Verification report form for GS4GG Programme of Activity (Gold Standard for the Global Goals)

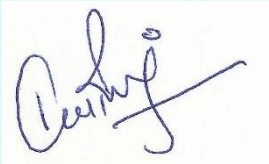
BASIC INFORMATION		
Title of the GS4GG Programme of Activity (PoA)	PoA GS ID: 11450 MicroEnergy Credits – Microfinance for Clean Energy Product Lines – India	
Reference number of the Programmes of Activity (PoA)	GS 11450	
Version number of the verification and certification report	2.0	
Completion date of the verification and certification report	06/10/2023	
GS ID (s) of VPAs under PoA	**VPA Ref. no.**	**Title**
	GS 11474	GS11450 - MicroEnergy Credits – Microfinance for Clean Energy Product Lines – India - MicroEnergy Credits PoA – CPA 02-GS11474
	GS 11475	GS11450 - MicroEnergy Credits – Microfinance for Clean Energy Product Lines – India - MicroEnergy Credits PoA – CPA 03-GS11475
	GS 11476	GS11450 - MicroEnergy Credits – Microfinance for Clean Energy Product Lines – India - MicroEnergy Credits PoA – CPA 04-GS11476
	GS 11477	GS11450 - MicroEnergy Credits – Microfinance for Clean Energy Product Lines – India - MicroEnergy Credits PoA – CPA 07-GS11477
	GS 11481	GS11450 - MicroEnergy Credits – Microfinance for Clean Energy Product Lines – India - MicroEnergy Credits PoA – CPA 11-GS11481
Version number of the monitoring report to which this report applies	2.0	
Completion date of the monitoring	06/08/2023	

report to which this report applies	
Monitoring period no. and duration	2ND VPA 02 - 01/01/2022 to 31/12/2022 (including both days) CP2 – 27/-2/2020 to 26/02/2025 VPA 03 - 01/01/2022 to 31/12/2022 (including both days) CP2 – 20/03/2020 to 19/03/2025 VPA 04 - 01/01/2022 to 31/12/2022 (including both days) CP2 – 20/03/2020 to 19/03/2025 VPA 07 - 01/01/2022 to 31/12/2022 (including both days) CP2 – 01/05/2020 to 30/04/2025 VPA 11 - 01/01/2022 to 31/12/2022 (including both days) CP2 – 07/12/2021 to 06/12/2026
VPA Implementer(s)	Micro Energy Credits Corporation Private Limited
Host Party	India
Applied methodologies and standardized baselines	AMS–III.AR "Substituting fossil fuel based lighting with LED/CFL lighting systems" Version 07. Technologies and Practices to Displace Decentralized Thermal Energy Consumption (TPDDTEC), version 03.1.
Activity requirements applied	☒ Community Services Activities ☐Renewable Energy Activities ☐ Land Use and Forestry Activities/Risks & Capacities ☐ N/A
Product Requirements applied	☒ GHG Emissions Reduction & Sequestration ☐ Renewable Energy Label ☐ N/A
Estimated amount of annual average GHG emission reductions	ICS: Year: 2022 VPA 02 – 96,840 tCO_2e VPA 03 – 42,625 tCO_2e VPA 04- 54,210 tCO_2e VPA 07 – 82,791 tCO_2e VPA 011 – 45,940 tCO_2e

	SLS: Year: 2022 VPA 02 – 13,376 tCO_2e VPA 03 – 7,948 tCO_2e VPA 04- 5,183 tCO_2e VPA 07 – 11,677 tCO_2e VPA 011 – 22,318 tCO_2e

Sustainable Development Goals Targeted	SDG Impact	Total amount of certified SDG impact (as per approved methodology) achieved in this monitoring period		Units/Products
		Estimated	Achieved	
SDG 13: Climate Action	Number of VER's (ICS)	VPA 2 96,840 VPA 3 42,625 VPA 4 54,210 VPA 7 82,791 VPA 11 45,940	VPA 2 31,236 VPA 3 25,745 VPA 4 41,509 VPA 7 43,664 VPA 11 21,605	tCO_2e VERs
	Number of VER's (SLS)	VPA 2 13,376 VPA 3 7,948 VPA 4 5,183 VPA 7 11,677 VPA 11 22,318	VPA 2 5,875 VPA 3 6,278 VPA 4 1,587 VPA 7 8,534 VPA 11 12,415	tCO_2e VERs
SDG 7: Affordable and Clean Energy	Number of beneficiaries (ICS)	VPA 2 29,678 VPA 3 16,048 VPA 4 26,943 VPA 7 25,646 VPA 11 12,798	VPA 2 16,357 VPA 3 9,600 VPA 4 16,821 VPA 7 16008 VPA 11 8,474	Number of ICS
	Number of beneficiaries (SLS)	VPA 2 121,676 VPA 3 79,849 VPA 4 19,794 VPA 7 46,822 VPA 11 242,588	VPA 2 94273 VPA 3 63,562 VPA 4 8376 VPA 7 35061 VPA 11 179,952	Number of SLS

SDG 8: Decent Work and Economic Growth	Total number of jobs created	VPA 2–20 VPA 3–20 VPA 4–20 VPA 7–20 VPA 11–20	VPA 2–23 VPA 3–43 VPA 4–30 VPA 7–60 VPA 11–48	Number of Jobs

Name and UNFCCC reference number of the VVB	Earthood Services Private Limited E-0066
Name, position and signature of the approver of the verification report	 Dr. Kaviraj Singh Managing Director

SECTION A. Executive summary

The GS programme of activity "MicroEnergy Credits – Microfinance for Clean Energy Product Lines - India" (PoA GS 11450) aims to replacement of fossil fuel consumption and the resultant GHG emission with a clear and sustainable technology which will lead to reduced GHG emissions. CME archives this through dissemination of improved cookstove (ICS), Solar lighting systems (SLS) and Water Purification System (WPS) in households/facilities of rural areas in various states of India. The PoA is using carbon finance to support local partners engaged in different activities like production, distribution, and maintenance of various product technologies like ICS, SLS and WPS. The VPAs main target is on reduction of greenhouse gas emissions from the burning of non-renewable woody biomass and/or charcoal for cooking and boiling of water for drinking purpose. Improved Cookstoves (ICS) improve heat transfer efficiency as compared to the baseline conventional there stone fired stoves, and thereby reducing GHG emissions, the water purification systems also reduce the dependency of boiling water using non-renewable woody biomass, thereby reducing the GHG emissions from the burning of non-renewable woody biomass and/or charcoal for treating the water, and solar lighting systems results in fulfilment of lighting needs through a renewable source (solar energy), thus replacing the baseline scenario with the project activity will lead to reduction in GHG emissions and fulfilling the requirements of the applied methodologies AMS-III.AR "Substituting fossil fuel-based lighting with LED/CFL lighting systems" version 07/10/ and TPDDTEC Version 3.1/08/ respectively.

The VPAs (VPA 2 , VPA 3, VPA 4, VPA 7, VPA 11) which is a part of this verification report includes dissemination of SLS and ICS and does not include implementation of WPS.

The VPA's are being submitted to GS4GG for Verification are as follows:

Parameter	Validated information
GS ID of the VPAs to be included	GS11474 (VPA 02), GS11475 (VPA 03), GS11476 (VPA 04), GS11477(VPA 07), GS11481 (VPA 11)
Title of the VPAs	• GS11450 - MicroEnergy Credits – Microfinance for Clean Energy Product lines – India - MicroEnergy Credits PoA – CPA 02 – GS11474. • GS11450 - MicroEnergy Credits – Microfinance for Clean Energy Product Lines – India - MicroEnergy Credits PoA – CPA 03 - GS11475 • GS11450 - MicroEnergy Credits – Microfinance for Clean Energy Product Lines – India - MicroEnergy Credits PoA – CPA 04- GS11476 • GS11450 - MicroEnergy Credits – Microfinance for Clean Energy Product Lines – India - MicroEnergy Credits PoA – CPA 07- GS11477 • GS11450 - MicroEnergy Credits – Microfinance for Clean Energy Product Lines – India - MicroEnergy Credits PoA – CPA 11- GS11481
Methodology applied	• AMS-III.AR "Substituting fossil fuel-based lighting with LED/CFL lighting systems" version 07 • Technologies and Practices to Displace Decentralized Thermal Energy Consumption (TPDDTEC), version 03.1.

Crediting period	5 years, Renewable twice, total 15 years of crediting period. Currently in **2nd** CP For VPA 02: CP1: 27/02/2015 to 26/02/2020 CP2: 27/02/2020 to 26/02/2025 For VPA 03: CP1: 20/03/2015 to 19/03/2020 CP2: 20/03/2020 to 19/03/2025 For VPA 04: CP1: 20/03/2015 to 19/03/2020 CP2: 20/03/2020 to 19/03/2025 For VPA 07: CP1: 01/05/2015 to 30/04/2020 CP2: 01/05/2020 to 30/04/2025 For VPA 11: CP1: 07/12/2016 to 06/12/2021 CP2: 07/12/2021 to 06/12/2026

The VPAs aim at dissemination of improved cookstove and solar lighting system in various states of India /02/ and is being implemented by MicroEnergy Credits Corporation Private Limited's (PO) and coordinated by MicroEnergy Credits Corporation Private Limited (MEC). The VPA's aims at GHG emission reductions through displacement of fossil fuel use with improved cookstove and solar lighting systems (ICS and SLS) to meet the thermal and electric demands of facility/household. The households in rural areas of India traditionally use fossil fuels which includes charcoal, kerosene, LPG, diesel, wood, and coal intensive grid for fulfilling their energy demands. The baseline scenario under the VPA's is the replacement of traditional three stone fired cookstove with the improved cookstove thereby reducing the amount of fuelwood used for cooking purposes in the baseline. Also, the distribution of solar lighting systems replaces the kerosene-based lamps in households, which would have resulted in GHG emissions due to burning of kerosene.

The PoA has been registered under GS4GG (GSID 11450). The CME of the PoA is Micro Energy Credits Corporation Private Limited and with the help of local partners & the VPAs Implementer. The improved cookstove are implemented by Shri Kshetra Dharmasthala Rural Development Project (SKDRDP) 1 , Cedar (formerly ESAF) and Canara. Solar lighting system are implemented by SKDRDP, ESAF, Muthoot, Sarala Women Welfare Society (Sarala).

The Monitoring period covered under this verification is 01/01/2022 – 31/12/2022 (inclusive of both the dates) for all the (VPA 02, VPA 03, VPA 04, VPA 07, VPA 11). All the VPAs i.e., GS 11474 (VPA 02), GS 11475 (VPA 03), GS 11476 (VPA 04), GS11477 (VPA 07), GS11481 (VPA 11) /02/ envisage an archived annual GHG emission reduction and other SDG impacts over the crediting period as given in the table below.

[1] http://www.pciaonline.org/sierra-club

[1] skdrdpindia.org

Sustainable Development Goals Targeted	SDG Impact	Amount Achieved	Units/ Products
13 Climate Action (mandatory)	Number of VERs (ICS)	VPA02– 31,236 VPA03– 25,745 VPA04-41,509 VPA07-43,664 VPA11-21,605	tCO_2e VERs
13 Climate Action (mandatory)	Number of VERs (SLS)	VPA02– 5,875 VPA03– 6,278 VPA04-1,587 VPA07-8,534 VPA11-12,415	tCO_2e VERs
7 Affordable and Clean Energy	Number of beneficiaries (ICS)	VPA 02–16,357 VPA 03–9,600 VPA04-16,821 VPA07-16008 VPA11-8,474	Number
7 Affordable and Clean Energy	Number of beneficiaries (SLS)	VPA 02– 94273 VPA 03– 63,562 VPA04-8376 VPA07-35061 VPA11-179,952	Number
8 Decent Work and Economic Growth	Quantitative Employment and income generation	VPA 02– 23 VPA 03– 43 VPA04- 30 VPA07- 60 VPA11- 48	Number

Scope of Verification

The verification is an independent and objective review for determination of the monitored reductions in GHG emissions by the VVB. The verification includes the implementation and operation of the PoA as set out in the registered PoA-DD/01/ & VPA-DDs/02/ for VPAs 02, 03, 04,07 and 11 in the monitoring period.

The verification tests the data and assertions set out in the monitoring report prepared for this monitoring period, and it is based on the review of the following:

(i) The approved methodology AMS-III.AR "Substituting fossil fuel based lighting with LED/CFL lighting systems" version 07/10/.
(ii) The approved methodology TPDDTEC – "Technologies and Practices to Displace Decentralized Thermal Energy Consumptions, Version 3.1 /08/
(iii) The registered PoA-DD/01/ & registered VPA-DDs/02/ and monitoring plan/02/
(iv) UNFCCC criteria referred to in the Kyoto Protocol criteria and the CDM modalities and procedures as agreed in the Bonn Agreement and the Marrakech Accords
(v) GS4GG requirements
(vi) The CDM Validation and Verification Standard (VVS) version 3.0/24/ and The CDM Project Standard (PS) version 3.0/23/
(vii) Relevant decisions, guidance, and clarifications of the CMP and CDM Executive Board and any other information and references relevant to the project activity's reported emission reductions
(viii) GS review of validation of PoA and VPAs

The verification has considered both the quantitative and qualitative aspects on stated/reported emission reductions. The monitoring report (all versions) and corresponding supporting documentation was assessed in accordance with the rules defined by UNFCCC and GS4GG, as appropriate to the PoA. The verification is not meant to provide any consulting or recommendations to the CME/others. However, stated requests for clarifications and/or corrective actions may provide input for improvement of the monitoring activities.

Verification Process
The verification process is conducted as per internal GS4GG Requirements, which includes the following steps;

a) Contract with CME and appointment of verification team and technical review team (refer Section B.1 and B.2 of this report)
b) Desk review (refer Section D.1 of this report) of Monitoring Report and corresponding ER sheet by verification team and remote audit (including sampling approach (refer Section D.4 of this report) to be applied)
c) Onsite audit (refer Section D.2 of this report) by verification team consistent of Team Leader and all Technical Experts, as a minimum
d) Follow up activities e.g., interviews (refer Section D.3 of this report)
e) Reporting and closure of findings (CARs/CLs/FARs) and preparation of draft verification report (refer Section D.5 of this report)
f) Independent technical review (refer Section B.2 of this report) of the draft verification report and final/revised documentation (e.g., Monitoring Report, corresponding ER sheet and evidences)
g) Reporting and closure of TR comments/findings (refer Section D.5 of this report) (CARs/CLs/FARs) and final approval for the decision made (refer Section G and H of this report).
h) Issuance of final verification report to contracted CME (or authorized representatives) and submission of request for issuance, as appropriate.

Verification Conclusion
The review of the monitoring report, supporting documentation and subsequent follow up actions have provided ESPL with sufficient evidence to determine the fulfilment of stated criteria. Earthood is of the opinion that the PoA "MicroEnergy Credits – Microfinance for Clean Energy Product Lines - India" (GS ID: 11450) meets all the GS requirements and has correctly applied the GS approved methodologies AMS-III.AR "Substituting fossil fuel based lighting with LED/CFL lighting systems" version 07/10/ and TPDDTEC Version 3.1/08/ respectively.

The GHG emission reductions were calculated correctly based on the approved methodologies AMS-III.AR "Substituting fossil fuel based lighting with LED/CFL lighting systems" version 07/10/, TPDDTEC Version 3.1/08/ and and the monitoring plan contained in the registered PoA-DD/01/ and VPA-DDs /02/.
Earthood Services Private Limited can certify that the emission reductions achieved in the monitoring period 01/01/2022 – 31/12/2022 for the (VPA 02, VPA 03, VPA 04, VPA 07, VPA

11) by GS PoA "MicroEnergy Credits – Microfinance for Clean Energy Product Lines - India" (GSID: 11450) amount to 37,111 tCO_2e for under VPA 02 , 32,023 tCO_2e for under VPA 03, 43,096 tCO_2e for under VPA 04, 52,198 tCO_2e for under VPA 07 and 34,020 tCO_2e under VPA 11.Therefore, this is being submitted for request for issuance, as per GS4GG and UNFCCC procedures.

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*	Interview(s)	Verification findings
1.	Team Leader	IR	Panicker	Vishnu	Central Office	Y	Y	Y	Y
2.	GS approved auditor	IR	Kalita	Jahnabi	Central office	Y	Y	Y	Y
3.	Technical Expert (TA 1.2, 3.1)	IR	Panicker	Vishnu	Central Office	Y	Y	Y	Y
4.	Local Expert	IR	Panicker	Vishnu	Central Office	Y	Y	Y	Y
5.	Verifier	IR	Kalita	Jahnabi	Central office	Y	Y	Y	Y
6.	Verifier	IR	Patwal	Charu	Central office	Y	Y	Y	Y
7.	Verifier (old)	IR	Jain	Arohi	Central office	N	Y	Y	N
8.	Trainee (Verifier)	IR	Sengupta	Akanksha	Central office	Y	Y	Y	Y
9.	Trainee (Verifier)	IR	Singh	Aayukta	Central office	N	Y	Y	N
10.	Trainee (Verifier)	IR	Suhag	Deepika	Central office	N	Y	Y	N
11.	Trainee (Verifier)	IR	Karfa	Diyotima	Central office	N	Y	Y	N
12.	Trainee (Verifier)	IR	Sarkar	Rahi	Central office	N	Y	Y	N

*On – site and remote interviews have been conducted for the current validation and the same has been discussed in detail in section D.2 of the report.

The team composition for the verification with their roles is included in table mentioned above.

B.2. Technical reviewer and approver of the verification 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 and TA expert	IR	Singh	Kaviraj	Central Office

	(TA 1.2) to TR				
2.	Approver	IR	Singh	Kaviraj	Central Office

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.	Erroneous transfer of information from documented records (sales receipt, carbon transfer form etc.) to credit tracker platform	Low	POs contracted by CME enters the details in credit tracker platform at the time of installation. POs also conduct an internal check to verify the accuracy of data entry.	On a sampling basis, the records are checked with the information from the credit tracker platform and substantiated by questions asked during the remote surveys of end-users. The familiarity of PO representatives with the tracker platform is also checked.
2.	Erroneous consideration of technical specifications of CEPs (especially for solar CEPs)	Low	The technical specifications are provided by the manufacturer.	Technical specifications of each CEP model are checked against the document issued by the manufacturer.
3.	Observational error by monitoring survey staff of CME/CPA implementer while recording the responses of users in relation to survey parameters	Low	Other than monitoring surveys, the CEP usage status-check surveys are also conducted regularly for distributed CEP. Therefore, risk of error is low. However, if there are discrepancies, they are to be dealt with as per the acceptance sampling approach.	If the aggregated materiality threshold stays within the prescribed materiality threshold, no additional effort is required. However, if the aggregated materiality threshold is above the prescribed threshold, additional samples are to be inspected. If additional sampling is not able to reduce the materiality threshold to a reasonable level of assurance, the monitoring result by the CME for that parameter is to be discarded.
4.	Calculation and referencing errors in ER sheet	Low	The ER calculations are cross-checked by using two different methods of calculation and comparing the results, therefore	All calculations and referencing will be checked by verification team with respect to applicable requirements under

			occurrence of error is less likely. However, referencing errors within the ER sheet may occur.	various documents viz., methodology, PoA DD, CPA DD etc.

C.2. Consideration of materiality in conducting the verification

In accordance with CDM VVS for PoAs, Version 03.0/24/ the prescribed thresholds for materiality for CDM PoAs are as under;
The applicable materiality threshold is 5.0% as PoA comprises Small-scale VPAs

Particulars / Monitoring Report	**MR Version (Initial)**	**MR Version (Revised/Final)**
Emission Reductions Achieved (tCO2e) in this monitoring period	VPA 03 – 32,023	32,023
Applicable Threshold (%) as per CDM VVS for PoAs Version 03.0	5.0%	5.0%

Particulars / Monitoring Report	**MR Version (Initial)**	**MR Version (Revised/Final)**
Emission Reductions Achieved (tCO2e) in this monitoring period	VPA 11 – 34,020	34,020
Applicable Threshold (%) as per CDM VVS for PoAs Version 03.0	5.0%	5.0%

The applicable materiality threshold is 2.0% as PoA comprises Large-scale VPAs

Particulars / Monitoring Report	**MR Version (Initial)**	**MR Version (Revised/Final)**
Emission Reductions Achieved (tCO2e) in this monitoring period	VPA 02 – 37111	37,111
Applicable Threshold (%) as per CDM VVS for PoAs Version 03.0	2.0%	2.0%

Particulars / Monitoring Report	**MR Version (Initial)**	**MR Version (Revised/Final)**
Emission Reductions Achieved (tCO2e) in this monitoring period	VPA 04 – 43,096	43,096
Applicable Threshold (%) as per CDM VVS for PoAs Version 03.0	2.0%	2.0%

Particulars / Monitoring Report	**MR Version (Initial)**	**MR Version (Revised/Final)**
Emission Reductions Achieved (tCO2e) in this monitoring period	VPA 07 – 52,198	52,198
Applicable Threshold (%) as per CDM VVS for PoAs Version 03.0	2.0%	2.0%

During the assessment all findings were closed and from the sample selected for verification, no systemic or systematic material errors were identified which would have an impact on total emission reductions from the entire population.

SECTION D. Means of verification

D.1. Desk/document review

The verification of the information of the PoA was performed through the document review including review of monitoring report /40/ version 3.0 dated 18/03/2023. Additionally, cross checks were performed for information provided in the monitoring report using other source of information, the verification team's sectoral or local expertise and, if necessary, independent background investigations.

The desk review involves:

- A review of the data and information presented to verify their completeness.
- A review of the monitoring plan, the monitoring methodologies including applicable tool(s) and, where applicable, the applied standardized baseline, paying attention to the frequency of measurements, the quality of metering equipment including calibration requirements, and the quality assurance and quality control procedures.
- A review of calculations and assumptions made in determining the GHG data and emission reductions.
- An evaluation of data management and the quality assurance and quality control system in the context of their influence on the generation and reporting of emission reductions.

The list of documents reviewed during the verification is provided under appendix 3 of this report.

D.2. On-site inspection

Duration of on-site inspection: 08/02/2023- 08/09/2023				
No.	**Activity performed on-site**	**Site location**	**Date**	**Team member**
1.	Physical site visit: Households visited (implementation of PoA)	Kerala, Tamil Nadu, Karnataka, Maharashtra	08/02/2023-08/09/2023	Vishnu Panicker, Akanksha Sengupta, Charu Patwal, Arohi Jain, Deepika Suhag, Jahnabi Kalita, Diyotima Karfa, Aayukta Singh
2.	Review of information flows for generating, aggregating and reporting the monitoring parameters	Kerala, Tamil Nadu, Karnataka, Maharashtra		
3.	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;	Kerala, Tamil Nadu, Karnataka, Maharashtra,		
4.	A check of the monitoring equipment including calibration performance and observations of monitoring practices against the applicable requirements	Kerala, Tamil Nadu, Karnataka, Maharashtra,		
5.	Identification of quality control and quality assurance procedures in	Kerala, Tamil Nadu, Karnataka,		

	place to prevent or identify and correct any errors or omissions in the reported monitoring parameters	Maharashtra		

D.3. Interviews

D.3.1. Interviews with CME and VPA Implementers

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1	Swamy	Kumar	MEC India	08/02/2023 - 08/09/2023	VPA DD description, Monitoring parameters, Project boundary, Ex-ante and Ex-post parameters	Vishnu Panicker and Akanksha Sengupta, Charu Patwal, Arohi Jain, Deepika Suhag, Jahnabi Kalita, Diyotima Karfa, Aayukta Singh
2	Kunjan	Pritu	MEC India		VPA DD description, Monitoring parameters, Project boundary, Ex-ante and Ex-post parameters	
3	Mehta	Parikshit	MEC India		VPA DD description, Monitoring parameters, Project boundary, Ex-ante and Ex-post parameters	
4	Parmar	Dilkhush	MEC India		VPA DD description, Monitoring parameters, Project boundary, Ex-ante and Ex-post parameters	
5.	Darshana	Chauhan	MEC India		VPA DD description, Monitoring parameters, Project boundary, Ex-ante and Ex-post parameters	
ICS End- User for VPA 02						
1	Basheer	Suharaby	ICS End user	18/04/2023	VVB Project Survey	Charu Patwal
2	Jomon	Kavitha	ICS End user	18/04/2023	VVB Project Survey	Charu Patwal
3	Raju	Reji	ICS End user	18/04/2023	VVB Project Survey	Charu Patwal
4	Thoma	Mary	ICS End	18/04/2023	VVB Project	Charu Patwal

			user		Survey	
5	Viswanathan	Sani	ICS End user	18/04/2023	VVB Project Survey	Charu Patwal
6	Unnikrishnan	Sarasa	ICS End user	18/04/2023	VVB Project Survey	Charu Patwal
7	Shakaran	Thankamani	ICS End user	18/04/2023	VVB Project Survey	Charu Patwal
8	Aneesh	Sheeja	ICS End user	18/04/2023	VVB Project Survey	Charu Patwal
9	Sreekumar	Beena	ICS End user	18/04/2023	VVB Project Survey	Charu Patwal
10	Majeed	Laila	ICS End user	18/04/2023	VVB Project Survey	Charu Patwal
11	Subair	Misriya	ICS End user	18/04/2023	VVB Project Survey	Charu Patwal
ICS End- User for VPA 03						
1	Davis	Elsy	ICS End user	19/04/2023	VVB Project Survey	Vishnu Panicker
2	Balan	Mallika	ICS End user	19/04/2023	VVB Project Survey	Vishnu Panicker
3	Rajesh	Sheeba	ICS End user	19/04/2023	VVB Project Survey	Vishnu Panicker
4	Subramanyan	Smitha	ICS End user	19/04/2023	VVB Project Survey	Vishnu Panicker
5	Krishnankutty	Nirmala devi	ICS End user	19/04/2023	VVB Project Survey	Vishnu Panicker
6	Suresh	Valsala	ICS End user	19/04/2023	VVB Project Survey	Vishnu Panicker
7	Selvaraj	Midhuna	ICS End user	19/04/2023	VVB Project Survey	Vishnu Panicker
8	Anilkumar	Sajitha	ICS End user	19/04/2023	VVB Project Survey	Vishnu Panicker
9	Murugan	Sindhu Murugan	ICS End user	19/04/2023	VVB Project Survey	Vishnu Panicker
10	-	Suma A	ICS End user	19/04/2023	VVB Project Survey	Vishnu Panicker
11	Boss	Sheeba Boss	ICS End user	19/04/2023	VVB Project Survey	Vishnu Panicker
ICS End- User for VPA 04						
1	-	Rekaha	ICS End User	14/03/2023	VVB Project Survey	Aayukta Singh
2	Amma	Kalayan	ICS End User	14/03/2023	VVB Project Survey	Aayukta Singh
3	G.R	Renukamma	ICS End User	14/03/2023	VVB Project Survey	Aayukta Singh
4	-	Kamalamma	ICS End User	14/03/2023	VVB Project Survey	Aayukta Singh
5	R	Sakamma (Savithramma)	ICS End User	14/03/2023	VVB Project Survey	Aayukta Singh
6	-	Sudha	ICS End User	14/03/2023	VVB Project Survey	Aayukta Singh
7	-	Geetha	ICS End User	14/03/2023	VVB Project Survey	Aayukta Singh
8	-	Hemava	ICS End	14/03/2023	VVB Project	Aayukta Singh

		thi	User		Survey	
9	-	Saroja Bayi	ICS End User	14/03/2023	VVB Project Survey	Aayukta Singh
10	-	Neelabayi	ICS End User	14/03/2023	VVB Project Survey	Aayukta Singh
11	-	Rukmini Bai	ICS End User	14/03/2023	VVB Project Survey	Aayukta Singh
ICS End- User for VPA 07						
1	-	Nirmala	ICS End User	15/03/2023	VVB Project Survey	Aayukta Singh
2	-	Bharathi	SLS End User	15/03/2023	VVB Project Survey	Aayukta Singh
3	-	Shushilamma	ICS End User	15/03/2023	VVB Project Survey	Aayukta Singh
4	-	Vimala	ICS End User	15/03/2023	VVB Project Survey	Aayukta Singh
5	-	Syavamma	ICS End User	15/03/2023	VVB Project Survey	Aayukta Singh
6	-	Kenchamma	ICS End User	15/03/2023	VVB Project Survey	Aayukta Singh
7	-	Kallamma	ICS End User	15/03/2023	VVB Project Survey	Aayukta Singh
8	-	Dakshayanamma	ICS End User	15/03/2023	VVB Project Survey	Aayukta Singh
9	-	N Pushpanjali	ICS End User	15/03/2023	VVB Project Survey	Aayukta Singh
10	-	Bharathi	ICS End User	15/03/2023	VVB Project Survey	Aayukta Singh
11	-	Umadevi K N	ICS End User	15/03/2023	VVB Project Survey	Aayukta Singh
ICS End- User for VPA 11- RSV						
1	Khalbande	Vandana	ICS End User	26/06/2023	VVB Project Survey	Akanksha Sengupta
2	Khalbande	Archana	ICS End User	26/06/2023	VVB Project Survey	Akanksha Sengupta
3	Shinde	Anita	ICS End User	26/06/2023	VVB Project Survey	Akanksha Sengupta
4	Kamble	Mangala	ICS End User	26/06/2023	VVB Project Survey	Akanksha Sengupta
5	Dhakde	Shiela	ICS End User	26/06/2023	VVB Project Survey	Akanksha Sengupta
6	Devendra Meshram	Rachna	ICS End User	26/06/2023	VVB Project Survey	Akanksha Sengupta
7	Moundekar	Uma	ICS End User	26/06/2023	VVB Project Survey	Akanksha Sengupta
8	Telghare	Lakshmi	ICS End User	26/06/2023	VVB Project Survey	Akanksha Sengupta
9	Telghare	Vitabhai	ICS End User	26/06/2023	VVB Project Survey	Akanksha Sengupta
10	Yelamwar	Mona	ICS End User	26/06/2023	VVB Project Survey	Akanksha Sengupta
11	Janbandhu	Parmila	ICS End User	26/06/2023	VVB Project Survey	Akanksha Sengupta
12	Gadaling	Madhuree	ICS End Use	26/06/2023	VVB Projet Survey	Akanksha Sengupta
13	Dongre	Manora	ICS End	26/06/2023	VVB Project	Akanksha

		ma	User		Survey	Sengupta
SLS End- User for VPA 02						
1	PV	Rajitha	SLS End user	18/04/2022	VVB Project Survey	Rahi Sarkar
2	Chandran	Prabha	SLS End user	18/04/2022	VVB Project Survey	Rahi Sarkar
3	Vasu	Danlakshmi	SLS End user	18/04/2022	VVB Project Survey	Rahi Sarkar
4	Radhakrishnan	Suchithra	SLS End user	18/04/2022	VVB Project Survey	Rahi Sarkar
5	C Sivan	Devi	SLS End user	18/04/2022	VVB Project Survey	Rahi Sarkar
6	C	Ajitha	SLS End user	18/04/2022	VVB Project Survey	Rahi Sarkar
7	Muhammedali	Ramlabibi	SLS End user	18/04/2022	VVB Project Survey	Rahi Sarkar
8	Narayanan	Vanaja	SLS End user	18/04/2022	VVB Project Survey	Rahi Sarkar
9	Hakkeem	Jasmin	SLS End user	18/04/2022	VVB Project Survey	Rahi Sarkar
10	Raman	Radhika	SLS End user	18/04/2022	VVB Project Survey	Rahi Sarkar
11	V	Vasantha	SLS End user	18/04/2022	VVB Project Survey	Rahi Sarkar
SLS End- User for VPA 03						
1	-	Sathya M	SLS End user	09/02/2023	VVB Project Survey	Jahnabi Kalita
2	-	Roshlin R	SLS End user	09/02/2023	VVB Project Survey	Jahnabi Kalita
3	Maheshwari	Uma	SlS End user	09/02/2023	VVB Project Survey	Jahnabi Kalita
4	M	Magalakshmi	SLS End user	09/02/2023	VVB Project Survey	Jahnabi Kalita
5	-	Patchiammal	SLS End user	09/02/2023	VVB Project Survey	Jahnabi Kalita
6	K	Samuthiravalli K	SlS End user	09/02/2023	VVB Project Survey	Jahnabi Kalita
7	Marimuthu	Selvi	SLS End user	09/02/2023	VVB Project Survey	Jahnabi Kalita
8	Devi A	Kanchana	SLS End user	09/02/2023	VVB Project Survey	Jahnabi Kalita
9	K	Kaleeswari K	SlS End user	09/02/2023	VVB Project Survey	Jahnabi Kalita
10	R	Mahalakshmi R	SLS End user	09/02/2023	VVB Project Survey	Jahnabi Kalita
11	A	Mareeswari A	SLS End user	09/02/2023	VVB Project Survey	Jahnabi Kalita
SLS End- User For VPA 04						
1	-	Palakshappa	SLS End User	15/03/2024	VVB Project Survey	Arohi Jain
2	-	Shaila	SLS End User	15/03/2024	VVB Project Survey	Arohi Jain
3	-	Hemavathi	SLS End User	15/03/2024	VVB Project Survey	Arohi Jain
4	-	Yashodha	SLS End User	15/03/2024	VVB Project Survey	Arohi Jain

5	-	Naveen	SLS End User	15/03/2024	VVB Project Survey	Arohi Jain
6	-	Nagrthanamma	SLS End User	15/03/2024	VVB Project Survey	Arohi Jain
7	-	Sk Thamaiha	SLS End User	15/03/2024	VVB Project Survey	Arohi Jain
8	-	Sp Kalappa	SLS End User	15/03/2024	VVB Project Survey	Arohi Jain
9	-	Mamatha	SLS End User	15/03/2024	VVB Project Survey	Arohi Jain
10	-	Yashodamma	SLS End User	15/03/2024	VVB Project Survey	Arohi Jain
11	-	Sakamma	SLS End User	15/03/2024	VVB Project Survey	Arohi Jain
SLS End- User for VPA 07-RSV*						
1	MS	Pradeep	SLS End User	08/09/2023	VVB Project Survey	Diyotima Karfa
2	Roopa	SR	SLS End User	08/09/2023	VVB Project Survey	Diyotima Karfa
3		Kalleshwaraswamy	SLS End User	08/09/2023	VVB Project Survey	Diyotima Karfa
4		Chandrakala	SLS End User	08/09/2023	VVB Project Survey	Diyotima Karfa
5	-	Preethi	SLS End User	08/09/2023	VVB Project Survey	Diyotima Karfa
6	MN	Savitha	SLS End User	08/09/2023	VVB Project Survey	Diyotima Karfa
7		Jayamma	SLS End User	08/09/2023	VVB Project Survey	Diyotima Karfa
8		Lakshmi	SLS End User	08/09/2023	VVB Project Survey	Diyotima Karfa
9		Pushpavathi	SLS End User	08/09/2023	VVB Project Survey	Diyotima Karfa
10	-	Mahadevamma	SLS End User	08/09/2023	VVB Project Survey	Diyotima Karfa
11	-	Pankaja	SLS End User	08/09/2023	VVB Project Survey	Diyotima Karfa
12	-	Yogeesha	SLS End User	08/09/2023	VVB Project Survey	Diyotima Karfa
13	-	Suma	SLS End User	08/09/2023	VVB Project Survey	Diyotima Karfa
SLS End- User for VPA 11						
1	-	Saranya	SLS End User	08/02/2023	VVB Project Survey	Deepika Suhag
2	-	Sakila	SLS End User	08/02/2023	VVB Project Survey	Deepika Suhag
3	-	Sharmila	SLS End User	08/02/2023	VVB Project Survey	Deepika Suhag
4	-	Gomathi	SLS End User	08/02/2023	VVB Project Survey	Deepika Suhag
5	Settu	Rajeshwari	SLS End User	08/02/2023	VVB Project Survey	Deepika Suhag
6	Chellapandi	Aruvi	SLS End User	08/02/2023	VVB Project Survey	Deepika Suhag
7		Kannaki	SLS End	08/02/2023	VVB Project	Deepika Suhag

			User		Survey	
8	-	Poongothai	SLS End User	08/02/2023	VVB Project Survey	Deepika Suhag
9	-	Santhi	SLS End User	08/02/2023	VVB Project Survey	Deepika Suhag
10	-	Tamilselvi	SLS End User	08/02/2023	VVB Project Survey	Deepika Suhag
11	-	Sankari	SLS End User	08/02/2023	VVB Project Survey	Deepika Suhag

*For VPA7- SLS and VPA 11- ICS, Remote Site Visit was conducted, hence 13 samples were taken for each.

All the end-users reported that the product is working satisfactorily, and they feel that there has been an improvement in the indoor air quality in case of ICS. All the end users also reported that they are aware of the grievance mechanism. No adverse or negative responses were received with regards the usage or convenience of use of stove.

D.4. Sampling approach

VVB's sampling plan:
In order to meet the requirements of Standard for Sampling and surveys for CDM project activities and programmes of activities /25/, the verification team applied acceptance sampling in the verification (in accordance with para 28). The verification team selected random samples of CME's sampled records, checked the acceptability (or otherwise) of the data for each such record with CME's sample records, and then based on the number of records where there is an agreement, determined if the CME's sample records meet the requirements.

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' /26/:

- The proportion of discrepancies between the CME's data and verification team's (field or onsite inspection results) data that can be considered acceptable. This is referred to as the AQL (Acceptable Quality Level): 0.5% was considered in this verification.
- The proportion of discrepancies between the CME's data and verification team's (field or onsite inspection results) data that would be considered unacceptable. This is the UQL (Unacceptable Quality Level): 20% was considered in this verification.
- The producer risk: 10% was considered.
- The consumer risk: 10% was considered.

Considering the above input values, a sample size of 11 was required as per Table (Sample size and acceptance number based on AQL, UQL, and producer and consumer risks) in the referred Standard /25/. Accordingly, the acceptance number (c) thus determined for the sample size is 0. A sample size of 11 for each technology of each VPA meets the criteria. The samples to be surveyed by assessment team were randomly selected from the list of monitored samples using the random sample generator on Microsoft excel. The audit plan and list of samples thus obtained to be surveyed by assessment team was communicated to CME via email.

Accordingly, the verification team together has verified 114 samples collectively (11 Samples for ICS for VPA 02, 03, 04 and 07 and 11 samples for SLS for VPA 02,03, 04, 11; since RSV was conducted for VPA 7-SLS and VPA 11- ICS, 13 samples each have been taken for them) during the remote survey it is observed that the sampling survey results of the CME for all the CEPs checked were consistent with VVB's survey results. The sampling method used is in line with Standard: Sampling and surveys for CDM project activities and programme of activities /23/ and Guideline: Sampling and surveys for CDM project activities and programme of activities v4.0/24/ and According to para 4.1.1 d in Site visit and Remote audit requirement

and procedures v2.0/25/ for remote audit the Sampling shall be 10% more than the Minimum required samples. In all, the verification team conducted onsite surveys for 88 households and remote surveys for 26 households."

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

Area of verification findings	No. of CL	No. of CAR	No. of FAR
General	-	-	-
Compliance of the monitoring report with the GS4GG monitoring report form	-	-	-
Remaining forward action requests from validation and/or previous verifications	-	-	-
VPAs considered for verification and covered under this report	-		-
Programme of activities	-	-	-
Compliance of the programme implementation with the registered PoA-DD	-	-	-
Implementation and operation of the management system	-	-	-
VPA Implementation	-	-	-
Compliance of the VPA implementation with the included VPA design document	-	-	-
Post-design certification changes	-	-	-
Compliance of the monitoring activities with the registered monitoring plan	-	-	-
Data and parameters fixed ex ante or at renewal of crediting period	-	-	-
Data and parameters monitored	-	-	-
Comparison of monitored parameters with last monitoring period	-	-	-
Implementation of the sampling plan	-	-	-
Assessment of data and calculations of net emission reductions or removals	-	-	-
Calculations of baseline value of each SDG Impact	-	-	-
Calculations of project value of each SDG Impact	-	-	-
Calculations of leakage GHG emissions	-	-	-
Calculations of net benefits for each SDG Impact	-	-	-
Comparison of actual GHG ER value achieved during this monitoring period with estimated value	-	-	-
Safeguarding principles	-	-	-
Stakeholder Inputs and Legal Disputes	-	-	-
Continuous input and grievance mechanism	-	-	-
Internal quality control	-	-	-
Others (editorial/ consistency)	-	-	-
Total	00	00	00

SECTION E. Verification findings

E.1. Compliance of the monitoring report with the GS4GG monitoring report form

Means of verification	The monitoring report form used is GS4GG Monitoring report template version 1.1 /04/, which is a valid version available at the time of verification. All the sections of the aforesaid form were filled as per the Monitoring report template guide version 1.1 /04/ and all the relevant details were provided in the form.

Findings	No findings were raised.
Conclusion	The monitoring report version 2. /40/ has been found to be completed using the valid version of the monitoring report form. The information provided in the monitoring report has been assessed in accordance with the GS4GG principles & requirements version 1.2/27/ and monitoring report template guide /04/.

E.2. Remaining forward action requests from validation and/or previous verifications

This is the second verification of VPAs (VPAs 02,03, 04, 07,11) under GS. The verification of the VPA is submitted for performance review. Any FAR's raised will be reflected in the next verification.

E.3. VPAs considered for verification and covered under this report

Title and GS reference number of the VPA included in the PoA as of the end of this monitoring period	Is the VPA considered for this verification? (yes/no)	Version of the VPA-DD/ PoA-DD	Confirmation that a request for issuance including the VPA has been published for the previous monitoring period (Y/N)
GS11450 - MicroEnergy Credits – Microfinance for Clean Energy Product Lines – India - MicroEnergy Credits PoA – CPA 02- GS11474.	Yes	Version 2.0/ Version 4.0	Y
GS11450 - MicroEnergy Credits – Microfinance for Clean Energy Product Lines – India - MicroEnergy Credits PoA – CPA 03- GS11475.	Yes	Version 2.0/ Version 4.0	Y
GS11450 - MicroEnergy Credits – Microfinance for Clean Energy Product Lines – India - MicroEnergy Credits PoA – CPA 04- GS11476	Yes	Version 2.0/ Version 4.0	Y
GS11450 - MicroEnergy Credits – Microfinance for Clean Energy Product Lines – India - MicroEnergy Credits PoA – CPA 07- GS11477	Yes	Version 2.0/ Version 4.0	Y
GS11450 - MicroEnergy Credits – Microfinance for Clean Energy Product Lines – India - MicroEnergy Credits PoA – CPA 11- GS11481	Yes	Version 2.0/ Version 4.0	Y

E.4. Programme of Activities

E.4.1. Compliance of the programme implementation with the registered PoA-DD

Means of verification	The PoA involves the promotion, distribution and sale of improved cook stoves (ICS), Solar lighting systems and water purifiers in India. CME has implemented the VPA's through coordination with the partner organizations (POs) and further with local/channel sellers/distributors.

The overall responsibility of implementation and operation is with CME (MEC), which was evident from the interviews conducted with CME. This is consistent with PoA DD /01/. The current verification considers 05 VPAs (VPA 02 - GS11450 - MicroEnergy Credits – Microfinance for Clean Energy Product Lines – India - MicroEnergy Credits PoA – CPA 02-GS11474 , VPA 03 - GS11450 - MicroEnergy Credits – Microfinance for Clean Energy Product Lines – India - MicroEnergy Credits PoA – CPA 03-GS11475 , GS11450 - MicroEnergy Credits – Microfinance for Clean Energy Product Lines – India - MicroEnergy Credits PoA – CPA 04-GS11476, GS11450 - MicroEnergy Credits – Microfinance for Clean Energy Product Lines – India - MicroEnergy Credits PoA – CPA 07-GS11477, GS11450 - MicroEnergy Credits – Microfinance for Clean Energy Product Lines – India - MicroEnergy Credits PoA – CPA 11-GS11481 that was put together by CME.
The implementation of the VPA's, as referenced above, is within the geographical boundary of the PoA-DD/01/, which constitutes the physical boundary as well.

The type of CEP (Clean Energy Product) models deployed under the VPAs is verified by the following:

VPA 02 – GS11474:

Type of CEP	Model	PO/ Implementer
Improved Cookstove	Grameen Greenway Smart Stove (GSSV3)	Evangelical Social Action Forum Microfinance. (ESAF)
Solar Lighting System	There are various models of Solar lighting systems distributed in VPA 02, which were all reviewed and found acceptable under the applied methodology	Evangelical Social Action Forum Microfinance. (ESAF)

VPA 03 – GS11475:

Type of CEP	Model	PO/ Implementer
Improved Cookstove	Grameen Greenway Smart Stove (GSSV3)	Evangelical Social Action Forum Microfinance. (ESAF)
Solar Lighting System	There are various models of Solar lighting systems distributed in VPA 03, which were all reviewed and found acceptable under the applied methodology	Evangelical Social Action Forum Microfinance. (ESAF) and Muthoot Microfin Ltd, (Muthoot)

VPA 04 – GS11476:

Type of CEP	Model	PO/ Implementer
Improved Cookstove	Grameen Greenway Smart Stove (GSSV3)	SKDRDP
Solar Lighting System	There are various models of Solar lighting systems distributed in VPA 04, which were all reviewed and found acceptable under the applied	SKDRDP

	methodology	

VPA 07 – GS11477:

Type of CEP	Model	PO/ Implementer
Improved Cookstove	Grameen Greenway Smart Stove (GSSV3)	SKDRDP
Solar Lighting System	There are various models of Solar lighting systems distributed in VPA 07, which were all reviewed and found acceptable under the applied methodology	Evangelical Social Action Forum Microfinance. (ESAF)

VPA 11 – GS11481:

Type of CEP	Model	PO/ Implementer
Improved Cookstove	Grameen Greenway Smart Stove (GSSV3)	SKDRDP, Bandhan
Solar Lighting System	There are various models of Solar lighting systems distributed in VPA 11, which were all reviewed and found acceptable under the applied methodology	Evangelical Social Action Forum Microfinance. (ESAF)

The Improved Cook stove model implemented under the PoA includes Grameen Greenway Smart Stove (GSSV3) and Grameen Greenway Jumbo Stove (GJS), among other models. These ICS are high efficiency cook stoves designed as an eco-friendly and modern replacement for traditional mud & stone stoves and delivers convenient cooking without any requirement of fuel processing or change in cooking habits thus solving the health, environment and fuel collection effort required for operating traditional stoves.

Solar lighting systems implemented under the PoA are renewable energy-based LED/CFL lighting systems. Through the introduction of LED/CFL-based lighting systems the project activity is replacing portable fossil fuel-based lamps.

Water purification system disseminated under the PoA include various models. The water purifiers remove harmful viruses, bacteria, parasites, pesticides and physical impurities, giving water which is as safe as boiled water. The water purification systems disseminated in this PoA do not require electricity or continuous tap water and hence, there is no plumbing required. However, it is to be noted that no water purification systems are disseminated under verified VPAs.

Technical specification of each type of CEP models are verified with the details provided by respective CEP suppliers /20/, /21/ and found to be consistently reported in the monitoring report.

As per the PoA DD/1/ maximum 2 types of CEPs shall be deployed under any VPA in any combination except ICS and Water Purifier being together. The numbers of CEPs deployed under the VPA has been confirmed by the monitoring database i.e., Credit Tracker Platform /45/.

The verification team has confirmed that the number of CEPs deployed under the VPA, and the actual thermal energy savings/year (for type II) and installed capacity (for type I) were found as follows:

VPA title and GS ID	Technology	Savings/Capacity/ Emission Reduction
GS11450 - MicroEnergy Credits – Microfinance for Clean Energy Product Lines – India - MicroEnergy Credits PoA – CPA 02- GS11474	ICS Solar Lighting system	37,111 tCO_2
MicroEnergy Credits PoA – CPA 02- GS11474 GS11450 - MicroEnergy Credits – Microfinance for Clean Energy Product Lines – India - MicroEnergy Credits PoA – CPA 03- GS11475	ICS Solar Lighting system	32,023 tCO_2
GS11450 - MicroEnergy Credits – Microfinance for Clean Energy Product Lines – India - MicroEnergy Credits PoA – CPA 04- GS11476	ICS Solar Lighting system	43,096 tCO_2
GS11450 - MicroEnergy Credits – Microfinance for Clean Energy Product Lines – India - MicroEnergy Credits PoA – CPA 07- GS11477	ICS Solar Lighting system	52,198 tCO_2
GS11450 - MicroEnergy Credits – Microfinance for Clean Energy Product Lines – India - MicroEnergy Credits PoA – CPA 11- GS11481	ICS Solar Lighting system	34,020 tCO_2

The verification team was able to confirm that the quantity, specification and target group of the CEPs is consistent with the PoA DD /1/ and VPA DDs/2/. Further, based on the review of Credit Tracker Platform /46/, physical observations from on-site visit conducted during current monitoring period:

- The VPA(s) are implemented within the boundary of the PoA as described in the PoA-DD/1/.
- The CME is same as that mentioned in the PoA-DD/1/.
- The implementation and operation of the project activity has been conducted in accordance with the description contained in the PoA-DD/1/ and VPA-DDs/2/.
- All physical features of the VPA proposed in the included VPA-DDs are in place.
- The project participants/VPA implementer has operated the VPAs as per the included VPA-DDs.

The verification team has conducted surveys via on-site visits with 88 households. It was observed that each CEP was assigned a unique household identification number. The unique identification number on each CEP, personal information of CEP owners and commissioning date of

CEP was cross checked with the MIS system of POs and further checked with Credit Tracker Platform available with the CME. The operation of the CEPs was confirmed through remote surveys of owners/representatives (of CEPs). The households were asked various questions to confirm identity of the end user, operational status of the CEPs, presence and usage of baseline technologies, among others.

The emission reductions being claimed during this monitoring period are lesser than the estimated emission reductions in the VPA-DDs, as given in the table below for comparable estimated ERs in the VPA-DDs for the corresponding period:

As in CPA-DD	Estimated ERs (tCO_2)	Actual ERs (tCO_2)
GS11450 - MicroEnergy Credits – Microfinance for Clean Energy Product Lines – India - MicroEnergy Credits PoA – CPA 02- GS11474	1,08,126	37,111
MicroEnergy Credits PoA – CPA 02- GS11474 GS11450 - MicroEnergy Credits – Microfinance for Clean Energy Product Lines – India - MicroEnergy Credits PoA – CPA 03- GS11475	50,57	32,023
GS11450 - MicroEnergy Credits – Microfinance for Clean Energy Product Lines – India - MicroEnergy Credits PoA – CPA 04- GS11476	91,930	43,096
GS11450 - MicroEnergy Credits – Microfinance for Clean Energy Product Lines – India - MicroEnergy Credits PoA – CPA 07-	94,468	52,198

GS11477		
GS11450 - MicroEnergy Credits – Microfinance for Clean Energy Product Lines – India - MicroEnergy Credits PoA – CPA 11-GS11481	68,258	34,020

The actual distribution of solar lighting systems and improved cookstoves for VPA's are less than the maximum quantity estimated in the VPA-DDs for corresponding year of CEP distributions. The VPA-DDs also mention that the Type III SSC threshold of 60k tCO_2e will not be exceeded for all VPAS and Type II threshold of 180 GWhth will not be exceeded for the small-scale VPAs. The information (including data and variables) provided in the MR is found to be in line with the description provided in the PoA-DD/1/. The calculations provided in ER sheet also confirmed that ICS distributions do not breach the threshold of 600 MWh of thermal energy savings per year in order demonstrate compliance with positive list of technology requirements for automatic additionality. The information (including data and variables) provided in the MR is found to be in line with the description provided in the PoA-DD/1/.

The verification team considers the programme description as contained in the PoA-DD/1/ is complete and accurate. The PoA-DD/1/ complies with the applied methodologies, tools, and forms. The monitoring report was compared and verified against the description provided in the PoA-DD/1/ and found to be correct.

Grievance Mechanism
The grievance mechanism involves recording the complaints from the beneficiaries by the field staffs to the household on a regular basis in a logbook/38/ which is maintained at the registered office. During the current monitoring period, no grievances were received which was verified upon checking the logbook/38/.

Findings

No findings

Conclusion

The verification team can confirm that all physical features (technology, project equipment, and monitoring and metering equipment) of the VPAs were in place and that the CME operated the project activity in accordance with the registered VPA-DDs/2/ and VPA-Inclusion Report/3/ during the current monitoring period and based on the information verified through the on-site audit and interviews.
The following values SDGs were attained in this monitoring period by the VPAs:

Sustainable Development Goals Targeted	SDG Impact	Amount Achieved	Units/Products
7 Affordable and Clean Energy	Number of households having operational	VPA 02– 94273 VPA 03– 63,562 VPA 04-8376 VPA 07-35061	Number of SLS

	solar lighting system and improved cookstove	VPA 11-179,952	
		VPA 02– 16,357 VPA 03– 9,600 VPA 04-16,821 VPA 07-16008 VPA 11-8,474	Number of ICS
8 Decent work and economic growth	Quantitative Employment and income generation	VPA 02– 23 VPA 03– 43 VPA 04-30 VPA 07-60 VPA 11-48	Number
13 Climate Action	Net CO_2	VPA02– 31,236 VPA03– 25,745 VPA 04-41,509 VPA07-43,664 VPA 11-21,605	tCO_2e VERs (ICS)
		VPA02– 5,875 VPA03– 6,278 VPA 04-1587 VPA 07-8,534 VPA 11-12,415	tCO_2e VERs (SLS)

E.4.2. Implementation and operation of the management system

Means of verification	Based on the interview of CME representatives, representatives of different POs (VPA implementer's) and monitoring team, it is confirmed that the CME has organized an appropriate management and operational system for monitoring and reporting. The CME co-ordinates with respective POs to establish a marketing and lending program for CEPs. POs staff, local distributors, technicians, and other service providers involved in marketing of CEPs to concerned households. The monitoring plan and procedures to identify each CEP sold have been followed by POs. MEC (Micro Energy Credits Corporation Private Limited) is CME for the PoA and responsible for inclusion of VPAs in the PoA. The Carbon Operation Manager of MEC is responsible for completion of inclusion process. The Carbon Operation Manager directly reports to CEO of CME and gets the carbon expert assistance during the VPA inclusion process, if required. The information about the type of CEP installed under each VPA is stored in Credit Tracker Platform/45/ that is maintained by MEC (CME). The Credit Tracker Platform/45/ records the unique identification number, location, installation date, and usage status of each clean energy product (CEP) in each VPA, helps to identify, locate and verify any or all of the CEP installations in particular VPA. CME has provided the tracker output file/46/ that is used to ensure that unique identification of CEPs can be tracked. This file has been verified to also

	ensure that no household receives more than 1 solar lighting system. The Carbon Operation Manager at the CME is responsible for QA/QC of the data, analysis, and reporting into the monitoring report. For survey data, a monitoring team has been organized by the CME consisting of trained monitoring staff, who conducted the surveys/ field tests. The staff was interviewed, and training records/34/,/34.1/ were checked to ensure that they were trained for conducting the surveys/ field tests. The monitoring manager at the CME is responsible for QA/QC of the data, analysis, and reporting into the monitoring report. In line with the registered monitoring plan, CME conducts an annual survey to ascertain the status of equipment and classify them as installed active, installed damaged and installed inactive. This process is to initiate a repair/post-sales service. All the products which were found to be damaged or inactive are discounted from emission reduction calculation as verified from emission reduction spreadsheet/5/6/. There are no CEPs with installed inactive status in the database for the VPA included in batch requesting issuance. VPA Implementer/PO field staff annually visit households included in the database to cross-check the information on the database with the factual evidence in the field. Any inconsistencies found (e.g., change in the address of a user) are updated on the database, and in the case, CEPs are found to be no longer in use, they will be clearly marked as such and excluded from emission reduction calculations. Original copies of sales receipts/22/, completed survey forms/40/ and carbon title transfer forms/13/ are retained by the respective POs/VPA implementers. The organizational structure and roles and responsibilities for monitoring were in line with the information provided in the VPA-DDs/02/, which was confirmed through interviewing PD representatives and the situation on the ground as observed during the onsite visit conducted during current monitoring period, and the structure was considered appropriate. The CEP users sign a title transfer/13/ with the PO while purchasing the product. The title transfer affirms the legal rights of the carbon credits generated by the CEP to the POs. The verification team cross-checked that that carbon title forms/13/ were duly signed by the end-users. Further, a signed contractual agreement between the PO and the CME/39/ guides the transfer of the emission reduction rights to the CME. It has been checked and verified from sample carbon title transfer forms/13/ and agreement between POs and CME/39/ that for the VPA's covered in current verification, the carbon credits generated from the CPA belong to the POs and are later transferred to the CME (MEC). The verification team confirms that the process pertaining to the transfer of emission reduction rights to CME is valid and appropriate for all VPAs under this batch which are requesting issuance.
Findings	No Finding were raised.
Conclusion	The verification team assessed the management systems in place to implement the monitoring of the PoA. This included the roles and responsibilities, data collection, transfer and aggregation procedures, data storage and archiving for the monitoring system. The roles and responsibilities data collection transfer and aggregation procedures, data storage and archiving for the monitoring system have been provided in the MR /40/. The verification team confirms that the monitoring management system of the VPA and by extension PoA is in place with

	the responsibilities properly identified and established as per the PoA-DD/01/.

E.4.3. Post-design certification changes

E.4.3.1. Temporary deviations from the approved Monitoring & Reporting Plan, methodology or standardized baseline

Not Applicable

E.4.3.2. Corrections

Not Applicable

E.4.3.3. Inclusion of a monitoring plan

Not Applicable

E.4.3.4. Permanent changes from the Design Certified monitoring plan, applied methodology or applied standardized baseline.

Not Applicable

E.4.3.5. Changes to the programme design

Not Applicable

E.4.3.6. Addition of CPA inclusion template

Not Applicable

E.4.3.7. Change of coordination/managing entity

Not Applicable

E.4.3.8. Change specific to afforestation and reforestation activities

Not Applicable

E.5. Voluntary project activity

E.5.1. Compliance of the VPA implementation with the included VPA design document

Means of verification	The reporting for this issuance has been done technology-wise, thus **section E.5 shall be dealing with distribution of ICS and its compliance with PoA-DD/01/ and applicable standard**. VPAs described in this section target the promotion, distribution and sale of ICS (Improved Cook Stoves) i.e., Greenway Smart Stove (GSSV3). According to a third-party lab assessment/47/, this cookstove has a thermal efficiency of 25.19% respectively/47/. Micro Energy Credits Corporation Private Limited is the Coordinating and Managing Entity (CME) for the implementation of VPA's. The CME coordinates and manages each Partner Organization (PO)/ VPA Implementer and assists them in implementing each element of the monitoring plan, which was confirmed to be the case by interviewing the CME and PO staff. **Improved cookstove:**

VPA Ref. #	GS 11474 (VPA 02)	GS 11475 (VPA 03)	GS11476 (VPA 04)	GS 11477 (VPA 07)	GS 11481 (VPA 11)
Location/ State	Kerala, Tamil Nadu,	Kerala.	Karnataka	Karnataka, Madhya Pradesh, Chhatisgarh, Tamil Nadu	Kerala , Karnataka, Maharashtra and Tamil Nadu
CEP Type	ICS	ICS	ICS	ICS	ICS
CEP Model	Grameen Greenway Smart Stove (GSSV3)	Grameen Greenway Smart Stove (GSSV3)	Grameen Greenway Smart Stove (GSSV3)	Grameen Greenway Smart Stove (GSSV3)	Grameen Greenway Smart Stove (GSSV3)
VPA Implementer / PO	ESAF	ESAF	SKDRDP	SKDRDP	SKDRDP Bandhan
Total Quantity Sold / Disseminated	32,976	17,831	29,927	28,495	14,220
Maximum Estimated Qty CEPs in CPA (for comparable year of distribution)	32,976	17,831	29927	28495	14220
Estimated ERs (comparable period) (tCO2e)	96,840	42,625	54,210	82,791	45,940
Actual ERs from the CEP Type (tCO2e)	31,236	25,745	41,509	38977	21,605

VPA 02 – GS11474:

ICS were distributed in Kerala and Tamil Nadu in India, which is consistent with the description given in the included VPA DDs/2/. By the end of the current monitoring period requesting issuance, total 32,976 ICS were disseminated under this VPAs, which is within the estimated quantity of 32,976 ICSs of the VPA DDs/2/ for comparable year of distribution. It's a large scale VPA and therefore, no thermal savings threshold is applicable. The distribution model is that stoves are distributed by PO, managed by CME. The stoves are sold to end users and the sales data is collected by means of sales receipts/22/ at the time of sale to the end-user.

VPA 03 – GS11475:

ICS were distributed in Kerala in India, which is consistent with the

description given in the included VPA DDs/2/. By the end of current monitoring period requesting issuance, total 17,831 ICS were disseminated under this VPA, which is within the estimated quantity of 17,831 ICSs of the VPA DDs/2/ for comparable year of distribution. It has been checked by the verification team that the VPAs is below the threshold of 180 GWh/year (thermal). The distribution model is that stoves are distributed by PO, managed by CME. The stoves are sold to end users and the sales data is collected by means of sales receipts/22/ at the time of sale to the end-user.

VPA 04– GS11476:

ICS were distributed in Karnataka in India, which is consistent with the description given in the included VPA DDs/2/. By the end of current monitoring period requesting issuance, total 29,927 ICS were disseminated under this VPA, which is within the estimated quantity of 29,927 ICSs of the VPA DDs/2/ for comparable year of distribution. It has been checked by the verification team that the VPAs is below the threshold of 180 GWh/year (thermal). The distribution model is that stoves are distributed by PO, managed by CME. The stoves are sold to end users and the sales data is collected by means of sales receipts/22/ at the time of sale to the end-user.

VPA 07 – GS11477:

ICS were distributed in Karnataka, Madhya Pradesh, Chhatisgarh, Tamil Nadu in India, which is consistent with the description given in the included VPA DDs/2/. By the end of current monitoring period requesting issuance, total 28,495 ICS were disseminated under this VPA, which is within the estimated quantity of 28,495 ICSs of the VPA DDs/2/ for comparable year of distribution. It has been checked by the verification team that the VPAs is below the threshold of 180 GWh/year (thermal). The distribution model is that stoves are distributed by PO, managed by CME. The stoves are sold to end users and the sales data is collected by means of sales receipts/22/ at the time of sale to the end-user.
No further sales have been added under the current monitoring period.

VPA 11 – GS11481:

ICS were distributed in Kerala, Karnataka, Maharashtra, Tamil Nadu in India, which is consistent with the description given in the included VPA DDs/2/. By the end of current monitoring period requesting issuance, total 14,220 ICS were disseminated under this VPA, which is within the estimated quantity of 14,220 ICSs of the VPA DDs/2/ for comparable year of distribution. It has been checked by the verification team that the VPAs is below the threshold of 180 GWh/year (thermal). The distribution model is that stoves are distributed by PO, managed by CME. The stoves are sold to end users and the sales data is collected by means of sales receipts/22/ at the time of sale to the end-user.

State-wise distribution of stoves is given below. NO further sales were added in the monitoring period.

VPA	Model/State	Values
VPA02	Smart/TN Smart/KL	8,570 24,406
VPA03	Smart/KL	17,831
VPA4	Smart/KA	29,937

	VPA7	Smart/KA Smart/CG Smart/MP Smart/TN	23,337 2,492 1,689 977	
	VPA11	Smart/KA Jumbo/KA Jumbo/KL Smart/MH Powergram/TN	34 555 4,950 7,353 1,328	
Findings	-			
Conclusion	• The verification team is of the opinion that physical features of the VPA have been implemented in accordance with the VPA-DDs/02/. • It is also confirmed, through the review of the supporting documentation, that physical features of the component VPA have been implemented in accordance with the VPA-DDs /02/. • The VPA's was also found to be completely operational in line with the VPA-DDs /02/. • The information provided in the relevant sections of the monitoring report are appropriately describe the implementation and operational status of the PoA.			

E.5.2. Post-design Certification Changes

E.5.2.1. Temporary deviations from the approved Monitoring & Reporting Plan, methodology or standardized baseline

Not Applicable

E.5.2.2. Corrections

Not Applicable

E.5.2.3. Changes to the start – date of the crediting period.

Not Applicable

E.5.2.4. Change to project design of approved project

Not Applicable

E.5.3. Compliance of the registered monitoring plan with applied methodologies and standardized baselines

Means of verification	The monitoring plan contained in the VPA-DDs/02/ was reviewed in relation to the monitoring requirements of the applied methodology, TPDDTEC, version 3.1 /08/, as well as the PoA DD /01/, bearing in mind the technology involved. In light of the review conducted, it was found that the monitoring plan in the VPA-DDs/02/ contains all the required parameters to be monitored in the context of the VPA design and description and allows determination of emission reductions according to the PoA DD/01/ and applied methodology/08/09/10/. That is included in the VPA-DDs/02/.
Findings	No findings raised.
Conclusion	The monitoring plan is in line with the approved methodology, Gold Standard Simplified Methodology Technologies and Practices to Displace Decentralized Thermal Energy Consumption (TPDDTEC), version 3.1

	/08/, that is included in the registered PoA DD/1/ and VPA-DDs/02/. The monitoring plan is in accordance with the applied methodology /08/09/10/ that is included in the VPA-DDs/02/.

E.5.4. Compliance of monitoring activities with the registered monitoring plan

E.5.4.1. Data and parameters fixed ex ante or at renewal of crediting period

SDG13: Quantity of fuel consumed in baseline scenario b during year y, $P_{b,y}$, in kg/HH-day

Means of verification	Quantity $P_{b,y}$ – kg per household per day The value of this parameter considered is mentioned below as per VPA-DDs. This was cross checked with the baseline kitchen performance test (KPT)[2]. The calculation steps and the attendant references in the excel sheet/05/06/ were checked. The sample mean of the daily consumption of dry fuelwood is a statistically determined value at 90/10 confidence interval/precision, derived based on the 4 consecutive days of fuelwood consumption when the KPT was conducted. The standard deviation of the sample is obtained from a revised sample size. This effectively removes overestimation of fuelwood estimation in baseline by eliminating the outliers in the household in the observational period of 4 consecutive days. The Precision check has been conducted by the CME on the outliner eliminated samples at 90/10, which is found to be below the threshold of 10%, hence was acceptable. This value is used in the baseline emission determination for both VPA's

VPA Number	State	Value
VPA 2	Tamil Nadu Kerala	6.90 7.00
VPA 3	Kerala	7.28
VPA 4	Karnataka	7.02
VPA 7	Karnataka Tamil Nadu Chhattisgarh Madhya Pradesh	6.99 6.85 6.99 7.13
VPA 11	Karnataka Kerala Maharashtra Tamil Nadu	7.13 6.93 7.19 7.14

Findings	No findings were raised.
Conclusion	The value mentioned in the Monitoring Report /40/ and Emission Reduction Spreadsheet /05/06/07/ are consistent with the approach given in registered VPA-DDs wherein it is recommended to establish baseline fuel usage for VPAs at the time of verification/02/. Hence the applied value is correct and justified.

[2] https://cleancooking.org/binary-data/DOCUMENT/file/000/000/604-1.pdf

SDG13: CO_2 emission factor arising from use of fuel type I in baseline scenario, $EF_{b,I,CO2}$, tCO2e/ t_{fuel}

Means of verification	$EF_{b,\ I,CO2}$-- The value is fixed and is derived from 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Chapter 2: Stationary Combustion, Table 2.5-- Default emission factors for stationary combustion in the residential and agriculture/forestry/fishing/fishing farms categories/32/. This value is used towards determination of baseline emissions. The value of this parameter considered is mentioned below as per VPA-DDs. VPA Number: Value VPA 02: 112 tCO_2/TJ VPA 03: 112 tCO_2/TJ VPA 04: 112 tCO_2/TJ VPA 07: 112 tCO_2/TJ VPA 11: 112 tCO_2/TJ
Findings	No findings were raised.
Conclusion	The value mentioned in the Monitoring Report /40/ and Emission Reduction Spreadsheet /05/06/ are consistent with the registered VPA-DDs/02/. The applied value is correct and justified.

SDG13: Non-CO_2 emission factor arising from use of fuel type *i* in baseline scenario, $EF_{b,I,non\text{-}CO2}$, tCO_2/t_{fuel}

Means of verification	$EF_{b,i,non\text{-}CO2}$-- The value is fixed and is derived from 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Chapter 2: Stationary Combustion, Table 2.9-- Residential Source Emission Factors. The value is calculated using the Emission factor of firewood for CH_4 and N_2O and their corresponding GWP./32/ This value is used for the determination of baseline emissions. This value is used towards determination of baseline emissions. The value of this parameter considered is mentioned below as per VPA-DDs VPA Number: Value VPA 02: 37.25 tCO_2/TJ VPA 03: 37.25 tCO_2/TJ VPA 04: 37.25 tCO_2/TJ VPA 07: 37.25 tCO_2/TJ VPA 11: 37.25 tCO_2/TJ
Findings	No findings were raised.
Conclusion	The value mentioned in the Monitoring Report /40/ and Emission Reduction Spreadsheet /05/06/ are consistent with the registered VPA-DD/2/. The applied value is correct and justified.

SDG13: CO_2 emission factor arising from use of fuel type *i* in project scenario, $EF_{p,I,CO2}$, tCO_2/t_{fuel}

Means of verification	$EF_{p,i,CO2}$-- The value is fixed and is derived from 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Chapter 2: Stationary Combustion, Table 2.5-- Default emission factors for stationary combustion in the residential and agriculture/forestry/fishing/fishing farms categories/32/. This value is used towards determination of baseline emissions. The value of this parameter considered is mentioned below as per VPA-DDs. VPA Number: Value

		VPA 02	112 tCO_2/TJ
		VPA 03	112 tCO_2/TJ
		VPA 04	112 tCO_2/TJ
		VPA 07	112 tCO_2/TJ
		VPA 11	112 tCO_2/TJ
Findings	No findings were raised.		
Conclusion	The value mentioned in the Monitoring Report /40/ and Emission Reduction Spreadsheet /05/06/ are consistent with the registered VPA-DDs/2/. The applied value is correct and justified.		

SDG13: Non- CO_2 emission factor arising from use of fuel type *i* in project scenario, $EF_{p,i,non\text{-}CO2}$, $tCO2/t_{fuel}$

Means of verification	$EF_{p,\ i,\ non\text{-}CO2}$-- The value is fixed and is derived from 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Chapter 2: Stationary Combustion, Table 2.9-- Residential Source Emission Factors. The value's calculated using the Emission factor of firewood for CH_4 and N_2O and their corresponding GWP/32/. This value is used towards determination of baseline emissions. The value of this parameter considered is mentioned below as per VPA-DDs		
		VPA Number	Value
		VPA 02	37.25 tCO_2/TJ
		VPA 03	37.25 tCO_2/TJ
		VPA 04	37.25 tCO_2/TJ
		VPA 07	37.25 tCO_2/TJ
		VPA 11	37.25 tCO_2/TJ
Findings	No findings were raised.		
Conclusion	The value mentioned in the Monitoring Report /40/ and Emission Reduction Spreadsheet /05/06/ are consistent with the registered VPA-DDs/2/. The applied value is correct and justified.		

SDG13: Net calorific value of the fuel type *i* used in the baseline, $NCV_{b.i}$, TJ/Tonne

Means of verification	$NCV_{b,i}$-- The value is fixed and is derived from 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Chapter 1: Introduction, Table 1.2-- Default net calorific values Default IPCC values for wood/wood waste are applied/32/. This value is used for the determination of baseline emissions. The value of this parameter considered is mentioned below as per VPA-DDs VPA Number: Value VPA 02: 0.0156 TJ/tonnes VPA 03: 0.0156 TJ/tonnes VPA 04: 0.0156 TJ/tonnes VPA 07: 0.0156 TJ/tonnes VPA 11: 0.0156 TJ/tonnes
Findings	No findings were raised.
Conclusion	The value mentioned in the Monitoring Report /40/ and Emission Reduction Spreadsheet /05/06/ are consistent with the registered VPA-DDs/2/. The applied value is correct and justified.

SDG13: Net calorific value of the fuel type *i* used in the project scenario, $NCV_{p.i}$, TJ/Tonne

Means of verification	$NCV_{p,i}$-- The value is fixed and is derived from 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Chapter 1: Introduction, Table 1.2-- Default net calorific values./32/ This value is used for the determination of baseline emissions. The value of this parameter considered is mentioned below as per VPA-DDs VPA Number: Value VPA 02: 0.0156 TJ/tonnes VPA 03: 0.0156 TJ/tonnes VPA 04: 0.0156 TJ/tonnes VPA 07: 0.0156 TJ/tonnes VPA 11: 0.0156 TJ/tonnes
Findings	No findings were raised.
Conclusion	The value mentioned in the Monitoring Report /40/ and Emission Reduction Spreadsheet /05/06/ are consistent with the registered VPA-DDs/2/. The applied value is correct and justified.

SDG13: Fraction of biomass used in year y for baseline scenario b that can be established as non-renewable biomass, $fNRB_{b,I,y}$, fraction

Means of verification	$f_{NRB,b,i,y}$ – The value of f_{NRB} is calculated using the Tool 30: Calculation of the fraction of non-renewable biomass of CDM/48/. As per the tool, PD has referred to the FSI report of various states of India to calculate the individual f_{NRB}. The detailed calculation of the approach has been assessed by the VVB through a f_{NRB} calculation excel sheet. The formulas and approach used by the PD is found to be appropriate and in line with the applied methodology/8/ and Tool 30/48/. This value is used for the determination of baseline emissions. The value of this parameter considered is mentioned below as per VPA-DDs **VPA Number** | **State** | **Value**

VPA 2	Tamil Nadu Kerala	0.913 0.874	
VPA 3	Kerala	0.874	
VPA 4	Karnataka	0.86	
VPA 7	Karnataka Tamil Nadu Chhattisgarh Madhya Pradesh	0.86 0.913 0.814 0.914	
VPA 11	Karnataka Kerala Maharashtra Tamil Nadu	0.86 0.874 0.913 0.913	

Findings	No findings were raised.
Conclusion	The value mentioned in the Monitoring Report /40/ and Emission Reduction Spreadsheet /05/06/07/ are consistent with the registered VPA-DDs/2/. The applied value is correct and justified.

E.5.4.2. Data and parameters monitored (Carbon & SDG)

SDG13: Quantity of fuel consumed in project scenario p during year y, Pp,y in kg/HH-day

Relevant SDG Indicator	**SDG13: Climate Action**	
Means of verification	**Criteria/Requirements**	**Assessment/Observation**
	Measuring /Reading /Recording frequency	The parameter is measured and recorded at least once every two years (biennial)
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The frequency is in line with the PoA-DD/1/ and VPA-DDs/2/
	Monitoring equipment	This value is derived statistically based on surveys in project scenario, adopting minimum 4 consecutive days of wood consumption by the sampled household. The weight of the fuelwood is measured by weighing scales. Type – Digital Moisture Meter Accuracy Class - +/- 1% Serial number – TM361471, TM391454, TM28591, TM300144, TM400178, TM316542 Calibration frequency – Annual Date of calibration – 27/02/2023 Validity – Until 26/02/2024 Type - Weighing Scale Accuracy Class - +/- 0.5 grams

		Serial number – WS010051, WS010052, WS010053, WS01495, WS010054 Calibration frequency – Annual Date of calibration – 19/02/2023 Validity – Until 18/02/2024
	Calibration frequency /interval:	Annual Please refer to section E.5.6 of this report for further details.
	How were the values in the monitoring report verified?	This is statistically derived value whose computation is explained as follows: The 4 consecutive day consumption of the firewood by the sampled household is calculated using 90/10 rule. The purpose of the calculation is to find the mean value of the firewood consumption which is as close to the population mean as possible. The calculation behind this was verified from the ER Calculation sheet of VPA 02 & VPA 03/05/06/. As per 90/10 rule, the mean consumption from the sampled household is acceptable if the precision value attained is less than 10%. In other words, mean value obtained drawn from simple random sample, in project scenario is likely to be 90% of time closer to the unknown population mean. In the calculation provided by the CME, the precision attained is less than 10% of the outer bounds if 90/10 is applied, to accept the sample mean. The calculation steps, and the applicability with the methodology/08/ was ascertained and found that the value calculated was conservative, as the PD had rejected all upper bound outliers while determining the mean value of wood consumption. The outliers were defined as follows: Upper Outlier Threshold (UOT): Upper Quartile of means of firewood consumption + 1.5* interquartile range of firewood consumption Lower Outlier Threshold (LOT): Lower Quartile of means of firewood consumption–- 1.5* interquartile range of firewood consumption For the monitoring period and as per the random sampling of households, the quantity of firewood which are equal to or above UOT were ignored for arriving at the mean value of the samples. The computations are conservative and does not overestimate the fuelwood consumption which in turns underestimates the emission reduction. To

		account for seasonal variations in wood consumption, 2 KPTs were conducted in dry and wet season. However, CME has calculated the ERs based on the higher wood consumption. During the current monitoring period, wood consumption in wet season comes out to be higher for all the VPAs and has been used by CME, which is found to be conservative. Calculations of both project KPT has been reviewed and found to be appropriate. The values obtained for this parameter:

VPA	Model/State	Values
VPA 2	Smart/TN Smart/KL	0.0039 0.0038
VPA 3	Smart/KL	0.0037
VPA 4	Smart/KA	0.0035
VPA 7	Smart/KA Smart/CG Smart/MP Smart/TN	0.0032 0.0035 0.0033 0.0033
VPA 11	Smart/KA Jumbo/KA Jumbo/KL Smart/MH Powergram/TN	0.0032 0.0034 0.0035 0.0036 0.0033

	If applicable, has the reported data been cross-checked with other available data?	Not applicable
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	The QA/QC processes were deemed to be appropriate and trustworthy. At the outset of each research, the equipment used in KPT is calibrated. Section E.5.6 of this report discusses calibration information. Personnel in charge of carrying out KPT studies are properly trained to supervise data collection and identify any inaccuracies in reported statistics.
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	Not Applicable
Findings	No findings were raised	
Conclusion	The parameter has been monitored appropriately, in accordance with the registered monitoring plan/2/ (as per measurement methods and procedures to be applied) and applied methodology/08/. The monitoring results were recorded	

	consistently as per the approved frequency in the monitoring plan/1/.

SDG13: Usage rate in project scenario p during year y determined on a sampling basis, Up,y, Fraction(or %)

Relevant SDG Indicator	**SDG13: Climate Action**	
Means of verification	**Criteria/Requirements**	**Assessment/Observation**
	Measuring /Reading /Recording frequency	Annually
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The frequency is in line with the PoA-DD/1/ and VPA-DDs/2/
	Monitoring equipment	Not applicable as this parameter is ascertained through surveys
	Calibration frequency /interval:	Not Applicable
	How were the values in the monitoring report verified?	This value is ascertained through annual surveys about the usage of the stoves in the project scenario. The value obtained during this monitoring period are: MP: 01/01/2022 to 31/12/2022

VPA4	Smart/KA	56%
VPA7	Smart/KA Smart/CG Smart/MP Smart/TN	57% 48% 56% 56%
VPA02	Smart/TN Smart/KL	52% 49%
VPA03	Smart/KL	54%
VPA11	Smart/KA Jumbo/KA Jumbo/KL Smart/MH Powergram/TN	68% 51% 59% 61% 57%

This value was accepted after checking the user habit survey results /41/ provided by the CME.

To achieve a Good Practice utilization rate of up to 90% (estimated value), field team training, end-user training and follow-ups, and an awareness campaign are all necessary. Before distribution, sensitization seminars are organized in each village/area to explain how the stove works. In addition, the field team conducts continuous monitoring operations in the field to verify data quality is up to standard, which serves

		to encourage stove users to use the stoves and gives them the opportunity to raise questions about the stoves. This was further cross checked with the desk review of documents and through interviews during the onsite visit.
	If applicable, has the reported data been cross-checked with other available data?	The survey results, assumptions and sales records were checked by the verification team and were found acceptable. The results are reproducible in the corresponding ER sheet of final Monitoring Report. The responses from randomly selected samples from VPAs for ICS under this batch issuance for VVB survey were cross-checked with CME monitoring survey forms which were provided by the CME, and all end users responses were consistent with monitoring results. The usage values were also compared with values obtained from last monitoring conducted for previous MP. It was evident from the values provided that the parameter value (i.e. usage rate) has decreased for each sub-group since the previous monitoring, which is reasonable and can be attributed to older age of stoves making those more prone to damages and discontinuation of usage.
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes. The QA/QC procedure are in place, internal checks have been done by the VPA implementer and established through on-site interviews.
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	Not Applicable
Findings	None	
Conclusion	The parameter has been monitored appropriately, in accordance with the registered monitoring plan/2/ (as per measurement methods and procedures to be applied) and applied methodology/08/. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan/2/.	

SDG13: Policy for encouraging discontinuation of baseline stove

Relevant SDG Indicator	**SDG13: Climate Action**	
Means of verification	**Criteria/Requirements**	**Assessment/Observation**

	Measuring /Reading /Recording frequency	Updated every two years
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The frequency is in line with the PoA-DD/1/ and VPA-DDs/2/
	Monitoring equipment	Not Applicable
	Calibration frequency /interval:	Not Applicable
	How were the values in the monitoring report verified?	The data is verified by checking the internal records of the MEC Credit tracker-based database excel spreadsheets/46/. End user trainings/34.1/ were checked which demonstrates that users have been informed about the use of project stoves and phase out of baseline stove.
	If applicable, has the reported data been cross-checked with other available data?	Information about the baseline system used is recorded at the time of loan processing, ICS buyers provide this information which is recorded in the baseline survey forms. The verification team has verified the sample baseline survey forms and found to be satisfactory. As another cross-check, the verification team, while conducting the remote survey of 11 randomly selected households from each VPA, also questioned the end-users about the baseline system. All 11 sampled household responses from each VPA were consistent with information provided in credit tracker platform.
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	The QA/QC processes were deemed to be appropriate and trustworthy.
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	Not Applicable
Findings	No findings were raised	
Conclusion	The parameter has been monitored appropriately, in accordance with the registered monitoring plan/2/ (as per measurement methods and procedures	

	to be applied) and applied methodology /08/. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan/2/.

SDG13: Technologies in the monitoring Database for project scenario p through year y, Np,y, Number

Relevant SDG Indicator	**SDG13: Climate Action**
Means of verification	

Criteria/Requirements	**Assessment/Observation**
Measuring /Reading /Recording frequency	This parameter is measured continuously
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The frequency is in line with the registered PoA-DD/1/ and VPA-DDs/2/
Monitoring equipment	Not Applicable
Calibration frequency /interval:	Not Applicable
How were the values in the monitoring report verified?	The data is verified by checking the records of MEC Credit tracker-based database excel spreadsheets/46/ and sales records/22/. The value of the parameter as per VPAs are:

VPA	**Model/State**	**Installed active**	**Installed damaged**	**Days**
VPA02	Smart/TN Smart/KL	6911 18890	1659 5516	2522515 6894850
VPA03	Smart/KL	17,388	443	6346620
VPA4	Smart/KA	27696	2241	10109040
VPA7	Smart/KA Smart/CG Smart/MP Smart/TN	23,306 2,271 1,488 837	1031 221 201 140	8141690 828915 543120 305505
VPA11	Smart/KA Jumbo/KA Jumbo/KL Smart/MH Powergram/TN	15 383 4,409 6881 1,101	19 172 541 472 227	5475 139795 1609285 251156

		5 401865
	If applicable, has the reported data been cross-checked with other available data?	Yes. The information provided in the VPA Database were verified randomly with the sales receipt/loan document and through on-site VVB survey of the household representatives.
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	The CME supervises the activities of the PO, providing training, guidelines and templates to facilitate accurate record keeping in their MIS system/Credit Tracker Platform. During the site visit the sale process, record keeping was reviewed and were found reliable.
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	Not Applicable
Findings	No findings	
Conclusion	The parameter has been monitored appropriately, in accordance with the registered monitoring plan/2/ (as per measurement methods and procedures to be applied) and applied methodology /08/. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan.	

SDG13: Leakage in project scenario p during year y, LEp,y, Tonnes/year

Relevant SDG Indicator	**SDG13: Climate Action**	
Means of verification	**Criteria/Requirements**	**Assessment/Observation**
	Measuring /Reading /Recording frequency	At least once every two years (biennial)
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The frequency is in line with the registered PoA-DD/1/ and VPA-DDs/2/
	Monitoring equipment	Not Applicable
	Calibration frequency /interval:	Not Applicable
	How were the values in the monitoring report verified?	The verified value in this monitoring period was assessed to be:

VPA	Model/State	Values
VPA02	Smart/TN Smart/KL	0
VPA03	Smart/KL	0

VPA4	Smart/KA	0
VPA7	Smart/KA Smart/CG Smart/MP Smart/TN	0 0 0 0
VPA11	Smart/KA Jumbo/KA Jumbo/KL Smart/MH Powergram/TN	0 0 0 0 0

There are 4 ways in which the leakages can occur in this project activity

i. The displaced stove is reused outside the project boundary in place of lower emitting technology
ii. The non-renewable biomass/fossil fuel saved due to the project activity are used by non-beneficiaries who previously used lower emitting sources
iii. The project significantly impacts the fNRB fraction within an area where other CDM/VER project activities account for fNRB fraction in their baseline scenario
iv. The project population compensates loss of space heating effect of inefficient tech by adopting some other form of heating or by retaining some use of inefficient technology.

However, all the four conditions can be discounted as follows:

i. The baseline stove were 3 stone/ traditional rudimentary stove. Owing to the crudeness to its design and ease of installation, anybody could install it outside the project boundary and hence there is no risk for the baseline stoves to move outside the project boundary
ii. Due to the abundance of the firewood in the project location the risk of non-renewable biomass used by non-project users does not arise and does not pose a threat to leakage emissions
iii. Again, the sheer scale of biomass availability in the project activity area vis a vis the project activity, the VPA does not pose a threat of biomass or the fNRB value. Besides this parameter is going to be checked at the beginning of every VPA crediting period.
iv. Due to the temperate and climate in Kerala & Tamil Nadu, India the need for space heating is minimal. Also, no evidence suggests that this is the case. Besides the PMS covers all non-cooking use of the household.

The calculation steps involved in the sampling method was cross checked and assessed and found to be correct.

	If applicable, has the reported data been cross-checked with other available data?	Not applicable
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	The QA/QC processes were deemed to be appropriate and trustworthy.
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	Not Applicable
Findings	None	
Conclusion	The parameter has been monitored appropriately, in accordance with the registered monitoring plan/2/ (as per measurement methods and procedures to be applied) and applied methodology /08/. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan.	

SDG 7: Access to affordable and clean energy (Number of operating ICS units under Project), $ACS_{Project}$, Number

Relevant SDG Indicator	**SDG7: Affordable and Clean Energy**	
Means of verification	**Criteria/Requirements**	**VVB Assessment**
	Measuring /Reading /Recording frequency	Continuously
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes, the frequency is in line to the PoA-DD/1/ and VPA-DDs/2/.

	How were the values in the monitoring report verified?	The post monitoring records/7/18/ were checked to identify as part of the assessment as well as during the interviews conducted with the 11 selected beneficiaries during site visit/50/ the intended beneficiaries who have access to affordable, reliable and modern energy services. Since the usage survey determines the usage rate for ICS, the value of the parameter based on the usage survey was accepted and are as follows as per the VPAs: Year 1 – 01/01/2022 to 31/12/2022

VPA#	ICS
VPA 02	16,357
VPA 03	9,600
VPA 04	16,821
VPA 07	16008
VPA 11	8,474

	If applicable, has the reported data been cross-checked with other available data?	Not Applicable
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	The QA/QC processes were deemed to be appropriate and trustworthy.
Findings	None	
Conclusion	Sustainability criteria was found to be fulfilled. The monitoring and reporting is as per the GS PoA-DD/1/, and registered VPA-DDs/2/. The representation of the monitored value was found to be accurate which was easily verifiable. No discrepancy in data monitoring, data management, transfer of data or QA/QC procedures was found.	

SDG 8: Quantitative Employment and income generation, QE $IG_{Project}$, Number

Relevant SDG Indicator	**SDG 8: Decent Work and Economic Growth**	
Means of verification	**Criteria/Requirements**	**VVB Assessment**
	Measuring /Reading /Recording frequency	Annually
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes, the frequency is in line to the PoA-DD/1/ and VPA-DDs/2/.

	How were the values in the monitoring report verified?	The employment contract /31/ were cross checked for all contracted employees/31/. Based on the documentary evidence provided by CME, this value was verified and accepted. The verified values are thus: **VPA#** / **Value** VPA 02: 20 – Male; 03 - Female VPA 03: 40 – Male; 03 – Female VPA 04: 29– Male; 01 – Female VPA 07: 54 – Male; 06 – Female VPA 11: 45 – Male; 03 – Female
	If applicable, has the reported data been cross-checked with other available data?	Not Applicable
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	The QA/QC processes were deemed to be appropriate and trustworthy.
Findings	None	
Conclusion	Sustainability criteria was found to be fulfilled. The monitoring and reporting is as per the GS PoA-DD/1/ and VPA-DDs/2/. The representation of the monitored value was found to be accurate which was easily verifiable. No discrepancy in data monitoring, data management, transfer of data or QA/QC procedures was found.	

E.5.5. Implementation of sampling plan

Means of verification	The sampling plan was implemented by the CME in accordance with the Gold Standard methodology Technologies and Practices to Displace Decentralized Thermal Energy Consumption, Version 3.1/08/, and the CDM EB 110, Annex 1, Standard for Sampling and Surveys for CDM Project Activities and Programme of Activities/25/. Two different sample sets were picked from population serviced under the VPA 02 & 03 viz., Usage Surveys of Cookstoves and Project KPTs. Thus, the project database with the demographic cohorts identified during the sampling survey serves along with the user age (whether non-beneficiary, beneficiary, and user for last 1 year and more) as the sample frames for the project population. Since the VPA's covers various state of India and various model of stove is distributed in the population, the sampling has been conducted for each state separately. Population with each state is reasonably considered homogenous. Therefore, the approach of simple random sampling for every sampling frame is acceptable.

Parameters to be covered through monitoring surveys:
The CME has conducted following kinds of surveys:

Usage Surveys:
- $U_{p,y}$-- Usage rate in project scenario p during year y determined on a sampling basis

Project Monitoring Survey/Project Field Tests:
- $P_{,p,y}$- Quantity of fuel consumed in project scenario p during year y, in tonnes, and as derived from the statistical analysis conducted on the data collected during the project performance field tests

Sustainability Surveys:
1. $AACS_{,HH}$-- Number of households with operation clean energy products
2. QE,IG- Quantitative Employment and income generation

Monitoring survey (by CME) duration:
The monitoring survey (field survey / tests) was carried out by CME representatives between following duration for the current monitoring period.

For Monitoring Period: 01/01/2022 to 31/12/2022:
VPA 02:

Survey Type	Monitoring dates	Monitoring frequency	Monitoring survey applicable for this MP?
Usage and Habit Survey	AFTER END OF YEAR : 06/01/2023 10/02/2023	Annual	Yes
Project KPT	January/February 2023 (dry season)	Biennial	Yes
Solar Lighting System	06/01/2022 to 16/02/2022	Annual	Yes

VPA 03:

Survey Type	Monitoring dates	Monitoring frequency	Monitoring survey applicable for this MP?
Usage and Habit Survey	AFTER END OF YEAR : 06/01/2023 10/02/2023	Annual	Yes
Project KPT	January/February 2023 (dry season)	Biennial	Yes
Solar Lighting System	06/01/2022 to 16/02/2022	Annual	Yes

VPA 04:

Survey Type	Monitoring	Monitoring	Monitoring

	dates	frequency	survey applicable for this MP?
Usage and Habit Survey	AFTER END OF YEAR : 06/01/2023 10/02/2023	Annual	Yes
Project KPT	January/February 2023 (dry season)	Biennial	Yes
Solar Lighting System	06/01/2022 to 16/02/2022	Annual	Yes

VPA 07:

Survey Type	Monitoring dates	Monitoring frequency	Monitoring survey applicable for this MP?
Usage and Habit Survey	AFTER END OF YEAR : 06/01/2023 10/02/2023	Annual	Yes
Project KPT	January/February 2023 (dry season)	Biennial	Yes
Solar Lighting System	06/01/2022 to 16/02/2022	Annual	Yes

VPA 11:

Survey Type	Monitoring dates	Monitoring frequency	Monitoring survey applicable for this MP?
Usage and Habit Survey	AFTER END OF YEAR : 06/01/2023 10/02/2023	Annual	Yes
Project KPT	January/February 2023 (dry season)	Biennial	Yes
Solar Lighting System	06/01/2022 to 16/02/2022	Annual	Yes

As evident from tables were conducted for VPAs with monitoring period 01/01/2022 to 31/12/2022. This ensures that frequency of annual monitoring for the parameter is met. The approach was found suitable for the duration of monitoring period, which is longer than 1 year.
Thus, it is confirmed that monitoring survey is applicable for the entire monitoring period.

<u>Sample size calculation for different tests</u>

Usage Survey: All monitored parameters were evaluated using simple random sampling with the requisite precision/confidence. Usage survey /41/ was done to determine usage and changes in circumstances

	experienced following the ICS project's deployment. The sample size was determined using the TPDDTEC Version 3.1 guideline/08/, which indicates that for a group size more than 1000, a minimum sample size of 100 is required for such a survey. Using MS Excel random selection algorithm, CME drew samples at random from the Monitoring Database. The representation of different age groups of distribution was also considered with 30 samples from each vintage picked in accordance with methodological sampling requirements. To ensure accurate representation of the entire population, the usage surveys were conducted on randomly chosen cookstoves dispersed across the project distribution boundary. Kitchen Performance Tests (Project KPT): The KPT sample size determination was based on the guidelines provided in the TPDDTEC Version 3.1 methodology/08/ for evaluating the fuel consumption in the project scenario. The sample size in cases of independent samples was calculated, yielding a sample size of 90 for all the VPAs. This resulted in a precision of 90/10 being met. In case, the confidence/precision is not met for any parameter for improved cookstove, the upper or lower bound is conservatively applied to arrive at final values for the parameter, which is found in line and acceptable considering the provisions provided in TPDDTEC v3.1./08/. It is noted that the average lifetime of cookstove model distributed in the VPAs, according to its technical specifications, is 5 years. However, the lifetime may vary from individual product to product depending on usage handling and other physical factors. Parameter Usage Rate ensures that non-operationality rate of project devices found in representative sample is accounted for in ER calculations. It is observed from the monitoring results for this parameter that the fraction of operational ICS in the VPAs have reduced since the previous monitoring periods, which can be attributed to older age of stoves making those more prone to damages and discontinuation of usage. Additionally, as already discussed in previous sections, CME conducts an annual monitoring for all end users as an additional QA/QC procedure to check the usage status of the project cookstove periodically, thus capturing non-functional or damaged devices, which are not included in calculation for emission reductions. It is noted that the overall number of the "installed_damaged" products has increased when compared to the previous annual monitoring survey results, which is verified from the credit tracker output files and is found reasonable. All parameters of interest are included in the ER spreadsheet for the VPA's. These were checked for the input values as well as formula applied and were found consistent. The reliability (demonstration of precision achieved after the survey results) is depicted in the ER calculation sheets corresponding to final Monitoring Report, which were also found correct.
Findings	CAR 02 raised and resolved
Conclusion	The verification team confirmed that the sampling plan and the parameter values are in accordance with the monitoring plan provided in PoA DD/1/ and the VPA DDs/2/.

E.5.6. Compliance with the calibration frequency requirements for measuring instruments

Means of verification	The registered monitoring plan (in the VPA DDs/2/ and PoA DD/1/) does not state the calibration requirements for any of the parameter.

	However, as good practice, the verification team enquired information with regard to monitoring equipment viz., weighing scale and moisture meter that were used to carry out field KPT tests. The devices used in this project activity is mentioned here Type – Digital Moisture Meter Accuracy Class - +/- 1% Serial number – TM361471, TM391454, TM28591, TM300144, TM400178, TM316542 Calibration frequency – Annual Date of calibration – 27/02/2023 Validity – Until 26/02/2024 Type - Weighing Scale Accuracy Class - +/- 0.5 grams Serial number – WS010051, WS010052, WS010053, WS01495, WS010054 Calibration frequency – Annual Date of calibration – 19/02/2023 Validity – Until 18/02/2024 It is noteworthy that registered monitoring plan does not specify any calibration frequency however, CME has maintained an annual frequency. All the monitoring surveys took place in the days when all the equipment were under calibration.
Findings	No findings were raised
Conclusion	The verification team confirm that CME applied good practices (as per manufacturer recommendation) while using the monitoring equipment and these were under the state of calibration. There is no specific requirement prescribed in this regard in the registered monitoring plan of monitoring methodology. The monitoring devices were found to be calibrated during the field test/14/15/.

E.5.7. Assessment of data and calculation of emission reductions or net removals

E.5.7.1. Calculation of baseline value or estimation of baseline situation of each SDG Impact

Means of verification	**1- SDG-13: Climate Action** The equations used were found consistent with the PoA DD/1/, VPA DDs/2/ and the applied methodology TPDDTEC, version 3.1/8/ Using TPDDTEC–- Technologies and Practices to Displace Decentralized Thermal Energy Consumption (TPDDTEC), version 3.1/8/, "When the baseline fuel and the project fuel are the same and the baseline emission factor and project emission are considered the same, the overall GHG reductions achieved by the project activity in year y are calculated as follows:" $BE_{b,y} = B_{b,y} * ((f_{NRB,\ y} * EF_{b,fuel,\ CO2}) + EF_{b,fuel,\ nonCO2}) * NCV_{b,\ fuel}$ Where,

$BE_{b,y}$	Emissions for baseline scenario b during the year y in tCO2e
$B_{b,y}$	Quantity of fuel consumed in baseline scenario b during year y, in tons, as per by-default factors (cases with project performance field test only)
$f_{NRB,y}$	Fraction of biomass used during year y for the considered scenario that can be established as non-renewable biomass (drop this term from the equation when using a fossil fuel baseline scenario)
$NCV_{b,fuel}$	Net calorific value of the fuel that is substituted or reduced (IPCC default for wood fuel, 0.015 TJ/ton)
$EF_{b,fuel,\ CO2}$	CO2 emission factor of the fuel that is substituted or reduced. 112 tCO2/TJ for Wood/Wood Waste, or the IPCC default value of other relevant fuel
$EF_{b,fuel,\ nonCO2}$	Non-CO2 emission factor of the fuel that is substituted or reduced

Also,

$B_{b,y} = N_{p,y} * P_{b,y}$

Where,

$N_{p,y}$	Project technology-days in the project database for project scenario p through year y
$P_{b,y}$	Specific fuel consumption for an individual technology in baseline scenario b during year y converted to tons/day

VPA Number	**States**	**Total BE_y**
VPA2	Kerala Tamil Nadu	101,767 37,877
VPA 3	Kerala	97,371
VPA4	Karnataka	83,138
VPA7	Karnataka Tamil Nadu Chhattisgarh Madhya Pradesh	118591 4557 11602 8432
VPA11	Jumbo Karnataka PowerGram Tamil Nadu Smart Karnataka Smart Maharashtra	2706 5976 81 380990

	Jumbo Kerala	23518

In line with section 6 of TPDDTEC (v.3.1)/08/ as the project involves installation of new systems with high efficiency and hence leakage emission is considered zero.

b) SDG-7: Affordable clean energy

$ACS_{baseline}$ Access to affordable and clean energy (Number of operating ICS units under baseline)

VPA#	$ACS_{baseline}$
VPA 02	0
VPA 03	0
VPA 04	0
VPA 07	0
VPA 11	0

c) SDG-8: Decent Work

The SDG impact is calculated as below:

QE $IG_{Baseline}$ Quantative Employment and income generation (Number of person (male or female) hired under baseline)

VPA#	$ACS_{baseline}$
VPA 02	0
VPA 03	0
VPA 04	0
VPA 07	0
VPA 11	0

Detailed assessment of all the parameters used to calculate emission reductions is provided under section E.5.4.2.
The calculations presented in the Monitoring Report /40/ and the corresponding ER sheet /05/06/07/ were found appropriate and complying with provisions prescribed in the registered monitoring plan/2/ of the respective VPA-DDs/2/, PoA-DD/1/ and applied methodology/08/.

Findings	None
Conclusion	The verification team verified that a) A complete set of data for the monitoring period was available and the verification of each monitoring parameter is elaborated under Section E.5.4.2 of this report. The complete monitoring data is also presented in the corresponding ER calculations sheet/05/06/07/ of final Monitoring Report/40/. b) The information provided in the monitoring report was cross checked with other sources, wherever appropriate and available, and such information is also included under Section E.5.4.2 of this report. c) The calculations of baseline emissions as presented in the corresponding ER calculations sheet/5//6/ of final Monitoring Report/40/ were checked and found to be consistent with the formulae

	and methods described in the registered monitoring plan of VPA-DDs/2/, registered PoA-DD/1/ and the applied methodology/08/. d) All assumptions used in the emission calculations were found appropriate and therefore justified e) Appropriate emission factors, IPCC default factors/32/ and other reference values have been correctly applied. This has also been elaborated under Section E.5.4.1 of this report. f) No standardized baseline was prescribed in the registered PoA-DD/1/.

E.5.7.2. Calculation of project value or estimation of project situation of each SDG Impact

Means of verification	a) SDG-13: Climate Action The equation for calculating emission reductions is as follows, Project estimate/emission calculation are conducted as follows: $PE_{p,y} = B_{p,y} * ((f_{NRB,y} * EF_{p,fuel,CO2}) + EF_{p,fuel,nonCO2}) * NCV_{p,fuel}$ $B_{p,y} = N_{p,y} * ((P_{p,y} * U_{p,y}) + (P_{b,y} * (1 - U_{p,y})))$ Where: $PE_{p,y}$ Emissions for project scenario p during year y in tCO2e $B_{p,y}$ Quantity of fuel consumed in project scenario p during year y, in tons, and as derived from the statistical analysis conducted on the data collected during the project performance field tests (cases when no baseline performance field test are performed, e.g. by-default baseline factors) $U_{p,y}$ Cumulative usage rate for technologies in project scenario p in year y, based on cumulative adoption rate and drop off rate revealed by usage surveys (fraction) $f_{NRB,y}$ Fraction of biomass used during year y that can be established as non-renewable biomass (drop this term from the equation when using a fossil fuel baseline scenario) $NCV_{p,fuel}$ Net calorific value of the project fuel (IPCC default for wood fuel, 0.015 TJ/ton). This is equal to the baseline fuel NCV in projects which use the same fuel. $EF_{p,fuel,CO2}$ CO_2 emission factor of the project fuel. This is equal to the baseline fuel EF in projects which use the same fuel, 112 tCO2/TJ for Wood/Wood Waste, or the IPCC default value of other relevant fuel $EF_{p,fuel,nonCO2}$ Non-CO_2 emission factor of the project fuel. This is equal to the baseline fuel EF in projects which use the same fuel. $PE_{p,y} = B_{p,y} * ((f_{NRB,y} * EF_{p,fuel,CO2}) + EF_{p,fuel,nonCO2}) * NCV_{p,fuel}$ $B_{p,y} = N_{p,y} * ((P_{p,y} * U_{p,y}) + (P_{b,y} * (1 - U_{p,y})))$

VPA Number	States	PE_y
VPA 2	Kerala	79,262
VPA2	Tamil Nadu	29146

Total		**108408**
VPA Number	**States**	**PE_y**
VPA 3	Kerala	71626.2
VPA Number	**States**	**PE_y**
VPA 4	Karnataka	41,629
VPA Number	**States**	**PE_y**
VPA 7	Karnataka	81,687
VPA 7	Tamil Nadu	3,071
VPA 7	Chhattisgarh	8,834
VPA 7	Madhya Pradesh	5,925
Total		**99,518**

VPA Number	**States**	**PE_y**
VPA11	Jumbo Karnataka	1,573
VPA11	PowerGram Tamil Nadu	4339
VPA11	Smart Karnataka	79
VPA11	Smart Maharashtra	27273
VPA11	Jumbo Kerala	16591
Total		**49,855**

b) SDG-7: Affordable clean energy

$ACS_{Project}$ = Access to affordable and clean energy (Number of operating ICS units under Project)

The verified values for each VPAs are:

VPA Number	Year-2022
VPA02	16,357
VPA03	9,600
VPA04	16,821
VPA07	16008
VPA11	8,474

c) SDG-8: Decent Work

QE IGProject = Quantitative Employment and income generation

	(Number of person (male and female) hired under Project) The verified values for each VPAs are: **VPA Number** / **Year-2022** VPA 02: 23 (Female:3 and Male:20) VPA 03: 43 (Female:3 and Male:40) VPA 04: 30 (Female:1 and Male:29) VPA 07: 60 (Female:6 and Male:54) VPA 11: 48 (Female : 3 and Male :45)
Findings	None
Conclusion	The verification team verified that a) A complete set of data for the monitoring period was available and the verification of each monitoring parameter is elaborated under Section E.5.4.2 of this report. The complete monitoring data is also presented in the corresponding ER calculations sheet/05/06/ of final Monitoring Report /40/. b) The information provided in the monitoring report was cross checked with other sources, wherever appropriate and available, and such information is also included under Section E.5.4.2 of this report.

E.5.7.3. Calculation of leakage

Means of verification	Leakage if applicable, will be assessed on the following points: a. The displaced baseline technologies are reused outside the project boundary in place of lower emitting technology or in a manner suggesting more usage than would have occurred in the absence of the project. b. The fNRB or fossil fuels saved under the project activity are used by non-project users who previously used lower emitting energy sources. c. The project significantly impacts the NRB fraction within an area where other CDM or VER project activities account for fNRB fraction in their baseline scenario. d. The project population compensates for loss of the space heating effect of inefficient technology by adopting some other form of heating or by retaining some use of inefficient technology. The 4 conditions under which the leakage should be accounted for are not observed in this project activity. The detailed discussion on the same is provided in section E.5.4.2 above under the parameter: SDG13: $LE_{p,y}$
Findings	None
Conclusion	A complete set of data for the monitoring period was available and the verification of each monitoring parameter is elaborated under Section E.5.4.2 of this report. The complete monitoring data is also presented in the corresponding ER calculations sheet/05/06/ of final Monitoring Report /40/. The information provided in the monitoring report was cross checked

	with other sources, wherever appropriate and available, and such information is also included under Section E.5.4.2 of this report.

E.5.7.4. Calculation of net benefits or direct calculation for each SDG Impact

Means of verification

SDGs Targeted	SDG Impact	Baseline estimate	Project estimate	Net benefit
13	Climate Action	VPA2- 139644 VPA 3- 97371 VPA 4–83,138 VPA 7–143182 VPA 11–71,460	VPA 2-108408 VPA 3–71626 VPA 4–41629 VPA 7– 99518 VPA11–49,855	VPA 2- 31,236 VPA 3- 25,745 VPA 04-41,509 VPA 07-43,664 VPA 11-21,605
7	Affordable and clean energy (ICS)	0	VPA 2- 16,357 VPA 3-9,600 VPA 04-16,821 VPA 07-16008 VPA 11-8,474	VPA 2- 16,357 VPA 3-9,600 VPA 04-16,821 VPA 07-16008 VPA 11-8,474
8	Decent work and economic growth	0	VPA 2- 23 VPA 3- 43 VPA 04-30 VPA 07-60 VPA 11-48	VPA 2- 23 VPA 3- 43 VPA 04-30 VPA 07-60 VPA 11-48

The calculation methods applied for all the SDG impacts were checked with PoA-DD/1/ and VPA-DDs/2/. The verification team confirms that the stated figures were checked and found acceptable.

Findings: No findings

Conclusion: The verification team confirms that

a) The complete data was available and is duly reported.
b) As indicated above, the description with regard to cross-check of reported data is included under respective parameter (refer Section E.5.4 of this report);
c) Appropriate methods and formulae for calculating baseline GHG emissions or baseline net GHG removals, project emissions and leakage emissions were followed;
d) Appropriate emission factors, IPCC default factors and other reference values were correctly applied.

E.6. Voluntary project activity

E.6.1. Compliance of the VPA implementation with the included VPA design document

Means of verification

The reporting for this issuance has been done technology-wise, thus section E.6 shall be dealing **with distribution of solar CEPs and its compliance with registered PoA-DD/1/, VPA-DDs/2/ and applicable standard.**

VPAs VPA 02, VPA 03, VPA 04, VPA 07, VPA 11 described in this section targets the promotion, distribution and sale of different models of solar lighting systems implemented in this PoA.

Micro Energy Credits Corporation Private Limited is the Coordinating and Managing Entity (CME) for the implementation of VPAs. The CME coordinates and manages each Partner Organization (PO)/VPA

Implementer and assists them in implementing each element of the monitoring plan.

Solar Lighting systems:

Solar Lighting systems VPA Ref. #	GS 11474 (VPA 02)	GS 11475 (VPA 03)	GS 11476 (VPA 04)	GS11477(VPA 07)	GS11481 (VPA 11)
Location / State	Kerala, Tamil Nadu, Chhattisgarh, Madhya Pradesh and Maharashtra	Kerala, Tamil Nadu, Karnataka, Gujarat, Maharashtra, Madhya Pradesh, Uttar Pradesh, Odisha, Pondicherry.	Karnataka	Assam (AS), Bihar (BH), Jharkhand (JK), Karnataka (KA), Odisha (OD), Tripura (TR), Uttar Pradesh (UP), West Bengal (WB)	Karnataka (KA), Kerala(KL), Gujarat (GJ), Madhya Pradesh (MP), Maharashtra (MH), Odisha (OD), Tamil Nadu (TN) and Uttar Pradesh (UP)
CEP Type	SLS	SLS	SLS	SLS	SLS
CEP Model	There are various models of Solar lighting systems distributed in the VPA, all reviewed and found acceptable under applied methodology	There are various models of Solar lighting systems distributed in the VPA, all reviewed and found acceptable under applied methodology	There are various models of Solar lighting systems distributed in the VPA, all reviewed and found acceptable under applied methodology	There are various models of Solar lighting systems distributed in the VPA, all reviewed and found acceptable under applied methodology	There are various models of Solar lighting systems distributed in the VPA, all reviewed and found acceptable under applied methodology

VPA Implementer / PO	ESAF	ESAF & Muthoot	SKDRDP	ESAF	ESAF
Total Quantity Sold / Disseminated	145,386 solar lamps (i.e. 121,676 solar lighting systems)	86,400 solar lamps (i.e. 79,849 solar lighting system)	56,342 (i.e. 19,794 Solar Lighting Systems)	126,504 (i.e.46,822 Solar Lighting Systems)	242,588 (i.e. 242,588 Solar Lighting Systems)
Maximum Estimated Qty CEPs in CPA ((for comparable year of distribution)	145,386 solar lamps (i.e. 121,676 solar lighting systems)	86,400 solar lamps (i.e. 79,849 solar lighting system)	56,342 solar lamps (i.e. 79,849 solar lighting system)	126,50 solar lamps (i.e. 79,849 solar lighting system)	242,58 solar lamps (i.e. 79,849 solar lighting system)
Estimated ERs (comparable period) (tCO2e)	13376	7949	5183	11677	22,318
Actual ERs from the CEP Type (tCO2e)	5,875	6,278	1587	8,534	12,415

The solar lighting systems are sold to end users and the sales data is collected by means of sales receipts /22/ at the time of sale to the end user. The technical specifications of SLS model were verified through the specifications provided by technology suppliers /21/ and found to be consistent with the monitoring report. The PO has a mechanism of allocating a unique ID to each CEP and the end user so that there is no inter and/or intra-VPAs double counting.

Total SLS distributed under both the VPAs i.e. VPAs 02, 03, 04, 07 and 11 are 657,220 The year and state wise implementation of SLS under the 5 VPAs are mentioned in the table below:

VPA 02:

Year	State	Total Lamps
2013	Kerala	3,699
2014	Kerala	18,119
	Tamil Nadu	7,622
	Maharashtra	1,735
	Chhattisgarh	2,154
	Madhya Pradesh	1,089

2015	Kerala	46,747
	Tamil Nadu	3,736
	Maharashtra	2,608
	Chhattisgarh	1,737
	Madhya Pradesh	1,598
2016	Kerala	43,124
	Tamil Nadu	11,416
	Madhya Pradesh	2
Total		**145,386**

No further sales have been added under the current monitoring period.

VPA 03:

Year	**State**	**Total Lamps**
2016	Gujarat	2081
	Karnataka	3707
	Madhya Pradesh	482
	Maharashtra	1529
	Kerala	45028
	Uttar Pradesh	133
	Odisha	457
	Tamil Nadu	32053
	Puducherry	930
2017	Maharashtra	2081
	Kerala	3707
	Tamil Nadu	482
2018	Kerala	1529
	Tamil Nadu	45028
Total		86,400

No further sales have been added under the current monitoring period.

VPA 04:

Year	**State**	**Total Lamps**
2013	Karnataka	7,342
2014	Karnataka	10,341
2015	Karnataka	24,660
2016	Karnataka	13,999
Total		56,342

No further sales have been added under the current monitoring period.

VPA 07:

Year	State	Total Lamps
2017	*Karnataka*	26484
	Assam	4106
	Bihar	2553
	Jharkhand	321
	Odisha	394
	West Bengal	48
	Uttar Pradesh	103
2018	*Karnataka*	49763
	Assam	4647
	Bihar	2431
	Jharkhand	585
	Odisha	599
	Tripura	867
	West Bengal	20
2019	*Karnataka*	28691
	Assam	2251
	Bihar	1325
	Jharkhand	238
	Odisha	207
	Tripura	481
	West Bengal	26
Total		126,504

No further sales have been added under the current monitoring period.

VPA 11:

Year	State	Total Lamps
2015	*Karnataka*	9,177
	Kerala	50,375
	Maharashtra	9,940
	Tamil Nadu	26,883
2016	*Karnataka*	10,819
	Kerala	39,162
	Gujarat	3,246
	Madhya Pradesh	293
	Maharashtra	8,053
	Odisha	15
	Tamil Nadu	45,325
	Uttar Pradesh	188

2017	*Karnataka*	5,598
	Kerala	11,783
	Gujarat	1,875
	Madhya Pradesh	380
	Maharashtra	19
	Odisha	2,405
	Tamil Nadu	17,052
Total		242,588

No further sales have been added under the current monitoring period.

During onsite surveys, the end users were asked if we can see the product installed to confirm the model in use. It has been checked by the verification team that the verified VPAs are way below the threshold /02/ for their respective methodologies:

VPA	Capacity (MW)/ ERs (tCO2e)	Threshold (MW)/ (tCO2e)
VPA 02	5,875 tCO_2e	60,000 tCO_2e
VPA 03	6,278 tCO_2e	60,000 tCO_2e
VPA 04	1,587 tCO_2e	60,000 tCO_2e
VPA 07	8,534 tCO_2e	60,000 tCO_2e
VPA 11	12,415 tCO_2e	60,000 tCO_2e

All technical specifications/21/ were reviewed and SLS models were found to be meeting the applied methodology requirements and PoA eligibility criteria of PoA and therefore, found acceptable by the verification team, as provisioned in section A.3 of VPA-DDs/2/.

Findings	No Findings were raised.
Conclusion	• The verification team is of the opinion that physical features of the VPAs have been implemented in accordance with the VPA-DDs/2/. • It is also confirmed, through the review of the supporting documentation, that physical features of the component VPAs have been implemented in accordance with the VPA-DDs/2/. • The VPAs was also found to be completely operational in line with the VPA-DDs/2/. • The information provided in the relevant sections of the monitoring report are appropriately describe the implementation and operational status of the PoA.

E.6.2. Post-Design Certification changes

E.6.2.1. Temporary deviations from the approved Monitoring & Reporting Plan, methodology or standardized baseline

Not Applicable

E.6.2.2. Corrections

Not Applicable

E.6.2.3. Changes to the start-date of the crediting period

Not Applicable

E.6.2.4. Permanent changes from the Design Certified monitoring plan, applied methodology or applied standardized baseline

Not Applicable as this is the first monitoring period of the VPA under GS.

E.6.2.5. Changes to project design of approved project

There are no changes made during this monitoring period.

E.6.3. Compliance of the registered monitoring plan with applied methodologies and standardized baselines

Means of verification	The monitoring plan contained in the VPA-DDs/2/ was reviewed in relation to the monitoring requirements of the applied methodologies AMS-III.AR version 7/10/, as well as the PoA DD/1/, bearing in mind the technology involved. In light of the review conducted, it was found that the monitoring plan in the VPA-DDs/2/ contains all the required parameters to be monitored in the context of the VPAs design and description and allows determination of emission reductions according to the PoA DD/1/ and applied methodology/09/10/.
Findings	No findings raised.
Conclusion	The monitoring plan is in line with the approved methodology, Gold Standard Simplified Methodology AMS-III.AR Version 07/10/, that is included in the registered PoA DD/1/ and VPA-DDs/2/. The monitoring plan is in accordance with the applied methodology /09/10/ that is included in the VPA-DDs/2/.

E.6.4. Compliance of monitoring activities with the registered monitoring plan.

E.6.4.1. Data and parameters fixed ex ante or at renewal of crediting period

For the VPA 02 & VPA 03 (AMS-III.AR)

SDG 13: The Lamp Emission factor, DV

Means of verification	Applicable only in VPA 02 & VPA 03. DV –- The value of the parameter was sourced from default value prescribed in AMS-III.AR. (v.7)/10/. The value of this parameter considered is mentioned below as per VPA-DDs. VPA Number: Value VPA 02: 0.092 tCO_2e/Lamp VPA 03: 0.092 tCO_2e/Lamp VPA 04: 0.092 tCO_2e/Lamp VPA 07: 0.092 tCO_2e/Lamp VPA 11: 0.092 tCO_2e/Lamp
Findings	No findings were raised.
Conclusion	The value mentioned in the Monitoring Report /40/ and Emission Reduction Spreadsheet /05/06/ are consistent with the approach given in VPA-DDs/2/. Hence the applied value is correct and justified.

E.6.4.2. Data and parameters monitored (Carbon & SDG)

VPAs 02 & 03 - AMS-III.AR

SDG 13: Number of project lamps distributed to end users of type i with charging method j ($N_{i,j}$), Number of lights

Means of verification	Criteria/Requirements	Assessment/Observation
	Measuring /Reading /Recording frequency	Annual
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
	Monitoring equipment	Not applicable
	Calibration frequency /interval:	Not applicable
	How were the values in the monitoring report verified?	The values reported in the final MR /40/ and ER sheet were verified through the output files of MEC Credit tracker platform provided by the CME. During the current monitoring period, ERs from the total of devices distributed have been calculated. Each device, and lamps therein, are considered operational for the first three years of its crediting period after which monitoring is required, which is found to be in line with VPA-DD and applied methodology AMS-III.AR version 07.

		The verified value for the number of total solar lighting systems in this monitoring period is provided in table below: **VPA** — **Total lamps** VPA 2 — 1,21,676 VPA 3 — 79,849 VPA 4 — 19,794 VPA 7 — 46822 VPA 11 — 2,42,588 It was noted that any point during the monitoring period, the small-scale threshold for savings was not exceeded by the VPAs. The verification team has verified the SLS models distributed in the current monitoring period and found those to be consistent with the technical specifications provided by respective product suppliers/21/ and the PoA-DD requirements/28/. During the on-site audit, end-users were surveyed to verify the models installed. The information thus obtained was cross-checked against technical specifications of the device and it was confirmed if it matched with those. Each household was found to be given a specific unique number. These unique identifiers are used to establish that double counting doesn't occur, and all devices are traceable to the households those were distributed to. The verification team checked the uniqueness of solar CEPs across the VPA from the database using Microsoft Excel based tools (eg. Conditional formatting to identify duplicate entries). All entries were found to be unique.
	If applicable, has the reported data been cross-checked with other available data?	Yes. The information provided in the VPA credit tracker Database was verified randomly with the sales receipt and loan document. The data was found consistently recorded.
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Solar light systems installation information was verified as maintained in the MEC tracker system that records the address of the households. It can be confirmed that management is ensuring the correct transfer of data and reporting of emission reductions and the necessary QA/QC processes are in place.
Findings	No findings were raised.	
Conclusion	The parameter has been monitored appropriately, in accordance with the registered monitoring plan and applied methodology.	

SDG 13: Grid factor in year y (GFy), Fraction

Means of verification	**Criteria/Requirements**	**Assessment/Observation**
	Measuring /Reading /Recording frequency	Not applicable (Default value used)

	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Not applicable (Default value used)
	Monitoring equipment	Not applicable
	Calibration frequency /interval:	Not applicable
	How were the values in the monitoring report verified?	The values reported in the final MR were verified from the methodology AMS-III.AR. As per the applied methodology AMS-III.AR para 21, Grid Factor in year y is equal to 1.0 when charging option defined in paragraph 3(a) is used. Para 3(a) of methodology is applicable to the VPAs i.e., the distributed project lamps are charged by a renewable energy system (photovoltaic system). It is also demonstrated at the time of VPA-inclusion and is cross checked during current verification from project database and on-site audit that the replaced lamps were kerosene lamps in line with para 8(a) of applied methodology and therefore it is assumed that all baseline emissions are from the consumption of fossil fuel (in this case, kerosene) for lighting. Therefore, for the current monitoring period default value 1.0 is considered for this parameter.
	If applicable, has the reported data been cross-checked with other available data?	Not applicable
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	It can be confirmed that management is ensuring the correct transfer of data and reporting of emission reductions and the necessary QA/QC processes are in place.
Findings	No findings were raised	
Conclusion	The parameter has been monitored appropriately, in accordance with the registered monitoring plan and applied methodology.	

SDG 13: Dynamic baseline factor in year y (DBy), Fraction

Means of verification	**Criteria/Requirements**	**Assessment/Observation**
	Measuring /Reading /Recording frequency	Not applicable (Default value used)
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring	Not applicable (Default value used)

	methodology? (Yes / No)	
	Monitoring equipment	Not applicable
	Calibration frequency /interval:	Not applicable
	How were the values in the monitoring report verified?	The values reported in the final MR were verified through the methodology AMS-III.AR. According to applied methodology AMS-III.AR, under para 21 and parameter table 5, dynamic baseline factor can be calculated as "default of 1.0 in the absence of relevant information" This methodological choice is confirmed at the time of inclusion of VPA as the applicable approach to determine parameter DBy. Therefore, for the current monitoring period default value 1.0 is considered for this parameter.
	If applicable, has the reported data been cross-checked with other available data?	Not applicable
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	It can be confirmed that management is ensuring the correct transfer of data and reporting of emission reductions and the necessary QA/QC processes are in place.
Findings	No findings were raised	
Conclusion	The parameter has been monitored appropriately, in accordance with the registered monitoring plan and applied methodology.	

SDG 13: The percentage of project lamps distributed to end users that are operating and in service (OFy,i,j), Fraction

Means of verification	**Criteria/Requirements**	**Assessment/Observation**
	Measuring /Reading /Recording frequency	Default value for first three years. Determined based on survey conducted in year 3 for years 4-7
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes, measuring and reporting frequency is met
	Monitoring equipment	Not applicable
	Calibration frequency /interval:	Not applicable
	How were the values in the monitoring report	According to applied methodology, if option-2 (para 18) is applied, all project lamps are assumed

	verified?	to operate for first three years from installation, This is also cross-verified from applied methodology according to which, percentage of project lamps distributed to end users that are operating and in service are assumed to be equal to 100 per cent for years 1, 2 and 3. Therefore, since CME has chosen option-2 from AMS-III.AR para 18 in VPA-DD, the percentage of project lamps distributed to end users that are operating and in service is acceptable as 100% for lamps installed less than 3 years ago. However, in case of the VPAs under this verification, the monitoring has been conducted based on sampling for all years of distribution, i.e. ex-post monitoring has been conducted irrespective of the year of installation. Since the approach is more proactive than the minimum requirements of the applied methodology and will not lead to any overestimation of the emission reductions, the approach is found acceptable. The calculation for determining the sample size were checked by the verification team and found to be appropriate and consistent with monitoring plan, as well as with Standard: Sampling and surveys for CDM project activities and programme of activities v.9.0.
	If applicable, has the reported data been cross-checked with other available data?	Not applicable
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	It can be confirmed that management is ensuring the correct transfer of data and reporting of emission reductions and the necessary QA/QC processes are in place.
Findings	No findings were raised	
Conclusion	The parameter has been monitored appropriately, in accordance with the registered monitoring plan and applied methodology.	

SDG 7: Access to affordable and clean energy (Number of operating SLS units under Project), $ACS_{Project}$, Number

Relevant SDG Indicator	**SDG7: Affordable and Clean Energy**	
Means of verification	**Criteria/Requirements**	**VVB Assessment**
	Measuring /Reading /Recording frequency	Continuously
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring	Yes, the frequency is in line to the PoA-DD/1/ and VPA-DD's/2/.

	methodology? (Yes / No)	
	How were the values in the monitoring report verified?	The post monitoring records/40/17/ were checked to identify as part of the assessment as well as during the interviews conducted with the 33 selected beneficiaries during on site visit the intended beneficiaries who are having access to affordable, reliable and modern energy services. The value of the parameter considered to be as mentioned below, which was found to be acceptable. **VPA#** / **Year – 2022** VPA 02 / 94273 VPA 03 / 63,562 VPA 04 / 8376 VPA 07 / 35061 VPA 11 / 179,952
	If applicable, has the reported data been cross-checked with other available data?	Not Applicable
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	The QA/QC processes were deemed to be appropriate and trustworthy.
Findings	None	
Conclusion	Sustainability criteria was found to be fulfilled. The monitoring and reporting is as per the GS PoA-DD /1/ and registered VPA-DDs/2/. The representation of the monitored value was found to be accurate which was easily verifiable. No discrepancy in data monitoring, data management, transfer of data or QA/QC procedures was found.	

E.6.5. Implementation of sampling plan

Means of verification	The monitoring has been carried out in accordance with the monitoring plan contained in the PoA-DD/1/ and respective VPA-DDs/2/. **Sampling Design/Target Population/Sampling Frame/Reliability**: In this sampling design, the VPA's that are covered under the current monitoring period VPA 02, VPA 03, VPA 04, VPA 07and VPA 11 are the subject. The sampling frame considered confidence level and precision as 90/10 considering the requirement of Standard for sampling and surveys for CDM PAs and PoAs/23/. The Credit Tracker Platform that records the contact details of the solar lighting systems end users, serves as the basis from which sampling frame

is developed.

Sampling Method (AMS-III.AR)
The sampling is applied to the proportion-based parameter OFy,i,j for the monitoring period requesting issuance. The samples for monitoring are randomly picked from each sample set. The sampling frame considered confidence level and precision as 90/10 considering the requirement of Standard for sampling and surveys for CDM PoAs for the monitored parameter requiring sampling. The Credit Tracker Platform that records the contact details of all end users serve as the basis from which sampling frame is developed. Differently aged CEPs are divided into separate sample frames and samples are picked from each of these of these sets separately by applying the sampling plan on each of these batches.
In conclusion, VVB reviewed all the evidence submitted by PP related to GHG emission reduction calculations and confirmed that all the parameters are correctly applied. Default values used in the calculation were identified correctly. The emission reduction calculation has been done in line with the applied methodology.
It is also to be noted that for VPA 02, 03, CME had been applying AMS I.A v14 during its first crediting period under CDM which required annual monitoring to be conducted. However, during transition to GS4GG, the crediting period was renewed, and methodology for VPA02 and 03 was changed to AMS III AR v7. CME conducted the monitoring at the beginning of the monitoring period to align with the requirements of the new applied methodology.

Sample selection:

The samples were randomly selected using a computerized randomizer tool in Microsoft excel, and the verification team has reviewed the calculation. The samples were drawn from the complete sales databases (irrespective of their usage status determined during usage survey) for each relevant VPA-DD/2/. The sample can be confirmed to be representative of the total population in the context of the consideration of vintage of implementation of solar CEPs.

Implementation of survey:
Based on interviews with the CME and surveyors during the onsite surveys, in addition to simply asking this question to the end users, the surveyors were also trained to visually inspect the solar lighting system to corroborate the responses received. Therefore, the implementation of survey was considered reliable.

Monitoring survey (by CME) duration:

The monitoring survey (field survey / tests) was carried out by CME representatives between following duration for the current monitoring period:

VPA Ref. No.	Technology	Survey dates for current monitoring period
GS 11474	SLS	06/01/2022 to 16/02/2022
GS 11475	SLS	06/01/2022 to 16/02/2022
GS 11476	SLS	06/01/2022 to 16/02/2022
GS11477	SLS	06/01/2022 to 16/02/2022
GS 11481	SLS	06/01/2022 to 16/02/2022

Therefore, it was concluded that the monitoring survey results obtained are applicable for the entire monitoring period.

	Reliability and precision calculation: The verification team has verified the ER calculation spreadsheets/5/6/ with the monitored data, where the actual achieved precision is calculated against the Guidelines outlined under "Standard for sampling and surveys for CDM project activities and programme of activities"/25/ and can confirm that the calculation of achieved reliability was done correctly. Reliability and precision check are carried out for each monitored sample group under the VPA. The parameters reported in ER spreadsheet were checked for the input values as well as formula applied and were found consistent. The reliability (demonstration of precision achieved after the survey results) is depicted in the ER calculation sheets /5/6/ corresponding to final Monitoring Report /40/, which were also found appropriate. Based on the verified results the verification team found that the required precision is met in all the cases and therefore the survey results were directly used in the calculation of ERs.
Findings	None
Conclusion	The verification team confirmed that the sampling plan and the parameter values are in accordance with the monitoring plan provided in PoA DD/1/ and the VPA DDs/2/.

E.6.6. Compliance with the calibration frequency requirements for measuring instruments

Means of verification	No monitoring equipment required to monitor the parameters, as verified through the registered monitoring plan as outline in the VPA-DDs/2/ and PoA-DD/1/.
Findings	No findings raised.
Conclusion	The verification team has determined that no monitoring equipment has been used by the PP. Therefore, there was no requirement of calibration. This was in accordance with the accepted monitoring plan and the applied monitoring methodology.

E.6.7. Assessment of data and calculation of emission reductions or net removals

E.6.7.1. Calculation of baseline value or estimation of baseline situation of each SDG Impact

Means of verification	**<u>SDG-13: Climate Action</u>** The verification team verified that a) A complete set of data for the monitoring period was available for the monitoring period and the verification of each monitoring parameter is elaborated under Section E.6.4 of this report. The complete monitoring data is also presented in the corresponding ER calculations sheets /5/6/ of final Monitoring Report /40/. b) The information provided in the monitoring report was cross checked with other sources, wherever appropriate and available, and such information is also included under Section E.6.4 of this report. c) The calculations of baseline emissions as presented in the corresponding ER calculations sheet of final Monitoring Report were checked and found to be consistent with the formulae and methods described in the registered monitoring plan of each relevant VPA-DDs/2/, PoA-DD/1/ and the applied methodology/09/10/. d) All assumptions used in the emission calculations were found appropriate and therefore justified

e) Appropriate emission factors, IPCC default factors/32/ and other reference values have been correctly applied. This has also been elaborated under Section E.6.4 of this report.
f) No standardized baseline was prescribed in the PoA-DD and therefore it has not been applied.
g) There is no pro-rata approach applied in the current monitoring period as entire monitoring period falls into period that is after the end of first commitment period of Kyoto Protocol.

The following equations were used to determine the baseline emissions as provided in the monitoring report /40/ and applied in the corresponding ER calculations sheets /5/6/. The equations used were found consistent with the revised accepted PoA-DD/1/, VPA-DDs/2/ and the applied methodology

AMS-III.AR., Version 07/09/:

The emissions reductions for solar lighting projects under AMS-III.AR are determined from equation (5) of the methodology, mentioned below:

$$ER_y = \sum_{i,j} N_{i,j} \times (BE_{y,i} - PE_{y,i,j}) \times (OF_{y,i,j})$$

Parameter	Unit	Value
ER_y	tCO_2e	Emission reductions in year y (
$N_{i,j}$	Number of project lamps	Number of project lamps distributed to end users of type *i* with charging method *j*
$BE_{y,i}$	tCO_2e	Baseline emissions per project lamp in year y
$PE_{y,i}$	tCO_2e	Project emissions per project lamp in year y
$OF_{y,i,j}$	%	Percentage of project lamps distributed to end users that are operating and in service in year *y*, for each lamp type *i* and charging method *j*. Assumed to be equal to 100 per cent for years 1, 2 and 3, and equal to the value determined in paragraph 36, for years 4, 5, 6 and 7

The baseline emissions per project lamp in year y are calculated using equation (3) of the methodology, mentioned below:

$$BE_y = DV \times GF_y \times DB_y$$

Parameter	Unit	Value
BE_y	tCO_2e	Baseline emissions per project lamp in year y
DV	tCO_2e per project lamp	Lamp Emission Factor (default is 0.092 tCO_2e per project lamp)
GF_y	-	Grid Factor in year y, • Equal to 1.0 when charging option defined in paragraph 3(a) is used; • Equal to 1.0 if the project activity is for off-grid households/communities (defined as no grid access or less than 12 hours grid availability per day on an annual average basis); • Otherwise it is equal to 1.0 minus (the fraction of time grid is available to the target households and communities/users in the region of project activity)
DB_y	-	Dynamic Baseline Factor (change in baseline fuel, fuel use rate, and/or utilization during crediting period) in year y. Calculated as either: • Option 1: default of 1.0 in the absence of relevant information; • Option 2: value of 1.0+FFg where FFg is the documented national growth rate of kerosene fuel use in lighting from the preceding years (use the most recent available data for a three or five years average fraction)

Here, the Lamp Emission Factor is determined through the following equation (2) of the methodology, mentioned below:

$$DV = FUR \times O \times U \times EF \div 1000 \times LF \times n \times NTG$$

Parameter	Unit	Value
DV	tCO_2e per project lamp	Lamp Emission Factor (default is 0.092 tCO_2e per project lamp)
FUR	liters/hour	Fuel use rate (0.03

		liters/hour)
O	hours/day	Utilization rate (3.5 hours/day)
U	days/year	Annual utilization (365 days/year)
EF	$kgCO_2$/liter	Fuel emissions factor (2.4 $kgCO_2$/liter)
LF	-	Leakage factor (1.0)
N	-	Number of fuel-based lamps replaced per project lamp (1.0)
NTG	-	Net-to-gross adjustment factor (1.0)

VPA Number	Total $BE_{i,v}$
VPA 2	5,875
VPA 3	25,745
VPA 4	41,509
VPA 7	43,664
VPA11	21,605

2. SDG-7: Affordable clean energy

$ACS_{baseline}$ Access to affordable and clean energy (Number of operating SLS units under baseline) = 0

3. SDG-8: Decent Work

The SDG impact is calculated as below:

QE $IG_{Baseline}$ = Quantative Employment and income generation (Number of person (male or female) hired under baseline) = 0

Findings	No findings
Conclusion	The verification team verified that g) A complete set of data for the monitoring period was available and the verification of each monitoring parameter is elaborated under

	Section E.6.4.2 of this report. The complete monitoring data is also presented in the corresponding ER calculations sheet /5/6/ of final Monitoring Report /40/. h) The information provided in the monitoring report was cross checked with other sources, wherever appropriate and available, and such information is also included under Section E.6.4.2 of this report. i) The calculations of baseline emissions as presented in the corresponding ER calculations sheet /5/6/ of final Monitoring Report /40/ were checked and found to be consistent with the formulae and methods described in the registered monitoring plan of VPA-DDs /2/, registered PoA-DD /1/ and the applied methodology/09/10/. j) All assumptions used in the emission calculations were found appropriate and therefore justified k) Appropriate emission factors, IPCC default factors/32/ and other reference values have been correctly applied. This has also been elaborated under Section E.6.4.1 of this report. l) No standardized baseline was prescribed in the registered PoA-DD/1/.

E.6.7.2. Calculation of project value or estimation of project situation of each SDG Impact

Means of verification

1. SDG 13: Climate Action

The project estimate for solar lighting system is 0 as it is a renewable energy-based technology.

2. SDG 7: Affordable and Clean Energy

$ACS_{Project}$ = Access to affordable and clean energy (Number of households with operating SLS units under Project)

The verified values for SDG 7 for the VPAs are:

VPA Number	ICS	SLS
VPA02	16,357	94273
VPA03	9,600	63,562
VPA 04	16,821	8376
VPA 07	16008	35061
VPA 11	8,474	179,952

3. SDG 8: Decent Work and Economic Growth

QE IGProject = Quantitative Employment and income generation (Number of person (male and female) hired under Project)

VPA Number	
VPA02	23 (Female:3 and Male:20)
VPA03	43 (Female:3 and Male:40)
VPA04	30 (Female:1 and Male:29)
VPA07	60 (Female:6 and Male:54)
VPA 11	48 (Female:3 and Male:45)

Findings	None
Conclusion	No project emissions are required to be calculated.

E.6.7.3. Calculation of leakage

Means of verification	The PoA-DD/1/, VPA-DDs/2/ and applied monitoring methodology/09/ does not prescribe any leakage emissions to be considered. The onsite visit conducted, and project design also did not reveal any potential source to be considered in this regard.
Findings	None
Conclusion	No additional leakage emissions (other than what is already considered in baseline calculations) were required in accordance with the methodology and AMS-III.AR., version 07/09/.

E.6.7.4. Calculation of net benefits or direct calculation for each SDG Impact

For SLS

Means of verification

SDGs Targeted	SDG Impact	Baseline estimate	Project estimate	Net benefit
13	Climate Action	VPA 02– 5,875 VPA 03– 6,278 VPA 04-1587 VPA 07-8534 VPA 11-12415	0 tCO_2e VERs (for all VPAs)	VPA 2- 5876 VPA 3–6278 VPA 4–1587 VPA 7–8534 VPA 11 -12415
7	Affordable and clean energy	0	VPA 2-94273 VPA 3-63,562 VPA 04-8376 VPA 07-35061 VPA 11-179,952	VPA 2-94273 VPA 3-63,562 VPA 04-8376 VPA 07-35061 VPA 11-179,952
8	Decent Work and economic growth	0 0	VPA 02- 23 VPA 03- 43 VPA 04-30 VPA 07-60 VPA 11-48	VPA 02- 23 VPA 03- 43 VPA 04-30 VPA 07-60 VPA 11-48

The calculation methods applied for all the SDG impacts were checked with PoA-DD/1/ and VPA-DDs/2/. The verification team confirms that the stated figures were checked and found acceptable.

Findings	None
Conclusion	The verification team confirms that e) The complete data was available and is duly reported; f) As indicated above, the description with regard to cross-check of reported data is included under respective parameter (refer Section E.5.4 and section E.6.4 of this report); g) Appropriate methods and formulae for calculating baseline GHG emissions or baseline net GHG removals, project emissions and leakage emissions were followed; h) Appropriate emission factors, IPCC default factors/32/ and other reference values were correctly applied.

E.7. Comparison of actual SDG Impacts with estimates in approved PDD

Means of verification

From Section E.5 of the Monitoring Report, it is apparent that estimated values were off while the project monitored its progress.

SDGs Targeted	SDG Impact	Values estimated in ex ante calculation of approved PoA-DD for this monitoring period	Actual values achieved during this monitoring period
13	Climate Action (ICS)	**Year: 2022** VPA02– 96840 VPA03– 42,625 VPA 04-54,210 VPA 07-82,791 VPA 11-45,940	**Year :2022** VPA02– 31,236 VPA03– 25,745 VPA 04-41,509 VPA 07-43,664 VPA 11-21,605
	Climate Action (SLS)	**Year: 2022** VPA 02– 13,376 VPA 03– 7,948 VPA 04-5183 VPA 07-11677 VPA 11-22318	**Year: 2022** VPA02– 5,875 VPA03 – 6,278 VPA 04-1,587 VPA 07-8,534 VPA 11-12,415
7	Affordable and clean energy (ICS)	**Year : 2022** VPA 02– 29,678 VPA 03– 16,048 VPA 04-26,943 VPA 07-25,646 VPA 11-12,798	**Year :2022** VPA 02– 16,357 VPA 03– 9,600 VPA 04-16,821 VPA 07-16008 VPA 11-8,474
	Affordable and clean energy (SLS)	**Year :2022** VPA 02– 121,676 VPA 03– 79,849 VPA 04-19,794 VPA 07-46,822 VPA 11-242,588	**Year :2022** VPA 02– 94273 VPA 03– 63,562 VPA 04-8376 VPA 07-35061 VPA 11-179,952
8	Decent Work and Economic Growth	**Year :2022** VPA 02– 20 VPA 03– 20 VPA 04-20 VPA 07-20 VPA 11-20	**Year :2022** VPA 02– 23 VPA 03– 43 VPA 04-30 VPA 07-60 VPA 11-48

The actual SDG targets against the anticipated values in PoA-DD/01/ and VPA-DDs/02/ is lower for all the SDGs except SDG 8 as tabulated above. The primary reason being in the PoA-DD and VPA-DDs sales for the respective technology are much lower than expected in the VPA-DDs. Thus, the achieved SDG targets are much lower than anticipated.

Findings	None
Conclusion	The actual emission reductions achieved in the current monitoring period for the VPAs is lower than the emission reductions as well as for other SDG targets stated in the VPA-DDs/2/. Therefore, it has been accepted by the verification team.

E.7.1. Remarks on increase in achieved SDG Impacts from estimated value in approved PDD

Means of verification	The Monitoring Report /40/ and corresponding ER calculations sheet /05/06/, show that the actual emission reductions achieved for project stove during this monitoring period are less than the estimate provided in VPA-DDs/2/. However, increase in the number of SDG 8 is due to the need of more on ground officers in various fields like sales, marketing, monitoring etc. which is found to be appropriate.
Findings	None
Conclusion	No justification was sought from the PD because the achievement of emission reductions were lower than what had been estimated.

E.8. Safeguarding reporting

Principles	Mitigation Measures added to the Monitoring Plan	Assessment/Observation
Principle 6.1. Labour Rights		
The Project Developer shall ensure that all employment is in compliance with national labour occupational health and safety laws and with the principles and standards embodied in the ILO fundamental conventions	The CME had made sure that all employment complies with regional labour laws and regulations. The VPA does not entail any forced labour. All employees are confirmed to be minimum 18 years of age. The information is found confirmed and recorded in the monitoring report.	As verified by the VVB through the employment records/30/ and contracts no employee was found to be 18 years of age which is in line with national labour laws
Principle 9.4 Release of pollutants.		
Could the Project potentially result in the release of pollutants to the environment?	The project distributed clean energy products which required a appropriate handling at their end of life to avoid release of pollutants at end of life. The PP has been accounted for this and ensured the mitigation measures are in place at the time of monitoring, including procurement of waste scrap, which has been documented in the monitoring report.	VVB has verified and evident through the interviews of Muthoot and ESAF staff, if any waste scrap disposal happened in the current monitoring, the information confirmed by the photographic evidence of sample receipts/8/ shared by the CME.

E.9. Stakeholder Inputs and Legal Disputes

Means of verification	Since there were no negative comments reported in the Grievance mechanism for the current period, as confirmed from the logbooks and interviews of the end users, this section is not applicable. No Legal disputes have been indicated by the CME and PO during the interviews. CME has added declaration in the monitoring report indicating that no legal contest has arisen during this monitoring period.

	The stakeholder mitigations that were agreed to be monitored include aftersales mechanism to ensure customer complaints are registered and addressed continuously. Interviews of end-users were conducted by the VVB representatives, and all end-users confirmed that they were aware of the complaints mechanism and had contact information of the PO representatives in case they have any complaints regarding the CEPs. The measures to address such complaints may include repair or replacement of CEPs, depending on the degree of damage. The Continuous input / Grievance Expression process book is available at the office of Local Partner organization for those who don't have the access to electronic media for expressing there concerns and the end users can also register there complaint / grievance through the email customercare@muthoot.com, info@cedarretail.in, help@goldstandard.org. skdrdp@skdrdpindia.org , care@sunking.com During the current monitoring period, For ICS, total repairs/replacements done were 154, 76, 32, 40, 52 for VPA 2,3,7, & 11 respectively. For SLS, total repairs/replacements done were 162,063. These have been confirmed by the ER Sheets/5/6/where the data from the partner is stored of the respective VPAs. A step wise approach has been adopted by the CME for aftersales mechanism to resolve customer complaints. The steps involved are: Step 1: Complain Registration Step 2: Logging complaint Step 3: Collection of products for repair Step 4: Resolution of the complaint Step 5: Feedback (optional) VVB confirms that all the technical failure and maintenance protocol has been appropriately listed by the CME in the MR.
Findings	No Finding were raised.
Conclusion	There was no Grievance registered in the current monitoring period which was confirmed by the grievance expression logbook available at the office of local partner organization/37/.

SECTION F. Internal quality control

The draft verification report that is prepared by the verification team is reviewed by an independent technical review team (one or more members) to confirm if the internal procedures established and implemented by Earthood were duly complied with and such opinion/conclusion is reached in an objective manner that complies with the applicable GS4GG requirements. The technical review team is collectively required to possess the technical expertise of all the technical area/sectoral scope the project activity relates to. All team members of technical review team are independent of the verification team.
During the technical review process, additional findings may be identified, or the closed-out findings may be opened, which needs to be satisfactorily resolved before the request for issuance is submitted to Gold Standard. The independent technical reviewer may either approve the report as such or reject/return the same in such case providing the comments/findings/issues that needs to be resolved by the verification team. The decision taken by the Technical Reviewer is final and is authorized on behalf of Earthood Services Private Limited.

SECTION G. Verification opinion

Earthood Services Private Limited (Earthood), contracted by, has performed the independent verification of the emission reductions for the GS Project GS11474 (VPA 02) ,GS11475 (VPA 03), GS11476 (VPA 04), GS11477 (VPA 07) and GS11481 (VPA 11) in the host country "India" for the monitoring period 01/01/2022 to 31/12/2022 (both dates inclusive), as reported in the Monitoring Report, Version 2.0 dated 06/08/2023/40/. The 'MicroEnergy Credits' is responsible for the collection of data in accordance with the monitoring plan and the reporting of GHG emissions reductions from the project activity. Earthood commenced the verification against the baseline and monitoring methodology "TPDDTEC – "Technologies and Practices to Displace Decentralized Thermal Energy Consumptions, Version 3.1"/08/ and AMS-III.AR "Substituting fossil fuel based lighting with LED/CFL lighting systems" version 07/10/, the monitoring plan contained in the VPA-DDs and Monitoring Report Version 2.0 dated 06/08/2023/40/.

VVB's verification approach is based on the understanding of the risks associated with reporting of GHG emission data and the controls in place to mitigate these. Earthood planned and performed the verification by obtaining evidence and other information and explanations that Earthood considered necessary to give reasonable assurance that reported GHG emission reductions are fairly stated.

The verification team confirms that:

- The PoA was found completely implemented as per the description given in the registered VPA-DDs.
- The actual operation conforms to the description in the registered PoA – DD/01/ and VPA- DDs/02/.

SECTION H. Certification statement

ESPL's verification approach is based on the understanding of the risks associated with reporting of GHG emission data and the controls in place to mitigate these. ESPL planned and performed the verification by obtaining evidence and other information and explanations that ESPL considered necessary to give reasonable assurance that the reported GHG emission reductions are fairly stated.
In our opinion, the GHG emissions reductions reported for the project activity are fairly stated in the Monitoring Report (final) Version 2.0 dated 06/08/2023/40/. ESPL, based on outcome of verification activities, certifies in writing that, during the monitoring period 01/01/2022 to 31/12/2022 (inclusive of both the dates) for the VPA 02, VPA 03, VPA O4, VPA 07 and VPA 11 (inclusive both dates) the registered GS PoA – GS11450 "MicroEnergy Credits – Microfinance for Clean Energy Product Lines – India" achieved the verified amount of 6,224 tCO_2e under VPA 02, 32,023 tCO_2e under VPA 03, 43,096 tCO_2e under VPA 04, 52,198 tCO_2e under VPA 07 and 34,020 tCO_2e under VPA 11 in anthropogenic emissions by sources of greenhouse gases that would not have occurred in the absence of the PoA.
The verified amount of emission reductions is stated below as per implemented VPAs and as per commitment period:

Verified and certified emission reductions as per monitoring period:

Monitoring period	Device	VPA 02	VPA 03	VPA 04	VPA 07	VPA 11
From 01/01/2022 to 31/12/2022 (Year 2022)	**ICS**	31,236 tCO_2e VERs	25,745 tCO_2e VERs	41,509 tCO_2e VERs	43,664tCO_2e VERs	21,605 tCO_2e VERs
	SLS	5,875 tCO_2e VERs	6,278 tCO_2e VERs	1587 tCO_2e VERs	8,534tCO_2e VERs	12,415 tCO_2e VERs
Total		**37111 tCO_2e VERs**	**32,023tCO_2e VERs**	**43,096 tCO_2e VERs**	**52,198 tCO_2e VERs**	**34,020 tCO_2e VERs**

Appendix 1. Abbreviations

Abbreviations	Full texts
General	
ACM	Approved Consolidated Methodology
AM	Approved Methodology
BE	Baseline Emission
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
CME	Coordinating and Managing Entity
CL	Clarification Request
CO2	Carbon dioxide
CP	Crediting Period
DR	Desk Review
EB	Executive Board
EI	External Individual
ESPL	Earthood Services Private Limited
FAR	Forward Action Request
GHG	Green House Gas
GSC/GSP	Global Stakeholder Consultation Process
IPCC	Intergovernmental Panel on Climate Change
IR	Internal Resource
KP	Kyoto Protocol
LSC	Local Stakeholder Consultation Process
MoC	Modalities of Communication
MoV	Means of Verification
MP	Monitoring Plan
ODA	Official Development Assistance
PA	Project Activity
PCP	Project Cycle Procedure
PD	Project Developer
PDD	Project Design Document
PE	Project Emission
PoA	Programme of Activities
PoA DD	Programme of Activities Design Document
PS	Project Standard
RCP	Renewal of Crediting Period
RFR	Request for Registration
tCO2e	tonnes of Carbon di Oxide equivalent

TPH	Tonnes Per Hour
TR	Technical Reviewer
UNFCCC	United Nations Framework Convention on Climate Change
V	Version
VPA	Verified Project Activity
VVB	Validation and Verification Body
VVS	Validation and Verification Standard
Project Specific	
ICS	Improved Cookstove
GS4GG	Gold Standard for Global Goals
EPC	Electric Pressure Cooker
LSC	Local Stakeholder Consultation
MoV	Means of Verification
SDG	Sustainable Development Goals
WPS	Water Purification System technology

Appendix 2. Competence of team members and technical reviewers

Competence Statement			
Name	Vishnu S Panicker		
Education	M.Sc (Sustainable Development and Environment Management) B.Sc (Forestry)		
Experience	1+ years		
Field	Forestry and Environment		
Approved Roles			
Team Leader	Yes (VM)		
Validator	Yes (VM)		
Verifier	Yes (VM)		
Local expert	Yes (India)		
Financial Expert	NO		
Technical Reviewer	NO		
TA Expert (X.X)	Yes (VM TA 1.2, 3.1)		
Reviewed by	Shifali Guleria, Quality Manager	**Date**	09/06/2023
Approved by	Deepika Mahala, Technical Manager	**Date**	09/06/2023

Competence Statement			
Name	Akanksha Sengupta		
Education	M.Sc Environmental Studies, University of Delhi B.Sc Zoology, Hans Raj College, DU		
Experience	4 months		
Field	Environment Science and Policy		
Approved Roles			
Team Leader	NO		
Validator	NO		
Verifier	NO		
Methodology Expert	NO		
Local expert	NO		
Financial Expert	NO		
Technical Reviewer	NO		
TA Expert (X.X)	NO		
Trainee	YES		
Reviewed by	Shifali Guleria (Quality Manager)	**Date**	19/05/2023
Approved by	Deepika Mahala (Technical Manager)	**Date**	19/05/2023

Competence Statement			
Name	Charu Patwal		
Education	M.Sc. Environmental Science		
Experience	2+ years		
Field	Research & Sustainability		
Approved Roles			
Team Leader	YES (VM only)		
Validator	YES (VM only)		
Verifier	YES (VM only)		
Local expert	YES (India)		
Financial Expert	NO		
Technical Reviewer	NO		
TA Expert (X.X)	YES (TA 3.1)		
Reviewed by	Shifali Guleria (Quality Manager)	**Date**	08/06/2023
Approved by	Deepika Mahala (Technical Manager)	**Date**	08/06/2023

Competence Statement			
Name	Jahnabi Kalita		
Education	M.Sc. Environment Management		
Experience	1 year		
Field	Environment, Climate change		
Approved Roles			
Team Leader	Yes (VM)		
Validator	Yes (VM)		
Verifier	Yes (VM)		
Local expert	Yes (India)		
Financial Expert	NO		
Technical Reviewer	NO		
TA Expert (X.X)	Yes (TA 3.1)		
Reviewed by	Shifali Guleria, Quality Manager	**Date**	02/06/2023
Approved by	Deepika Mahala, Technical Manager	**Date**	02/06/2023

Competence Statement	
Name	Arohi Jain
Education	M. Sc. Environmental Sciences B.Sc. Biology
Experience	3+ years
Field	Environmental Sciences
Approved Roles	
Team Leader	Yes (VM)
Validator	Yes (VM)
Verifier	Yes (VM)

Local expert	Yes (India)		
Financial Expert	NO		
Technical Reviewer	NO		
TA Expert (X.X)	Yes (VM TA 3.1)		
Reviewed by	Shifali Guleria, Quality Manager	**Date**	30/05/2023
Approved by	Deepika Mahala, Technical Manager	**Date**	30/05/2023

Competence Statement			
Name	Diyotima Karfa		
Education	B.Tech. Biotechnology M.Sc. Biotechnology		
Experience	-		
Field	Climate Change		
Approved Roles			
Team Leader	NO		
Validator	NO		
Verifier	NO		
Methodology Expert	NO		
Local expert	NO		
Financial Expert	NO		
Technical Reviewer	NO		
TA Expert (X.X)	NO		
Trainee	YES		
Reviewed by	Shifali Guleria (Quality Manager)	**Date**	12/07/2023
Approved by	Deepika Mahala (Technical Manager)	**Date**	12/07/2023

Competence Statement			
Name	Aayukta Singh		
Education	M.Sc (Plant Pathology) B.Sc (Agriculture)		
Experience	-		
Field	Agriculture		
Approved Roles			
Team Leader	NO		
Validator	NO		
Verifier	NO		
Methodology Expert	NO		
Local expert	NO		
Financial Expert	NO		
Technical Reviewer	NO		
TA Expert (X.X)	NO		
Trainee	YES		
Reviewed by	Shifali Guleria (Quality Manager)	**Date**	28/10/2022

Approved by	Deepika Mahala (Technical Manager)	**Date**	31/10/2022

Competence Statement			
Name	Deepika		
Education	M.Sc. (Forestry) B.Sc. (Hons.) Forestry		
Experience	-		
Field	-		
Approved Roles			
Team Leader	NO		
Validator	NO		
Verifier	NO		
Methodology Expert	NO		
Local expert	NO		
Financial Expert	NO		
Technical Reviewer	NO		
TA Expert (X.X)	NO		
Trainee	Yes		
Reviewed by	Shifali Guleria (Quality Manager)	**Date**	03/10/2022
Approved by	Deepika Mahala (Technical Manager)	**Date**	03/10/2022

Appendix 3. Documents reviewed or referenced

No.	Author	Title	References to the document	Provider
1.	MEC	PoA-DD	VPA2 – ver 5 VPA3 –ver 4 VPA4 – ver 6 VPA7 -ver 5 VPA11-ver 5	CME
2.	MEC	VPA-DD VPA 02 VPA 03 VPA -04 VPA-07 VPA-11	Ver.1.0,	CME
3.	ESPL	Validation Report for inclusion of VPA	Version 1.0, dated 15/09/2022	Others
4.	GS4GG	Monitoring report template Guide	Version 1.1, published on 14/10/2020	GS4GG
5.	MEC	ER Calculation Summary Sheet_VPA 2 , VPA 7, VPA 11	Pertaining to latest MR	CME
6.	MEC	ER Calculation sheet_VPA 03, VPA 4	Pertaining to latest MR	CME
7.	GS4GG	The Gold Standard Simplified Methodology Technologies and Practices to Displace Decentralized Thermal Energy Consumption (TPDDTEC)	Version 3.1, Dated 25/08/2017	Others
8.	MEC	Waste scrap disposal sample receipts	-	CME
9.	UNFCCC	AMS-III.AR Substituting fossil fuel-based lighting with LED/CFL lighting systems	Version 07	Others
10.	CDM	CDM webpage of the PoA: https://cdm.unfccc.int/ProgrammeOfActivities/poa_db/B46TH0V2GLIZK1UPWJ3SMNA8QRX7FY/view	Last accessed on 06/10/2023	Others
11.	The Gold Standard Foundation	GS webpage of the PoA: https://registry.goldstandard.org	Last accessed on 06/10/2023	Others

		/projects/details/3501		
12.	MEC	Carbon Title transfer document	-	CME
13.	MEC	Calibration certificates of weigh balance	Various	CME
14.	MEC	Calibration certificates of Moisture meter	Various	CME
15.	MEC	Spot check user records and the pictures of the stoves	-	CME
16.	MEC	Training records	-	CME
17.	MEC	Monitoring survey reports for parameters monitoring for ICS and SLS	-	CME
18.	MEC	Questionnaire used during the survey for each type of CEP		CME
19.	SKDRDP	Technical specifications of ICS – Jumbo stove	-	CME
20.	d.Light	Technical specifications of SLS (Various)	-	CME
21.	MEC	Original copies of sales receipts / invoices/ warranty cards	-	CME
22.	UNFCCC	CDM PS for PoA	Version 3.0	Others
23.	UNFCCC	CDM VVS for PoA	Version 3.0	Others
24.	UNFCCC	Standard: sampling and surveys for CDM project activities and programme of activities	Version 9.0	Others
25.	UNFCCC	Guidelines: sampling and surveys for CDM project activities and programme of activities	Version 4.0	Others
26.	GS4GG	Principle and requirements	Version 1.2	Others
27.	GS4GG	PoA Requirements	Version 2.0	Others
28.	GS4GG	CSA Requirements	Version 1.2	Others
29.	GS4GG	GHG emission reduction and sequestration product requirements	Version 2.1	Others
30.	MEC	Employment Records	-	CME
31.	IPCC	IPCC Guidelines for National Greenhouse Gas Inventories 2.1 (http://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_2_Ch2_Stationary_Combustion.pdf)	-	Others
32.	GS4GG	Form: GS-MR-FORM	Version 1.1, Dated 14/10/2020	Others
33.	TASC	Training photos	-	CME
34.1	TASC	Training records	-	TASC

34.	The Gold Standard Foundation	REQUIREMENTS AND GUIDELINES USAGE RATE MONITORING,	-	CME
35.	IPCC	GWP: IPCC AR https://www.ipcc.ch/site/assets/uploads/2018/02/ar4-wg1-chapter2-1.pdf	-	Others
36.	IPCC	GWP: IPCC AR5, https://www.ipcc.ch/assessment-report/ar5/	-	Others
37.	MEC	Grievance Logbook	-	Others
38.	MEC	MEC and PO's agreement	-	CME
39.	MEC	Monitoring Report (final)	Version 2.0, dated 06/08/2023	CME
40.	MEC	Quarterly and annual monitoring survey forms	Filled	CME
41.	MEC	Vintage Wise approach (GS11482)	-	CME
42.	MEC	Credit tracker platform screenshots/ online – output file	-	CME
43.	MEC	KPT test https://cleancooking.org/binary-data/DOCUMENT/file/000/000/604-1.pdf	Version 4.0 March 2018	CME
44.	MEC	Credit Tracker Platform Screenshots	-	CME
45.	MEC	Tracker output file	-	CME
46.	IIT Varanasi	Stove test report	-	CME
47.	UNFCCC	Tool 30: Calculation of the fraction of non-renewable biomass	Version 4.0	Others
48.	UNFCCC	Community Services Activity Requirements	Version 1.2	Others
49.	ESPL	On-Site audit records	-	Others

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

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

FAR ID	xx	**Section no.**	Xx	**Date :** DD/MM/YYYY
Description of FAR				
There is no finding from validation.				
Project participant response				**Date :** DD/MM/YYYY
NA				
Documentation provided by project participant				

NA	
VVB assessment	**Date:** DD/MM/YYYY
NA	

Table 2. CL from this verification

CL ID	-	**Section no.**	-	**Date:** DD/MM/YYYY
Description of CL				
There is no CL from this verification				
Project participant response				**Date:** DD/MM/YYYY
NA				
Documentation provided by project participant				
NA				
VVB assessment				**Date:** DD/MM/YYYY
NA				

Table 3. CAR from this verification

CAR ID	-	**Section no.**	-	**Date:** DD/MM/YYYY
Description of CAR				
There is no CAR from this verification				
Project participant response				**Date: DD/MM/YYYY**
NA				
Documentation provided by project participant				
NA				
VVB assessment				**Date:DD/MM/YYYY**
NA				

Table 4. FAR from this verification

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