same. Please refer to the Annex 2 for assessment of each parameter.

D.5.3. Implementation of sampling plan

Means of verification	Document Review, Interview
Findings	CAR 02 and CAR 03 has been raised and resolved successfully. Please refer Appendix 4 below.
Conclusion	According to the standard for sampling and survey /B04/ and related guidelines /B04/ the sampling plan was determined at the time of project registration and applied during the monitoring. Sampling method: Simple random sampling method is adopted as the target population is homogeneous. The sample size is determined by the requirement to achieve 95/10 precision, in line with the methodology for bi-annual survey. Sampling approaches may follow the Guideline "Sampling and surveys for CDM project activities and programme of activities" for calculation of sample size. Data to be collected: Number of project devices of type i and operating in year y. Implementation plan: Annual or biennial. Actual implementation: - Sampling method: The sample size included all households and was randomly sampled from a list of all the project biogas system in the project for each state separately. The target population is

	the 11,085 during the monitoring period. The sampling frame is homogenous within itself, with respect to service level, established ex-ante baseline and user characteristics. PD has performed simple random sampling in the total population. Since, the population is homogenous as the targeted population belongs to the same economical section, same technology is used throughout the project (i.e. Deenbandhu model), the same Feed is used in the biodigesters (i.e. cow dung) and End use of the biogas is same i.e. cooking; the use of simple random sampling is acceptable. Further, PD has selected 300 samples following the guidelines for Sampling and Surveys for CDM Project activities and Programme of Activities Ver. 4.0 (EB86, Annex 4). The samples are randomly selected using the random sample generator. Further, VVB has checked the sampling process and the found that the same is performed in line with the CDM sampling standard (version 9). As the target population is homogeneous, PP has proposed simple random sampling plan using 95/10 as confidence/precision. This is in line with the applied methodology /B01/. 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) /B04/. In line with paragraph 26 of the Sampling Standard, the verification team has applied acceptance sampling approach through on-site interviews on the monitoring survey as part of verification. The Project proponent had applied sampling approach to the monitoring survey /10/, conducted by the representatives of Project proponent. The verification team has chosen acceptance sampling in accordance with paragraph 28 of the sampling standard /B04/. Applying paragraph 39 (c) of the sampling standard, version 09 /B04/, a sample size of 11 households was chosen (with no discrepant records). A sample size of 11 was determined, based on an AQL of 0.5% and UQL of 20%; producer risk and consumer risk of 10 % each in determining the VVB's sample size Acceptance number (c) thus determined for the sample is 0. The population included in the project activity is homogeneous in nature and a random sampling method was chosen to get a representative acceptance sample. VVB interviewed 11 samples from the monitoring survey done by Project Proponents. The details of the sample interviewed are listed in section C.3 (under the list of interviewed persons). No discrepancy was found in any of the 11 samples and thus c=0, i.e., no discrepant records were observed. Thus, PP's set of records has been accepted in line with §33 of the sampling standard (version 09.0) /B04/. For the impact parameters, questionnaire was prepared and was used during the survey by the PP. During the on-site interviews, the verification team cross-checked these sample documents, and no discrepancies were found in the impact parameters as well. Furthermore, the training & competency of the personnel, who conducted such test were checked. They were also interviewed to ensure that the process, method used, and their competency to confirm such standardised test were appropriately applied. The sampling technique to draw such samples were found adequate and the sample collectors were found competent to perform such task.

	PP has determined target sample number to be 300 as below: The total sample size has been derived using equation para 12 of appendix 1, EB 86 Annex 4, Guidelines for Sampling and Surveys for CDM Project activities and Programme of Activities Ver. 4.0. /B04/. The expected parameter values (mean, standard deviation and proportion) have been taken as per para 12 of appendix 1, EB 86 Annex 4 /B04/. Total Population (N) is 11,085 expected proportion is taken 60% and accordingly, sample size (n) come out to be 251. However, on a conservative note PP has opted to perform survey in 300 sample households. The survey was conducted from 11/04/2024 to 31/05/2024, this was mentioned on page no. 8 in the Biogas usage survey report and the specific dates of beneficiary interviews and results from the survey were verified from the survey forms and survey results respectively. The survey was conducted by a third party in the 300 sampled population. The usage survey was conducted as per the applied methodology AMS-I.E version 12 and Guidelines for sampling and surveys for CDM project activities and programmes of activities Ver04.0., confirmed from the third party survey report. During the onsite interviews with the end-user, it has been confirmed that end-user did not utilize any other cooking devices during the monitoring period. The Project Proponent conducted regular inspections and spot checks to ensure adherence to the prescribed cooking practices and Periodic maintenance schedules to ensure the smooth functioning of the biogas system. This proactive approach minimized the risk of deviation from the project's intended usage. This was confirmed from the end-user and the employees during the on-site visit. During the survey it was found that 7% of sampled population used firewood for an average of 5 days during this monitoring period, this is due to factors such as the winter season, habitual behaviour, issue with pipeline and mass gatherings altogether, this has been confirmed during the onsite interview the ER sheet (refer section D.5.2 for details). Therefore, the approach for monitoring the firewood usage, biogas operational status and Habitual Behaviour which is provided in the survey results are found appropriate to the VVB. Hence confirmed the veracity of the survey report.

D.6. Compliance with the calibration frequency requirements for measuring instruments

Means of verification	Document Review, Interview
Findings	No findings in this section.
Conclusion	Not appliable, since there is no monitoring equipment which require calibration as per the monitoring plan. The equipment's used for the monitoring consists of reviewing the documents and on-site interviews.

D.7. Assessment of data and calculation of emission reductions or net removals

D.7.1. Calculation of baseline GHG emissions or baseline net GHG removals by sinks

Means of verification	Document Review, Interview
Findings	No findings in this section.
Conclusion	As per the registered PDD /B03/ and the Methodology applied /B01/, Baseline emission reductions are calculated as per equation 1 of the methodology as below: $BE_y = B_y * f_{NRB, y} * NCV_{biomass} * EF_{projected\_fossilfuel}$ Where, **BE_y** = Baseline Emissions during the year y in tCO2e **B_y** = Quantity of woody biomass that is substituted or displaced in tonnes

	$f_{NRB, y}$ = 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 or government data or approved default country specific fraction of non-renewable woody biomass (fNRB) values available on the CDM website. In this case fNRB, y is fixed ex-ante to be Punjab verified from registered PDD and validation report /B03/. **$NCV_{biomass}$** = 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 the substitution of non-renewable woody biomass by similar consumers. Use a value of 64.4 tCO_2/TJ. By' By is determined by using option (a) paragraph 29 of the methodology as follows: "Calculated as the product of the number of households multiplied by the estimate of average annual consumption of woody biomass per household that is displaced by the project activity (tonnes/ household/year)"; $B_y = N_{HH} \times (BC_{BL,HH,y} - BC_{PJ,HH,y})$ Where, N_{HH} = Number of households in the project activity, number $BC_{BL,y}$ = Average annual consumption of woody biomass per household before the start of the project activity, tonnes/household/year $BC_{PJ,HH,y}$ = If it is found that pre-project devices were not completely displaced but continue to be used to some extent, average annual consumption of woody biomass per household in the pre-project devices during the project activity, tonnes/household/year $BC_{BL,HH,y}$ = for the project have been considered based on previous survey and publicly available reports as discussed in above section. The average annual consumption of woody biomass is estimated by survey methods to be 0. 073 tonne/household/year in case of Punjab, as per the MR /01/,. Accordingly, the baseline emissions for project activity for the monitoring period from 01/10/2023 to 30/09/2024 is calculated to be 53,820 tCO_2e.

D.7.2. Calculation of project GHG emissions or actual net anthropogenic GHG removals by sinks

Means of verification	Document Review, Interview
Findings	CL 02 has been raised and resolved successfully. Please refer Appendix 4 below.
Conclusion	As per "AMS I.E- Switch from non-renewable biomass for thermal applications by the user, Version 12, the baseline emissions (BE_y) are calculated as: $BE_y = B_y \times f_{NRB,y} \times NCV_{biomass} \times EF_{projected\_fossil\_fuel}$ Where, BE_y = Baseline emissions during the year y in t CO_2e

	B_y = Quantity of woody biomass that is substituted or displaced in tonnes $f_{NRB,y}$ = Fraction of woody biomass used in the absence of the project activity in year y that can be established as non-renewable biomass (fNRB) $NCV_{biomass}$ = Net calorific value of the non-renewable woody biomass that is substituted (IPCC default for wood fuel, 0.0156 TJ/tonne) $EF_{projected\_fossil\ fuel}$ = Emission factor for the substitution of non-renewable woody biomass by similar consumers. Use a value of 64.4 tCO_2/TJ. By is determined by using option (a) paragraph 27 of the methodology as follows: "Calculated as the product of the number of households multiplied by the estimate of average annual consumption of woody biomass per household that is displaced by the project activity (tonnes/ household/year)"; $By = NHH \times (BCBL,HH,y - BCPJ,HH,y)$ Where, N_{HH} = Number of households in the project activity, number $BC_{BL,y}$ = Average annual consumption of woody biomass per household before the start of the project activity, tonnes/household/year $BC_{PJ,HH,y}$ = If it is found that pre-project devices were not completely displaced but continue to be used to some extent, average annual consumption of woody biomass per household in the pre-project devices during the project activity, tonnes/household/year. $BC_{BL,HH,y}$ = for the project have been considered based on previous survey and publicly available reports as discussed in above section. Fraction of woody biomass used in the absence of the project activity in year y that can be established as non-renewable biomass (fNRB,y) is determined as per methodological tool 'Calculation of the fraction of non-renewable biomass' version 02 as follows: The fraction of woody biomass that can be established as non-renewable, is: f_{NRB} and it is fixed ex-ante at the time of validation for the entire crediting period. The project activity does not involve any of the above activity and hence, project emissions for the project activity is not applicable. However, while determining B_y as per equation 3 of the applied methodology, firewood consumed by pre-project devices during the project activity shall be monitored and applied ex-post. This is to be accounted. Leakage Emissions (LEy): Leakage emissions (related to the non-renewable woody biomass saved by the project activity shall be assessed based on ex post surveys of users and the areas from which this woody biomass is sourced (using 90/30 precision for a selection of samples). The following potential source of leakage shall be considered: The use/diversion of non-renewable woody biomass saved under the project activity by non-project households/users that previously used renewable energy sources. If this leakage assessment quantifies an increase in the use of non-renewable woody biomass used by the non-project households/users that is attributable to the project activity, then By is adjusted to account for the quantified leakage. Alternatively, By is multiplied by a net to gross adjustment factor of 0.95 to account for leakages, in which case surveys are not required.

PP has opted default option, and By shall be adjusted with adjustment factor of 0.95 to account leakage.

Emission reductions:
Emission reductions are to be estimated based on the equation below:

$ER_y = BEy – PE_y – LE_y$

ERy= 53,820 tCO_2e

Comparison of monitored parameters with last monitoring period are as follows;

SDG	SDG Impact	Value obtained in this monitoring period	Value obtained last monitoring period
13	Emission reductions	53,820 tCO_2e	54,573 tCO_2e
7	Access to affordable and clean energy services	11,085 biogas plant users have access clean energy	11,085 biogas plant users have access to clean energy
8	Unemployment rate, by sex, age and persons with activity disabilities	10 permanents employment	10 permanents employment
8	Unemployment rate, by sex, age and persons with activity disabilities	2 training per year	2 training per year
3	Improvement in health and decrease in illness	11,085 biogas plant users have improved health conditions	11,085 biogas plant users have improved health conditions

D.7.3. Calculation of leakage GHG emissions

Means of verification	Document Review, Interview
Findings	No findings in this section.
Conclusion	According to the registered PDD /B03/, a leakage assessment is only required every two years; however, such a leakage and thus assessment is required for this monitoring period. Project Leakage Assessment Ex post surveys of users and the areas from which this woody biomass is sourced will be used to assess leakage emissions. The following potential leakage sources must be considered: non-project households/users who previously used renewable energy sources use/divert non-renewable woody biomass saved under the project activity. If the leakage assessment identifies an increase in the use of non- renewable woody biomass by non-project households/users that is attributable to project activity, By is adjusted to account for the quantified leakage. To account for leakages, By

	is multiplied by a net to gross adjustment factor of 0.95, in which case surveys are not required. PP has opted default option, and By is adjusted with adjustment factor of 0.95 to account leakage. Therefore, the net benefit is = 56,652*0.95= 53,820 tCO_2e As per the demonstration in the registered PDD /B03/ and MR /01/, the adjustment factor of 0.95 has been accounted for leakage for the monitoring period.

D.7.4. Summary calculation of GHG emission reductions or net anthropogenic GHG removals by sinks

Means of verification	Document Review, Interview
Findings	CAR 04 has been raised and resolved successfully. Please refer Appendix 4 below.
Conclusion	Emission Reductions: The emission reductions in this monitoring period are: $ER_y = BE_y - PE_y – LE_y$ Where, ER_y is the total emission reductions of the project activity during the year y in tCO_2e; Bey is the baseline emissions for the project activity during the year y in tCO_2e; Pe_y is the emissions for the project activity during the year y in tCO_2e; LEy is the leakage emissions for the project activity during the year y in tCO_2e. As explained in section D.7.1 above, the resulted Baseline emissions (BEy) for the monitoring period is 53,820 tCO_2e. Similarly, as explained in section D.7.2 and section D.7.3 project emission is zero for the monitoring period. Hence, resulted emission reduction for the monitoring period is 53,820 tCO_2e (round-down value). The values of data and parameters which is fixed ex ante has been confirmed from the registered PDD. The data and parameters monitored including for this project activity has been confirmed from the third-party survey report and the on-site interview. Further VVB has checked the ER calculation in ER sheet and found that the values applied and calculated are correct. SDGs has been cross-checked from the third-party survey report, employment records and the on-site interview, the detailed assessment has been provided in the section D.5.2. Calculation of net benefits or direct calculation for each SDG Impacts are as follows;

SDG	SDG Impact	Baseline Estimate	Project Estimate	Net benefit
13	Emission reductions	56,653 tCO_2e	2,833 tCO_2e (leakage)	53,820 tCO_2e
7	Access to affordable and clean energy services	Firewood based conventional	11,085	11,085
8	Unemployment rate, by sex, age and persons with activity disabilities	N/A	10	10 Employments
8	Unemployment rate, by sex, age and persons with activity disabilities	N/A	02	2 trainings
3	Improvement in health and decrease in illness	Illness due to smoke	11,085	11,085

D.7.5. Comparison of actual GHG emission reductions or net anthropogenic GHG removals by sinks with estimates in registered PDD

Means of verification	Document Review, Interview
Findings	CL 02 has been raised and resolved successfully. Please refer Appendix 4 below.
Conclusion	The ex-ante estimate value of the emission reductions for the monitoring period as per the registered PDD /B04/ is 54,573 tCO_2e and the actual emission reductions achieved for the monitoring period is 53,820 tCO_2e.

SDG	Values estimated in ex ante calculation of approved PDD	Actual values achieved during this monitoring period
13	54,573 tCO_2e	53,820 tCO_2e
3	Improvement in health and decrease in illness for 100% users	11,085 biogas plant users now have improved health conditions
7	100% users were using firewood which is not a Clean Source of energy	11,085 users are accessed to clean energy source.
8	10 permanent employments and 2 trainings in a year	10 permanent employments, and 2 trainings in a year

The emission reduction calculations provided in the spreadsheet /03/ have been verified to be correct and in line with the registered PDD /B04/.

D.7.6. Remarks on difference from estimated value in registered PDD

Means of verification	Document Review, Interview
Findings	No findings in this section.
Conclusion	The ex-ante estimate value of the emission reductions for the monitoring period as per the registered PDD /B04/ is 54,573 tCO_2e and the actual emission reductions achieved for the monitoring period is 53,820 tCO_2e. For SDG 13, since actual emission reduction is lower than the estimated value and hence it is acceptable to the verification team. The monitoring report /01/ provides reason for decrease in the actual emission reduction and the same was confirmed by the verification team by interviewing the representatives of PP and by reviewing the actual implementation status of the project. For other SDG parameters, PP has provided justification in the Monitoring report and assessment of the same is provided below: • SDG 3: The actual value is same as the estimated value, which is deemed appropriate and thus acceptable to the VVB. • SDG 7: The actual value is same as the estimated value, which is deemed appropriate and thus acceptable to the VVB. • SDG 8: The actual value is same as the estimated value, which is deemed appropriate and thus acceptable to the VVB. • SDG 13: The actual value is lower than the estimated value, which is deemed appropriate and thus acceptable to the VVB.

SECTION E. Internal quality control

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The verification report shall pass a technical review before being submitted to the Gold Standard. The technical review is performed by a technical reviewer qualified in accordance with CCIPL's qualification scheme for validation and verification.

SECTION F. Verification/Certification opinion

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Carbon Check (India) Private Ltd. (CCIPL) has performed the 3rd periodic verification of the registered GS Project Activity "Implementation of clean energy technology in rural areas of India-2 (GS 11656)".

The verification team assigned by the VVB concludes that the project activity as described in the PDD /B03/ and the Monitoring report /01/, meets all relevant requirements of the Gold Standard. The verification has been conducted in-line with the GS4GG requirements project activities.

Verification methodology and process

The Verification team confirms the contractual relationship signed on 22/10/2024/14/ between the VVB, Carbon Check (India) Private Ltd. and the Project Participant. The team assigned to the verification meets the CCIPL's internal procedures including the UNFCCC/GS requirements for the team composition and competence. The verification team has conducted a thorough contract review as per UNFCCC and CCIPL's procedures and requirements.

The verification has been performed as per the requirements described in the GS4GG and constitutes the review and completion of the following steps:

- Reviewing the PDD /B04/, including the monitoring plan and the corresponding validation report /B03/;
- Desk review of the MR /01/ and other relevant documents including documents related to the project activities in emission reductions;
- Review of the applied monitoring methodology AMS-I.E. Switch from non-renewable biomass for thermal applications by the user - Version 12 /B01/;
- On-site inspection (09/11/2024- and 10/11/2024)
- Resolution of CARs and CLs raised during verification
- Issuance of Verification Report

The project activity was correctly implemented according to selected monitoring methodology, monitoring plan and the registered PDD. 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 document review and remote interviews, the verification team confirms that the project activity has resulted in the 53,820 tCO_2e emission reductions during the reported monitoring period.

This statement covers verification period from 01/10/2023-30/09/2024 (inclusive).

The VVB has raised 02 clarifications and 05 corrective action requests, all of which are satisfactorily closed.

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

The VVB, hereby certifies that the project activity, achieved emission reductions by sources of GHG equal to 53,820tCO_2e equivalent and all monitoring requirements have been fulfilled and is substantiated by an audit trail that contains evidence and records.

Vintage	**ER (tCO_2e)**
01/10/2023 – 31/12/2023	13,528 tCO_2e
01/01/2024 – 30/09/2024	40,292 tCO_2e

Total for the monitoring period	**53,820 tCO_2e**

Appendix 1. Abbreviations

Abbreviations	Full texts
BE	Baseline Emissions
CA	Corrective Action/ Clarification Action
CER	Certified Emission Reduction
CAR	Corrective Action Request
CCIPL	Carbon Check (India) Private Ltd.
CL	Clarification Request
CO_2	Carbon Dioxide
CO_{2e}	Carbon Dioxide Equivalent
DVR	Draft Verification Report
EB	CDM Executive Board
EF	Emission Factor
FA	Final Approval
FAR	Forward Action Request
FVR	Final Validation Report
GHG	Greenhouse gas(es)
GS	Gold Standard
GWP	Global Warming Potential
IPCC	Intergovernmental Panel on Climate Change
LE	Leakage Emissions
MP	Monitoring Period
MR	Monitoring Report
MWh	Mega Watt Hour
OSV	On Site Visit
PE	Project Emissions
PP(s)	Project Participant(s)
PRC	Post registration change
QC/QA	Quality Control/ Quality Assurance
TA	Technical Area
TR	Technical Review
UNFCCC	United Nations Framework Convention on Climate Change
VVS	Validation and Verification Standard
VVB	Validation & verification body

Appendix 2. Competence of team members and technical reviewers

Carbon CHECK

Carbon Check (India) Private Limited

Certificate of Competency

Mr. Muhammed Suhail K

has been qualified as per CCIPL's internal qualification procedures in accordance with the requirements of CDM AS (V7.0), 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	☐ 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

30th January 2024

Expiry Date

21st January 2025

Priya Suman

Ms. Priya Suman
Compliance Officer

Sanjay Agarwalla

Mr. Sanjay Kumar Agarwalla
Technical Director

Revision History of the document:

Revision date	Summary of changes
Dec 2023	Initial Adoption
Jan 2024	Amendment in Technical Area – 3.1

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

Mr. Amit Anand

has been qualified as per CCIPL's internal qualification procedures in accordance with the requirements of CDM AS (V7.0), 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	☐ 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 and RSA			

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

Expiry Date

21st January 2025

Priya Suman

Ms. Priya Suman
Compliance Officer

Sanjay Agarwalla

Mr. Sanjay Kumar Agarwalla
Technical Director

Revision History of the document:

Revision date	Summary of changes
2022[1]	Annual revision
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

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 (V7.0), 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	☐ 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 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

5th December 2023

Expiry Date

21st January 2025

Priya Suman

Ms. Priya Suman
Compliance Officer

Sanjay Agarwalla

Mr. Sanjay Kumar Agarwalla
Technical Director

Revision History of the document:

Revision date	Summary of changes
2022[1]	Annual revision
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

Appendix 3. Documents reviewed or referenced

S. No.	Document
/01/	Monitoring Report (Version 01 dated 09/10/2024) Monitoring Report (Version 02 dated 11/11/2024) Monitoring Report (Version 03 dated 18/12/2024)
/02/	Emission reductions sheet
/03/	Sustaincert's review report for the design certification and for 1st performance certification
/04/	Training records from 01/10/2023-30/09/2024
/05/	Monitoring Survey Forms
/06/	Evidence for the random sample generator for the parameters opted for sampling/survey.
/07/	Initial Sample size calculation sheet along with actual samples conducted and the reliability assessment.
/08/	Evidence for unique identification number under the project
/09/	Records of monitoring Survey of the project and Biogas user survey
/10/	Third party survey report
/11/	Employment records from 01/10/2023-30/09/2024
/12/	The grievance registers applicable for the monitoring period
/13/	Monitoring log books from 01/10/2023-30/09/2024
/14/	Verification contract between VVB & PP
/15/	Biogas Service Records from 01/10/2023-30/09/2024

Background Documents

Ref no.	Reference Document
/B01/	AMS-I.E. Switch from non-renewable biomass for thermal applications by the user - Version 12

/B02/	1. Gold Standard Principles and Requirements version 1.2, dated 24/10/2019 2. Gold Standard Programme of Activity Requirements version 1.2, dated 24/10/2019 3. GS Validation & Verification Body Requirements version 2.0, dated 14/01/2021 4. Community Services Activity Requirements (version 1.1) under GS4GG https://globalgoals.goldstandard.org/200-gs4gg-community-services-activity-requirements/
/B03/	Registered PDD and corresponding Validation Report
/B04/	Standards a) CDM Sampling Standard, version 09.0 b) Guidelines for Sampling and Surveys for CDM Project activities and Programme of Activities Ver. 4.0. c) CDM validation and verification standard for project activities, version 04.0
/B05/	IPCC 2006, volume 2, chapter 1
/B06/	Site Visit and Remote Audit Requirements and Procedures, version 1.0 dated 17/11/2021
/B07/	GS Validation and Verification Standard V1.0
/B08/	Validation report for the design certification and verification report for 1st and 2nd Monitoring period

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

Table 1. FARs from this verification

FAR ID	**0**	**Section no.**		**Date:**
Description of CAR				
NA				
PP response				**Date:**
Documentation provided by the CME				
DOE assessment				**Date:**

Table 2. CARs from this verification

CAR ID	01	**Section no.**	Section C	**Date:** 05/11/2024
Description of CAR				
PD shall include maintenance and downtime activity in the current monitoring period in the section C of the MR.				
PP response				**Date: 11/11/2024**
Same has been included in section C of revised MR.				
Documentation provided by PP				
VVB assessment				**Date: 13/11/2024**
PD have included the maintenance and downtime activity in the current monitoring period in the section C of the MR, the same found to be appropriate. Hence CAR 01 is closed.				

CAR ID	02	**Section no.**	Section C	Date: 05/11/2024
Description of CAR				
The value provided for parameter $BC_{PJ,HH,y}$ is not consistent with the ER sheet, PP is requested to provide the correct value.				
PP response				**Date: 11/11/2024**
The value provided for parameter $BC_{PJ,HH,y}$ is consistent now in Revised MR				
Documentation provided by PP				
VVB assessment				**Date: 13/11/2024**
PD has corrected the value provided for parameter BCPJ,HH,y and the same is consistent with ER sheet. Hence, CAR 02 is closed				

CAR ID	03	**Section no.**	Section B.1	**Date: 05/11/2024**
Description of CAR				

PP is requested to confirm in Section B.1 of the Monitoring Report (MR) whether all units were operational during this Monitoring Period.
PP response **Date: 11/11/2024**
A Survey was conducted from 18/04/2024-31/05/2024 by KSPL in the 300 sampled population and were found operational at the time of survey. Therefore, it is evident from the survey that 100% operational rate of all the biogas plants.
Documentation provided by PP
VVB assessment **Date: 13/11/2024**
VVB has cross-checked the survey results and the found that 300 sampled population and were found operational at the time of survey, the same is confirmed during on-site visit. Hence, CAR 03 is closed.

CAR ID	04	**Section no.**	Section E.5.1	Date: 05/11/2024
Description of CAR				
The ex-ante value provided in the section E.5.1 of the MR is of annual emission reductions from the project activity, PP is requested to provide the ex-ante value for the monitoring period.				
PP response				**Date: 11/11/2024**
Section E.5.1 has been revised now.				
Documentation provided by PP				
VVB assessment				**Date: 13/11/2024**
PD has provided the ex-ante value for the monitoring period in the section E.5.1 of the MR, the same is found to be appropriate. Hence, CAR 04 is closed.				

CAR ID	05	**Section no.**	Section G.1	**Date:** 05/11/2024
Description of CAR				
In section G.1 of the MR, it is mentioned that “There were minor issues reported by users which were recorded in grievance register”. PP is requested to mention in brief about the grievance mechanism in place.				
PP response				**Date: 11/11/2024**
Section G.1 of MR has been revised.				
Documentation provided by PP				
VVB assessment				**Date: 13/11/2024**
Issues reported by users during this monitoring period has been discussed in the section G.1 of the MR, the same found to be appropriate. Hence CAR 05 is closed.				

Table 3. CL from this verification

CL ID	01	Section no.	G.1 in MR	Date: 05/11/2024
Description of CL				
PP is requested to provide the following documents. 1.Monitoring survey report. 2.Griviance register and compliant records 3. Monitoring survey questionnaire and its results 4. training records. 5. Contract between PP and third party for monitoring survey 6. Third party survey report 7. Evidence of Carbon Credits waiver 8. Salary slips for this monitoring period 9. Biogas Service Records				
PP response				**Date: 11/11/2024**
. Above all mentioned documents have been provided in Zip folder.				
Documentation provided by PP				
-				
VVB assessment				**Date: 13/11/2024**
PD has provided all the above-mentioned documents; hence CL 01 is closed.				

CL ID	02	Section no.	E.2 in MR	Date: 05/11/2024
Description of CL				
SDG 8: PD shall provide information on whether the 10 permanent jobs created were during the current MP.				
PP response				**Date: 11/11/2024**
The 10 jobs created in a prior monitoring period continued to be maintained during the current monitoring period.				
Documentation provided by PP				
VVB assessment				**Date: 13/11/2024**
The justification provided by the PD is found to be appropriate, Hence, CL 02 is closed.				

Annex 1: Assessment of data and parameters fixed ex-ante at the time of validation

Relevant SDG Indicator	SDG 13, Climate action
Parameter	N_{HH}
Data unit	Number
Default values used	11,085
Purpose of data	Estimation of Baseline
Source of verification of the source	Project Proponent's project database

Relevant SDG Indicator	SDG 13, Climate action
Parameter	$BC_{BL,HH,y}$
Data unit	tonnes/household/year
Default values used	5.38
Purpose of data	Estimation of Baseline
Source of verification of the source	Baseline survey

Relevant SDG Indicator	SDG 13, Climate action
Parameter	$f_{NRB,y}$
Data unit	Percentage
Default values used	95.61%
Purpose of data	Estimation of Baseline
Source of verification of the source	Calculated

Relevant SDG Indicator	SDG 13, Climate action
Parameter	$NCV_{biomass}$
Data unit	TJ/tonne
Default values used	0.0156
Purpose of data	Calculation of Baseline emissions
Source of verification of the source	IPCC default value for wood/B05/

Relevant SDG Indicator	SDG 13, Climate action
Parameter	$EF_{projected\_fossilfuel}$
Data unit	tCO2/TJ
Default values used	64.4
Purpose of data	Estimation of Baseline
Source of verification of the source	Default value from the methodology, AMS-I.E

Annex 2: Assessment of data and parameters monitored

Monitoring Parameter Requirement	**Assessment/ Observation by the VVB**
Relevant SDG Indicator	SDG 13 Indicator 13.2.1 "Amount of CO2e emissions reduced by the project per year"
Data / Parameter: **(as in monitoring plan of PDD):**	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. ($BC_{PJ,HH,y}$)
Unit	tonnes/household/year
Measuring frequency/Time Interval:	At least once in every two years.
Reported value	0.074
Verified Source of Data	Value obtained from monitoring survey of samples /09/ VVB has followed the CDM standard i.e. Sampling and surveys for CDM project activities and programmes of activities version 09 for performing the acceptance sampling. Applying paragraph 39 (c) of the sampling standard, version 09, a sample size of 11 households was chosen (with no discrepant records). A sample size of 11 was determined, based on an AQL of 0.5% and UQL of 20%; producer risk and consumer risk of 10 % each in determining the VVBs sample size. VVB has interviewed 11 samples from the monitoring survey done by Project Proponent. During the acceptance sampling process VVB has checked the operations of the biogas plant as well as interviewed the end users as well as the PP's field team. During the onsite visit it is found that all the biogas plants were fully operational. Further, during the interviews with the end users as well as the PP's field team it is found that the plants are operational. VVB has checked the technical life of the biogas digester, and it is around 20 year and in line with PDD. As this is only the 4th year of operation compared to its technical lifetime, the operational rate seems acceptable. Further, VVB has verified the grievance register and found that there were some minor technical issues and the same were reported and rectified as mentioned in section G.1 of the MR. Further, VVB has crosscheck biogas services records and same was cross verified during the onsite visit with the end-users and found regular maintenance are being carried out for the sustenance of the project activity. During the maintenance time a few of the end users were using wood. The same is mentioned in the monitoring survey. VVB has confirmed these details during the interviews with the end users; and found in line with the monitoring results.
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Assessment of details of monitoring equipment, its specification and calibration as per the requirements of registered PDD:	NA
Does 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
In case only partial data are available because activity levels or non-activity parameters have not been monitored in	NA

accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	

Monitoring Parameter Requirement	Assessment/ Observation by the VVB
Relevant SDG Indicator	SDG 13 Indicator 13.2.1 "Amount of CO2e emissions reduced by the project per year"
Data / Parameter: **(as in monitoring plan of PDD):**	Number of households (biogas system) in the project activity in operational per year (N_{HH})
Unit	Number
Measuring frequency/Time Interval:	At least once in every two years.
Reported value	11,085
Verified Source of Data	Value obtained from Project Proponent's project database and monitoring survey of samples /09/. VVB has followed the CDM standard i.e. Sampling and surveys for CDM project activities and programmes of activities version 09 for performing the acceptance sampling. Applying paragraph 39 (c) of the sampling standard, version 09, a sample size of 11 households was chosen (with no discrepant records). A sample size of 11 was determined, based on an AQL of 0.5% and UQL of 20%; producer risk and consumer risk of 10 % each in determining the VVBs sample size. VVB has interviewed 11 samples from the monitoring survey done by Project Proponent. During the acceptance sampling process VVB has checked the operations of the biogas plant as well as interviewed the end users as well as the PP's field team. During the onsite visit VVB has physical visited and checked all the 11-biogas plant and found that all the biogas plants were fully operational. Further, during the interviews with the end users as well as the PP's field team it is found that the plants are operational. VVB has checked the technical life of the biogas digester, and it is around 20 year and in line with PDD. As this is only the 4th year of operation compared to its technical lifetime, the operational rate seems acceptable.
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Assessment of details of monitoring equipment, its specification and calibration as per the requirements of registered PDD:	NA
Does the data management (from data generation to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions	Yes, the data management ensures correct transfer of data and reporting of emission reductions and all necessary QA/QC processes are in place.

and are necessary QA/QC processes in place?	
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	NA

Monitoring Parameter Requirement	Assessment/ Observation by the VVB
Relevant SDG Indicator	SDG 08
Data / Parameter: (as in monitoring plan of PDD):	Unemployment rate, by sex, age and persons with disabilities
Unit	Number
Measuring frequency/Time Interval:	Annual
Reported value	2
Verified Source of Data	Value obtained from records of training programme /04/
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Assessment of details of monitoring equipment, its specification and calibration as per the requirements of registered PDD:	NA
Does 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. VVB has cross verified the training provided to the local technical staff related to the operation and maintenance/04/. PD has conducted 2 trainings during the monitoring period to improve the skills of the local technicians, to improve the quality of the monitoring activities. VVB has assessed the training records including the topics covered during the training activity. /04/. The same is also confirmed during the onsite interviews with the local technical staff/04/.
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	NA

Monitoring Parameter Requirement	Assessment/ Observation by the VVB
Relevant SDG Indicator	SDG 08
Data / Parameter:	Quantitative employment and income generation (8.5.2)

(as in monitoring plan of PDD):	
Unit	Number
Measuring frequency/Time Interval:	Annual
Reported value	10 (permanent)
Verified Source of Data	Value obtained from employment records /11/
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Assessment of details of monitoring equipment, its specification and calibration as per the requirements of registered PDD:	NA
Does 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. VVB has checked the employment records and found that a total of 10 permanent employment is created. Further, VVB has crosschecked the salary slips paid to the employees/11/. VVB during the onsite interview
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	NA

Monitoring Parameter Requirement	**Assessment/ Observation by the VVB**
Relevant SDG Indicator	SDG 7
Data / Parameter: (as in monitoring plan of PDD):	Access to affordable and clean energy services (7.1.2)
Unit	Number
Measuring frequency/Time Interval:	At least once in two years
Reported value	11,085
Verified Source of Data	Value obtained from Biogas user survey /09/
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Assessment of details of monitoring equipment, its specification and calibration as per the requirements of registered PDD:	NA
Does 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

In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	NA

Monitoring Parameter Requirement	**Assessment/ Observation by the VVB**
Relevant SDG Indicator	SDG 3
Data / Parameter: **(as in monitoring plan of PDD):**	Improvement in health and decrease in illness (3.9.1)
Unit	Number
Measuring frequency/Time Interval:	At least once in two years
Reported value	11,085
Verified Source of Data	Value obtained from Biogas user survey /09/.
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Assessment of details of monitoring equipment, its specification and calibration as per the requirements of registered PDD:	NA
Does 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
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	NA