


**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	21/10/2022
GS ID (s) of VPAs under PoA	VPA ID: GS11503 (VPA 19), GS11501 (VPA 21), GS11498 (VPA 24), GS11496 (VPA 26)
Version number of the monitoring report to which this report applies	3.0
Completion date of the monitoring report to which this report applies	17/10/2022
Monitoring period no. and duration	1 st 01/01/2021 – 31/12/2021
Crediting period of the PoA corresponding to this monitoring period	18/01/2012 – 17/01/2032
Project Representative	Micro Energy Credits Corporation Private Limited
Host Party	India
Applied methodologies and standardized baselines	AMS-I.A “Electricity generation by the user” version 14. Technologies and Practices to Displace Decentralized Thermal Energy Consumption (TPDDTEC), version 03.1.
Activity requirements applied	<input checked="" type="checkbox"/> Community Services Activities <input type="checkbox"/> Renewable Energy Activities <input type="checkbox"/> Land Use and Forestry Activities/Risks & Capacities <input type="checkbox"/> N/A

Product Requirements applied		<input checked="" type="checkbox"/> GHG Emissions Reduction & Sequestration <input type="checkbox"/> Renewable Energy Label <input type="checkbox"/> N/A		
Estimated amount of annual average GHG emission reductions		ICS: VPA 19 - 60,397 tCO ₂ e VPA 21 - 75,228 tCO ₂ e VPA 24 - 70,890 tCO ₂ e VPA 26 - 88,227 tCO ₂ e SLS: VPA 19 - 52,797 tCO ₂ e VPA 21 - 74,420 tCO ₂ e VPA 24 - 52,531 tCO ₂ e VPA 26 - 71,280 tCO ₂ e		
Sustainable Development Goals Targeted	SDG Impact	Total amount of certified SDG impact (as per approved methodology) achieved in this monitoring period		Units/Product
		Estimated	Achived	
SDG 13: Climate Action	Number of VER's	VPA19 -113,194 VPA21 -149,648 VPA24 -123,421 VPA26 -159,507	VPA19 -69,441 VPA21 -103,884 VPA24 -63,254 VPA26 -55,288	tCO ₂ e VERs
SDG 1: No Poverty	Number of households with clean energy products i.e., ICS	VPA 19 -22,600 VPA 21 -26,000 VPA 24 -22,600 VPA 26 -25,625	VPA19 -21,000 VPA21 -22,000 VPA24 -21,000 VPA26 -20,124	Number of ICS
	Number of households with clean energy products i.e., SLS	VPA 19 -197,033 VPA 21 -287,184 VPA 24 -189,047 VPA 26 -260,835	VPA19 - 40,164 VPA21- 136,182 VPA24 - 237 VPA26 - 175	Number of SLS
SDG 3: Good Health and Well Being	Percentage of users reporting reduction in smoke/PM after shifting to ICS in project	VPA 19 - 100 % VPA 21 - 100 % VPA 24 - 100 % VPA 26 - 100 %	VPA19 - 82% VPA21 - 84% VPA24 - 90% VPA26 - 90%	Percentage
SDG 5: Gender Equality	Percentage of users reporting time saving due to reduction in collected fuel consumption/cooking time/boiling water	VPA 19 - 100 % VPA 21 - 100 % VPA 24 - 100 % VPA 26 - 100 %	VPA19 - 82% VPA21 - 84% VPA24 - 90% VPA26 - 90%	Percentage
SDG 7: Affordable and Clean Energy	Number of beneficiaries (ICS)	VPA 19 - 20,340 VPA 21 - 23,400 VPA 24 - 20,340 VPA 26 - 23,062	VPA19 - 17,220 VPA21 - 18,450 VPA24 - 18,900 VPA26 - 18,112	Number of ICS

	Number of beneficiaries (SLS)	VPA 19- 197,033 VPA 21- 287,184 VPA24- 189,047 VPA26- 260,835	VPA19- 39,445 VPA21- 131,242 VPA24- 204 VPA26- 167	Number of SLS
SDG 8: Decent Work and Economic Growth	Total number of jobs created	VPA 19 - 20 VPA 21 - 20 VPA 24 - 20 VPA 26 - 20	VPA19- 73 VPA21- 85 VPA24- 30 VPA26- 30	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		 Managing Director Dr. Kaviraj Singh		

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 TPDDTEC Version 3.1/09/ and AMS-I. A "Electricity generation by the user" version 14/10/ respectively.

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

Parameter	Validated information
GS ID of the VPAs to be included	GS 11503 (VPA 19), GS 11501 (VPA 21), GS11498 (VPA 24) & GS 11496 (VPA 26)
Title of the VPAs	<ul style="list-style-type: none"> GS11450 - MicroEnergy Credits – Microfinance for Clean Energy Product Lines – India - MicroEnergy Credits PoA – CPA 19 – Clear Sky Partners – GS11503MicroEnergy GS11450 - MicroEnergy Credits – Microfinance for Clean Energy Product Lines – India - MicroEnergy Credits PoA – VPA 21 - Clear Sky Partners – GS11501 GS11450 - MicroEnergy Credits – Microfinance for Clean Energy Product Lines – India - MicroEnergy Credits PoA – CPA 24 – Clear Sky Partners – GS11498 GS11450 - MicroEnergy Credits – Microfinance for Clean Energy Product Lines – India - MicroEnergy Credits PoA – CPA-26- Clear Sky Partners – GS11496
Methodology applied	<ul style="list-style-type: none"> AMS-I.A "Electricity generation by the user" version 14. 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.

The VPA aims 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 Shri Kshetra Dharmasthala Rural Development Project (SKDRDP), Evangelical Social Action Forum (ESAF), Asirvad Microfinance Ltd., Simpa Networks and Bandhan Creation Pvt. Ltd.

The Monitoring period covered under this verification is 01/01/2021 – 31/12/2021 (inclusive of both the dates). All the VPAs i.e., GS 11503 (VPA 19), GS 11501 (VPA 21), GS11498 (VPA 24) & GS 11496 (VPA 26)/02/ envisage an archived annual GHG emission reduction and other SDG impacts over the crediting period as given in the table below.

Sustainable Development Goals Targeted	SDG Impact	Amount Achieved	Units/ Products
13 Climate Action (mandatory)	Number of VERs	VPA19- 69,441 VPA21- 103,884 VPA24- 63,254 VPA26- 55,288	tCO ₂ e VERs
1 End poverty in all its forms everywhere	Number of households with clean energy products	VPA19- 21,000 VPA21- 22,000 VPA24- 21,000 VPA26- 20,124	Number ICS
1 End poverty in all its forms everywhere	Number of households with clean energy products i.e. SLS	VPA19- 40,164 VPA21- 136,182 VPA24- 237 VPA26- 175	Number SLS
3 Good Health and Wellbeing	% Households confirming less smoke with the use of improved cookstove	VPA19- 82% VPA21- 84% VPA24- 90% VPA26- 90%	%
5 Gender Equality	% Household reporting time saving	VPA19- 82% VPA21- 84%	%

		on domestic work by women in collecting fuel or cooking on traditional stove	VPA24- 90% VPA26- 90%	
7 Affordable and Clean Energy	Number of beneficiaries (ICS)		VPA19- 17,220 VPA21- 18,450 VPA24- 18,900 VPA26- 18,112	Number
7 Affordable and Clean Energy	Number of beneficiaries (SLS)		VPA19- 39,445 VPA21- 131,242 VPA24- 204 VPA26- 167	Number
8 Decent Work and Economic Growth	Quantitative Employment and income generation	and	VPA19- 30 VPA21- 42 VPA24- 30 VPA26- 30	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 VPA19, 21, 24 & VPA 26 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-I.A "Electricity generation by the user, version 14.0/10/
- (ii) The approved methodology TPDDTEC – "Technologies and Practices to Displace Decentralized Thermal Energy Consumptions, Version 3.1 /09/
- (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 TPDDTEC Version 3.1/09/ and AMS-I.A "Electricity generation by the user" version 14/10/.

The GHG emission reductions were calculated correctly based on the approved methodologies "TPDDTEC Version 3.1/09/ and AMS-I.A "Electricity generation by the user" version 14/10/ 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 01/01/2021 – 31/12/2021 by GS PoA "MicroEnergy Credits – Microfinance for Clean Energy Product Lines - India" (GSID: 11450) amount to 69,441 tCO₂e for VPA 19, 103,884 tCO₂e for VPA 21, 63,254 tCO₂e for VPA 24 and 55,288 tCO₂e for VPA 26. 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	Varshney	Divij	Central Office	Y	N	Y	Y
2.	Methodological Expert	IR	Guleria	Shifali	Central Office	Y	Y	Y	Y
3.	Technical Expert (TA 1.2)	IR	Guleria	Shifali	Central Office	Y	Y	Y	Y
4.	Local Expert	IR	Guleria	Shifali	Central Office	Y	Y	Y	Y
5.	Trainee (Verifier)	IR	Vashisht	Sushant	Central Office	Y	Y	Y	Y

6.	Trainee (Verifier)	IR	Panda	Satya Ranjan	Central Office	N	Y	Y	N
	Trainee (Verifier)	IR	Yadav	Ashish	Central Office	N	Y	Y	N

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

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 (TA 1.2) to TR	IR	Mahala	Deepika	Central Office
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	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

			are to be dealt with as per the acceptance sampling approach.	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 occurrence of error is less likely. However, referencing errors within the ER sheet may occur.	All calculations and referencing will be checked by verification team with respect to applicable requirements under 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;

Type of PoA	PoAs comprising large-scale CPAs			PoAs comprising only small-scale CPAs	PoAs comprising only micro-scale CPAs
Emission Reductions (tCO ₂ e)/year	500,000 or more	300,001 to 499,999	300,000 or less		
Materiality Threshold (as per CDM VVS for PoAs Version 03.0)	0.5%	1.0%	2.0%	5.0%	10.0%

The applicable materiality threshold is 2.0% as PoA comprises Large-scale VPA (VPA 21 & 26)

Particulars / Monitoring Report	MR Version (Initial)	MR Version (Revised/Final)
Emission Reductions Achieved (tCO ₂ e) in this monitoring period	VPA21- 67,798 tCO ₂ e VPA26- 55,288 tCO ₂ e	VPA21- 103,884 tCO ₂ e VPA26- 55,288 tCO ₂ e
Applicable Threshold (%) as per CDM VVS for PoAs Version 03.0	2.0%	2.0%

The applicable materiality threshold is 5.0% as PoA comprises Small-scale VPA (VPA 19 & 24)

Particulars / Monitoring Report	MR Version (Initial)	MR Version (Revised/Final)
Emission Reductions Achieved (tCO ₂ e) in this monitoring period	VPA19- 69,444 tCO ₂ e VPA24- 63,254 tCO ₂ e	VPA19- 69,441 tCO ₂ e VPA24- 63,254 tCO ₂ e
Applicable Threshold (%) as per	5.0%	5.0%

CDM VVS for PoAs Version 03.0		
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Monitored Parameter (Symbol / Description)	Reporting Frequency	Number of Discrete Data* (Total) Total (100%)	Sample selected for verification Sample	Type of error identified	Impact on ERs	
					ERs impacted (Sample)	ERs impacted (extrapolate for population)
VPA 19 (GS11503)						
For solar CEPs						
li	Annual	30	30	None	NA	NA
Ni,a	Annual	40,164	40,164 The aggregate number of installations was cross-checked from system generated output file of credit tracker platform	None	NA	NA
di,a,v	Annual	40,164	11 (based on acceptance sampling)	None	NA	NA
LFRi,v	Annual	40,164	11 (based on acceptance sampling)	None	NA	NA
CFi,v,LFR	Annual	Calculated	It is a calculated value. Calculation was checked	None	NA	NA
H	Annual	1 (since it is a default value sourced from applied methodology)	1 (appropriateness and proper application of the default value was checked)	None	NA	NA
n <i>r,i,v</i> ,total	Annual	57	57 (calculation for each PO/state/ model group was	None	NA	NA

			checked)			
Kerosene Usage in the Baseline	Annual	40,164	11 (based on acceptance sampling)	None	NA	NA
For improved cook stove						
$N_{p,y}$	Annual	21,000	21,000 The aggregate number of installations was cross-checked from system generated output file of credit tracker platform	None	NA	NA
$P_{p,y}$	Updated Every two years	90	11 (based documentary evidences were checked along with cross-check of a few during onsite audit for 11 randomly selected ICS)	None	NA	NA
$U_{p,y}$	Annual	100	11 (based on acceptance sampling)	None	NA	NA
VPA 21 (GS11501)						
For solar CEPs						
l_i	Annual	34	34	None	NA	NA
$N_{i,a}$	Annual	136,182	136,182 The aggregate number of installations was cross-checked from system generated output file of credit tracker platform	None	NA	NA
$d_{i,a,v}$	Annual		11 (based on	None	NA	NA

		136,182	acceptance sampling)			
LFR _{i,v}	Annual	136,182	11 (based on acceptance sampling)	None	NA	NA
CF _{i,v,LFR}	Annual	Calculated	It is a calculated value. Calculation was checked	None	NA	NA
H	Annual	1 (since it is a default value sourced from applied methodology)	1 (appropriate ness and proper application of the default value was checked)	None	NA	NA
n _{i,v,total}	Annual	105	105 (calculation for each PO/state/ model group was checked)	None	NA	NA
Kerosene Usage in the Baseline	Annual	136,182	11 (based on acceptance sampling)	None	NA	NA
For improved cook stove						
N _{p,y}	Annual	22,000	22,000 The aggregate number of installations was cross-checked from system generated output file of credit tracker platform	None	NA	NA
P _{p,y}	Updated Every two years	90	11 (based documentary evidences were checked along with cross-check of a few during onsite audit for 11 randomly selected	None	NA	NA

			ICS)			
$U_{p,y}$	Annual	129	11 (based on acceptance sampling)	None	NA	NA
VPA 24 (GS11498)						
For solar CEPs						
I_i	Annual	15	15	None	NA	NA
$N_{i,a}$	Annual	237	237 The aggregate number of installations was cross-checked from system generated output file of credit tracker platform	None	NA	NA
$d_{i,a,v}$	Annual	237	11 (based on acceptance sampling)	None	NA	NA
$LFR_{i,v}$	Annual	237	11 (based on acceptance sampling)	None	NA	NA
$CF_{i,v,LFR}$	Annual	Calculated	It is a calculated value. Calculation was checked	None	NA	NA
H	Annual	1 (since it is a default value sourced from applied methodology)	1 (appropriate ness and proper application of the default value was checked)	None	NA	NA
$n_{i,v,total}$	Annual	15	15 (calculation for each PO/state/ model group was checked)	None	NA	NA
Kerosene Usage in the Baseline	Annual	237	11 (based on acceptance sampling)	None	NA	NA
For improved cook stove						

$N_{p,y}$	Annual	21,000	21,000 The aggregate number of installations was cross-checked from system generated output file of credit tracker platform	None	NA	NA
$P_{p,y}$	Updated Every two years	90	11 (based on documentary evidences were checked along with cross-check of a few during onsite audit for 11 randomly selected ICS)	None	NA	NA
$U_{p,y}$	Annual	100	11 (based on acceptance sampling)	None	NA	NA
VPA 26 (GS11496)						
For solar CEPs						
l_i	Annual	14	14	None	NA	NA
$N_{i,a}$	Annual	175	175 The aggregate number of installations was cross-checked from system generated output file of credit tracker platform	None	NA	NA
$d_{i,a,v}$	Annual	175	11 (based on acceptance sampling)	None	NA	NA
$LFR_{i,v}$	Annual	175	11 (based on acceptance sampling)	None	NA	NA
$CF_{i,v,LFR}$	Annual	Calculated	It is a calculated	None	NA	NA

			value. Calculation was checked			
H	Annual	1 (since it is a default value sourced from applied methodology)	1 (appropriate ness and proper application of the default value was checked)	None	NA	NA
$n_{i,v,total}$	Annual	14	14 (calculation for each PO/state/ model group was checked)	None	NA	NA
Kerosene Usage in the Baseline	Annual	175	11 (based on acceptance sampling)	None	NA	NA
For improved cook stove						
$N_{p,y}$	Annual	20,124	20,124 The aggregate number of installations was cross- checked from system generated output file of credit tracker platform	None	NA	NA
$P_{p,y}$	Updated Every two years	90	11 (based documentary evidences were checked along with cross-check of a few during onsite audit for 11 randomly selected ICS)	None	NA	NA
$U_{p,y}$	Annual	100	11 (based on acceptance sampling)	None	NA	NA

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 17/10/2022. 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: 19/09/2022 to 24/09/2022				
No.	Activity performed on-site	Site location	Date	Team member
1.	Physical site visit: Households visited (implementation of PoA)	Karnataka	19/09/2022 to 24/09/2022	Shifali Guleria, Satya Ranjan panda and Ashish Yadav
2.	Review of information flows for generating, aggregating and reporting the monitoring parameters	Karnataka	19/09/2022 to 24/09/2022	Shifali Guleria, Satya Ranjan panda and Ashish Yadav
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;	Karnataka	19/09/2022 to 24/09/2022	Shifali Guleria, Satya Ranjan panda and Ashish Yadav
4.	A check of the monitoring equipment including calibration performance and observations of monitoring practices against the applicable requirements	Karnataka	19/09/2022 to 24/09/2022	Shifali Guleria, Satya Ranjan panda and Ashish Yadav
5.	Identification of quality control and quality assurance procedures in place to prevent or identify and correct any errors or omissions in the reported monitoring parameters	Karnataka	19/09/2022 to 24/09/2022	Shifali Guleria, Satya Ranjan panda and Ashish Yadav

D.3. Interviews

D.3.1. Interviews with CME and VPA Implementers

No.	Interviewee	Date	Subject	Team
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	Last name	First name	Affiliation			member
1	Parmar	Dilkhush	Sr. Carbon Technical officer – MEC India	20/09/2022	VPA DD description, Additionality, Baseline identification, Project boundary, Ex-ante and Ex-post parameters	Divij Varshney, Shifali Guleria and Sushant Vashisht
2	Kumarswamy	C.K.	MEC India	20/09/2022	Methodology application, monitoring plan, sampling method, ER calculations	Divij Varshney, Shifali Guleria and Sushant Vashisht
3	Sadashivan	Ashok	MEC India	20/09/2022	Methodology application, monitoring plan, sampling method, ER calculations	Divij Varshney, Shifali Guleria and Sushant Vashisht
ICS End- User for VPA 19						
1	-	Jayamma	End User	21/09/2022	VVB Survey Project	Satya Ranjan Panda
2	-	Sudhamma	End User	21/09/2022	VVB Survey Project	Satya Ranjan Panda
3	-	Boramma	End User	21/09/2022	VVB Survey Project	Satya Ranjan Panda
4	-	Obakka	End User	21/09/2022	VVB Survey Project	Satya Ranjan Panda
5	-	Thippakka	End User	21/09/2022	VVB Survey Project	Satya Ranjan Panda
6	-	Thippamma	End User	21/09/2022	VVB Survey Project	Satya Ranjan Panda
7	-	Nallajaruvakka	End User	21/09/2022	VVB Survey Project	Satya Ranjan Panda
8	-	Nethramma	End User	21/09/2022	VVB Survey Project	Satya Ranjan Panda
9	-	Prabhavati	End User	21/09/2022	VVB Survey Project	Satya Ranjan Panda
10	-	Karpooramma	End User	21/09/2022	VVB Survey Project	Satya Ranjan Panda
11	-	Sithamma	End User	21/09/2022	VVB Survey Project	Satya Ranjan Panda
ICS End- User for VPA 21						
1	-	Bharthi	End User	21/09/2022	VVB Survey Project	Ashish Yadav
2	-	Renuka	End User	21/09/2022	VVB Survey Project	Ashish Yadav
3	-	Puttamma	End User	21/09/2022	VVB Survey Project	Ashish Yadav
4	-	Mahadevamma	End User	21/09/2022	VVB Survey Project	Ashish Yadav
5	-	Chandramma	End User	21/09/2022	VVB Survey Project	Ashish Yadav
6	-	Chandarakala	End User	21/09/2022	VVB Survey Project	Ashish Yadav
7	-	Pavithra	End User	21/09/2022	VVB Survey Project	Ashish Yadav

				22	Survey		
8	-	Devamma	End User	21/09/2022	VVB Survey	Project	Ashish Yadav
9	-	Rathnamma	End User	21/09/2022	VVB Survey	Project	Ashish Yadav
10	-	Asha	End User	21/09/2022	VVB Survey	Project	Ashish Yadav
11	M.R.	Sarala	End User	21/09/2022	VVB Survey	Project	Ashish Yadav
ICS End- User for VPA 24							
1	-	Pavithra	End User	22/09/2022	VVB Survey	Project	Satya Ranjan Panda
2	-	Thimmavva	End User	22/09/2022	VVB Survey	Project	Satya Ranjan Panda
3	-	Gowramma	End User	22/09/2022	VVB Survey	Project	Satya Ranjan Panda
4	-	Shashikala	End User	22/09/2022	VVB Survey	Project	Satya Ranjan Panda
5	-	Vijayamma	End User	22/09/2022	VVB Survey	Project	Satya Ranjan Panda
6	-	Pruthvi	End User	22/09/2022	VVB Survey	Project	Satya Ranjan Panda
7	-	Rathnamma	End User	22/09/2022	VVB Survey	Project	Satya Ranjan Panda
8	-	Parvathamma	End User	22/09/2022	VVB Survey	Project	Satya Ranjan Panda
9	-	Bhagyamma	End User	22/09/2022	VVB Survey	Project	Satya Ranjan Panda
10	-	Doddamma	End User	22/09/2022	VVB Survey	Project	Satya Ranjan Panda
11	-	Jayamma	End User	22/09/2022	VVB Survey	Project	Satya Ranjan Panda
ICS End- User for VPA 26							
1	G.	Kavya	End User	22/09/2022	VVB Survey	Project	Ashish Yadav
2	-	Shobha	End User	22/09/2022	VVB Survey	Project	Ashish Yadav
3	-	Manjula	End User	22/09/2022	VVB Survey	Project	Ashish Yadav
4	-	Gowramma	End User	22/09/2022	VVB Survey	Project	Ashish Yadav
5	-	Mahadevamma	End User	22/09/2022	VVB Survey	Project	Ashish Yadav
6	-	Sundramma	End User	22/09/2022	VVB Survey	Project	Ashish Yadav
7	-	Vasantamma	End User	22/09/2022	VVB Survey	Project	Ashish Yadav
8	-	Kamala	End User	22/09/2022	VVB Survey	Project	Ashish Yadav
9	-	Hemavathi	End User	22/09/2022	VVB Survey	Project	Ashish Yadav
10	-	Lakshamma	End User	22/09/2022	VVB Survey	Project	Ashish Yadav
11	-	Renuka	End User	22/09/2022	VVB Survey	Project	Ashish Yadav
SLS End- User for VPA 19							
1	-	Buddamm	End User	21/09/20	VVB	Project	Satya Ranjan

		a		22	Survey		Panda	
2	-	Shobha	End User	21/09/2022	VVB Survey	Project	Satya Panda	Ranjan
3	-	Sumitra	End User	21/09/2022	VVB Survey	Project	Satya Panda	Ranjan
4	-	Yashodamma	End User	21/09/2022	VVB Survey	Project	Satya Panda	Ranjan
5	-	Manjamma	End User	21/09/2022	VVB Survey	Project	Satya Panda	Ranjan
6	-	Shaheena Bhanu	End User	21/09/2022	VVB Survey	Project	Satya Panda	Ranjan
7	-	S Devika	End User	21/09/2022	VVB Survey	Project	Satya Panda	Ranjan
8	-	Fakkira Banu	End User	21/09/2022	VVB Survey	Project	Satya Panda	Ranjan
9	-	Khurshid Unnisa	End User	21/09/2022	VVB Survey	Project	Satya Panda	Ranjan
10	-	Sabiya Banu	End User	21/09/2022	VVB Survey	Project	Satya Panda	Ranjan
11	-	Muktatah ara	End User	21/09/2022	VVB Survey	Project	Satya Panda	Ranjan
SLS End- User for VPA 21								
1	-	Nitha K	End User	24/09/2022	VVB Survey	Project	Sushant Vashisht	
2	-	M K Ramani	End User	24/09/2022	VVB Survey	Project	Sushant Vashisht	
3	-	Sujatha P R	End User	24/09/2022	VVB Survey	Project	Sushant Vashisht	
4	-	Girija	End User	24/09/2022	VVB Survey	Project	Sushant Vashisht	
5	-	Sruthi K	End User	24/09/2022	VVB Survey	Project	Sushant Vashisht	
6	-	Jothy Lakshmi	End User	24/09/2022	VVB Survey	Project	Sushant Vashisht	
7	-	Omana	End User	24/09/2022	VVB Survey	Project	Sushant Vashisht	
8	-	Latha	End User	24/09/2022	VVB Survey	Project	Sushant Vashisht	
9	-	Sherly	End User	24/09/2022	VVB Survey	Project	Sushant Vashisht	
10	-	Suson	End User	24/09/2022	VVB Survey	Project	Sushant Vashisht	
11	-	Salma Jomon	End User	24/09/2022	VVB Survey	Project	Sushant Vashisht	
SLS End- User for VPA 24								
1	-	Puttalakshmi	End User	20/09/2022	VVB Survey	Project	Satya Panda	Ranjan
2	-	Gurumoor thi	End User	20/09/2022	VVB Survey	Project	Satya Panda	Ranjan
3	-	Manjunat ha	End User	20/09/2022	VVB Survey	Project	Satya Panda	Ranjan
4	-	S S Kumarasw amy	End User	20/09/2022	VVB Survey	Project	Satya Panda	Ranjan
5	-	Neelavath i	End User	20/09/2022	VVB Survey	Project	Satya Panda	Ranjan
6	-	Kumara	End User	20/09/2022	VVB Survey	Project	Satya Panda	Ranjan

				22	Survey		Panda	
7	-	Shivamm a	End User	20/09/20 22	VVB Survey	Project	Satya Panda	Ranjan
8	-	Ravi Kumar	End User	20/09/20 22	VVB Survey	Project	Satya Panda	Ranjan
9	-	Nagarathn a	End User	20/09/20 22	VVB Survey	Project	Satya Panda	Ranjan
10	Setty	A H Gangadhr ara	End User	20/09/20 22	VVB Survey	Project	Satya Panda	Ranjan
11	-	Shivakum ar	End User	20/09/20 22	VVB Survey	Project	Satya Panda	Ranjan
SLS End- User for VPA 26								
1	-	Renuka	End User	19/09/20 22	VVB Survey	Project	Shifali Satya Panda	Guleria, Ranjan
2	-	Kalavathi	End User	19/09/20 22	VVB Survey	Project	Shifali Satya Panda	Guleria, Ranjan
3	-	Bhagya	End User	19/09/20 22	VVB Survey	Project	Shifali Satya Panda	Guleria, Ranjan
4	-	Poornima	End User	19/09/20 22	VVB Survey	Project	Shifali Satya Panda	Guleria, Ranjan
5	-	Manjulam ma	End User	19/09/20 22	VVB Survey	Project	Shifali Satya Panda	Guleria, Ranjan
6	-	Saroja Bayi	End User	20/09/20 22	VVB Survey	Project	Shifali Satya Panda	Guleria, Ranjan
7	-	Kalavathi	End User	20/09/20 22	VVB Survey	Project	Shifali Satya Panda	Guleria, Ranjan
8	-	Yashodam ma	End User	20/09/20 22	VVB Survey	Project	Shifali Satya Panda	Guleria, Ranjan
9	-	Renuka	End User	20/09/20 22	VVB Survey	Project	Shifali Satya Panda	Guleria, Ranjan
10	-	Ruhana Bhanu	End User	20/09/20 22	VVB Survey	Project	Shifali Satya Panda	Guleria, Ranjan
11	-	Kala K	End User	20/09/20 22	VVB Survey	Project	Shifali Satya Panda	Guleria, Ranjan

Type of questions asked by VVB to VPA Implementers:

Following questions are asked by the end-users for the verification of samples:

No.	Questions asked by Team member for SLS monitoring survey
1.	Name of the end-user
2.	Location/ Address (Village name, Pincode)

3.	Branch, District, State
4.	What is the Product Model? Can you show us the product.
5.	What is the Installation Date?
6.	What is the Unique ID of CEP?
7.	Total Quantity of each product type you have?
8.	Is your product in use/ operational?
9.	How many hours do you use the solar lighting system per day
10.	Is device using electricity/energy to operate?
11.	What was the baseline device in use?
12.	Lumen output and wattage
13.	How many lamps did you receive?
14.	How many lamps are operational?
15.	Does the HH include distributed Cookstove and Purifier?
16.	Is your sampled HH also surveyed by PP?

No.	Questions asked by Team member for ICS monitoring survey
1.	Name of the end-user
2.	Location/ Address (Village name, Pincode)
3.	Branch, District, State
4.	What is the Product Model? Can you show us the product.
5.	What is the Installation Date?
6.	What is the Unique ID of CEP?
7.	Total Quantity of each product type you have?
8.	Is your product in use/ operational?
9.	Is device using electricity/energy to operate?
10.	Is the baseline stove still in use?
11.	Quantity of wood use in baseline stove?
12.	Is there any smoke reduction after using the project stove?
13.	Are you spending lesser time in collecting wood since using the project device?
14.	Amount of time saved (hrs)
15.	Does the HH include distributed Cookstove and Purifier?
16.	Is your sampled HH also surveyed by PP?

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. While no adverse or negative responses were received regards the usage or convenience of use of stove, some responded gave suggestions like having the project.

D.4. Sampling approach

CME's sampling approach

Solar Lighting System

For the purpose of sampling CME has followed the CDM guidelines for Sampling and surveys for CDM project activities and programmes of activities version 4.0/26/ which is in line with the revised accepted PoA DD/01/. The CME has applied simple random sampling at the VPA level for different monitoring parameters as per PoA DD/1/ and VPA DD/2/. 90/10 confidence precision was applied by CME in the sampling, which is appropriate since they are doing an annual survey. The basis of selected samples by the CME is elaborated in the subsequent sections viz., E.6.5.

Improved Cookstove

The number of samples/ households that CME undertook while performing user habit surveys and project Monitoring Survey are as follows:

	VPA 19	VPA 21	VPA 24	VPA 26
Habit Survey**	100	129	100	100
Project KPT Survey**	90	90	90	90

The basis for selecting the above samples by the CME is elaborated in the subsequent sections viz., E.5.5

** : Estimated as per the methodology TPDDTEC v3.1/09/ requirement if the user >1000 then 100 is needed for Habit Survey.

For project survey the estimated samples came to 90 to satisfy 90/10 precision level of less than 10%.

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' /25/:

- 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 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.

The current verification is for VPA 19 (GS11503), VPA 21 (GS11501), VPA 24 (GS11498) and VPA 26 (GS11496). In this monitoring period, following was observed:

GS Ref. VPA	Measure/Technology	Unique CEPs at the end of previous MP	Unique CEPs at the end of current MP	Incremental CEPs distribution?	Fresh/New Monitoring by CME in the MP?
GS11503	Improved cookstove	21,000	21,000	No	Yes
	Solar Lighting system	40,164	40,164	No	Yes
GS11501	Improved cookstove	22,000	22,000	No	Yes
	Solar Lighting system	136,182	136,182	No	Yes
GS11498	Improved cookstove	21,000	21,000	No	Yes
	Solar Lighting system	237	237	No	Yes
GS11496	Improved cookstove	20,124	20,124	No	Yes
	Solar Lighting system	175	175	No	Yes

Accordingly, the verification team together has verified 88 samples collectively (11 samples for each technology distributed under each VPA) during the on - site survey and observed that the sampling survey results of the CME for all the CEPs checked were found to be 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 /25/ and Guideline: Sampling and surveys for CDM project activities and programme of activities /26/. In all, the verification team conducted onsite surveys for 88 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	-	CAR#02	-
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	CL#01	CAR#01 CAR#03	-
Comparison of monitored parameters with last monitoring period	-	-	-
Implementation of the sampling plan	-	CAR#04	-
Assessment of data and calculations of net emission reductions or removals	CL#02	-	-
Calculations of baseline value of each SDG Impact	-	CAR#05	-
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	-	CAR#06	-
Safeguarding principles	-	-	-
Stakeholder Inputs and Legal Disputes	-	-	-
Continuous input and grievance mechanism	-	-	-
Internal quality control	-	-	-
Verification opinion	-	-	-
Total	02	07	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 first verification of VPAs (VPA 19,21,24,26) under GS. The validation and verification of the VPA is submitted simultaneously for GS design and 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
GS11450 - MicroEnergy Credits – Microfinance for Clean Energy Product Lines – India - MicroEnergy Credits PoA – CPA 19 – Clear Sky Partners – GS11503	Yes	Version 4.1/ Version 2.1
GS11450 - MicroEnergy Credits – Microfinance for Clean Energy Product Lines – India - MicroEnergy	Yes	Version 4.1/ Version

Credits PoA – VPA 21 - Clear Sky Partners – GS11501		2.1
GS11450 - MicroEnergy Credits – Microfinance for Clean Energy Product Lines – India - MicroEnergy Credits PoA – CPA 24 – Clear Sky Partners – GS11498	Yes	Version 3.1/ Version 2.1
GS11450 - MicroEnergy Credits – Microfinance for Clean Energy Product Lines – India - MicroEnergy Credits PoA – CPA-26- Clear Sky Partners – GS11496	Yes	Version 4.0/ Version 2.1

E.4. Programme of Activities

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

Means of verification	<p>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 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 04 VPA (VPA 19 - MicroEnergy Credits PoA – CPA 19 – Clear Sky Partners, VPA 21 - MicroEnergy Credits PoA – CPA 21 – Clear Sky Partners, VPA 24 - MicroEnergy Credits PoA – CPA 24 – Clear Sky Partners, VPA 26 - MicroEnergy Credits PoA – CPA 26 – Clear Sky Partners) that was put together by CME.</p> <p>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.</p> <p>The type of CEP (Clean Energy Product) models deployed under the VPAs is verified by the following:</p> <p>VPA 19 – GS11503:</p>		
	Type of CEP	Model	PO/ Implementer
	Improved Cookstove	Grameen Greenway Jumbo Stove (GJS)	SKDRDP
	Solar lighting system	PLT3F1HLS PLT6HLS CL2LT2HLS PL2LT6F1HLS PLT4HLS CL1LT1F1HLS SKDLT3 PL1LT3HLS CL1LT2HLS CL1LT1HLS CL2HLS CL3LT1HLS2 PL1LT3F1HLS CLT2F1HLS	SKDRDP, ESAF and Asirvad

	PL1LT3F1HLS2 CLT2HLS CL3LT1HLS PL1LT5HLS CLT1HLS PL1LT3F2HLS PL2LT8F2HLS SB2HLS Glosolar Mini HLS Jugnu Lightbox L2005 Greenlight Planet Boom (Sunking Boom) Greenlight Planet Pro-X (Sunking Pro-X) RAL Duron Mitva MS-16C RAL Duron Mitva MST 952A Greenlight Planet Home Lighting System (Sunking HLS) Greenlight Planet Pico Plus (Sunking Pico Plus)	
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VPA 21 – GS11501:

Type of CEP	Model	PO/ Implementer
Improved Cookstove	Grameen Greenway Jumbo Stove (GJS)	SKDRDP
Solar lighting system	Power 80 SK-1510 SK-1520 SK-1530 SP 315 SP Breeze SP Inverter 200 SP100 SP200 Spark Pro Spark Pro Breeze Spark Pro Ujala Sunverter 1530 Ujala 2.0 Ujala Breeze SK 1540 SK Mini SP 50 Magic TV Greenlight Planet Pro200 (Sunking Pro200) Greenlight Planet Pico Plus	Simpa, ESAF, Bandhan and Asirvad

	(Sunking Pico Plus)	
	RAL Duron Mitva MS16C	
	RAL Duron Mitva MST952A	
	Greenlight Planet Boom (Sunking Boom)	
	Greenlight Planet Home Lighting System (Sunking HLS)	
	Greenlight Planet Pro 400 (Sunking Pro 400)	
	Greenlight Planet Home Lighting System 120 (Sunking HLS120)	
	Greenlight Planet Pro-2 (Sunking Pro-2)	
	Greenlight Planet Home Lighting System 120 Plus (Sunking HLS120 Plus)	
	VPA 24 – GS11498:	
Type of CEP	Model	PO/ Implementer
Improved Cookstove	Grameen Greenway Jumbo Stove (GJS)	SKDRDP
Solar lighting system	CL1LT2HLS CL1LT1HLS CL2HLS CL2LT2HLS CL3LT1HLS SKDLT3 PL1LT5HLS CLT2F1HLS CLT2HLS PL1LT3F1HLS PLT3F1HLS CL2LT2HLS2 PL1LT4HLS PL2LT4HLS PLT4F1HLS	SKDRDP
VPA 26 – GS11496:		
Type of CEP	Model	PO/ Implementer
Improved Cookstove	Grameen Greenway Jumbo Stove (GJS)	SKDRDP
Solar lighting system	CL1LT2HLS CL1LT1HLS CL2HLS CL2LT2HLS CLT1HLS CLT2HLS	SKDRDP

	PL1LT3HLS											
	SKDLT3											
	PL1LT5HLS											
	CLT2F1HLS											
	CL2LT2HLS2											
	PL1LT4HLS											
	PL2LT4HLS											
	PLT4F1HLS											
	<p>The Improved Cook stove model implemented under the PoA include 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.</p> <p>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.</p> <p>Water purification system disseminated under the PoA include various models. The water purifiers remove harmful virus, bacteria, parasites, pesticides and physical impurities, giving the 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 verifying VPAs.</p> <p>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.</p> <p>As per the PoA DD/1/ maximum 2 types of CEP 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 /46/.</p> <p>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:</p>											
	<table border="1"> <thead> <tr> <th>VPA title and GS ID</th> <th>Technology</th> <th>Savings/Capacity/Emission Reduction</th> </tr> </thead> <tbody> <tr> <td>MicroEnergy Credits PoA – CPA 19 – Clear Sky Partners – GS11503</td> <td>ICS Solar Lighting system</td> <td>145.43 GWh 0.28 MW</td> </tr> <tr> <td>MicroEnergy Credits PoA – VPA 21 - Clear Sky Partners – GS11501</td> <td>ICS Solar Lighting system</td> <td>155.73 GWh 0.25 MW</td> </tr> <tr> <td>MicroEnergy Credits</td> <td>ICS</td> <td>146.12 GWh</td> </tr> </tbody> </table>		VPA title and GS ID	Technology	Savings/Capacity/Emission Reduction	MicroEnergy Credits PoA – CPA 19 – Clear Sky Partners – GS11503	ICS Solar Lighting system	145.43 GWh 0.28 MW	MicroEnergy Credits PoA – VPA 21 - Clear Sky Partners – GS11501	ICS Solar Lighting system	155.73 GWh 0.25 MW	MicroEnergy Credits
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MicroEnergy Credits PoA – CPA 19 – Clear Sky Partners – GS11503	ICS Solar Lighting system	145.43 GWh 0.28 MW										
MicroEnergy Credits PoA – VPA 21 - Clear Sky Partners – GS11501	ICS Solar Lighting system	155.73 GWh 0.25 MW										
MicroEnergy Credits	ICS	146.12 GWh										

PoA – CPA 24 – Clear Sky Partners – GS11498	Solar Lighting system	0.003 MW
MicroEnergy Credits PoA – CPA-26- Clear Sky Partners – GS11496	ICS Solar Lighting system	127.67 GWh 0.002 MW

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 CERs in the VPA-DDs for the corresponding period:

As in CPA-DD	Estimated ERs (tCO₂)	Actual ERs (tCO₂)
MicroEnergy Credits PoA – CPA 19 – Clear Sky Partners – GS11503	VPA 19 – 113,194	VPA19 – 69,441
MicroEnergy Credits PoA – VPA 21 - Clear Sky Partners – GS11501	VPA 21 – 149,648	VPA21 – 103,884
MicroEnergy Credits PoA – CPA 24 – Clear Sky Partners – GS11498	VPA 24 – 123,421	VPA24 – 63,254
MicroEnergy Credits PoA – CPA- 26- Clear Sky	VPA 26 – 159,507	VPA26 – 55,288

	Partners – GS11496		
	<p>The actual distribution of solar lighting systems and improved cookstoves for VPA are less than the maximum quantity estimated in the VPA-DDs for corresponding year of CEP distributions. The VPA-DDs also mentions that the Type 1 SSC threshold of 15 MWe will not be exceeded and Type II threshold of 180 GWhth for VPA 19 & 24 will not exceeded and the scale of VPA is small scale and for VPA 21 & 26 is crossed and the scale of VPA is small scale. 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/.</p> <p>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.</p> <p>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 was received which was verified upon checking the logbook/38/.</p>		
	Findings	No Findings were raised.	
	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.	

E.4.2. Implementation and operation of the management system

Means of verification	<p>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.</p> <p>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.</p> <p>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.</p> <p>The Carbon Operation Manager directly reports to CEO of CME and gets the carbon expert assistance during the VPA inclusion process, if required.</p> <p>The information about the type of CEP installed under each VPA is stored</p>
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in Credit Tracker Platform/46/ that is maintained by MEC (CME).

The Credit Tracker Platform/46/ 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 and KPTs. 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/5/6/7/8/. 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/41/ 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 the VPA GS 11503 (VPA 19), GS 11501 (VPA 21), GS11498 (VPA 24) & GS 11496 (VPA 26) 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	<p>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.</p> <p>VPA's - GS 11503 (VPA 19), GS 11501 (VPA 21), GS11498 (VPA 24) & GS 11496 (VPA 26) described in this section target the promotion, distribution and sale of ICS (Improved Cook Stoves) i.e., Greenway Jumbo Stoves (GJS) and Greenway Smart Stove (GSSV3). According to</p>
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a third-party lab assessment/47/, this cookstove has a thermal efficiency of 31.17% and 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 11503 (VPA 19)	GS 11501 (VPA 21)	GS 11498 (VPA 24)	GS 11496 (VPA 26)
Location / State	Karnataka	Karnataka	Karnataka	Karnataka
CEP Type	ICS	ICS	ICS	ICS
CEP Model	Grameen Greenway Jumbo Stove (GJS)	Grameen Greenway Jumbo Stove (GJS)	Grameen Greenway Jumbo Stove (GJS)	Grameen Greenway Jumbo Stove (GJS)
VPA Implementer / PO	SKDRDP	SKDRDP	SKDRDP	SKDRDP
Total Quantity Sold / Disseminated	21,000	22,000	21,000	20,124
Maximum Estimated Qty CEPs in CPA ((for comparable year of distribution)	23,000	27,000	23,000	27,000
Estimated CERs (comparable period) (tCO ₂ e)	60,397	75,228	70,890	88,227
Actual CERs from the CEP Type (tCO ₂ e)	57,184	62,581	63,187	55,230

VPA 19 – GS11503:

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 21,000 ICS were disseminated under this VPAs, which is within the estimated quantity of 23,000 ICSs of the VPA DDs/2/ for comparable year of distribution. It has been checked by the verification team that the VPAs is way below the threshold of 180 GWh/year (thermal) i.e., 145.43 GWhth. The distribution model is that stoves are distributed by PO- SKDRDP, 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 21 – GS11503:

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 22,000 ICS were disseminated under this VPA, which is within the estimated quantity of 27,000 ICSs of the VPA DDs/2/ for comparable year of distribution. It has been checked by the verification team that the VPAs is way below the threshold of 180 GWh/year (thermal) i.e., 155.73 GWhth, however, as per VPA-DDs the scale of the VPA is defined as large scale for ICS. The distribution model is that stoves are distributed by PO- SKDRDP, 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 24 – GS11498:

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 21,000 ICS were disseminated under this VPAs, which is within the estimated quantity of 23,000 ICSs of the VPA DDs/2/ for comparable year of distribution. It has been checked by the verification team that the VPAs is way below the threshold of 180 GWh/year (thermal) i.e., 146.12 GWhth, however, as per VPA-DDs the scale of the VPAs is defined as large scale for ICS. The distribution model is that stoves are distributed by PO- SKDRDP, 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 26 – GS11496:

ICS were distributed in Karnataka in India, which is consistent with the description given in the included VPA DDs/02/. By the end of current monitoring period requesting issuance, total 20,124 ICS were disseminated under this VPAs, which is within the estimated quantity of 27,000 ICSs of the VPA DDs/02/ for comparable year of distribution. It has been checked by the verification team that the VPAs is way below the threshold of 180 GWh/year (thermal) i.e., 127.67 GWhth, however, as per VPA-DDs the scale of the VPA's is defined as large scale for ICS. The distribution model is that stoves are distributed by PO- SKDRDP, 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.

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-VPA double counting. It was found that PO involved in implementation of VPA's are involved in this issuance has allocated unique identification numbers to the CEPs sold by them. This information was checked against sample end-user documentation/18//22/, CME database/08/, and was found to be appropriate. 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.

This verification report covers the monitoring period from 01/01/2021 to

	31/12/2021(inclusive of both the dates).
Findings	CAR#02 was raised and resolved.
Conclusion	<ul style="list-style-type: none"> 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 /09/, 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/09//10/.
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 /09/, that is included in the registered PoA DD/1/ and VPA-DDs/02/. The monitoring plan is in accordance with the applied methodology /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, in kg/HH-day

Means verification	of	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) ¹ . The calculation steps and the attendant references in the excel sheet/08/ 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 outlier 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 all four VPA's		
		VPA Number	State	Value
		VPA 19	Karnataka	6.944
		VPA 21	Karnataka	7.040
			Kerala	7.077
		VPA 24	Karnataka	7.130
		VPA 26	Karnataka	7.051
			Kerala	7.042
Findings		No findings were raised.		
Conclusion		The value mentioned in the Monitoring Report /40/ and Emission Reduction Spreadsheet /05/ 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.		

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

Means verification	<p>EF_{b, I, CO_2}-- 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/.</p> <p>This value is used towards determination of baseline emissions. The value of this parameter considered is mentioned below as per VPA-DDs.</p> <table border="1"> <thead> <tr> <th>VPA Number</th><th>Value</th></tr> </thead> <tbody> <tr> <td>VPA 19</td><td>112 tCO₂/TJ</td></tr> <tr> <td>VPA 21</td><td>112 tCO₂/TJ</td></tr> <tr> <td>VPA 24</td><td>112 tCO₂/TJ</td></tr> <tr> <td>VPA 26</td><td>112 tCO₂/TJ</td></tr> </tbody> </table>	VPA Number	Value	VPA 19	112 tCO ₂ /TJ	VPA 21	112 tCO ₂ /TJ	VPA 24	112 tCO ₂ /TJ	VPA 26	112 tCO ₂ /TJ
VPA Number	Value										
VPA 19	112 tCO ₂ /TJ										
VPA 21	112 tCO ₂ /TJ										
VPA 24	112 tCO ₂ /TJ										
VPA 26	112 tCO ₂ /TJ										

¹ <https://cleancooking.org/binary-data/DOCUMENT/file/000/000/604-1.pdf>

Findings	No findings were raised.
Conclusion	The value mentioned in the Monitoring Report /40/ and Emission Reduction Spreadsheet /5/ are consistent with the registered VPA-DDs/02/. The applied value is correct and justified.

SDG13: Non-CO₂ emission factor arising from use of fuel type *i* in baseline scenario, tCO₂/t_{fuel}

Means of verification	<p>EF_{b,i,non-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 CH₄ and N₂O and their corresponding GWP./32/ This value is used for the determination of baseline emissions.</p> <p>This value is used towards determination of baseline emissions. The value of this parameter considered is mentioned below as per VPA-DDs</p> <table border="1"> <thead> <tr> <th>VPA Number</th><th>Value</th></tr> </thead> <tbody> <tr> <td>VPA 19</td><td>37.25 tCO₂/TJ</td></tr> <tr> <td>VPA 21</td><td>37.25 tCO₂/TJ</td></tr> <tr> <td>VPA 24</td><td>37.25 tCO₂/TJ</td></tr> <tr> <td>VPA 26</td><td>37.25 tCO₂/TJ</td></tr> </tbody> </table>	VPA Number	Value	VPA 19	37.25 tCO ₂ /TJ	VPA 21	37.25 tCO ₂ /TJ	VPA 24	37.25 tCO ₂ /TJ	VPA 26	37.25 tCO ₂ /TJ
VPA Number	Value										
VPA 19	37.25 tCO ₂ /TJ										
VPA 21	37.25 tCO ₂ /TJ										
VPA 24	37.25 tCO ₂ /TJ										
VPA 26	37.25 tCO ₂ /TJ										
Findings	No findings were raised.										
Conclusion	The value mentioned in the Monitoring Report /40/ and Emission Reduction Spreadsheet /5/ are consistent with the registered VPA-DD/2/. The applied value is correct and justified.										

SDG13: CO₂ emission factor arising from use of fuel type *i* in project scenario, tCO₂/t_{fuel}

Means of verification	<p>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.</p> <table border="1"> <thead> <tr> <th>VPA Number</th><th>Value</th></tr> </thead> <tbody> <tr> <td>VPA 19</td><td>112 tCO₂/TJ</td></tr> <tr> <td>VPA 21</td><td>112 tCO₂/TJ</td></tr> <tr> <td>VPA 24</td><td>112 tCO₂/TJ</td></tr> <tr> <td>VPA 26</td><td>112 tCO₂/TJ</td></tr> </tbody> </table>	VPA Number	Value	VPA 19	112 tCO ₂ /TJ	VPA 21	112 tCO ₂ /TJ	VPA 24	112 tCO ₂ /TJ	VPA 26	112 tCO ₂ /TJ
VPA Number	Value										
VPA 19	112 tCO ₂ /TJ										
VPA 21	112 tCO ₂ /TJ										
VPA 24	112 tCO ₂ /TJ										
VPA 26	112 tCO ₂ /TJ										
Findings	No findings were raised.										
Conclusion	The value mentioned in the Monitoring Report /40/ and Emission Reduction Spreadsheet /5/ are consistent with the registered VPA-DDs/2/. The applied value is correct and justified.										

SDG13: Non- CO₂ emission factor arising from use of fuel type *i* in project scenario, tCO₂/t_{fuel}

Means of verification	<p>EF_{p, i, non-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 CH₄ and N₂O and their corresponding GWP/32/.</p> <p>This value is used towards determination of baseline emissions. The value of this parameter considered is mentioned below as per VPA-DDs</p> <table data-bbox="619 566 1286 734"> <tr> <th>VPA Number</th><th>Value</th></tr> <tr> <td>VPA 19</td><td>37.25 tCO₂/TJ</td></tr> <tr> <td>VPA 21</td><td>37.25 tCO₂/TJ</td></tr> <tr> <td>VPA 24</td><td>37.25 tCO₂/TJ</td></tr> <tr> <td>VPA 26</td><td>37.25 tCO₂/TJ</td></tr> </table>	VPA Number	Value	VPA 19	37.25 tCO ₂ /TJ	VPA 21	37.25 tCO ₂ /TJ	VPA 24	37.25 tCO ₂ /TJ	VPA 26	37.25 tCO ₂ /TJ
VPA Number	Value										
VPA 19	37.25 tCO ₂ /TJ										
VPA 21	37.25 tCO ₂ /TJ										
VPA 24	37.25 tCO ₂ /TJ										
VPA 26	37.25 tCO ₂ /TJ										
Findings	<p>No findings were raised.</p>										
Conclusion	<p>The value mentioned in the Monitoring Report /40/ and Emission Reduction Spreadsheet /5/ are consistent with the registered VPA-DDs/2/. The applied value is correct and justified.</p>										

SDG13: Net calorific value of the fuel type *i* used in the baseline, TJ/Tonne

Means verification of	<p>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/.</p> <p>This value is used for the determination of baseline emissions. The value of this parameter considered is mentioned below as per VPA-DDs</p> <table border="1" data-bbox="619 430 1284 600"> <thead> <tr> <th>VPA Number</th><th>Value</th></tr> </thead> <tbody> <tr> <td>VPA 19</td><td>0.0156 TJ/tonnes</td></tr> <tr> <td>VPA 21</td><td>0.0156 TJ/tonnes</td></tr> <tr> <td>VPA 24</td><td>0.0156 TJ/tonnes</td></tr> <tr> <td>VPA 26</td><td>0.0156 TJ/tonnes</td></tr> </tbody> </table>	VPA Number	Value	VPA 19	0.0156 TJ/tonnes	VPA 21	0.0156 TJ/tonnes	VPA 24	0.0156 TJ/tonnes	VPA 26	0.0156 TJ/tonnes
VPA Number	Value										
VPA 19	0.0156 TJ/tonnes										
VPA 21	0.0156 TJ/tonnes										
VPA 24	0.0156 TJ/tonnes										
VPA 26	0.0156 TJ/tonnes										
Findings	No findings were raised.										
Conclusion	The value mentioned in the Monitoring Report /40/ and Emission Reduction Spreadsheet /5/ 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, TJ/Tonne

Means verification of	<p>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/</p> <p>This value is used for the determination of baseline emissions. The value of this parameter considered is mentioned below as per VPA-DDs</p> <table border="1" data-bbox="619 1090 1284 1261"> <thead> <tr> <th>VPA Number</th><th>Value</th></tr> </thead> <tbody> <tr> <td>VPA 19</td><td>0.0156 TJ/tonnes</td></tr> <tr> <td>VPA 21</td><td>0.0156 TJ/tonnes</td></tr> <tr> <td>VPA 24</td><td>0.0156 TJ/tonnes</td></tr> <tr> <td>VPA 26</td><td>0.0156 TJ/tonnes</td></tr> </tbody> </table>	VPA Number	Value	VPA 19	0.0156 TJ/tonnes	VPA 21	0.0156 TJ/tonnes	VPA 24	0.0156 TJ/tonnes	VPA 26	0.0156 TJ/tonnes
VPA Number	Value										
VPA 19	0.0156 TJ/tonnes										
VPA 21	0.0156 TJ/tonnes										
VPA 24	0.0156 TJ/tonnes										
VPA 26	0.0156 TJ/tonnes										
Findings	No findings were raised.										
Conclusion	The value mentioned in the Monitoring Report /40/ and Emission Reduction Spreadsheet /5/ 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, fraction

Means verification of	$f_{NRB,b,i,y}$ – 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/9/ 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 19	Karnataka	0.860
	VPA 21	Karnataka	0.860
		Kerala	0.874
	VPA 24	Karnataka	0.860
VPA 26	Karnataka	0.860	

		Kerala	0.874
Findings	No findings were raised.		
Conclusion	The value mentioned in the Monitoring Report /40/ and Emission Reduction Spreadsheet /5/ 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,i 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	<p>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.</p> <p>Accuracy class: +/- 0.5 grams</p> <p>Serial Number: WS00120, WS00123, WS12012, WS00132, WS00156, WS00151, WS00153, WS00436, WS00136, WB-01, WB-02, WB-03, WB-04, WB-05, WB-06, WB-07, WB-08</p> <p>Calibration Frequency: Annual</p> <p>Date of recent calibration: 15/02/2021</p> <p>Validity: until 14/02/2022</p>
	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 19, 21, 24, 26/5/. As per 90/10 rule, the mean consumption from the sampled household is accepted if the precision 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 5.38% (VPA 19), 3.38% (VPA 21), 4.15% (VPA 26) and 4.24% (VPA 24) /08/ which 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/09/ 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 UOT (kg/person/day) and LOT (kg/person/day), so the quantity of firewood which are equal to or above UOT were ignored for arriving at the mean value of the samples. The Values of UOT and LOT as per VPAs for the current monitoring period:

VPA#	19	21	24	26
UOT	1.47	0.96	1.06	1.16
LOT	-0.06	0.28	0.21	0.32

So the computation 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 taken by CME, which is found to be conservative. Calculations of both

		<p>project KPT has been reviewed and found to be appropriate.</p> <p>The samples drawn by the CME during this MP is 90 (after adjusting for outliers it came to 85(VPA 19), 82(VPA 21), 88(VPA 24), 85(VPA 26)) from the beneficiaries in project scenario and the value obtained is:</p> <table border="1"> <thead> <tr> <th>VPA#</th><th>Value (kg/HH/day)</th></tr> </thead> <tbody> <tr> <td>VPA 19</td><td>2.57</td></tr> <tr> <td>VPA 21</td><td>2.57</td></tr> <tr> <td>VPA 24</td><td>2.73</td></tr> <tr> <td>VPA 26</td><td>3.04</td></tr> </tbody> </table>	VPA#	Value (kg/HH/day)	VPA 19	2.57	VPA 21	2.57	VPA 24	2.73	VPA 26	3.04
	VPA#	Value (kg/HH/day)										
	VPA 19	2.57										
	VPA 21	2.57										
VPA 24	2.73											
VPA 26	3.04											
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	CL#01 was raised and resolved.											
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/9/. 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?	<p>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:</p> <table border="1"> <thead> <tr> <th>VPA#</th><th>Value (%)</th></tr> </thead> <tbody> <tr> <td>VPA 19</td><td>0.82</td></tr> <tr> <td>VPA 21</td><td>0.84</td></tr> <tr> <td>VPA 24</td><td>0.90</td></tr> <tr> <td>VPA 26</td><td>0.90</td></tr> </tbody> </table> <p>This value was accepted after checking the user habit survey results /41/provided by the CME.</p> <p>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 continuing 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.</p> <p>This was further cross checked with the desk review of documents and through interviews as well as during the onsite visit.</p>	VPA#	Value (%)	VPA 19	0.82	VPA 21	0.84	VPA 24	0.90	VPA 26
VPA#	Value (%)										
VPA 19	0.82										
VPA 21	0.84										
VPA 24	0.90										
VPA 26	0.90										
If applicable, has the reported data been cross-checked with other available data?	<p>The survey results, assumptions and sales records were checked by the verification team and were found acceptable.</p> <p>The responses from randomly selected samples from respective VPAs under this batch issuance for VVB's remote survey were cross-checked with CME monitoring survey forms which were provided by the CME, all the end users responses were consistent with monitoring results.</p> <p>The usage rate were also compared with values obtained from last monitoring conducted for previous MP under CDM which were:</p> <table border="1"> <thead> <tr> <th>VPA#</th><th>Previous MP Values</th></tr> </thead> <tbody> </tbody> </table>	VPA#	Previous MP Values								
VPA#	Previous MP Values										

			(CDM 9181 MP12B3 & B4)
		VPA 19	0.85
		VPA 21	0.87
		VPA 24	0.98
		VPA 26	0.98
	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 remotely conducted interviews and also during the onsite assessment conducted.	
	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/9/. 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?	<p>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.</p> <p>The verification team has verified the sample baseline survey forms and found to be satisfactory.</p> <p>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.</p>
	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 /9/. 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?	<p>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:</p> <table border="1"> <thead> <tr> <th>VPA#</th><th>Value (Number)</th></tr> </thead> <tbody> <tr> <td>VPA 19</td><td>21,000</td></tr> <tr> <td>VPA 21</td><td>22,000</td></tr> <tr> <td>VPA 24</td><td>21,000</td></tr> <tr> <td>VPA 26</td><td>20,124</td></tr> </tbody> </table>	VPA#	Value (Number)	VPA 19	21,000	VPA 21	22,000	VPA 24	21,000	VPA 26	20,124
	VPA#	Value (Number)										
	VPA 19	21,000										
	VPA 21	22,000										
VPA 24	21,000											
VPA 26	20,124											
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 statement and through the on-site 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?	<p>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.</p> <p>During site visit the sales process, record keeping was reviewed and were found reliable.</p>											
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	CAR#04 was raised and closed											
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 /9/. 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?	<p>The verified value in this monitoring period was assessed to be:</p> <table border="1"> <thead> <tr> <th>VPA#</th><th>Value (tCO₂e/year)</th></tr> </thead> <tbody> <tr> <td>VPA 19</td><td>0</td></tr> <tr> <td>VPA 21</td><td>0</td></tr> <tr> <td>VPA 24</td><td>0</td></tr> <tr> <td>VPA 26</td><td>0</td></tr> </tbody> </table> <p>There are 4 ways in which the leakages can occur in this project activity</p> <ol style="list-style-type: none"> The displaced stove are reused outside the project boundary in place of lower emitting technology The non-renewable biomass/fossil fuel saved due to the project activity are used by non beneficiaries who previously used lower emitting sources The project significantly impacts the NRB fraction within an area where other CDM/VER project activities account for NRB fraction in their baseline scenario 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. <p>However all the four conditions can be discounted as follows:</p> <ol style="list-style-type: none"> The baseline stove were 3 stone 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 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 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. 	VPA#	Value (tCO ₂ e/year)	VPA 19	0	VPA 21	0	VPA 24	0	VPA 26
VPA#	Value (tCO ₂ e/year)										
VPA 19	0										
VPA 21	0										
VPA 24	0										
VPA 26	0										

		iv. Due to the temperate and climate in Karnataka, 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 /9/. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan.	

SDG1: Number of ICS distributed in Project, BSAPProject, Number

Relevant SDG Indicator	SDG 1: No poverty	
Means of verification	Criteria/Requirements	Assessment/Observation
	Measuring /Reading /Recording frequency	This parameter is measured on annual basis
	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 for this parameter as per VPAs are:
	VPA#	Value (Number)

		<table><tr><td>VPA 19</td><td>21,000</td></tr><tr><td>VPA 21</td><td>22,000</td></tr><tr><td>VPA 24</td><td>21,000</td></tr><tr><td>VPA 26</td><td>20,124</td></tr></table>	VPA 19	21,000	VPA 21	22,000	VPA 24	21,000	VPA 26	20,124
	VPA 19	21,000								
	VPA 21	22,000								
	VPA 24	21,000								
	VPA 26	20,124								
	The records of number of VPAs for ICS distributed in monitoring database, ex-post monitoring survey records were cross checked. Since the database is a primary source of data collection and the QA/QC were found to be robust as described below, the values were accepted.									
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 /9/. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan.									

SDG3: HH reporting reduction in smoke while cooking on improved stove in project, SPMHH, %

Relevant SDG Indicator	SDG 3: Good Health and Well Being	
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 in line to the PoA-DD/1/ and VPA-DDs/2/.

	How were the values in the monitoring report verified?	<p>The usage Survey Records/8/18/ was checked to find out the respondent's responses regarding reduced in smoke. This was further cross checked during the onsite visit when the households having the ICS were asked about the reduction in smoke by using the project ICS and all of the end users agreed that there is reduction in smoke compared to the baseline.</p> <p>The value of the parameter as per VPAs are:</p> <table border="1"> <thead> <tr> <th>VPA#</th><th>Value (%)</th></tr> </thead> <tbody> <tr> <td>VPA 19</td><td>82%</td></tr> <tr> <td>VPA 21</td><td>84%</td></tr> <tr> <td>VPA 24</td><td>90%</td></tr> <tr> <td>VPA 26</td><td>90%</td></tr> </tbody> </table>	VPA#	Value (%)	VPA 19	82%	VPA 21	84%	VPA 24	90%	VPA 26	90%
	VPA#	Value (%)										
	VPA 19	82%										
	VPA 21	84%										
VPA 24	90%											
VPA 26	90%											
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 5: Time Saving per Households, HHTSProject, %

Relevant SDG Indicator	SDG 5: Gender Equality	
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 Monitoring Survey Records/8//18/ was checked to find out the respondent's

		<p>responses regarding reduced time spent on collection of firewood. This was further cross checked during the onsite visit when the households having the ICS were asked about the average reduction in time in collecting wood and all of the end users agreed that time was saved considerably as less firewood was needed to cook compared to the baseline.</p> <table border="1"> <thead> <tr> <th>VPA#</th> <th>Value (%)</th> </tr> </thead> <tbody> <tr> <td>VPA 19</td> <td>82%</td> </tr> <tr> <td>VPA 21</td> <td>84%</td> </tr> <tr> <td>VPA 24</td> <td>90%</td> </tr> <tr> <td>VPA 26</td> <td>90%</td> </tr> </tbody> </table>	VPA#	Value (%)	VPA 19	82%	VPA 21	84%	VPA 24	90%	VPA 26	90%
	VPA#	Value (%)										
	VPA 19	82%										
	VPA 21	84%										
VPA 24	90%											
VPA 26	90%											
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.											

SDG 7: Access to affordable and clean energy (Number of operating ICS units under Project), ACSProject, 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/8/18/ were checked to identify as part of the assessment as well as during the interviews conducted with the 11 selected

		<p>beneficiaries during site visit/50/ the intended beneficiaries who are having access to affordable, reliable and modern energy services.</p> <p>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:</p> <table><tr><th>VPA#</th><th>Value (%)</th></tr><tr><td>VPA 19</td><td>17,220</td></tr><tr><td>VPA 21</td><td>18,450</td></tr><tr><td>VPA 24</td><td>18,900</td></tr><tr><td>VPA 26</td><td>18,112</td></tr></table>	VPA#	Value (%)	VPA 19	17,220	VPA 21	18,450	VPA 24	18,900	VPA 26	18,112
	VPA#	Value (%)										
	VPA 19	17,220										
	VPA 21	18,450										
	VPA 24	18,900										
VPA 26	18,112											
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, 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?	These are employment contract /31/ was cross checked for all the contract employees/31/. Based on the documentary evidences provided by CME, this value was

		verified and accepted.	
		The verified value is thus: VPA#	Value (%)
		VPA 19	73
		VPA 21	85
		VPA 24	30
		VPA 26	30
	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	<p>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 3.1/09/, 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 VPA19, 21, 24 & VPA 26 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.</p> <p>Since the VPA's covers various state of India and various model of stove is distributed in the population, the population is reasonable considered homogenous. Therefore, the approach of simple random sampling from the entire population is acceptable.</p> <p><u>Parameters to be covered through monitoring surveys:</u></p> <p>The CME has conducted following kinds of surveys:</p> <p>Usage Surveys:</p> <ul style="list-style-type: none"> $U_{p,y}$ -- Usage rate in project scenario p during year y determined on a sampling basis <p>Project Monitoring Survey/Project Field Tests:</p> <ul style="list-style-type: none"> $P_{p,y}$ -- Quantity of fuel consumed in project scenario p during year y, in tonnes, and as derived from the statistical analysis conducted on the
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data collected during the project performance field tests

Sustainability Surveys:

1. BSA/HHS- Proportion of population living in households with access to basic services
2. SPM_{HH}-- Air Quality in project households
3. HHTS- Time saved per household
4. AACS_{HH}-- Number of households and institutions having access to affordable, reliable and modern energy services
5. 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.

VPA 19:

Survey Type	Monitoring dates	Monitoring frequency	Monitoring survey applicable for this MP?
Usage and Habit Survey	07/01/2022 - 24/01/2022	Annual	Yes
Project KPT	05/07/2021 - 18/08/2021	Biennial	Yes

VPA 21:

Survey Type	Monitoring dates	Monitoring frequency	Monitoring survey applicable for this MP?
Usage and Habit Survey	06/01/2022 - 25/01/2022	Annual	Yes
Project KPT	03/07/2021 - 31/07/2021	Biennial	Yes

VPA 24:

Survey Type	Monitoring dates	Monitoring frequency	Monitoring survey applicable for this MP?
Usage and Habit Survey	03/01/2022 - 17/01/2022	Annual	Yes
Project KPT	05/07/2021 - 01/09/2021	Biennial	Yes

VPA 26:

Survey Type	Monitoring dates	Monitoring frequency	Monitoring survey applicable for this MP?
Usage and Habit Survey	03/01/2022 - 24/01/2022	Annual	Yes
Project KPT	04/07/2021 - 16/08/2021	Biennial	Yes

Thus, it is confirmed that monitoring survey is applicable for the entire monitoring period.

Sample size calculation for different tests

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/09/, 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 100(VPA 19), 129(VPA 21), 100(VPA 24) and 100(VPA 26) 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/09/ 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./09/

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

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

Means of verification	<p>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.</p> <p>The devices used in this project activity is mentioned here</p> <p>Type – Weighing Scale Accuracy class: +/- 0.5 grams Serial Number: WS00120, WS00123, WS12012, WS00132, WS00156, WS00151, WS00153, WS00436, WS00136, WB-01, WB-02, WB-03, WB-04, WB-05, WB-06, WB-07, WB-08 Calibration Frequency: Date of recent calibration: 15/02/2021 Validity: until 14/02/2022</p> <p>Type – Moisture Meter Accuracy class: +/- 0.5 grams Serial Number: TM157341, TM157285, TM28591, TM240016, TM28657, TM240017, TM28618, TM239929, TM157277, X014064, X014086, X013975, X014073, X014104, X014102, X014082, X014049. Calibration Frequency: Annual Date of recent calibration: 19/02/2021 Validity: until 18/02/2022 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.</p>
Findings	No findings 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	<p>1- SDG-13: Climate Action</p> <p>The equations used were found consistent with the PoA DD/1/, VPA DDs/2/ and the applied methodology TPDDTEC, version 3.1/9/</p> <p>Using TPDDTEC-- Technologies and Practices to Displace Decentralized Thermal Energy Consumption (TPDDTEC), version 3.1/9/, "When the</p>
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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:"

$$ER_y = \sum_{b,p} (N_{p,y} * U_{p,y} * P_{p,b,y} * NCV_{b, fuel} * (f_{NRB,b, y} * EF_{fuel, CO_2} + EF_{fuel, nonCO_2})) - \sum LE_{p,y} \quad \text{(Eq.3)}$$

Where:

$\sum_{b,p}$: Sum over all relevant (baseline b/project p) couples.

$N_{p,y}$: Cumulative number of project technology – days included in the project database for project scenario p against baseline scenario b in year y

$P_{p,b,y}$: Specific fuel savings for an individual technology of project p against an individual technology of baseline b in year y, (tons/day).

$f_{NRB,b,y}$: Fraction of biomass used in year y for baseline scenario b 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).

$EF_{b,fuel, CO_2}$: 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.

$EF_{b,fuel, non CO_2}$: Non – CO₂ emission factor of the fuel that is reduced.

$LE_{p,y}$: Leakage for project scenario p in year y (tCO₂e/yr).

Sample calculation of VPA 24 jumbo stove karnataka:

$$ER_y = 7,658,795 * 0.90 * (0.0071 - 0.0027) * 0.0156 * (0.86 * 112 + 37.25) - 0 = 63,188 \text{ tCO}_2\text{e}$$

Leakage if applicable, will be assessed on the following points:

- 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.
- The NRB or fossil fuels saved under the project activity are used by non-project users who previously used lower emitting energy sources.
- The project significantly impacts the NRB fraction within an area where other CDM or VER project activities account for NRB fraction in their baseline scenario.
- 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.

In line with section 6 of TPDDTEC (v.3.1)/09/ as the project involves installation of new systems with high efficiency and hence leakage emission is considered zero.

2- SDG-1: No Poverty

$$\text{SDG 1 (Net Benefit)} = \text{BSA}_{\text{project}} - \text{BSA}_{\text{Baseline}}$$

Where:

$\text{BSA}_{\text{Baseline}}$ = Number of ICS distributed in baseline = 0

$\text{BSA}_{\text{project}}$ = Number of ICS distributed in project = 21,000

VPA#	$\text{BSA}_{\text{Project}}$	$\text{BSA}_{\text{Baseline}}$	SDG 1 (Net Benefit)
VPA 19	21,000	0	21,000
VPA 21	22,000	0	22,000
VPA 24	21,000	0	21,000
VPA 26	20,124	0	20,124

3- SDG-3: Good health and well-being

$$\text{SDG 3 (Net Benefit)} = \text{SPM}_{\text{HH,project}} - \text{SPM}_{\text{HH,Baseline}}$$

Where:

$\text{SPM}_{\text{HH,Baseline}}$ % HH reporting reduction in smoke while cooking on improved stove in baseline

$\text{SPM}_{\text{HH,Project}}$ % HH reporting reduction in smoke/ while cooking on improved stove in Project

VPA#	$\text{SPM}_{\text{HH,Project}}$	$\text{SPM}_{\text{HH,Baseline}}$	SDG 3 (Net Benefit)
VPA 19	82%	0	82%
VPA 21	84%	0	84%
VPA 24	90%	0	90%
VPA 26	90%	0	90%

4- SDG-5: Gender Equality

$$\text{SDG 5 (Net Benefit)} = \text{HHTS}_{\text{Project}} - \text{HHTS}_{\text{Baseline}}$$

Where:

$\text{HHTS}_{\text{baseline}}$ = % HH reporting time saving from fuel collection due to reduced fuel consumption in baseline

$\text{HHTS}_{\text{Project}}$ = % HH reporting time saving from fuel collection due to reduced fuel consumption in Project

VPA#	$\text{HHTS}_{\text{Project}}$	$\text{HHTS}_{\text{Baseline}}$	SDG 3 (Net Benefit)
VPA 19	82%	0	82%
VPA 21	84%	0	84%
VPA 24	90%	0	90%
VPA 26	90%	0	90%

5- SDG-7: Affordable clean energy

$$\text{SDG 7 (Net Benefit ICS)} = \text{ACS}_{\text{project}} - \text{ACS}_{\text{Baseline}}$$

Where:

$\text{ACS}_{\text{baseline}}$ Access to affordable and clean energy (Number of operating ICS units under baseline)

$\text{ACS}_{\text{project}}$ Access to affordable and clean energy (Number of operating ICS units under Project)

$$\text{SDG 7 (Net Benefit SLS)} = \text{ACS}_{\text{project}} - \text{ACS}_{\text{Baseline}}$$

VPA#	$\text{ACS}_{\text{Project}}$	$\text{ACS}_{\text{baseline}}$	SDG 3 (Net Benefit)
VPA 19	17,220	0	17,220
VPA 21	18,450	0	18,450
VPA 24	18,900	0	18,900
VPA 26	18,112	0	18,112

6- SDG-8: Decent Work

The SDG impact is calculated as below:

$$\text{SDG 8 (Net Benefit)} = \text{QE IG}_{\text{Project}} - \text{QE IG}_{\text{Baseline}}$$

Where:

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

$\text{QE IG}_{\text{Project}}$ Quantative Employment and income generation (Number of person (male or female) hired under project)

VPA#	$\text{ACS}_{\text{Project}}$	$\text{ACS}_{\text{baseline}}$	SDG 3 (Net Benefit)
VPA 19	73	0	73
VPA 21	85	0	85
VPA 24	30	0	30
VPA 26	30	0	30

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 /5/ 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/9/.

Findings

CAR#05 was raised and resolved.

Conclusion

The verification team verified that

- 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/5/ 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.
- The calculations of baseline emissions as presented in the

	<p>corresponding ER calculations sheet/5/ 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/9/.</p> <p>d) All assumptions used in the emission calculations were found appropriate and therefore justified</p> <p>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.</p> <p>f) No standardized baseline was prescribed in the registered PoA-DD/1/.</p>
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E.5.7.2. Calculation of project value or estimation of project situation of each SDG Impact

Means of verification	<p>a) <u>SDG-13: Climate Action</u> The equation for calculating emission reductions already accounts for project emissions.</p> <p>b) <u>SDG-1: No Poverty</u> The SDG impacts for the project were 21,000(VPA 19), 22,000(VPA 21), 21,000(VPA 24) and 20,124(VPA 26) users confirmed to improve savings.</p> <p>c) <u>SDG-3: Good health and well-being</u> The SDG impacts for the project were:</p> <ul style="list-style-type: none"> 82% (VPA 19), 84% (VPA 21), 90% (VPA 24) and 90% (VPA 26) of respondents confirmed to be exposed to less smoke and/or health problems <p>d) <u>SDG-5: Gender Equality</u> The SDG impacts estimated for the project were:</p> <ul style="list-style-type: none"> 82%(VPA 19), 84%(VPA 21), 90%(VPA 24) and 90%(VPA 26) of users confirmed that fuel collection is less time consuming <p>e) <u>SDG-7: Affordable clean energy</u> The SDG impacts estimated for the project were the distribution of 17,220(VPA 19), 18,450(VPA 21), 18,900(VPA 24) and 18,112(VPA 26) improve cookstoves.</p> <p>f) <u>SDG-8: Decent Work</u> The SDG impacts estimated for the project was:</p> <ul style="list-style-type: none"> 73 persons(VPA 19), 85 persons(VPA 21), 30 persons(VPA 24) and 30(VPA 26) were hired under this project.
Findings	None
Conclusion	<p>The verification team verified that</p> <p>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/5/ of final Monitoring Report /40/.</p> <p>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.</p>

E.5.7.3. Calculation of leakage

Means of verification	The 4 conditions under which the leakage should be accounted for is 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/5/ 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	57,184 tCO ₂ e VERs (VPA 19) 62,581 tCO ₂ e VERs (VPA 21) 63,187 tCO ₂ e VERs (VPA 24) 55,230 tCO ₂ e VERs (VPA 26)	0 tCO ₂ e VERs (for all VPAs)	57,184 tCO ₂ e VERs (VPA 19) 62,581 tCO ₂ e VERs (VPA 21) 63,187 tCO ₂ e VERs (VPA 24) 55,230 tCO ₂ e VERs (VPA 26)
	1	No Poverty	0	21,000 (VPA 19) 22,000 (VPA 21) 21,000 (VPA 24) 20,124 (VPA 26)	21,000 (VPA 19) 22,000 (VPA 21) 21,000 (VPA 24) 20,124 (VPA 26)
	3	Good Health and well being	0%	82% (VPA 19) 84% (VPA 21) 90% (VPA 24) 90% (VPA 26)	82% (VPA 19) 84% (VPA 21) 90% (VPA 24) 90% (VPA 26)

	5	Gender Equality	0%	82% (VPA 19) 84% (VPA 21) 90% (VPA 24) 90% (VPA 26)	82% (VPA 19) 84% (VPA 21) 90% (VPA 24) 90% (VPA 26)
	7	Affordable and clean energy	0	17,220 (VPA 19) 18,450 (VPA 21) 18,900 (VPA 24) 18,112 (VPA 26)	17,220 (VPA 19) 18,450 (VPA 21) 18,900 (VPA 24) 18,112 (VPA 26)
	8	Decent work and economic growth	0	73 ² (VPA 19) 85 ³ (VPA 21) 30 ⁴ (VPA 24) 30 ⁵ (VPA 26)	73 (VPA 19) 85 (VPA 21) 30 (VPA 24) 30 (VPA 26)
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	CAR#01 was raised and closed.				
Conclusion	<p>The verification team confirms that</p> <ul style="list-style-type: none"> 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	<p>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.</p> <p>VPA (GS11503, GS 11501, GS 11498 & GS11496) described in this section targets the promotion, distribution and sale of different models of solar lighting</p>
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² These are total number of jobs irrelevant of the technology (SLS or ICS).

³ These are total number of jobs irrelevant of the technology (SLS or ICS).

⁴ These are total number of jobs irrelevant of the technology (SLS or ICS).

⁵ These are total number of jobs irrelevant of the technology (SLS or ICS).

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:

VPA Ref. #	GS 11503 (VPA 19)	GS 11501 (VPA 21)	GS 11498 (VPA 24)	GS 11496 (VPA 26)
Location / State	Bihar (BH), Chhattisgarh (CG), Goa (GOA), Gujarat (GJ), Jharkhand (JK), Karnataka (KA), Kerala (KL), Madhya Pradesh (MP), Maharashtra (MH), Odisha (OD), Punjab (PJ), Rajasthan (RJ), Tamil Nadu (TN), Uttar Pradesh (UP) and West Bengal (WB)	Assam(AS), Bihar(BH), Chandigarh (CH), Chhattisgarh(C G), Goa(GOA), Gujarat(GJ), Jharkhand (JK), Karnataka(KA), Kerala(KL), Madhya Pradesh(MP), Maharashtra(M H), Odisha(OD), Punjab(PJ), Rajasthan(RJ), Tamil Nadu(TN), Tripura (TR), Uttar Pradesh(UP) and West Bengal(WB)	Karnataka (KA)	Karnataka (KA)
CEP Type	SLS	SLS	SLS	SLS
CEP Model	PLT3F1HLS PLT6HLS CL2LT2HLS PL2LT6F1HLS S PLT4HLS CL1LT1F1HLS S SKDLT3 PL1LT3HLS CL1LT2HLS CL1LT1HLS CL2HLS CL3LT1HLS2 PL1LT3F1HLS S CLT2F1HLS PL1LT3F1HLS S2	Power 80 SK-1510 SK-1520 SK-1530 SP 315 SP Breeze SP Inverter 200 SP100 SP200 Spark Pro Spark Pro Breeze Spark Pro Ujala Sunverter 1530 Ujala 2.0 Ujala Breeze	CL1LT2HLS CL1LT1HLS CL2HLS CL2LT2HLS CL3LT1HLS SKDLT3 PL1LT5HLS CLT2F1HLS CLT2HLS PL1LT3F1HLS PLT3F1HLS CL2LT2HLS2 PL1LT4HLS PL2LT4HLS PLT4F1HLS	CL1LT2HLS CL1LT1HLS CL2HLS CL2LT2HLS CLT1HLS CLT2HLS PL1LT3HLS SKDLT3 PL1LT5HLS CLT2F1HLS CL2LT2HLS2 PL1LT4HLS PL2LT4HLS PLT4F1HLS

		CLT2HLS CL3LT1HLS PL1LT5HLS CLT1HLS PL1LT3F2HL S PL2LT8F2HL S SB2HLS Glosolar Mini HLS Jugnu Lightbox L2005 Greenlight Planet Boom (Sunking Boom) Greenlight Planet Pro-X (Sunking Pro-X) RAL Duron Mitva MS- 16C RAL Duron Mitva MST 952A Greenlight Planet Home Lighting System (Sunking HLS) Greenlight Planet Pico Plus (Sunking Pico Plus)	SK 1540 SK Mini SP 50 Magic TV Greenlight Planet Pro200 (Sunking Pro200) Greenlight Planet Pico Plus (Sunking Pico Plus) RAL Duron Mitva MS16C RAL Duron Mitva MST952A Greenlight Planet Boom (Sunking Boom) Greenlight Planet Home Lighting System (Sunking HLS) Greenlight Planet Pro 400 (Sunking Pro 400) Greenlight Planet Home Lighting System 120 (Sunking HLS120) Greenlight Planet Pro-2 (Sunking Pro-2) Greenlight Planet Home Lighting System 120 Plus (Sunking HLS120 Plus)		
	VPA Impleme nter / PO	SKDRDP, ESAF and Asirvad	Simpa, ESAF, Bhandhan and Asirvad	SKDRDP	SKDRDP
	Total Quantity Sold /	40,164	136,182	237	175

	Disseminated													
	Maximum Estimate d Qty CEPs in CPA ((for comparable year of distribution)	200,000	266,000	200,000	266,000									
	Estimated CERs (comparable period) (tCO2e)	52,797	74,420	52,531	71,280									
	Actual CERs from the CEP Type (tCO2e)	12,257	41,303	67	58									
	<p>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. 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 VPA is way below the threshold of 15MW /02/.</p> <table><tr><th>VPA</th><th>Capacity (MW)</th></tr><tr><td>GS11503 (VPA 19)</td><td>0.28</td></tr><tr><td>GS11501 (VPA 21)</td><td>0.25</td></tr><tr><td>GS11498 (VPA 24)</td><td>0.003</td></tr><tr><td>GS11496 (VPA 26)</td><td>0.002</td></tr></table> <p>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/.</p>					VPA	Capacity (MW)	GS11503 (VPA 19)	0.28	GS11501 (VPA 21)	0.25	GS11498 (VPA 24)	0.003	GS11496 (VPA 26)
VPA	Capacity (MW)													
GS11503 (VPA 19)	0.28													
GS11501 (VPA 21)	0.25													
GS11498 (VPA 24)	0.003													
GS11496 (VPA 26)	0.002													
Finding s	CAR#02 was raised and resolved.													
Conclusion	<ul style="list-style-type: none">• 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 methodology, AMS.I.A version 14.0/10/, 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/10/.
Findings	No findings raised.
Conclusion	The monitoring plan is in line with the approved methodology, Gold Standard Simplified Methodology AMS I.A Version 14.0/10/, that is included in the registered PoA DD/1/ and VPA-DDs/2/. The monitoring plan is in accordance with the applied methodology /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

SDG13: The specific luminous efficiency of kerosene when burnt in a kerosene lantern, in Lumens/ W

Means of verification	LE _{Ker} -- The value of this parameter is considered is mentioned below as per VPA DDs/2/. This was checked with the revised accepted PoA-DD and
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	<p>included VPA-DDs/2/.</p> <p>This value is used towards determination of baseline emissions. The value of this parameter considered is mentioned below as per VPA-DDs.</p> <table border="1"> <thead> <tr> <th>VPA Number</th><th>Value</th></tr> </thead> <tbody> <tr> <td>VPA 19</td><td>0.13 Lumens/ W</td></tr> <tr> <td>VPA 21</td><td>0.13 Lumens/ W</td></tr> <tr> <td>VPA 24</td><td>0.13 Lumens/ W</td></tr> <tr> <td>VPA 26</td><td>0.13 Lumens/ W</td></tr> </tbody> </table>	VPA Number	Value	VPA 19	0.13 Lumens/ W	VPA 21	0.13 Lumens/ W	VPA 24	0.13 Lumens/ W	VPA 26	0.13 Lumens/ W
VPA Number	Value										
VPA 19	0.13 Lumens/ W										
VPA 21	0.13 Lumens/ W										
VPA 24	0.13 Lumens/ W										
VPA 26	0.13 Lumens/ W										
Findings	No findings were raised.										
Conclusion	The value mentioned in the Monitoring Report /40/ and Emission Reduction Spreadsheet /5/6/7/8/ are consistent with the approach given in VPA-DDs/2/. Hence the applied value is correct and justified.										

SDG13: The specific CO₂ emissions of kerosene, tCO₂e/ GJ

Means verification of	<p>EF_{Ker}-- 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/.</p> <p>This value is used towards determination of baseline emissions. The value of this parameter considered is mentioned below as per VPA-DDs.</p> <table border="1"> <thead> <tr> <th>VPA Number</th><th>Value</th></tr> </thead> <tbody> <tr> <td>VPA 19</td><td>0.00719 tCO₂/TJ</td></tr> <tr> <td>VPA 21</td><td>0.00719 tCO₂/TJ</td></tr> <tr> <td>VPA 24</td><td>0.00719 tCO₂/TJ</td></tr> <tr> <td>VPA 26</td><td>0.00719 tCO₂/TJ</td></tr> </tbody> </table>	VPA Number	Value	VPA 19	0.00719 tCO ₂ /TJ	VPA 21	0.00719 tCO ₂ /TJ	VPA 24	0.00719 tCO ₂ /TJ	VPA 26	0.00719 tCO ₂ /TJ
VPA Number	Value										
VPA 19	0.00719 tCO ₂ /TJ										
VPA 21	0.00719 tCO ₂ /TJ										
VPA 24	0.00719 tCO ₂ /TJ										
VPA 26	0.00719 tCO ₂ /TJ										
Findings	No findings were raised.										
Conclusion	The value mentioned in the Monitoring Report /40/ and Emission Reduction Spreadsheet /5/6/7/8/ are consistent with the registered VPA-DDs/2/. The applied value is correct and justified.										

SDG13: Standard normal for a confidence interval of 90%

Means verification of	<p>z-- The value of this parameter is considered is mentioned below as per VPA DDs/2/. This was checked with the revised accepted PoA-DD/01/ and included VPA-DDs/2/. This value is used towards determination of baseline emissions.</p> <p>This value is used for the determination of baseline emissions. The value of this parameter considered is mentioned below as per VPA-DDs.</p> <table border="1"> <thead> <tr> <th>VPA Number</th><th>Value</th></tr> </thead> <tbody> <tr> <td>VPA 19</td><td>1.290</td></tr> <tr> <td>VPA 21</td><td>1.290</td></tr> <tr> <td>VPA 24</td><td>1.290</td></tr> <tr> <td>VPA 26</td><td>1.290</td></tr> </tbody> </table>	VPA Number	Value	VPA 19	1.290	VPA 21	1.290	VPA 24	1.290	VPA 26	1.290
VPA Number	Value										
VPA 19	1.290										
VPA 21	1.290										
VPA 24	1.290										
VPA 26	1.290										
Findings	No findings were raised.										
Conclusion	The value mentioned in the Monitoring Report/40/ and Emission Reduction Spreadsheet/5/6/7/8/ are consistent with the registered VPA-DDs/2/. The applied value is correct and justified.										

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

SDG13: lumens output for each solar lamp n deployed as part of project activity (Ln), Lumens

Relevant SDG Indicator	SDG13: Climate Action	
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. 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?	<p>The values reported in the final MR /40/ were verified through the technical specifications provided by the suppliers of the respective model.</p> <p>The verified value of this parameter for solar lighting systems sold/distributed under the relevant VPAs at the end of the current monitoring period is lower of Lumen output of installed system and 140.538 Lumen as per PoA-DD/1/ and VPA-DDs/2/ constraint. Additionally, each household in the database only receives one solar lighting system and if any of the households are found to have another SLS installed during quarterly monitoring, no emission reductions are claimed from those households.</p> <p>These measures ensure that no single household gets emission reductions higher than those that were validated at the time of PoA and VPAs registration (equivalent level of kerosene consumption in the baseline).</p> <p>The verification team has verified the lumen output of models disturbed in the current monitoring period and found to be consistent with the technical specifications provided by respective product suppliers. In case the SLS models have more than one setting for light intensity, the conservative value is considered in line with VPA-DDs/2/.</p> <p>The verification team also checked the type of solar lighting systems in all of the surveyed households during the onsite surveys. The information thus obtained was cross-checked against technical specifications</p>

		<p>of the device and it was confirmed if it matched.</p> <p>Specific to distribution of solar CEPs, each household is given a "user account identification number". This number can be used to establish that one household receives only one product since the number is unique and cannot be repeated. The verification team checked the uniqueness of "user account identification number" for solar CEPs across the VPA covered using conditional formatting and confirms that only a single solar device has been provided to each household. The assessment team has also verified the tracker output file provided by CME that includes consolidated list of all CEP sales made under the Programme and confirms that only 1 solar CEP has been implemented in a single household.</p>
	If applicable, has the reported data been cross-checked with other available data?	Type/ model of solar lighting systems given in ER sheets were further checked with the credit tracker output file/46/ during document review of the supporting documents shared by CME. No discrepancy in data was observed regarding models of solar lighting systems distributed.
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	<p>Solar lighting systems installation information is maintained in the MEC tracker system that records address of the household. The tracker system is monitored continuously.</p> <p>It can be confirmed that management ensuring the correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place.</p>
	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 Finding were raised.	
Conclusion	The parameter has been monitored appropriately, in accordance with the registered monitoring plan/1/2/ (as per measurement methods and procedures to be applied) and applied methodology/10/. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan.	

SDG13: Total number of solar lamps of type i that have been deployed in period a, Ni,a, Lamps

Relevant SDG Indicator	SDG13: Climate Action
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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. The frequency is in line with the PoA-DD/1/ and VPA-DDs/2/											
Monitoring equipment	Not applicable. The number in Credit Tracker Platform.											
Calibration frequency /interval:	Not Applicable											
How were the values in the monitoring report verified?	<p>The values reported in the final MR /40/ (and corresponding ER sheets /5/6/7/8/) were verified through the Credit Tracker Platform /43/, /45/ that records the name of the customer, loan account number, branch name address/ description of location, contact telephone number(s) (where available), unique client ID and date of first loan disbursement date. The entire database for the VPA included in the current monitoring period is presented in the ER sheet as VPA Database/5/6/7/8/.</p> <p>The verified value for solar systems sold/distributed under the VPAs at the end of the current monitoring period are:</p> <table border="1"> <thead> <tr> <th>VPA#</th> <th>Value (%)</th> </tr> </thead> <tbody> <tr> <td>VPA 19</td> <td>40,164</td> </tr> <tr> <td>VPA 21</td> <td>136,182</td> </tr> <tr> <td>VPA 24</td> <td>237</td> </tr> <tr> <td>VPA 26</td> <td>175</td> </tr> </tbody> </table>	VPA#	Value (%)	VPA 19	40,164	VPA 21	136,182	VPA 24	237	VPA 26	175	
VPA#	Value (%)											
VPA 19	40,164											
VPA 21	136,182											
VPA 24	237											
VPA 26	175											
If applicable, has the reported data been cross-checked with other available data?	Yes. The information provided in the VPA database/5/6/7/8/ and ER sheets/5/ was verified randomly with the sales receipt/ warranty cards/22/ and through interviews 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?	<p>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.</p> <p>The sale process and record keeping was reviewed by conducting CME and PO interviews; the record keeping processes explained were found reliable.</p>											
In case project participants have temporarily not monitored the parameter, has	Not Applicable											

	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?	
Findings	CAR#03 was raised and closed	
Conclusion	The parameter has been monitored appropriately, in accordance with the registered monitoring plan/1/2/ (as per measurement methods and procedures to be applied) and applied methodology/10/. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan.	

SDG13: Average number of days lamps of type i that have been deployed in period a were operating in period v, di,a,v, days

Relevant SDG Indicator	SDG13: Climate Action	
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. 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 credit tracker platform records the exact date of sale for solar lighting system that can be tracked by the implementing partners and CME. The value of this parameter calculated as the total days from date of installation of the SLS to the end date of monitoring period or the entire monitoring period, whichever is lesser. Individual number of days SLS have operated during the monitoring period is calculated and the average value is used for calculating the emission reductions. In the event of a non-functional CEP being identified during the monitoring, the number of crediting days for that device are considered '0'. It is noteworthy to see that apart from considering the methodological requirements for determination of this parameter value, an additional check on conservativeness of emission reduction estimation is also ensured by considering 0 crediting days for products identified as non-functional at any point during the quarterly or

		<p>annual monitoring. This quarterly and annual monitoring is followed by CME.</p> <p>The value of the parameter for all the models distributed in each state of VPA reported in the MR is verified through the Credit Tracker Platform output file and found to be consistent. The dates of installations were also verified through sales receipts or installation cards /22/ of 44 randomly selected households for remote survey from the VPA with SLS distribution. The information obtained was consistent with dates provided in ER sheets/5/6/7/8/. It was thus confirmed that for households where distribution was done during the monitoring period (if any), emission reductions were only claimed for days passed since installation.</p> <p>The SLS model specific state-wise average values of parameter are equal to or lower than 365 days which was found appropriate based on the evidences provided as mentioned above.</p>	
	If applicable, has the reported data been cross-checked with other available data?	<p>The date of installation of the 11 randomly selected households per VPA for DOE onsite survey was further cross-checked with credit tracker screenshots/45/ of recorded details of these 44 households. The values provided were found to be consistent. The applied value does not exceed 365 which is the total number of operational days in the monitoring period. The verified average values were equal to this as per the model distributed and date of installation.</p>	
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	<p>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.</p> <p>The sale process and record keeping was reviewed by conducting CME and PO interviews; the record keeping processes explained were found reliable.</p>	
	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	Not Applicable	

	Project Standard?	
Findings	CAR#03 was raised and closed	
Conclusion	The parameter has been monitored appropriately, in accordance with the registered monitoring plan/1/2/ (as per measurement methods and procedures to be applied) and applied methodology /10/. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan.	

SDG13: Average operating hours of kerosene lamps in the baseline, H, Hours/ day

Relevant SDG Indicator	SDG13: Climate Action	
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. 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?	As per the applied methodology AMS I.A version 14/10/ paragraph I) "For the specific case of lighting devices a daily usage of 3.5 hours shall be assumed, unless it is demonstrated that the actual usage hours adjusted for seasonal variation of lighting is different based on representative sample survey (90% confidence interval +/-10% error) done for minimum of 90 days". For the current monitoring period default value of 3.5 hours/day is considered for this parameter for these VPAs.
	If applicable, has the reported data been cross-checked with other available data?	The value reported in the ER calculation sheet /5/6/7/8/ was checked with MR/40 and applied methodology AMS I.A version 14/10/ and found to be consistent.
	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 procedures are in place. The data provided in applied methodology/10/ has been appropriately reported and used in ER calculation sheet/5/6/7/8/ and MR/40/.
Findings	None	
Conclusion	The parameter has been monitored appropriately, in accordance with the registered monitoring plan/1//2/ (as per measurement methods and procedures to be applied) and applied methodology /10/. The monitoring results were recorded consistently as per the approved frequency in the	

monitoring plan.

SDG13: Lamp failure rate: Share of lamps of lamp type i in checked sample group gi,v not operational in period v (LFRi,v), %

Relevant SDG Indicator	SDG13: Climate Action	
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. 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?	<p>This parameter is determined by CME/PO/Monitoring partner through the quarterly survey to confirm the usage status of all SLS. The results collected are recorded in the Credit Tracker Platform /43/45/.</p> <p>If a solar lighting system is found to be not in use or non-operational during the survey then the same is considered as "failed" during the entire monitoring period under concern. All SLSs distributed till the day of surveying are monitored.</p> <p>Lamp failure rate is calculated as:</p> $LFR = (\text{Number of failed lamps} / \text{Total number of lamps monitored})$ <p>The value of this parameter for different SLS models distributed during the current monitoring period is provided in the monitoring report /40/ and ER calculation sheets/5/6/7/8/.</p> <p>The verification team randomly selected 44 samples (11 samples per VPA) for VVB's onsite survey from the VPAs covered in this request for issuance and found that all 44 surveyed SLSs for the VPAs were operational (as confirmed by the end users). The results were consistent with the monitoring survey results provided in ER calculation sheet/5/6/7/8/ for the surveyed households.</p>

	If applicable, has the reported data been cross-checked with other available data?	The results were cross-checked with quarterly usage survey forms/41/ for the 44 households surveyed to ensure consistency of data. No discrepancies in data reporting of this parameter were observed. Additionally, the lamp failure rate values are also compared with values obtained from last monitoring period under CDM and it could be confirmed that for each sub-group the parameter value has increased (indicating increased number of failed lamps) since last monitoring period. This is reasonable and can be attributed to older age of the SLSSs, thus making them more prone to 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 training was provided to the staff responsible for collection of data/34.1/. QA/QC procedure is in place.	
	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/1/2/ (as per measurement methods and procedures to be applied) and applied methodology /10/. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan.		

SDG 13: This factor corrects the total number of lamps of Type i by the share of these lamps that were found to be operational according to the sampling in period v., $CF_{i,v,LFR}$, %

Relevant SDG Indicator	SDG 13: Climate Action		
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. 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?	<p>Value of this parameter is calculated using the value of lamp failure rate ($LFR_{i,v}$) using the below equation:</p> $CF_{i,v,LFR} = 1 - \left(LFR_{i,v} + Z * \sqrt{\frac{LFR_{i,v} * (1 - LFR_{i,v})}{n_{i,v,total}}} \right)$ <p>Values mentioned in the monitoring report were checked with the ER calculations sheet and found to be consistent.</p>
	If applicable, has the reported data been cross-checked with other available data?	Calculation approach reported in the ER calculation sheet was found to be satisfactory and in line with the registered monitoring plan.
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	This value is calculated based on the results of other monitored parameters with 90/10 confidence/precision. The statistical error is included in this parameter (confidence level 90%) when 90/10 precision is not met.
Findings	CAR#03 was raised and resolved.	
Conclusion	The parameter has been monitored appropriately, in accordance with the registered monitoring plan/1/2/ (as per measurement methods and procedures to be applied) and applied methodology /10/. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan.	

SDG13: Total number of lamps checked for which a valid result was obtained, $n_{i,v,total}$, Lamps

Relevant SDG Indicator	SDG 13: Climate Action	
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	Yes, the frequency in line to the PoA-DD/1/ and VPA-DDs/2/.

	methodology? (Yes / No)	
	How were the values in the monitoring report verified?	<p>This parameter is determined using the sampling surveys. Simple random sampling is applied to determine the sample size for the surveys. Sample size for each type of SLS model is calculated separately for each partner organization and each state.</p> <p>The verification team conducted a on-site visit wherein 44 randomly selected households (11 households per VPA) from the VPAs with SLS distribution were surveyed and asked about the operability and usage of the project device. All sampled households were found to have an operational SLS which was subjected to regular, daily usage. The data of surveyed households was also consistent with results presented in ER sheets/5/6/7/8/, which were used in calculation of the parameter value.</p> <p>The monitored value are included in the final Monitoring Report /40/. The required level of precision i.e., 10% or less, has been achieved at 90% confidence level.</p> <p>Minimum 30 samples or total number of deployed SLS were monitored wherever the sample size arrived as less than 30 for a particular group of SLS model/state/PO combination. In some cases, the actual number of installations were less than 30 therefore the entire population size was considered. The verification team was able to confirm that the sample size calculation is in line with the Guideline: Sampling and surveys for CDM project activities and programme of activities/26/.</p> <p>As an additional measure of conservativeness, CME has calculated this value using the assumption that all SLSs with status recorded as "installed_damaged" during quarterly and annual usage monitoring survey (which was done as a QA/QC procedure inline with revised approved PoA-DD/1/ and VPA-DDs/2/) are not working or in use. CME has considered no emission reductions from these devices with "installed_damaged" status even if the defunctional and in use after introducing minor repairs or fixes. This has been verified through evidence provided i.e., some sample monitoring survey forms/41//18/ and quarterly usage survey forms/41/. This has been reflected</p>

		accurately in ER sheets/5/6/7/8/ as well.
	If applicable, has the reported data been cross-checked with other available data?	<p>The survey results, assumptions and sales records for different state/model/PO groups were checked by the verification team at random and were found acceptable. The results are reproducible in the ER sheets corresponding to final Monitoring Report/40/.</p> <p>The verification team cross-checked the parameter related data in ER sheet against the filled monitoring survey forms of the CME/41/ of the 44 randomly selected samples (11 samples per VPA) for VVB's onsite survey. It was confirmed that all the responses on solar lighting systems' operationality as reported by the end users during onsite interviews were consistent with the CME's sample survey results/18/41/.</p>
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	<p>The CME/PO select the households for monitoring survey to check the lamp usage status for each lamp type <i>i</i> in the monitoring period. The survey results are recorded in Credit Tracker.</p> <p>The training was provided to the staff responsible for collection of data/34.1/. Thus, the QA/QC procedure is in place for the training of staff, and the documentary evidences were shared by CME against these requirements/34.1/.</p>
Findings	None	
Conclusion	The parameter has been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan.	

SDG 13: Determination of whether or not the end user used kerosene for lighting prior to the project activity, kerosene usage in the baseline

Relevant SDG Indicator	SDG 13: Climate Change	
Means of verification	Criteria/Requirements	VVB Assessment
	Measuring /Reading /Recording frequency	Annual
	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?	<p>Every household is asked about the baseline fuel used for lighting purpose at the time of loan application. The information gathered from the end users/purchaser of the product is recorded in the MIS system of POs and Credit Tracker Platform. This was confirmed from the credit tracker output file/46/.</p> <p>For the current monitoring period, it was inquired and confirmed during DOE onsite surveys of 11 randomly selected households per VPAs that all those households were using kerosene for lighting prior to the purchasing the SLS.</p>
	If applicable, has the reported data been cross-checked with other available data?	Data recorded in the system generated credit tracker output file/46/ is checked at random. Also, the sample households are randomly checked by the verification team for 11 randomly selected households per VPA by cross-checking the data in ERs sheet against baseline survey forms of these households/41/ (which were filled at the time of SLS installation). The form contains information about the baseline fuel in use by the household.
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the training was provided to the staff responsible for collection of data/34.1/. QA/QC procedure is in place.
Findings	None	
Conclusion	The parameter has been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan.	

SDG1: Number of SLS distributed in Project, BSAPProject, Number

Relevant SDG Indicator	SDG 1: No poverty	
Means of verification	Criteria/Requirements	Assessment/Observation
	Measuring /Reading /Recording frequency	This parameter is measured on annual basis
	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?	<p>The verified value for this parameter as per VPAs are:</p> <table border="1"> <thead> <tr> <th>VPA#</th><th>Value (Number)</th></tr> </thead> <tbody> <tr> <td>VPA 19</td><td>40,164</td></tr> <tr> <td>VPA 21</td><td>136,182</td></tr> <tr> <td>VPA 24</td><td>237</td></tr> <tr> <td>VPA 26</td><td>175</td></tr> </tbody> </table> <p>The records of number of VPA for SLS distributed in monitoring database, ex-post monitoring survey records were cross checked. Since the database is a primary source of data collection and the QA/QC were found to be robust as described below, the values were accepted.</p>	VPA#	Value (Number)	VPA 19	40,164	VPA 21	136,182	VPA 24	237	VPA 26	175
	VPA#	Value (Number)										
	VPA 19	40,164										
	VPA 21	136,182										
VPA 24	237											
VPA 26	175											
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/1/ (as per measurement methods and procedures to be applied) and applied methodology /10/. 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 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 methodology? (Yes / No)	Yes, the frequency is in line to the PoA-DD/1/ and VPA-DD's/2/.										
	How were the values in the monitoring report verified?	<p>The post monitoring records/41/18/ were checked to identify as part of the assessment as well as during the interviews conducted with the 44 selected beneficiaries during on site visit the intended beneficiaries who are having access to affordable, reliable and modern energy services.</p> <p>The usage rate was determines through the monitoring survey and then calculated through $CFR_{i,v}$, the usage rate of 98.21%(VPA 19), 96.37%(VPA 21), 85.98%(VPA 24) and 95.60%(VPA 26) for SLS, the value of the parameter considered to be as mentioned below, which was found to be acceptable.</p> <table border="1"> <thead> <tr> <th>VPA#</th> <th>Value (Number)</th> </tr> </thead> <tbody> <tr> <td>VPA 19</td> <td>39,445</td> </tr> <tr> <td>VPA 21</td> <td>131,242</td> </tr> <tr> <td>VPA 24</td> <td>204</td> </tr> <tr> <td>VPA 26</td> <td>167</td> </tr> </tbody> </table>	VPA#	Value (Number)	VPA 19	39,445	VPA 21	131,242	VPA 24	204	VPA 26	167
	VPA#	Value (Number)										
	VPA 19	39,445										
	VPA 21	131,242										
VPA 24	204											
VPA 26	167											
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	<p>The monitoring has been carried out in accordance with the monitoring plan contained in the PoA-DD/1/ and respective VPA-DDs/2/.</p> <p>Sampling Design/Target Population/Sampling Frame/Reliability:</p> <p>In this sampling design, the VPA's that are covered under the current</p>
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monitoring period (GS11503, GS11501, GS11498 & GS11496) 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.

In first stage the total sales population is divided per partner if more than one partner organization (PO) involved in the VPAs. Further if the solar lighting systems sold by the PO in more than one state then the sales population splits at state level.

For each state, the sales numbers were further split into solar lighting system model.

Sampling Method:

Considering the homogeneity regarding the usage of solar products for the PO's in the relevant VPA's with solar lighting system sales, simple random sampling is applied to determine the parameter "Total number of lamps checked for which a valid result was obtained".

Sample Size (Required and Actual) for Parameter of Interest:

The sampling is applied to the proportion-based parameter $n_{i,v,total}$ for the monitoring period requesting issuance. The sample sizes were determined, separately as per type of Solar lighting models and /or for the SLS models implemented by each PO per state.

In this regard, sample size calculation spreadsheets /5/6/7/8/ was checked and found correct as per registered monitoring plan. Minimum 30 samples or total number of deployed SLSs were monitored wherever the sample size arrived as less than 30 for particular group of SLS model/state/PO combination. In some cases, the actual number of installations were less than 30, and therefore, the entire population size was considered. The verification team was able to confirm that the sample size calculation is in line with the Guideline: Sampling and surveys for CDM project activities and programme of activities/26/. Thus, the actual surveyed systems were either same or higher than the required number.

As can be seen below, the sampling requirements were met for all type of solar lighting systems vintages.

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 conducted annually as a part of QA/QC in line with revised accepted PoA-DD/1/) for each relevant VPA-DDs/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. To confirm whether the sample is representative of the different vintage of solar CEPs, CME had submitted a separate excel file/42/ which was assessed by the verification team for the proportion of total sales in different vintages versus the proportion of selected sampled households in those vintages. The vintages were calculated based on implementation date. The same is found to be justified and appropriate. Hence the verification team was able to confirm that the samples are representative of the total

population.

A sample vintage consideration is as follows:

**Vintage split for Sarala d.light S100 in the state of West Bengal:
(sample size requirement-89)**

Vintage based on implementation date	Proportion in distribution	Required number of samples based on proportion in distribution	Number of samples monitored for d.light S400
0-1 (27/06/2019 to 26/06/2020)	0%	0	0
1-2 (27/06/2018 to 26/06/2019)	0%	0	0
2-3 (27/06/2017 to 26/06/2018)	0%	0	0
3-4 (27/06/2016 to 26/06/2017)	77%	69	69
4-5 (27/06/2015 to 26/06/2016)	21%	19	19
5-6 (27/06/2014 to 26/06/2015)	2%	1	1

VPAs part of this issuance request have CEP sales in different vintages, and the number of samples (weightage based on number of CEPs installed and being used in the vintage) are assigned to each vintage accordingly. It was verified with credit tracker platform output files (VPA specific) /46/ and found to be consistent with the data available in vintage-wise consideration sheet/42/ average lifetime of various models of solar lights have been checked from their technical specifications. All models distributed in VPA of this batch have an average technical life of 5 years. However, this is an average estimate of the lifetime which might vary from individual product to product, depending on usage and handling. Operationality of the distributed solar light models is majorly dependent on its battery and the LED. Most of the electrical components of these lights, including batteries, charger, solar panels are replaceable, which can help the product last longer. During verification team's on-site visit, through interviews with project implementer representatives it was confirmed that system is in place for after-sales maintenance services to help the households with issues faced with operationality of the device. The end users were also interviewed to cross check, and it was found that they are aware of the available after-sales services. Additionally, what must also be noted is that CME conducts an annual and quarterly monitoring for all end users to check the usage status of the project device, thus capturing non-operational devices, which are then not accounted in calculation for emission reductions. Therefore, consideration of all solar lighting systems vintages included in the VPA has been accepted by the verification team.

Implementation of survey:

For monitoring of the parameter, the survey includes the question

- Is the solar lighting system in use? (Y/N)

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 No.	Ref.	Technology	Previous Monitoring dates
	GS11503		SLS	20/01/2021 – 20/02/2021
	GS11501		SLS	20/01/2021 – 20/02/2021
	GS11498		SLS	20/01/2021 – 16/02/2021
	GS11496		SLS	20/01/2021 – 19/02/2021
				Survey dates for current monitoring period
				03/01/2022 – 14/02/2022
				01/01/2022 – 26/02/2022
				05/01/2022 – 15/01/2022
				10/01/2022 – 06/02/2022
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/5/6/7/8/ 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 /5/6/7/8/ 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	CAR#04 was 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.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	<p><u>SDG-13: Climate Action</u></p> <p>The verification team verified that</p> <ol style="list-style-type: none"> 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 /5/6/7/8/ 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.6.4 of this report. 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/10/. All assumptions used in the emission calculations were found appropriate and therefore justified 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. No standardized baseline was prescribed in the PoA-DD and therefore it has not been applied. 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. <p>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 /8/. The equations used were found consistent with the revised accepted PoA-DD/1/, VPA-DDs/2/ and the applied methodology AMS-I.A., version 14/10/:</p> <p>Total ERs achieved in the current monitoring period by all types of SLS distributed in the relevant VPA is calculated using the following equations:</p> $BE_v = \sum_{a=1}^n (N_{i,a} * d_{i,a,v}) * l_i * h * \frac{1}{LE_{ker}} * EF_{ker} * 10^{-6} * 3.6 * CF_{i,v,LFR}$ <p>Where:</p> <p>$BE_{i,v}$ = Emissions generated in the absence of the project activity in period v by all lamps of type i</p> <p>$N_{i,a}$ = The total number of solar lamps of type i deployed in period a</p> <p>$d_{i,a,v}$ = Average number of days lamps of type i that have been deployed in period a were operating in period v</p> <p>l_i = Nominal lumen output of solar lamps of the type I deployed as part of the project activity</p> <p>h = Average number of hours solar lamps are used per day</p> <p>LE_{ker} = The specific light output of kerosene when burnt in a kerosene lantern</p> <p>EF_{ker} = The specific CO₂-emissions of kerosene</p>
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	<p>$CF_{i,v,LFR}$ = This factor corrects the total number of lamps of type i by the share of these lamps that were found to be operational according to the sampling in period v. The statistical error is included in this parameter (confidence level 90%).</p> <p>And:</p> $CF_{i,v,LFR} = 1 - \left(LFR_{i,v} + z * \sqrt{\frac{LFR_{i,v} * (1 - LFR_{i,v})}{n_{i,v,total}}} \right)$ <p>Where:</p> <p>$CF_{i,v,LFR}$ = This factor corrects the total number of lamps of type i by the share of these lamps that were found to be operational according to the sampling in period v. The statistical error is included in this parameter (confidence level 90%).</p> <p>$LFR_{i,v}$ = Share of lamps of Imp type i in checked sample group $g_{i,v}$ not operational in period v.</p> <p>z = Standard normal for a confidence level of 90%</p> <p>$n_{i,v,total}$ = Total number of lamps checked for which a valid result was obtained.</p> <p>Since there are different models of SLS having different lumen output are distributed/sold under the relevant VPAs, hence the emission reductions achieved by each type of solar lighting system is calculated separately. The above equation is used to calculate the ER achieved by particular solar lighting system and total emission reductions are arrived at as summation of the same.</p> $BE_v = \sum_{i=1}^n BE_{i,v}$ <p>Where,</p> <p>$BE_{i,v}$ is the emission reductions achieved in the period v by all lamps of type i</p> <p>The calculation provided as a sample for one of the Partner-Model-State combination in MR/40/ has been reviewed and is found consistent with actual calculations applied in ER calculation sheet/5/ for that specific combination. It is noted that the sample calculation provided in MR is only one example of a specific group, which in no case reflect total baseline emissions from the technology i.e. from SLS distribution.</p>
Findings	No Finding were raised.
Conclusion	<p>The verification team verified that</p> <p>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 /5/6/7/8/ of final Monitoring Report /40/.</p> <p>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.</p> <p>i) The calculations of baseline emissions as presented in the corresponding ER calculations sheet /5/6/7/8/ 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/10/.</p>

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

Means of verification	The PoA-DD/1/, VPA-DDs/2/ and applied monitoring methodology/10/ does not prescribe any project 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 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/10/ 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 AMS-I.A, version 14 /10/.

E.6.7.4. 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	12,257 tCO ₂ e VERs (VPA 19) 41,303 tCO ₂ e VERs (VPA 21) 67 tCO ₂ e VERs (VPA 24) 58 tCO ₂ e VERs (VPA 26)	0 tCO ₂ e VERs (for all VPAs)	12,257 tCO ₂ e VERs (VPA 19) 41,303 tCO ₂ e VERs (VPA 21) 67 tCO ₂ e VERs (VPA 24) 58 tCO ₂ e VERs (VPA 26)
	1	No Poverty	0	40,176 (VPA 19) 136,182 (VPA 21) 237 (VPA 24) 175 (VPA 26)	40,176 (VPA 19) 136,182 (VPA 21) 237 (VPA 24) 175 (VPA 26)
	7	Affordable and clean energy	0	39,445 (VPA 19) 131,242 (VPA 21) 204 (VPA 24) 167 (VPA 26)	39,445 (VPA 19) 131,242 (VPA 21) 204 (VPA 24) 167 (VPA 26)

	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 Finding were raised.
Conclusion	<p>The verification team confirms that</p> <p>e) The complete data was available and is duly reported;</p> <p>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);</p> <p>g) Appropriate methods and formulae for calculating baseline GHG emissions or baseline net GHG removals, project emissions and leakage emissions were followed;</p> <p>h) Appropriate emission factors, IPCC default factors/32/ and other reference values were correctly applied.</p>

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	VPA 19 – 113,194 VPA 21 – 149,648 VPA 24 – 123,421 VPA 26 – 159,507	VPA19 – 69,441 VPA21 – 103,884 VPA24 – 63,254 VPA26 – 55,288
	1	No Poverty	VPA 19 - 22,600 ICS VPA 21 - 26,000 ICS VPA 24 - 22,600 ICS VPA 26 - 25,625 ICS	VPA 19 - 21,000 VPA 21 - 22,000 VPA 24 - 21,000 VPA 26 - 20,124
			VPA 19 - 197,033 SLS VPA 21 - 287,184 SLS VPA 24 - 189,047 SLS VPA 26 - 260,835 SLS	VPA 19 - 40,164 VPA 21 - 136,182 VPA 24 - 237 VPA 26 - 175
	3	Good Health and well being	VPA 19 - 100 % VPA 21 - 100 % VPA 24 - 100 % VPA 26 - 100 %	VPA 19 - 82% VPA 21 - 84% VPA 24 - 90% VPA 26 - 90%
	5	Gender Equality	VPA 19 - 100 % VPA 21 - 100 % VPA 24 - 100 % VPA 26 - 100 %	VPA 19 - 82% VPA 21 - 84% VPA 24 - 90% VPA 26 - 90%
	7	Affordable and clean energy	VPA 19 - 20,340 VPA 21 - 23,400 VPA 24 - 20,340 VPA 26 - 23,062	VPA 19 - 17,220 VPA 21 - 18,450 VPA 24 - 18,900 VPA 26 - 18,112
			VPA 19 - 197,033 VPA 21 - 287,184 VPA 24 - 189,047 VPA 26 - 260,835	VPA 19 - 39,445 VPA 21 - 131,242 VPA 24 - 204 VPA 26 - 167

	8	Decent Work and Economic Growth	VPA 19 - 20 VPA 21 - 20 VPA 24 - 20 VPA 26 - 20	VPA 19 - 73 VPA 21 - 85 VPA 24 - 30 VPA 26 - 30
	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 /5/6/7/8/, show that the actual emission reductions achieved for project stove during this monitoring period are less than the estimate provided in VPA-DDs/2/.
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. Stakeholder Inputs and Legal Disputes

Means of verification	Not applicable
Findings	None
Conclusion	Not Applicable

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 GS 11503 (VPA 19), GS 11501 (VPA 21), GS11498 (VPA 24) & GS 11496 (VPA 26) in the host country "India" for the monitoring period 01/01/2021 to 31/12/2021 (both dates inclusive), as reported in the Monitoring Report,

Version 3.0 dated 17/10/2022/40/. 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"/09/ and "AMS I.D – Electricity generation by the user, Version 14.0"/10/, the monitoring plan contained in the VPA-DDs and Monitoring Report Version 3.0 dated 17/10/2022/40/.

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 3.0 dated 17/10/2022/40/. ESPL, based on outcome of verification activities, certifies in writing that, during the monitoring period 01/01/2021 to 31/12/2021 (inclusive of both the dates), the registered GS PoA – GS11450 "MicroEnergy Credits – Microfinance for Clean Energy Product Lines – India" achieved the verified amount of 69,441 tCO₂e reductions for VPA 19, 103,848 tCO₂e reductions for VPA 21, 63,254 tCO₂e reductions for VPA 24 and 55,288 tCO₂e reductions for VPA 26 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	VPA 19	VPA 21	VPA 24	VPA 26
From 01/01/2021 till 31/12/2021	69,441 tCO ₂ e	103,848 tCO ₂ e	63,254 tCO ₂ e	55,288 tCO ₂ e
Total	69,441 tCO₂e	103,848 tCO₂e	63,254 tCO₂e	55,288 tCO₂e

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	Shifali Guleria		
Education	M.Sc. (Environmental Studies and Resource Management), TERI University		
Experience	3+ year		
Field	Climate Change		
Approved Roles			
Team Leader	YES		
Validator	YES		
Verifier	YES		
Methodology Expert	YES (AMS-I.A., AMS-II.G., AMS-II.E., AMS-III.A.V., AMS-I.D, ACM0002)		
Local expert	YES		
Financial Expert	NO		
Technical Reviewer	YES		
TA Expert	YES (1.2, 3.1)		
Reviewed by	Deepika Mahala	Date	16/02/2022
Approved by	Ashok Gautam	Date	18/02/2022

Competence Statement			
Name	Deepika Mahala		
Country	India		
Education	M. Sc. (Environment Management), GGSIP University B.Sc. Hons. (Chemistry), Sri Venkateshwar College, DU		
Experience	6 Years +		
Field	Climate Change		
Approved Roles			
Team Leader	YES		
Validator	YES		
Verifier	YES		
Methodology Expert	ACM0002, AMS.I.D., AMS.I.A, AMS.III.AV, AMS.II.G, AMS-II.C		
Local expert	YES (India, Bangladesh)		
Financial Expert	NO		
Technical Reviewer	YES		
TA Expert	YES (TA 1.2 & TA 3.1)		
Reviewed by	Shifali Guleria (QM)	Date	28/04/2022
Approved by	Kaviraj Singh (MD)	Date	28/04/2022

Competence Statement			
Name	Divij Varshney		
Education	M.Tech. Renewable energy systems B.Tech. Electrical Engineering		
Experience	1.5 years		
Field	e.g., Climate Change & Environment / Industry		
Approved Roles			
Team Leader	Yes (VM)		
Validator	Yes (VM)		
Verifier	Yes (VM)		
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	24/09/2022
Approved by	Deepika Mahala, Technical Manager	Date	24/09/2022

Competence Statement			
Name	Sushant Vashisht		
Education	M.Sc. Environmental science and Technology		
Experience	6 months		
Field	Environment science and technology		
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	10/05/2022
Approved by	Deepika Mahala (Technical Manager)	Date	10/05/2022

Competence Statement	
Name	Satya Ranjan Panda
Education	M.Tech in Energy and Environmental Engineering (NIT Rourkela) B.Tech in Civil Engineering (NIST Berhampur)
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	15/09/2022
Approved by	Deepika Mahala (Technical Manager)	Date	15/09/2022

Competence Statement			
Name	Ashish Yadav		
Education	M.Sc Environmental Sciences B.Sc Biotechnology		
Experience	1 Year		
Field	Wastewater treatment		
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	20/09/2022
Approved by	Deepika Mahala (Technical Manager)	Date	20/09/2022

Appendix 3. Documents reviewed or referenced

No.	Author	Title	References to the document	Provider
1.	MEC	PoA-DD	Version 2.1 dated 15/09/2022	CME
2.	MEC	VPA-DD VPA 19 VPA 21 VPA 24 VPA 26	Ver.4.1, 17/10/2022 Ver.4.1,17/10/2022 Ver.3.1, 17/10/2022 Ver.4.0, 10/10/2022	CME
3.	ESPL	Validation Report for inclusion of VPA	Version 2.0, dated 21/10/2022	Others
4.	GS4GG	Monitoring report template Guide	Version 1.1, published on 14/10/2020	GS4GG
5.	MEC	ER Calculation Summary Sheet_MP1.xlsx	Pertaining to latest MR	CME
6.	MEC	ER Calculation sheet_d.lightS350_MP1.xlsx	Pertaining to latest MR	CME
7.	MEC	ER Calculation sheet_d.lightS400_MP1.xlsx	Pertaining to latest MR	CME
8.	MEC	ER Calculation sheet_ICs_d.lightS300_S500_MP1_v2.xlsx	Pertaining to latest MR	CME
9.	GS4GG	The Gold Standard Simplified Methodology Technologies and Practices to Displace Decentralized Thermal Energy Consumption (TPDDTEC)	Version 3.1, Dated 25/08/2017	Others
10.	UNFCCC	AMS I.A – Electricity generation by the user	Version 14.0	Others
11.	CDM	CDM webpage of the PoA: https://cdm.unfccc.int/ProgrammeOfActivities/poa_db/B46TH0V2GLIZK1UPWJ3SMNA8QRX7FY/view	Last accessed on 13/10/2022	Others
12.	The Gold Standard Foundation	GS webpage of the PoA: https://registry.goldstandard.org/projects/details/3501	Last accessed on 13/10/2022	Others
13.	MEC	Carbon Title transfer document	-	CME

14.	MEC	Calibration certificates of weigh balance	Various	CME
15.	MEC	Calibration certificates of Moisture meter	Various	CME
16.	MEC	Spot check user records and the pictures of the stoves	-	CME
17.	MEC	Training records	-	CME
18.	MEC	Monitoring survey reports for parameters monitoring for ICS and SLS	-	CME
19.	MEC	Questionnaire used during the survey for each type of CEP	December 2020	CME
20.	SKDRDP	Technical specifications of ICS – Jumbo stove	-	CME
21.	d.Light	Technical specifications of SLS (Various)	-	CME
22.	MEC	Original copies of sales receipts / invoices/ warranty cards	-	CME
23.	UNFCCC	CDM PS for PoA	Version 3.0	Others
24.	UNFCCC	CDM VVS for PoA	Version 3.0	Others
25.	UNFCCC	Standard: sampling and surveys for CDM project activities and programme of activities	Version 9.0	Others
26.	UNFCCC	Guidelines: sampling and surveys for CDM project activities and programme of activities	Version 4.0	Others
27.	GS4GG	Principle and requirements	Version 1.2	Others
28.	GS4GG	PoA Requirements	Version 2.0	Others
29.	GS4GG	CSA Requirements	Version 1.2	Others
30.	GS4GG	GHG emission reduction and sequestration product requirements	Version 2.1	Others
31.	MEC	Employment Records	-	CME
32.	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
33.	GS4GG	Form: GS-MR-FORM	Version 1.1, Dated 14/10/2020	Others
34.	TASC	Training photos	-	CME
34.1	TASC	Training records	-	TASC
35.	The Gold Standard Foundation	REQUIREMENTS AND GUIDELINES USAGE RATE MONITORING,	-	CME
36.	IPCC	GWP: IPCC AR5 (https://www.ipcc.ch/site/assets/uploads/2018/02/WG1AR5_FG1-20180216.pdf)	-	Others

		oads/2018/02/ar4-wg1-chapter2-1.pdf		
37.	IPCC	GWP: IPCC AR5, https://www.ipcc.ch/assessment-report/ar5/	-	Others
38.	MEC	Grievance Logbook	-	Others
39.	MEC	MEC and PO's agreement	-	CME
40.	MEC	Monitoring Report (final)	Version 3.0, dated 17/10/2022	CME
41.	MEC	Quarterly and annual monitoring survey forms	Filled	CME
42.	MEC	Vintage Wise approach (GS11482)	-	CME
43.	MEC	Credit tracker platform screenshots/ online – output file	-	CME
44.	MEC	https://cleancooking.org/binary-data/DOCUMENT/file/000/000/604-1.pdf	March 2018	CME
45.	MEC	Credit Tracker Platform Screenshots	-	CME
46.	MEC	Tracker output file	-	CME
47.	IIT Varanasi	Stove test report	-	CME
48.	UNFCCC	Tool 30: Calculation of the fraction of non-renewable biomass	Version 4.0	Others
49.	UNFCCC	Community Services Activity Requirements	Version 1.2	Others
50.	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.	Date : DD/MM/YYYY
Description of FAR			
There is no finding from validation			
Project participant response			Date : DD/MM/YYYY
Documentation provided by project participant			
DOE assessment			Date: DD/MM/YYYY

Table 2. CL from this verification

CL ID	01	Section no.	E.5.4.2	Date	10/10/2022
Description of CL					
The project KPT were conducted in two seasons (wet season and dry season) with the same end-users and the value of mean wood consumption was calculated in all the VPAs accordingly. PP is requested to clarify what is the basis of choosing the final value of mean wood consumption based on the project KPT (wet or dry season) in all the VPAs.					
Project participant response					Date : 11/10/2022
<i>The consumption of wood during the wet season was found higher than the dry season. Hence due to conservativeness approach and keeping in line with TPDDTEC v3.1 season variation requirements, the KPT conducted in the wet season was considered. We have revised the formula in the ER calculation sheet to use reflect that maximum value has been used. Revised ER sheet has been provided.</i>					
Documentation provided by project participant					
Revised ER Sheet					
DOE assessment					Date: 12/10/2022
The explanation provided by the PD was found to be appropriate. As per para 4.1.12 of the applied methodology TPDDTEC v3.1, "The approach taken to conduct the performance tests must be such that: the impact of daily and seasonal variations on the expected average fuel consumption savings is accounted for". The PD has accounted for the seasonal variations and conducted the KPT on wet and dry seasons over the same end-users. The approach to take account for maximum wood consumption in dry season is found to be conservative and hence, appropriate. the revised ER sheets has been reviewed and confirms that it reflects the formulae based on the maximum wood consumption in wet or dry season.					
CL#01 is CLOSED.					

CL ID	02	Section no.	-	Date	10/10/2022
Description of CL					
In following sheets: ER Calculation Sheet_VPA19_MP1_v2.xlsx, ER Calculation Sheet_VPA21_MP1, ER Calculation Sheet_VPA24_MP1_v2, ER calculation sheet_VPA26_MP1_v2.					
For SLS, It has been mentioned quarterly monitoring (YES = Solar Lighting System working, NO = Solar Lighting System not working), PD is requested to how quarterly monitoring is carried out and does quarterly monitoring is done for all the SLS distributed.					
Project participant response					Date : 11/10/2022
<i>As part of the monitoring plan, the PO conducts quarterly monitoring for all the distributed SLS products. PO staff is trained during the inception of the project as well as regular trainings are provided to the PO staff to capture this information in a prescribed format. PO staff has weekly and bi-weekly meetings with end users which is used to capture this information. Sample QMS sheets have been submitted to VVB.</i>					
Documentation provided by project participant					
QMS Forms					
DOE assessment					Date: 12/10/2022
The shared documents has been reviewed. It has been confirmed that CME conducts quarterly monitoring of the distributed SLS products through the quarterly monitoring survey forms. The training modules and attendance has been shared and found to be appropriate.					
CL#03 is CLOSED.					

Table 3. CAR from this verification

CAR ID	01	Section no.	E.5.7.4	Date	10/10/2022
Description of CAR					

In Table 1: Sustainable Development Contributions Achieved, SDG impact of SDG 3 and SDG 5 is found to be inconsistent with SDG Impact in VPA-DD. PP is requested to take corrective action.

Project participant response	Date : 11/10/2022
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SDG3 and 5 in table 1 has been made consistent with VPA-DD. Revised MR has been submitted

Documentation provided by project participant

Revised MR

DOE assessment	Date: 12/10/2022
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The revised MR has been reviewed. PD has updated the SDG Impact of SDG 3 and SDG 5 to be consistent with VPA-DDs, and hence, found to be appropriate.

CAR#01 is closed.

CAR ID	02	Section no.	E.5.1, E.6.1	Date : 10/10/2022
Description of CAR				
In section B, following inconsistencies are observed:				
<ol style="list-style-type: none"> For VPA 19, Measures taken, PD has stated "For improved cookstoves and solar lights, the State of Bihar (BH), Chhattisgarh (CG), Goa (GOA), Gujarat (GJ), Jharkhand (JK), Karnataka (KA), Kerala (KL), Madhya Pradesh (MP), Maharashtra (MH), Odisha (OD), Punjab (PJ), Rajasthan (RJ), Tamil Nadu (TN), Uttar Pradesh (UP) and West Bengal (WB) are included". However, as per VPA-DD and ER sheet VPA 19, ICS is distributed only in state of Karnataka. PP is requested to clarify. For VPA 21, Measures taken, PD has stated "For improved cookstoves and solar lights, the State of Assam(AS), Bihar(BH), Chandigarh(CD), Chhattisgarh(CG), Goa(GA), Gujarat(GJ), Jharkhand (JK), Karnataka(KA), Kerala(KL), Madhya Pradesh(MP), Maharashtra(MH), Odisha(OD), Punjab(PB), Rajasthan(RJ), Tamil Nadu(TN), Tripura (TR), Uttar Pradesh(UP) and West Bengal(WB) are included". However, as per VPA-DD and ER sheet VPA 21, ICS is distributed only in state of Karnataka. PP is requested to clarify. For VPA 24, point c (7), PD has stated "The improved cookstoves under this VPA are implemented from 30/11/2019 to 19/06/2020. The solar lighting systems under this VPA are implemented from 01/01/2020 to 20/02/2020", which is found to be inconsistent with the ER sheet VPA 24. PP is requested to clarify. For VPA 26, point c (7), PP has stated "The improved cookstoves under this VPA are implemented from 30/11/2019 to 24/06/2020. The solar lighting systems under this CPA are implemented from 07/01/2020 to 23/03/2020", which is found to be inconsistent with the ER sheet VPA 24. PP is requested to clarify. 				
Project participant response				Date : 11/10/2022
<ol style="list-style-type: none"> The clerical error in the MR has been corrected. Improved cookstoves are only distributed in the state of Karnataka. Revised MR has been submitted. The clerical error in the MR has been corrected. Improved cookstoves are only distributed in the state of Karnataka. Revised MR has been submitted. The error in the date of implementation has been corrected. Accidentally, the dates for ICS and SLS were interchange. Revised MR has been provided. The error in the date of implementation has been corrected. Accidentally, the dates for ICS and SLS were interchange. Revised MR has been provided. 				
Documentation provided by project participant				
Revised MR.				
DOE assessment				Date: 12/10/2022

1. The revised MR has been reviewed. PD has corrected the information in section B of the MR. The information has been verified and found to be appropriate. CLOSED
2. The revised MR has been reviewed. PD has corrected the information in section B of the MR. The information has been verified and found to be appropriate. CLOSED
3. The revised MR has been reviewed. PD has corrected the dates of implementation in section B of MR. The revised dates has been verified from the sales database and found to be appropriate. CLOSED
4. The revised MR has been reviewed. PD has corrected the dates of implementation in section B of MR. The revised dates has been verified from the sales database and found to be appropriate. CLOSED

CAR#02 is CLOSED.

CAR ID	03	Section no.	E.6.4.2	Date : 10/10/2022
Description of CAR				
Following inconsistencies has been observed in section D.2 of MR:				
<ol style="list-style-type: none"> 1. VPA 19, Parameter '$d_{i,a,v}$', the value of ESAF RAL Duron Mitva MST 952A(KL) is found to be inconsistent with ER sheet, Tab: ESAF_RAL Duron Mitva MST952A_KL, Cell E17. 2. VPA 19, Parameter '$CF_{i,v,LFR}$', the value of Sunking Pico Plus(KL) is found to be inconsistent with ER sheet, Tab: ESAF_SUNKING PICO PLUS_KL, Cell E19. 3. VPA 19, Parameter '$CF_{i,v,LFR}$', the value of Sunking Pico Plus(MH) is found to be inconsistent with ER sheet, Tab: ESAF_SUNKING PICO PLUS_MH, Cell E19. 4. VPA 26, parameter '$N_{i,a}$', CME is requested to clarify of whether 175 is the weighted average or the total sales for the parameter. 				
PD is requested to take corrective action.				
Project participant response				Date : 11/10/2022
<ol style="list-style-type: none"> 1. VPA 19, Parameter '$d_{i,a,v}$', the value of ESAF RAL Duron Mitva MST 952A(KL) has been made consistent with ER sheet. Revised MR is submitted. 2. VPA 19, Parameter '$CF_{i,v,LFR}$', the value of Sunking Pico Plus(KL) has been made consistent with ER sheet. Revised MR is submitted. 3. VPA 19, Parameter '$CF_{i,v,LFR}$', the value of Sunking Pico Plus(MH) has been made consistent with ER sheet. Revised MR is submitted. 4. VPA 26, parameter '$N_{i,a}$', the value is total. The typographical error has been corrected. Revised MR is submitted. 				
Documentation provided by project participant				
Revised MR				
DOE assessment				Date: 12/10/2022
<ol style="list-style-type: none"> 1. The revised MR has been reviewed. The value of ESAF RAL Duron Mitva MST 952A(KL) parameter '$d_{i,a,v}$' has been made consistent with the ER sheet. The calculation has also been reviewed and found to be appropriate. CLOSED 2. The revised MR has been reviewed. The value of Sunking Pico Plus(KL) for parameter '$CF_{i,v,LFR}$' has been made consistent with the ER sheet. The calculation has also been reviewed and found to be appropriate. CLOSED 3. The revised MR has been reviewed. The value of Sunking Pico Plus(MH) for parameter '$CF_{i,v,LFR}$' has been made consistent with the ER sheet. The calculation has also been reviewed and found to be appropriate. CLOSED 4. The revised MR has been reviewed. For parameter '$N_{i,a}$' the typographical error has been corrected. CLOSED 				
CAR#03 is CLOSED.				

CAR ID	04	Section no.	E.6.5	Date : 10/10/2022
Description of CAR				

Following inconsistencies are observed in section D.4 of MR:	
<ol style="list-style-type: none"> 1. Page 110, vintage split of CL2LT2HLS2, total monitored samples is mentioned as 0 for vintage 1-2 (01/01/2020 to 31/12/2020), which is found to be inconsistent with ER sheet VPA 26. 2. VPA 19, SLS, column sample size, value for asirvad gosolar HLS (RJ) is found to be inconsistent with ER sheet VPA 19, tab: Asirvad_Mon_Glosolar MiniHLS_RJ, Cell D3. 3. VPA 21, SLS, column sample size, value for Bandhan Sunking HLS 120 (BH), Simpa SP Inverter 200 (BH) and Asirvad sunking Boom (KA) is found to be inconsistent with ER sheet VPA 21, tab: Bandhan_Mon_SunkingHLS120_BH Cell E4, Simpa_Mon_SPInverter200_BH Cell C4 & asirvad_Mon_Sunkingboom_KA Cell C4. 	
PP is requested to take corrective action.	
Project participant response	Date : 11/10/2022
<ol style="list-style-type: none"> 1. Page 110, the example has been corrected to reflected the correct vintage split and how samples have been taken proportionately. Revised MR has been submitted. 2. VPA 19, SLS, column sample size, value for asirvad gosolar HLS (RJ) has been made consistent with the ER sheet. Revised MR has been submitted. 3. VPA 21, SLS, column sample size, value for Bandhan Sunking HLS 120 (BH), Simpa SP Inverter 200 (BH) and Asirvad sunking Boom (KA) has been made consistent with the ER sheet. Revised MR has been submitted. 	
Documentation provided by project participant	
Revised MR	
DOE assessment	Date: 12/10/2022
<ol style="list-style-type: none"> 1. The revised MR has been reviewed. The vintage is found to be consistent with the ER sheet. The vintage calculation has been reviewed and found to be appropriately applied. CLOSED 2. The revised MR has been reviewed. The value of sample size of asirvad gosolar HLS (RJ) has been made consistent with the ER sheet. The vintage calculation has been reviewed and found to be appropriately applied. CLOSED 3. The revised MR has been reviewed. The value of Bandhan Sunking HLS 120 (BH), Simpa SP Inverter 200 (BH) and Asirvad sunking Boom (KA) has been made consistent with the ER sheet. The vintage calculation has been reviewed and found to be appropriately applied. CLOSED 	
CAR#04 is CLOSED.	

CAR ID	05	Section no.	E.5.7.1	Date : 10/10/2022
Description of CAR				
In Section E.4, Column 'Baseline estimate' and 'Net Benefit', the value of SDG 13 for VPA 19 is found to be inconsistent with ER sheet VPA 19, tab: ER summary, cell C7. PD is requested to take corrective action.				
Project participant response				Date : 11/10/2022
In Section E.4, Column 'Baseline estimate' and 'Net Benefit', the value of SDG 13 for VPA 19 has been made consistent with the ER Sheet. Revised MR has been submitted.				
Documentation provided by project participant				
Revised MR				
DOE assessment				Date: 12/10/2022
The revised MR has been reviewed. Net Benefit and Baseline Estimate for the value of SDG 13 (VPA 19) has been corrected and found to be appropriate. The ER calculation has also been reviewed and found to be appropriately applied.				
CAR#05 is CLOSED.				

CAR ID	06	Section no.	-	Date : 10/10/2022
Description of CAR				
It has been observed that the values of SDG parameters and Emission reductions for VPA 21 has been left blank in whole MR. CME is requested to provide all the values for VPA 21.				

Project participant response	Date : 11/10/2022
The values of SDG parameters and emission reductions for VPA21 has been added in the MR. Revised MR has been submitted.	
Documentation provided by project participant	
Revised MR	
DOE assessment	Date: 12/10/2022
The revised MR has been reviewed. The values of SDG parameters and Emission reductions for VPA 21 has been correctly reflected in the MR. The calculations of SDGs and ERs has been reviewed and found to be appropriately applied.	
CAR#06 is CLOSED.	

Table 4. FAR from this verification

FAR ID	xx	Section No.		Date : DD/MM/YYYY
Description of FAR				
There is no FAR from this verification				
Project participant response				Date : DD/MM/YYYY
Documentation provided by project participant				
DOE assessment				Date: DD/MM/YYYY