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TEMPLATE

MONITORING REPORT

PUBLICATION DATE **14.10.2020**

VERSION **v. 1.1**

RELATED SUPPORT **- TEMPLATE GUIDE Monitoring Report v. 1.1**

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KEY PROJECT INFORMATION

Programme of Activity Information

GS ID of Programme	**GS11450**
Title of Programme	MicroEnergy Credits – Microfinance for Clean Energy Product Lines – India
Version of POA-DD applicable to this monitoring report	4.0
Name and GS ID of fully Validated CPA/VPAs (i.e. non compliance check)	NA

Key Project Information

GS ID (s) of Project (s)	**GS11474, GS11475, GS11476, GS11477, GS11481**
Title of the project (s) covered by monitoring report	GS11450 - MICROENERGY CREDITS – MICROFINANCE FOR CLEAN ENERGY PRODUCT LINES – INDIA GS11450 - MicroEnergy Credits – Microfinance for Clean Energy Product Lines – India - MicroEnergy Credits PoA – CPA 02- GS11474 GS11450 - MicroEnergy Credits – Microfinance for Clean Energy Product Lines – India - MicroEnergy Credits PoA – CPA 03- GS11475 GS11450 - MicroEnergy Credits – Microfinance for Clean Energy Product Lines – India - MicroEnergy Credits PoA – CPA 04- GS11476 GS11450 - MicroEnergy Credits – Microfinance for Clean Energy Product Lines – India - MicroEnergy Credits PoA – CPA 07- GS11477 GS11450 - MicroEnergy Credits – Microfinance for Clean Energy Product Lines – India - MicroEnergy Credits PoA – CPA 11- GS11481
Version number of the PDD/VPA-DD (s) applicable to this monitoring report	VPA2 – 5.0 VPA3 – 4.0 VPA4 - 6.0 VPA7 - 5.0 VPA11-.5.0
Version number of the monitoring report	2

Completion date of the monitoring report	6/08/2023
Date of project design certification	27/01/2023– VPA 2 27/01/2023– VPA 3 18/11/2022– VPA 4 11/04/2023- VPA 7 11/04/2023- VPA 11
Date of Last Annual Report	NA
Monitoring period number	2
Duration of this monitoring period	01/01/2022 to 31/12/2022 (inclusive of both days) Monitoring period falls under crediting period (CP) 2: 27/02/2020 to 26/02/2025 for VPA-2 20/03/2020 to 19/03/2025 for VPA-3 20/03/2020 to 19/03/2025 for VPA- 4 01/05/2020 to 30/04/2025 for VPA –7 07/12/2021 to 06/12/2026 for VPA –11
Project Representative	Micro Energy Credits Corporation Private Limited
Host Country	India
Activity Requirements applied	☒ Community Services Activities ☐ Renewable Energy Activities ☐ Land Use and Forestry Activities/Risks & Capacities ☐ N/A
Methodology (ies) applied and version number	AMS–III.AR "Substituting fossil fuel based lighting with LED/CFL lighting systems" Version 07) Technologies and Practices to Displace Decentralized Thermal Energy Consumption (TPDDTEC), version 3.1
Product Requirements applied	☒ GHG Emissions Reduction & Sequestration ☐ Renewable Energy Label ☐ N/A

Table 1 - Sustainable Development Contributions Achieved

Sustainable Development Goals Targeted	SDG Impact	Amount Achieved		Units/ Products
13 Climate Action (mandatory)	Number of VERs (ICS)	**VPA 2**	31236	tCO_2e VERs
		VPA 3	25745	
		VPA 4	41,509	
		VPA 7	43,664	
		VPA 11	21,605	
13 Climate Action (mandatory)	Number of VERs (SLS)	**VPA 2**	5875	tCO_2e VERs
		VPA 3	6278	
		VPA 4	1587	
		VPA 7	8534	
		VPA 11	12,415	
13 Climate Action (mandatory)	**Number of VERs (ICS+SLS)**	**VPA 2**	**37112**	tCO2e VERs
		VPA 3	**32,023**	
		VPA 4	**43,096**	
		VPA 7	**52,198**	
		VPA 11	**34,020**	
7 Affordable and Clean Energy	Number of households having operational clean energy product (ICS)	**VPA 2**	16357	Number
		VPA 3	9600	
		VPA 4	16,821	
		VPA 7	16008	
		VPA 11	8,474	
7 Affordable and Clean Energy	Number of households having operational clean energy product (SLS)	**VPA 2**	94273	Number
		VPA 3	63562	
		VPA 4	8376	
		VPA 7	35061	
		VPA 11	179952	
8 Decent Work and Economic Growth	Total number of jobs created	**VPA 2**	23	Number
		VPA 3	43	
		VPA 4	30	
		VPA 7	60	
		VPA 11	48	

Table 2 – Product Vintages

Start Dates	End Dates	Amount Achieved VERs
01/01/2022	31/12/2022	

Tech	VPA2	VPA3	VPA4	VPA 7	VPA11
ICS	31236	25745	41,509	43,664	21,605
SLS	5875	6278	1,587	8534	12,415
Total	37111	32023	43,096	52,198	34,020

SECTION A. DESCRIPTION OF PROJECT

A.1. General description of project

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The project activity is implemented in India. In the rural areas of India, the predominant means of cooking are traditional cook stoves that use woody biomass as fuel. The smoke and fumes from these stoves contribute heavily to indoor air pollution, which overall claim approximately 400,000 lives per year in India[1]. In rural areas of India, households are either not connected to the grid or in households even with grid connectivity, there are frequent power outages and low voltage so rural households must use kerosene for indoor lighting, which also contributes to indoor air pollution and GHG emissions.

The project activity involves marketing, distributing, and financing improved cookstove and solar lighting systems, for low-income households and microentrepreneurs in India. Future sales of solar lighting systems may happen in any state but within the geographic boundary of the PoA i.e. the country of India. However, it will be ensured at all times that the threshold for SSC projects is not exceeded and the PoA eligibility criteria are met.

These products provide clean energy for cooking and renewable energy for lighting. The cookstoves distributed under the VPA replaces traditional cookstoves thereby reducing the amount of fuelwood used for cooking in the baseline by households and thus reducing GHG emissions corresponding to the fuelwood saving by the project activity. The solar lighting systems replace kerosene-based lamps in households, which would have resulted in GHG emissions due to burning of fossil fuel i.e., kerosene.

The program is a voluntary initiative coordinated by Micro Energy Credits Corporation Private Limited (MEC), the CME of the PoA, and implemented by MEC's Partner Organizations (PO). The improved cookstove are implemented by Shri Kshetra

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

Dharmasthala Rural Development Project (SKDRDP)2 , Cedar (formerly ESAF) and Canara. Solar lighting system are implemented by SKDRDP, ESAF, Muthoot, Sarala Women Welfare Society (Sarala)..

Under this VPA, MEC works with project partners to develop a successful and diversified clean energy-lending program. The clean energy program addresses typical barriers for low-income clients including education, price, finance, and supply and after sales service. MEC trains project partners to implement the clean energy lending program, as well as a robust and transparent carbon credit monitoring and tracking system to quantify and record the volume of carbon emission reductions created through the clean energy program. The carbon finance is used to expand and sustain the clean energy program through:

1. Client education and marketing
2. Internal training and capacity building
3. On lending funds to local SMEs producing the clean energy products
4. Aftersales service and maintenance
5. Lowering the interest or principal cost to the client

The goal of the VPAs is to use carbon finance to enable installations of solar lanterns, and improved cook stoves in India.

A.2. Location of project

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VPA2- GS11474

a. Host Party (ies) - India

b. Region/State/Province – Kerala (KL) and Tamil Nadu(TN) states for improved cookstoves and several regions within these states. For solar lighting systems, the states such as Kerala (KL), Tamil Nadu (TN), Madhya Pradesh (MP), Maharashtra (MH), and Chhattisgarh (CG) and many regions within those states are included.

c. City/Town/Community – Several Cities/Towns are included

d. Physical/Geographic location – The exact location (address) of each CEP is captured in the Credit Tracker Platform and can be verified.

VPA3- GS11475

a. Host Party (ies) - India

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

[2] skdrdpindia.org

b. Region/State/Province – Kerala (KL) state for improved cookstoves. For solar lighting systems, several states such as Gujarat (GJ), Karnataka (KA), Madhya Pradesh (MP), Maharashtra (MH), Pondicherry (PD), Kerala (KL), Uttar Pradesh (UP), Odisha (OD) and Tamil Nadu (TN) and many regions within those states are included.
c. City/Town/Community – Several Cities/Towns are included
d. Physical/Geographic location – The exact location (address) of each CEP is captured in the Credit Tracker Platform and can be verified.

VPA4-GS ID11476

a. Host Party (ies) - India
b. Region/State/Province – Karnataka (KA) State for improved cookstove and solar lighting. Several regions within the State are included.
c. City/Town/Community – Several Cities/Towns are included
d. Physical/Geographic location – The exact location (address) of each CEP is captured in the Credit Tracker Platform and can be verified.

VPA7-GS ID11477

a. Host Party (ies) - India
b. Region/State/Province – Karnataka (KA), Madhya Pradesh (MP), Chhattisgarh (CG) and Tamil Nadu (TN) states for improved cookstoves and several regions within these states. For solar lighting systems, several states, Assam (AS), Bihar (BH), Jharkhand (JK), Karnataka (KA), Odisha (OD), Tripura (TR), Uttar Pradesh (UP), West Bengal (WB) and many regions within those states are included.
c. City/Town/Community – Several Cities/Towns are included
d. Physical/Geographic location – The exact location (address) of each CEP is captured in the Credit Tracker Platform and can be verified.

VPA11-GS ID11481

a. Host Party (ies) - India
b. Region/State/Province – Kerala (KL), Karnataka (KA), Maharashtra (MH) and Tamil Nadu (TN) States for improved cookstoves and several regions within these states. For solar lighting systems, Karnataka (KA), Kerala(KL), Gujarat (GJ), Madhya Pradesh (MP), Maharashtra (MH), Odisha (OD), Tamil Nadu (TN) and Uttar Pradesh (UP)
c. City/Town/Community – Several Cities/Towns are included

d. Physical/Geographic location – The exact location (address) of each CEP is captured in the Credit Tracker Platform and can be verified.

A.3. Reference of applied methodology

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Solar Lighting System: AMS-III.AR "Substituting fossil fuel-based lighting with LED/CFL lighting systems, version 7.0"

Improved Cookstove: "Technologies and Practices to Displace Decentralized Thermal Energy Consumption (TPDDTEC), version 3.1"3

CDM Tool 30: Calculation of the fraction of non-renewable biomass v3.0

A.4. Crediting period of project

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VPA ReferenceNumber	Crediting Start Date	GS4GG Crediting End Date (CP1)	Crediting Start Date (CP-2)[4]	GS4GG Crediting End Date	GS4GG Eligible Crediting End Date[5]
GS11474	27/02/2015	26/02/2020	27/02/2020	26/02/2025	26/02/2030
GS11475	20/03/2015	19/03/2020	20/03/2020	19/03/2025	19/03/2030
GS11476	20/03/2015	19/03/2020	20/03/2020	19/03/2025	19/03/2030
GS11477	01/05/2015	30/04/2020	01/05/2020	30/04/2025	30/04/2030
GS11481	07/12/2016	06/12/2021	07/12/2021	06/12/2026	06/12/2031

SECTION B. IMPLEMENTATION OF PROJECT

B.1. Description of implemented project

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These are the 5 VPAs implemented in this Batch.

VPA2 - GS ID: GS11474

a. Purpose of the VPA(s) and the measures taken for GHG emission reductions or net anthropogenic GHG removals–

Purpose: Under the VPA, Micro Energy Credits works with PO – Evangelical Social Action Forum Microfinance (ESAF) to develop a successful and diversified clean energy lending program. The clean energy program addresses typical barriers for low-income clients including education, price, finance, and supply and aftersales service. MicroEnergy Credits trains the PO's to implement the clean energy lending program, as well as a

[3] TPDDTEC version 3.1

[4] VPA 5 has issued CERs till end of 26/06/2020.

[5] As these are CDM Transitioned projects, GS4GG allows a total crediting period of 15-yearsfrom the CDM crediting start date

robust and transparent carbon credit monitoring and tracking system to quantify and record the volume of carbon emission reductions created through the clean energy program.

Measures taken: The VPA involves marketing, distributing, and financing solar lighting systems and improved cook stoves for low-income households and microentrepreneurs in Kerala (KL), Tamil Nadu (TN), Chhattisgarh (CG), Madhya Pradesh (MP) and Maharashtra (MH). These products provide renewable energy for lighting and efficient energy for cooking. The total number of units implemented under this VPA till date is:

Improved cookstoves – 32,976
Solar Lighting systems – 121,676 (i.e. 145,386 Solar Lamps)

Year	**Improved Cookstove**	**Solar Lighting systems**
2013	1,984	3,691
2014	30,992	26,686
2015	-	49,585
2016	-	41,714
Total	**32,976**	**121,676**
Year	**Improved Cookstove**	**Solar Lighting systems**

No further sales have been added under the current monitoring period (01/01/2022 to 31/12/2022).

b. Description of the installed technology, technical processes, and equipment for the VPA –

Improved Cookstove:

The Improved Cookstove model implemented under this VPA is the Grameen Greenway Smart Stove (GSSV3). Technical specifications are as follows –

Stove Body Size: 9.8'' x 7.6'' x 11.7''
Net weight: 2.5 kg
Average Life span under standard use conditions: 5 years
The rated thermal efficiency is 25.19%

Solar lighting system:

The solar lighting system models implemented under this VPA including their technical specifications is as follows –

1. BPL SL-1300
The technical specifications of this product are –
Type and Solar Panel Wattage: Polycrystalline/1.3W
Lighting Wattage – 1.4
Luminous flux output (Lumens): 135
Lumen maintenance (for 2,000 hours): 95.5%
Rated lamp life: greater than 10,000 hours
Lighting point (number of project lamps):1
Battery type/capacity-Lithium Ferro Phosphate/1.6Ah, 3.3V
Type of charge controller -PMW
Solar Run time(SRT): 4 hours
Warranty – 1 year

2. BPL SL-1700
The technical specifications of this product are –
Type and Solar Panel Wattage: Polycrystalline/3W
Lighting Wattage – 1.4
Luminous flux output (Lumens): 165
Lumen maintenance (for 2,000 hours): 95.75%
Rated lamp life: greater than 10,000 hours
Lighting point (number of project lamps):1
Battery type/capacity-Lithium ion/2.2Ah, 7.2V
Type of charge controller -PMW
Solar Run time(SRT): 4-5hours
Warranty – 1 year

3. Greenlight Planet Sunking PRO 2 (Sunking Pro2)
The technical specifications of this product are –
Type and Solar Panel Wattage: Polycrystalline/3W
Lighting Wattage – 3
Luminous flux output (Lumens): 135
Lumen maintenance (for 2,000 hours): 95.75%
Rated lamp life: greater than 10,000 hours
Lighting point (number of project lamps):1
Battery type/capacity-Lithium Ferro-Phosphate/3Ah, 3.3V
Type of charge controller -PMW
Solar Run time(SRT): 4-5hours
Warranty – 1 year

4. Duron Mitva Combo 1 (RAL MS 352 + MS 16)
The technical specifications of this product are –

Type and Solar Panel Wattage: Polycrystalline/3.5W
Lighting Wattage – 2.5
Luminous flux output (Lumens): 224
Lumen maintenance (for 2,000 hours): 95.75%
Rated lamp life: greater than 10,000 hours
Lighting point (number of project lamps):1
Battery type/capacity-Lead Acid Battery/0.5Ah, 3.2V
Type of charge controller -PMW
Solar Run time(SRT): 4-5hours
Warranty – 1 year

5. RAL Duron Mitva MS 352
The technical specifications of this product are –
Type and Solar Panel Wattage: Polycrystalline/3.4W
Lighting Wattage – 1.9
Luminous flux output (Lumens): 190
Lumen maintenance (for 2,000 hours): 95.75%
Rated lamp life: greater than 10,000 hours
Lighting point (number of project lamps):1
Battery type/capacity-Lead Acid Battery/5Ah, 3.7V
Type of charge controller -PMW
Solar Run time(SRT): 5hours
Warranty – 1 year

6. Duron Mitva Combo 2 (RAL MS 322 + MS 16)
The technical specifications of this product are –
Type and Solar Panel Wattage: Polycrystalline/2.5W
Lighting Wattage – 1.5
Luminous flux output (Lumens): 120
Lumen maintenance (for 2,000 hours): 95.75%
Rated lamp life: greater than 10,000 hours
Lighting point (number of project lamps):1
Battery type/capacity-Lithium ion/2.6Ah, 3.2V
Type of charge controller -PMW
Solar Run time(SRT): 4-5hours
Warranty – 1 year

7. Mitva MH 536
The technical specifications of this product are –
Type and Solar Panel Wattage: Polycrystalline/2.5W
Lighting Wattage – 2
Luminous flux output (Lumens): 130
Lumen maintenance (for 2,000 hours): 95.75%
Rated lamp life: greater than 10,000 hours
Lighting point (number of project lamps):1
Battery type/capacity-Lithium ion/3.6Ah, 3.7V
Type of charge controller -PMW

Solar Run time(SRT): 4hours
Warranty – 1 year

8. Orb Energy SOL-10
The technical specifications of this product are –
Type and Solar Panel Wattage: Polycrystalline/3.8W
Lighting Wattage – 1
Luminous flux output (Lumens): 73
Lumen maintenance (for 2,000 hours): 95.75%
Rated lamp life: greater than 10,000 hours
Lighting point (number of project lamps):1
Battery type/capacity-Lithium ion/4.5Ah, 3.7V
Type of charge controller -PMW
Solar Run time(SRT): 5hours
Warranty – 1 year

9. Barefoot Power Go -250
The technical specifications of this product are –
Type and Solar Panel Wattage: Polycrystalline/2.5W
Lighting Wattage – 1.6
Luminous flux output (Lumens): 135
Lumen maintenance (for 2,000 hours): 95.75%
Rated lamp life: greater than 10,000 hours
Lighting point (number of project lamps):1
Battery type/capacity-Lithium Ferro Phosphate/3.3Ah, 3.3 V
Type of charge controller -PMW
Solar Run time(SRT): 6hours
Warranty – 1 year

10. Barefoot Power Connect 600
The technical specifications of this product are –
Type and Solar Panel Wattage: Polycrystalline/6W
Lighting Wattage – 3
Luminous flux output (Lumens): 300
Lumen maintenance (for 2,000 hours): 95.75%
Rated lamp life: greater than 10,000 hours
Lighting point (number of project lamps):1
Battery type/capacity-SMF/5Ah, 3.3V
Type of charge controller -PMW
Solar Run time(SRT): 4-5hours
Warranty – 1 year

11. Barefoot Power Connect 620B
The technical specifications of this product are –
Type and Solar Panel Wattage: Polycrystalline/12W
Lighting Wattage – 4.5
Luminous flux output (Lumens): 365

Lumen maintenance (for 2,000 hours): 95.75%
Rated lamp life: greater than 10,000 hours
Lighting point (number of project lamps):1
Battery type/capacity-SMF/12Ah, 3.3V
Type of charge controller -PMW
Solar Run time(SRT): 4-5hours
Warranty – 1 year

12. Barefoot Power Firefly Mobile
The technical specifications of this product are –
Type and Solar Panel Wattage: Polycrystalline/1.5W
Lighting Wattage – 0.6
Luminous flux output (Lumens): 63
Lumen maintenance (for 2,000 hours): 95.75%
Rated lamp life: greater than 10,000 hours
Lighting point (number of project lamps):1
Battery type/capacity-Lithium PO/0.75Ah, 3.3 V
Type of charge controller -PMW
Solar Run time(SRT): 4-5hours
Warranty – 1 year

13. Greenlight Planet Sunking ProX (Sunking ProX)
The technical specifications of this product are –
Type and Solar Panel Wattage: Polycrystalline/10W
Lighting Wattage – 1.093
Luminous flux output (Lumens): 175
Lumen maintenance (for 2,000 hours): 95.75%
Rated lamp life: greater than 10,000 hours
Lighting point (number of project lamps):1
Battery type/capacity-Lithium Ferro Phosphate/3Ah, 3.3V
Type of charge controller -PMW
Solar Run time(SRT): 4-5hours
Warranty – 1 year

14. Greenlight Planet Home Lighting (Sunking HLS)
The technical specifications of this product are –
Type and Solar Panel Wattage: Polycrystalline/6.3W
Lighting Wattage – 2.64
Luminous flux output (Lumens): 100
Lumen maintenance (for 2,000 hours): 95.75%
Rated lamp life: greater than 10,000 hours
Lighting point (number of project lamps):1
Battery type/capacity-Lithoum ferro phosphate/6Ah, 3.3V
Type of charge controller -PMW
Solar Run time(SRT): 4-5hours
Warranty – 1 year

c. Relevant dates for the VPA –

1. Construction/Implementation date – The stoves under this VPA are implemented from 27/06/2013 to 31/10/2014. The solar lighting systems are implemented from 07/01/2013 to 20/06/2016.
2. Commissioning – 32,976 Improved cookstoves and 121,676 Solar lighting systems are distributed till date under this VPA. The exact commissioning/installation dates for all the CEP's are mentioned in the Emission Reduction Calculation sheet for this VPA.
3. Continued operation periods – All of the functional products were continuously operational during the course of this monitoring period. Non-functional products are discounted in emission reduction calculation.

d. Total GHG emission reductions achieved in this monitoring period for the VPA, including information on how double counting is avoided –

The total GHG emission reduction achieved in this monitoring period for the VPA is 37,112 tCO2e.

VPA3 - GS ID: GS11475

a. Purpose of the VPA(s) and the measures taken for GHG emission reductions or net anthropogenic GHG removals–

Purpose: Under the VPA, Micro Energy Credits works with PO – Evangelical Social Action Forum Microfinance (ESAF) and Muthoot Microfin Ltd, (Muthoot) to develop a successful and diversified clean energy lending program. The clean energy program addresses typical barriers for low income clients including education, price, finance, and supply and aftersales service. MicroEnergy Credits trains the PO's to implement the clean energy lending program, as well as a robust and transparent carbon credit monitoring and tracking system to quantify and record the volume of carbon emission reductions created through the clean energy program.

Measures taken: The VPA involves marketing, distributing, and financing solar lighting systems and improved cook stoves for low income households and microentrepreneurs in Kerala (KL), Tamil Nadu (TN), Karnataka (KA), Gujarat (GJ), Maharashtra (MH), Madhya Pradesh (MP), Uttar Pradesh (UP), Odisha (OD), Pondicherry (PD). These products provide renewable energy for lighting and efficient energy for cooking. The total number of units implemented under this VPA till date is:

Improved cookstoves – 17,831
Solar Lamps –86,400 solar lamps (i.e., 79,849 solar lighting system)

Year	Smart Stoves	Solar Lighting Systems
2013	23	-
2014	16,043	-
2015	1,702	-
2016	2	65,337
2017	-	13,779
2018	61	733
Total	**17,831**	**79,849**

No further sales have been added under the current monitoring period (01/01/2022 to 31/12/2022).

Description of the installed technology, technical processes and equipment for the VPA –

Improved Cookstove:

The Improved Cookstove model implemented under this VPA is the Grameen Greenway Smart Stove (GSSV3). Technical specifications are as follows –

Stove Body Size: 9.8'' x 7.6'' x 11.7''
Net weight: 2.5 kg
Average Life span under standard use conditions: 5 years

Solar lighting system:

The solar lighting system models implemented under this VPA including their technical specifications is as follows –

1. BPL SL-1300
The technical specifications of this product are –
Type and Solar Panel Wattage: Polycrystalline/1.3W
Lighting Wattage – 1.4
Luminous flux output (Lumens): 135
Lumen maintenance (for 2,000 hours): 95.5%
Rated lamp life: greater than 10,000 hours
Lighting point (number of project lamps):1
Battery type/capacity-Lithium Ferro Phosphate/1.6Ah, 3.3V
Type of charge controller -PMW
Solar Run time(SRT): 4 hours
Warranty – 1 year

2. BPL SL-1700
The technical specifications of this product are –

Type and Solar Panel Wattage: Polycrystalline/3W
Lighting Wattage – 1.4
Luminous flux output (Lumens): 165
Lumen maintenance (for 2,000 hours): 95.75%
Rated lamp life: greater than 10,000 hours
Lighting point (number of project lamps):1
Battery type/capacity-Lithium ion/2.2Ah, 7.2V
Type of charge controller -PMW
Solar Run time(SRT): 4-5hours
Warranty – 1 year

3. Greenlight Planet Sunking PRO 2 (Sunking Pro2)
The technical specifications of this product are –
Type and Solar Panel Wattage: Polycrystalline/3W
Lighting Wattage – 3
Luminous flux output (Lumens): 135
Lumen maintenance (for 2,000 hours): 95.75%
Rated lamp life: greater than 10,000 hours
Lighting point (number of project lamps):1
Battery type/capacity-Lithium Ferro-Phosphate/3Ah, 3.3V
Type of charge controller -PMW
Solar Run time(SRT): 4-5hours
Warranty – 1 year

4. RAL Duron Mitva MS 352
The technical specifications of this product are –
Type and Solar Panel Wattage: Polycrystalline/3.4W
Lighting Wattage – 1.9
Luminous flux output (Lumens): 190
Lumen maintenance (for 2,000 hours): 95.75%
Rated lamp life: greater than 10,000 hours
Lighting point (number of project lamps):1
Battery type/capacity-Lead Acid Battery/5Ah, 3.7V
Type of charge controller -PMW
Solar Run time(SRT): 5hours
Warranty – 1 year

5. Duron Mitva Combo 2 (RAL MS 322 + MS 16)
The technical specifications of this product are –
Type and Solar Panel Wattage: Polycrystalline/2.5W
Lighting Wattage – 1.5
Luminous flux output (Lumens): 120
Lumen maintenance (for 2,000 hours): 95.75%
Rated lamp life: greater than 10,000 hours
Lighting point (number of project lamps):1
Battery type/capacity-Lithium ion/2.6Ah, 3.2V
Type of charge controller -PMW
Solar Run time(SRT): 4-5hours
Warranty – 1 year

6. Mitva MH 536
The technical specifications of this product are –
Type and Solar Panel Wattage: Polycrystalline/2.5W

Lighting Wattage – 2
Luminous flux output (Lumens): 130
Lumen maintenance (for 2,000 hours): 95.75%
Rated lamp life: greater than 10,000 hours
Lighting point (number of project lamps):1
Battery type/capacity-Lithium ion/3.6Ah, 3.7V
Type of charge controller -PMW
Solar Run time(SRT): 4hours
Warranty – 1 year

7. Barefoot Power Go -250
The technical specifications of this product are –
Type and Solar Panel Wattage: Polycrystalline/2.5W
Lighting Wattage – 1.6
Luminous flux output (Lumens): 135
Lumen maintenance (for 2,000 hours): 95.75%
Rated lamp life: greater than 10,000 hours
Lighting point (number of project lamps):1
Battery type/capacity-Lithium Ferro Phosphate/3.3Ah, 3.3 V
Type of charge controller -PMW
Solar Run time(SRT): 6hours
Warranty – 1 year

8. Greenlight Planet Home Lighting (Sunking HLS)
The technical specifications of this product are –
Type and Solar Panel Wattage: Polycrystalline/6.3W
Lighting Wattage – 2.64
Luminous flux output (Lumens): 100
Lumen maintenance (for 2,000 hours): 95.75%
Rated lamp life: greater than 10,000 hours
Lighting point (number of project lamps):1
Battery type/capacity-Lithoum ferro phosphate/6Ah, 3.3V
Type of charge controller -PMW
Solar Run time(SRT): 4-5hours
Warranty – 1 year

9. Duron Mitva MS – 322A
The technical specifications of this product are –
Type and Solar Panel Wattage: Polycrystalline/1.7W
Lighting Wattage – 1
Luminous flux output (Lumens): 85
Lumen maintenance (for 2,000 hours): 95.5%
Rated lamp life: greater than 10,000 hours
Lighting point (number of project lamps):1
Battery type/capacity-Lithium-ion/2.6Ah, 3.7V
Type of charge controller -PMW
Solar Run time(SRT): 4-5 hours
Warranty – 1 year

10. RAL Duron Mitva MS 352A
Type and Solar Panel Wattage: Polycrystalline/3.4W
Lighting Wattage – 2
Luminous flux output (Lumens): 148.8

Lumen maintenance (for 2,000 hours): 95.5%
Rated lamp life: greater than 10,000 hours
Lighting point (number of project lamps):1
Battery type/capacity-Lithium Ferro Phosphate/5Ah, 3.7V
Type of charge controller -PMW
Solar Run time(SRT): 5 hours
Warranty – 1 year

c. Relevant dates for the VPA –

a) Construction/Implementation date – The stoves under this VPA are implemented from 05/08/2013 to 29/11/2018. The solar lighting systems under this VPA are implemented from 21/06/2016 to 17/05/2018.
b) Commissioning – 17,831 Improved cookstoves and 86,400 Solar Lamps (79,849 solar lighting systems) are distributed till date under this VPA. The exact commissioning/installation dates for all the CEP's are mentioned in the Emission Reduction Calculation sheet for this VPA.
c) Continued operation periods – All of the functional products were continuously operational during the course of this monitoring period. Non-functional products are discounted in emission reduction calculation.

d. Total GHG emission reductions achieved in this monitoring period for the VPA, including information on how double counting is avoided –

The total GHG emission reductions achieved in this monitoring period for the VPA is 32023 tCO_2e.

VPA4 - GS ID: GS11476

a. Purpose of the VPA(s) and the measures taken for GHG emission reductions or net anthropogenic GHG removals–

Purpose: Under the VPA, Micro Energy Credits works with PO – Shri Kshetra Dharmasthala Rural Development Project (SKDRP) to develop a successful and diversified clean energy lending program. The clean energy program addresses typical barriers for low-income clients including education, price, finance, and supply and aftersales service. Micro Energy Credits trains the POs' to implement the clean energy lending program, as well as a robust and transparent carbon credit monitoring and tracking system to quantify and record the volume of carbon emission reductions created through the clean energy program.

Measures taken: The VPA involves marketing, distributing, and financing solar lighting systems and improved cook stoves for low income households and microentrepreneurs in Karnataka. These products provide renewable energy for lighting and efficient energy for cooking. The total number of units implemented under this VPA till date is:
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Improved cookstoves – 29,937
Solar Lamps – 56,342 (i.e. 19,794 Solar Lighting Systems)

Year	Improved Cookstove	Solar Lamps
2013	804	7,342
2014	29,133	10,341
2015	-	24,660
2016	-	13,999
Total	**29,937**	**56,342**

No further sales have been added under the current monitoring period (01/01/2022 to 31/12/2022).

b. Description of the installed technology, technical processes and equipment for the VPA –

Improved Cookstove:

The Improved Cookstove model implemented under this VPA is the Grameen Greenway Smart Stove (GSSV3). Technical specifications are as follows –

Stove Body Size: 9.8'' x 7.6'' x 11.7''
Net weight: 2.5 kg
Average Life span under standard use conditions: 5 years
The rate of thermal efficiency – 25.19%

Solar lighting system:

The solar lighting system model implemented under this VPA including their technical specifications is as follows –

1. Selco Eco Home 1 HLS (Model Number – EH1HLS):
The technical specifications of this product are –
Type and Solar Panel Wattage: Polycrystalline/10W
Lighting Wattage – 1.2
Luminous flux output (Lumens): 108
Lumen maintenance (for 2,000 hours): 95.75%
Rated lamp life: greater than 10,000 hours
Lighting point (number of project lamps):1
Battery type/capacity-Lead Acid Battery/15Ah, 12V
Type of charge controller -PMW
Solar Run time(SRT): 4-5hours

Warranty – 1 year

3. Selco Eco Home 4 HLS (Model Number – EH4HLS):
The technical specifications of this product are –
Type and Solar Panel Wattage: Polycrystalline/10W
Lighting Wattage – 3.6
Luminous flux output (Lumens): 324
Lumen maintenance (for 2,000 hours): 95.75%
Rated lamp life: greater than 10,000 hours
Lighting point (number of project lamps):2
Battery type/capacity-Lead Acid Battery/15Ah, 12V
Type of charge controller -PMW
Solar Run time(SRT): 4-5hours
Warranty – 1 year

4. Selco Smart Home 4 HLS (Model Number – SH4HLS):
The technical specifications of this product are –
Type and Solar Panel Wattage: Polycrystalline/10W
Lighting Wattage – 16.8
Luminous flux output (Lumens): 1512
Lumen maintenance (for 2,000 hours): 95.75%
Rated lamp life: greater than 10,000 hours
Lighting point (number of project lamps):4
Battery type/capacity-Lead Acid Battery/30Ah, 12V
Type of charge controller -PMW
Solar Run time(SRT): 4-5hours
Warranty – 1 year

5. Selco Shankara 2 Light (Model Number – SKD2L):
The technical specifications of this product are –
Type and Solar Panel Wattage: Polycrystalline/20W
Lighting Wattage – 9
Luminous flux output (Lumens): 780
Lumen maintenance (for 2,000 hours): 95.75%
Rated lamp life: greater than 10,000 hours
Lighting point (number of project lamps): 2
Battery type/capacity-Lead Acid Battery/30Ah, 12V
Type of charge controller -PMW
Solar Run time(SRT): 4-5hours
Warranty – 1 year

6. Bright Light Home 6 HLS (Model Number – B6HLS):
The technical specifications of this product are –
Type and Solar Panel Wattage: Polycrystalline/60W
Lighting Wattage – 32
Luminous flux output (Lumens): 2880

Lumen maintenance (for 2,000 hours): 95.75%
Rated lamp life: greater than 10,000 hours
Lighting point (number of project lamps):6
Battery type/capacity-Lead Acid Battery/80Ah, 12V
Type of charge controller -PMW
Solar Run time(SRT): 4-5hours
Warranty – 1 year

7. Bright Light Home 2 HLS (Model Number – BH2HLS):
The technical specifications of this product are –
Type and Solar Panel Wattage: Polycrystalline/12W
Lighting Wattage – 6
Luminous flux output (Lumens): 540
Lumen maintenance (for 2,000 hours): 95.75%
Rated lamp life: greater than 10,000 hours
Lighting point (number of project lamps):2
Battery type/capacity-Lead Acid Battery/15Ah, 12V
Type of charge controller -PMW
Solar Run time(SRT): 4-5hours
Warranty – 1 year

8. Bright Light Home 3 HLS (Model Number – BH3HLS):
The technical specifications of this product are –
Type and Solar Panel Wattage: Polycrystalline/18W
Lighting Wattage – 12.5
Luminous flux output (Lumens): 1125
Lumen maintenance (for 2,000 hours): 95.75%
Rated lamp life: greater than 10,000 hours
Lighting point (number of project lamps):3
Battery type/capacity-Lead Acid Battery/20Ah, 12V
Type of charge controller -PMW
Solar Run time(SRT): 4-5hours
Warranty – 1 year

9. Bright Light Home 4 HLS (Model Number – BH4HLS):
The technical specifications of this product are –
Type and Solar Panel Wattage: Polycrystalline/40W
Lighting Wattage – 14
Luminous flux output (Lumens): 1260
Lumen maintenance (for 2,000 hours): 95.75%
Rated lamp life: greater than 10,000 hours
Lighting point (number of project lamps):2
Battery type/capacity-Lead Acid Battery/60Ah, 12V
Type of charge controller -PMW
Solar Run time(SRT): 4-5hours
Warranty – 1 year

10. Model Number – CC4F1HLS2:
The technical specifications of this product are –
Type and Solar Panel Wattage: Polycrystalline/40W
Lighting Wattage – 32
Luminous flux output (Lumens): 2520
Lumen maintenance (for 2,000 hours): 95.75%
Rated lamp life: greater than 10,000 hours
Lighting point (number of project lamps):4
Battery type/capacity-Lead Acid Battery/60Ah, 12V
Type of charge controller -PMW
Solar Run time(SRT): 4-5hours
Warranty – 1 year

11. Model Number – CC4F2HLS:
The technical specifications of this product are –
Type and Solar Panel Wattage: Polycrystalline/40W
Lighting Wattage – 30
Luminous flux output (Lumens): 2350
Lumen maintenance (for 2,000 hours): 95.75%
Rated lamp life: greater than 10,000 hours
Lighting point (number of project lamps): 4
Battery type/capacity-Lead Acid Battery/60Ah, 12V
Type of charge controller -PMW
Solar Run time(SRT): 4-5hours
Warranty – 1 year

12. Model Number – CC3F1HLS:
The technical specifications of this product are –
Type and Solar Panel Wattage: Polycrystalline/40W
Lighting Wattage – 25
Luminous flux output (Lumens): 1970
Lumen maintenance (for 2,000 hours): 95.75%
Rated lamp life: greater than 10,000 hours
Lighting point (number of project lamps): 3
Battery type/capacity-Lead Acid Battery/60Ah, 12V
Type of charge controller -PMW
Solar Run time(SRT): 4-5hours
Warranty – 1 year

13. Model Number – CC8HLS:
The technical specifications of this product are –
Type and Solar Panel Wattage: Polycrystalline/75W
Lighting Wattage – 60
Luminous flux output (Lumens): 4700
Lumen maintenance (for 2,000 hours): 95.75%
Rated lamp life: greater than 10,000 hours
Lighting point (number of project lamps): 8

Battery type/capacity-Lead Acid Battery/40Ah, 12V
Type of charge controller -PMW
Solar Run time(SRT): 4-5hours
Warranty – 1 year

14. Model Number – CL1C2HLS:
The technical specifications of this product are –
Type and Solar Panel Wattage: Polycrystalline/20W
Lighting Wattage – 12.4
Luminous flux output (Lumens): 1010
Lumen maintenance (for 2,000 hours): 95.75%
Rated lamp life: greater than 10,000 hours
Lighting point (number of project lamps): 4
Battery type/capacity-Lead Acid Battery/40Ah, 12V
Type of charge controller -PMW
Solar Run time(SRT): 4-5hours
Warranty – 1 year

15. Model Number – CL2B1HLS:
The technical specifications of this product are –
Type and Solar Panel Wattage: Polycrystalline/20W
Lighting Wattage – 8.4
Luminous flux output (Lumens): 900
Lumen maintenance (for 2,000 hours): 95.75%
Rated lamp life: greater than 10,000 hours
Lighting point (number of project lamps): 3
Battery type/capacity-Lead Acid Battery/40Ah, 12V
Type of charge controller -PMW
Solar Run time(SRT): 4-5hours
Warranty – 1 year

16. Model Number – CL2C2HLS:
The technical specifications of this product are –
Type and Solar Panel Wattage: Polycrystalline/30W
Lighting Wattage – 16.8
Luminous flux output (Lumens): 1430
Lumen maintenance (for 2,000 hours): 95.75%
Rated lamp life: greater than 10,000 hours
Lighting point (number of project lamps): 4
Battery type/capacity-Lead Acid Battery/40Ah, 12V
Type of charge controller -PMW
Solar Run time(SRT): 4-5hours
Warranty – 1 year

17. Model Number – CL2HLS2-2LED:
The technical specifications of this product are –
Type and Solar Panel Wattage: Polycrystalline/15W

Lighting Wattage – 4.8
Luminous flux output (Lumens): 500
Lumen maintenance (for 2,000 hours): 95.75%
Rated lamp life: greater than 10,000 hours
Lighting point (number of project lamps): 2
Battery type/capacity-Lead Acid Battery/40Ah, 12V
Type of charge controller -PMW
Solar Run time(SRT): 4-5hours
Warranty – 1 year

18. Model Number – CL3C1HLS:
The technical specifications of this product are –
Type and Solar Panel Wattage: Polycrystalline/20W
Lighting Wattage – 14.2
Luminous flux output (Lumens): 1300
Lumen maintenance (for 2,000 hours): 95.75%
Rated lamp life: greater than 10,000 hours
Lighting point (number of project lamps): 4
Battery type/capacity-Lead Acid Battery/40Ah, 12V
Type of charge controller -PMW
Solar Run time(SRT): 4-5hours
Warranty – 1 year

19. Model Number – CL3HLS:
The technical specifications of this product are –
Type and Solar Panel Wattage: Polycrystalline/20W
Lighting Wattage – 8.4
Luminous flux output (Lumens): 900
Lumen maintenance (for 2,000 hours): 95.75%
Rated lamp life: greater than 10,000 hours
Lighting point (number of project lamps): 3
Battery type/capacity-Lead Acid Battery/20Ah, 12V
Type of charge controller -PMW
Solar Run time(SRT): 4-5hours
Warranty – 1 year

20. Model Number – CL4HLS:
The technical specifications of this product are –
Type and Solar Panel Wattage: Polycrystalline/20W
Lighting Wattage – 9.6
Luminous flux output (Lumens): 1050
Lumen maintenance (for 2,000 hours): 95.75%
Rated lamp life: greater than 10,000 hours
Lighting point (number of project lamps): 4
Battery type/capacity-Lead Acid Battery/20Ah, 12V
Type of charge controller -PMW
Solar Run time(SRT): 4-5hours

Warranty – 1 year

21. Model Number – PL2C4HLS:
The technical specifications of this product are –
Type and Solar Panel Wattage: Polycrystalline/75W
Lighting Wattage – 52.4
Luminous flux output (Lumens): 4250
Lumen maintenance (for 2,000 hours): 95.75%
Rated lamp life: greater than 10,000 hours
Lighting point (number of project lamps): 4
Battery type/capacity-Lead Acid Battery/75Ah, 12V
Type of charge controller -PMW
Solar Run time(SRT): 4-5hours
Warranty – 1 year

22. Super Bright Home 10 HLS (Model Number – S10HLS):
The technical specifications of this product are –
Type and Solar Panel Wattage: Polycrystalline/100W
Lighting Wattage – 60
Luminous flux output (Lumens): 5400
Lumen maintenance (for 2,000 hours): 95.75%
Rated lamp life: greater than 10,000 hours
Lighting point (number of project lamps):8
Battery type/capacity-Lead Acid Battery/150Ah, 12V
Type of charge controller -PMW
Solar Run time(SRT): 4-5hours
Warranty – 1 year

23. Super Bright Home 14 HLS (Model Number – S14HLS):
The technical specifications of this product are –
Type and Solar Panel Wattage: Polycrystalline/120W
Lighting Wattage – 82
Luminous flux output (Lumens): 7380
Lumen maintenance (for 2,000 hours): 95.75%
Rated lamp life: greater than 10,000 hours
Lighting point (number of project lamps):10
Battery type/capacity-Lead Acid Battery/120Ah, 12V
Type of charge controller -PMW
Solar Run time(SRT): 4-5hours
Warranty – 1 year

24. Super Bright Home 15 HLS (Model Number – S15HLS):
The technical specifications of this product are –
Type and Solar Panel Wattage: Polycrystalline/120W
Lighting Wattage – 91
Luminous flux output (Lumens): 4700
Lumen maintenance (for 2,000 hours): 95.75%

Rated lamp life: greater than 10,000 hours
Lighting point (number of project lamps): 12
Battery type/capacity-Lead Acid Battery/120Ah, 12V
Type of charge controller -PMW
Solar Run time(SRT): 4-5hours
Warranty – 1 year

25. Super Bright Home 2 HLS (Model Number – SB2HLS):
The technical specifications of this product are –
Type and Solar Panel Wattage: Polycrystalline/18W
Lighting Wattage – 12
Luminous flux output (Lumens): 1080
Lumen maintenance (for 2,000 hours): 95.75%
Rated lamp life: greater than 10,000 hours
Lighting point (number of project lamps):2
Battery type/capacity-Lead Acid Battery/20Ah, 12V
Type of charge controller -PMW
Solar Run time(SRT): 4-5hours
Warranty – 1 year

26. Super Bright Home 5 HLS (Model Number – SB5HLS):
The technical specifications of this product are –
Type and Solar Panel Wattage: Polycrystalline/50W
Lighting Wattage – 25
Luminous flux output (Lumens): 2250
Lumen maintenance (for 2,000 hours): 95.75%
Rated lamp life: greater than 10,000 hours
Lighting point (number of project lamps):3
Battery type/capacity-Lead Acid Battery/80Ah, 12V
Type of charge controller -PMW
Solar Run time(SRT): 4-5hours
Warranty – 1 year

27. Super Bright Home 6 HLS (Model Number – SB6HLS):
The technical specifications of this product are –
Type and Solar Panel Wattage: Polycrystalline/60W
Lighting Wattage – 46
Luminous flux output (Lumens): 4140
Lumen maintenance (for 2,000 hours): 95.75%
Rated lamp life: greater than 10,000 hours
Lighting point (number of project lamps):6
Battery type/capacity-Lead Acid Battery/80Ah, 12V
Type of charge controller -PMW
Solar Run time(SRT): 4-5hours
Warranty – 1 year

28. Super Bright Home 8 HLS (Model Number – SB8HLS):

The technical specifications of this product are –
Type and Solar Panel Wattage: Polycrystalline/75W
Lighting Wattage – 37
Luminous flux output (Lumens): 2900
Lumen maintenance (for 2,000 hours): 95.75%
Rated lamp life: greater than 10,000 hours
Lighting point (number of project lamps): 4
Battery type/capacity-Lead Acid Battery/110Ah, 12V
Type of charge controller -PMW
Solar Run time(SRT): 4-5hours
Warranty – 1 year

29. Super Bright Home 9 HLS (Model Number – SB9HLS):
The technical specifications of this product are –
Type and Solar Panel Wattage: Polycrystalline/75W
Lighting Wattage – 37
Luminous flux output (Lumens): 2900
Lumen maintenance (for 2,000 hours): 95.75%
Rated lamp life: greater than 10,000 hours
Lighting point (number of project lamps): 9
Battery type/capacity-Lead Acid Battery/110Ah, 12V
Type of charge controller -PMW
Solar Run time(SRT): 4-5hours
Warranty – 1 year

30. Smart Home 2 HLS (Model Number – SH2HLS):
The technical specifications of this product are –
Type and Solar Panel Wattage: Polycrystalline/12W
Lighting Wattage – 7.4
Luminous flux output (Lumens): 666
Lumen maintenance (for 2,000 hours): 95.75%
Rated lamp life: greater than 10,000 hours
Lighting point (number of project lamps):2
Battery type/capacity-Lead Acid Battery/15Ah, 12V
Type of charge controller -PMW
Solar Run time(SRT): 4-5hours
Warranty – 1 year

31. Smart Home 6 HLS (Model Number – SH6HLS):
The technical specifications of this product are –
Type and Solar Panel Wattage: Polycrystalline/30W
Lighting Wattage – 22.8
Luminous flux output (Lumens): 2020
Lumen maintenance (for 2,000 hours): 95.75%
Rated lamp life: greater than 10,000 hours
Lighting point (number of project lamps):6
Battery type/capacity-Lead Acid Battery/30Ah, 12V

Type of charge controller -PMW
Solar Run time(SRT): 4-5hours
Warranty – 1 year

32. Model Number – SHLS6):
The technical specifications of this product are –
The technical specifications of this product are –
Type and Solar Panel Wattage: Polycrystalline/45W
Lighting Wattage – 30
Luminous flux output (Lumens): 2200
Lumen maintenance (for 2,000 hours): 95.75%
Rated lamp life: greater than 10,000 hours
Lighting point (number of project lamps): 6
Battery type/capacity-Lead Acid Battery/30Ah, 12V
Type of charge controller -PMW
Solar Run time(SRT): 4-5hours
Warranty – 1 year

33. Selco Shankara 4 Light (Model Number – SKD4CFL):
The technical specifications of this product are –
The technical specifications of this product are –
Type and Solar Panel Wattage: Polycrystalline/20W
Lighting Wattage – 12.4
Luminous flux output (Lumens): 1010
Lumen maintenance (for 2,000 hours): 95.75%
Rated lamp life: greater than 10,000 hours
Lighting point (number of project lamps): 4
Battery type/capacity-Lead Acid Battery/30Ah, 12V
Type of charge controller -PMW
Solar Run time(SRT): 4-5hours
Warranty – 1 year

c. **Relevant dates for the VPA** –

1. The stoves under this VPA are implemented from 01/02/2013 to 24/09/2014. The solar lighting systems are implemented from 01/02/2013 to 07/12/2016.
2. Commissioning – 29,937 Improved cookstoves and 56,342 Solar Lamps (19,794 solar lighting systems) are distributed till date under this VPA. The exact commissioning/installation dates for all the CEPs are mentioned in the Emission Reduction Calculation sheet for this VPA.
3. Continued operation periods – All of the functional products were continuously operational during the course of this monitoring period. Non-functional products are discounted in emission reduction calculation.

d. Total GHG emission reductions achieved in this monitoring period for the VPA, including information on how double counting is avoided -

The total GHG emission reductions achieved in this monitoring period for the VPA is **43,096** tCO_2e.

VPA7 - GS ID: GS11477

1. Purpose of the VPA(s) and the measures taken for GHG emission reductions or net GHG removals by sinks –

Purpose: Under the VPA, Micro Energy Credits works with PO – Evangelical Social Action Forum (ESAF), Bandhan Creation Private Limited (Bandhan) and Shri Kshetra Dharmasthala Rural Development Project (SKDRDP) to develop a successful and diversified clean energy lending program. The clean energy program addresses typical barriers for low income clients including education, price, finance, and supply and aftersales service. Micro Energy Credits trains the POs to implement the clean energy lending program, as well as a robust and transparent carbon credit monitoring and tracking system to quantify and record the volume of carbon emission reductions created through the clean energy program.

Measures taken: The VPA involves marketing, distributing, and financing solar lanterns and improved cook stoves for low income households and microentrepreneurs in the states of Karnataka (KA), Tamil Nadu (TN), Jharkhand (JK), Madhya Pradesh (MP), Assam (AS), Bihar (BH), Chhattisgarh (CG), Odisha (OD), Tripura (TR), Uttar Pradesh (UP) and West Bengal (WB). These products provide renewable energy for lighting and efficient energy for cooking. The total number of units implemented under this VPA till date is:

Improved cookstoves – 28,495
Solar Lamps – 126,504 (i.e.46,822 Solar Lighting Systems)

Year	**Improved Cookstoves**			
	Karnataka	**Tamil Nadu**	**Chhattisgarh**	**Madhya Pradesh**
2013	1	-	-	-
2014	8,941	888	2,473	1,689
2015	14,395	89	19	-
Total	**23,337**	**977**	**2,492**	**1,689**

Year	**Solar Lamps**
2017	34,373
2018	58,912
2019	33,219
Total	**126,504**

No further sales have been added under the current monitoring period (01/01/2022 to 31/12/2022).

2. Description of the installed technology, technical processes and equipment for the VPA–

Improved Cookstove:
The Improved Cookstove model implemented under this VPA is the Grameen Greenway Smart Stove (GSSV3). Technical specifications are as follows –

Stove Body Size: 9.8'' x 7.6'' x 11.7''
Net weight: 2.5 kg
Average Life span under standard use conditions: 5 years
The rated thermal efficiency is 25.19%

3. Solar Lighting Systems:

The solar lamp models implemented under this VPA are listed below along with their specifications-

1. Selco Eco Home 2 HLS (Model Number – EH2HLS):
The technical specifications of this product are –
Type and Solar Panel Wattage: Polycrystalline/10W
Lighting Wattage – 3.6
Luminous flux output (Lumens): 324
Lumen maintenance (for 2,000 hours): 95.75%
Rated lamp life: greater than 10,000 hours
Lighting point (number of project lamps):2
Battery type/capacity-Lead Acid Battery/15Ah, 12V
Type of charge controller -PMW
Solar Run time(SRT): 4-5hours
Warranty – 1 year

2. Selco Eco Home 4 HLS (Model Number – EH4HLS):
The technical specifications of this product are –
Type and Solar Panel Wattage: Polycrystalline/10W
Lighting Wattage – 3.6
Luminous flux output (Lumens): 324
Lumen maintenance (for 2,000 hours): 95.75%
Rated lamp life: greater than 10,000 hours
Lighting point (number of project lamps):2
Battery type/capacity-Lead Acid Battery/15Ah, 12V
Type of charge controller -PMW
Solar Run time(SRT): 4-5hours
Warranty – 1 year

3. Selco Smart Home 4 HLS (Model Number – SH4HLS):
The technical specifications of this product are –
Type and Solar Panel Wattage: Polycrystalline/10W
Lighting Wattage – 16.8

Luminous flux output (Lumens): 1512
Lumen maintenance (for 2,000 hours): 95.75%
Rated lamp life: greater than 10,000 hours
Lighting point (number of project lamps):4
Battery type/capacity-Lead Acid Battery/30Ah, 12V
Type of charge controller -PMW
Solar Run time(SRT): 4-5hours
Warranty – 1 year

4. Bright Light Home 4 HLS (Model Number – BH4HLS):
The technical specifications of this product are –
Type and Solar Panel Wattage: Polycrystalline/40W
Lighting Wattage – 14
Luminous flux output (Lumens): 1260
Lumen maintenance (for 2,000 hours): 95.75%
Rated lamp life: greater than 10,000 hours
Lighting point (number of project lamps):2
Battery type/capacity-Lead Acid Battery/60Ah, 12V
Type of charge controller -PMW
Solar Run time(SRT): 4-5hours
Warranty – 1 year

5. Super Bright Home 14 HLS (Model Number – S14HLS):
The technical specifications of this product are –
Type and Solar Panel Wattage: Polycrystalline/120W
Lighting Wattage – 82
Luminous flux output (Lumens): 7380
Lumen maintenance (for 2,000 hours): 95.75%
Rated lamp life: greater than 10,000 hours
Lighting point (number of project lamps):10
Battery type/capacity-Lead Acid Battery/120Ah, 12V
Type of charge controller -PMW
Solar Run time(SRT): 4-5hours
Warranty – 1 year

6. Super Bright Home 15 HLS (Model Number – S15HLS):
The technical specifications of this product are –
Type and Solar Panel Wattage: Polycrystalline/120W
Lighting Wattage – 91
Luminous flux output (Lumens): 4700
Lumen maintenance (for 2,000 hours): 95.75%
Rated lamp life: greater than 10,000 hours
Lighting point (number of project lamps): 12
Battery type/capacity-Lead Acid Battery/120Ah, 12V
Type of charge controller -PMW
Solar Run time(SRT): 4-5hours
Warranty – 1 year

7. Selco Super Bright HLS (Model Number – SB4HLS):
The technical specifications of this product are –
Type and Solar Panel Wattage: crystalline/40W
Lighting Wattage – 32
Luminous flux output (Lumens): 2880
Lumen maintenance (for 2,000 hours): 95.75%
Rated lamp life: greater than 10,000 hours
Lighting point (number of project lamps):
Battery type/capacity-/Lead-Acid batter/60Ah, 12V
Type of charge controller -PMW
Solar Run time(SRT): 4-5hours
Warranty – 1 year

8. Super Bright Home 2 HLS (Model Number – SB2HLS):
The technical specifications of this product are –
Type and Solar Panel Wattage: Polycrystalline/18W
Lighting Wattage – 12
Luminous flux output (Lumens): 1080
Lumen maintenance (for 2,000 hours): 95.75%
Rated lamp life: greater than 10,000 hours
Lighting point (number of project lamps):2
Battery type/capacity-Lead Acid Battery/20Ah, 12V
Type of charge controller -PMW
Solar Run time(SRT): 4-5hours
Warranty – 1 year

9. Super Bright Home 6 HLS (Model Number – SB6HLS):

The technical specifications of this product are –
Type and Solar Panel Wattage: Polycrystalline/60W
Lighting Wattage – 46
Luminous flux output (Lumens): 4140
Lumen maintenance (for 2,000 hours): 95.75%
Rated lamp life: greater than 10,000 hours
Lighting point (number of project lamps):6
Battery type/capacity-Lead Acid Battery/80Ah, 12V
Type of charge controller -PMW
Solar Run time(SRT): 4-5hours
Warranty – 1 year

10. Super Bright Home 8 HLS (Model Number – SB8HLS):

The technical specifications of this product are –
Type and Solar Panel Wattage: Polycrystalline/75W
Lighting Wattage – 32
Luminous flux output (Lumens): 2880
Lumen maintenance (for 2,000 hours): 95.75%
Rated lamp life: greater than 10,000 hours

Lighting point (number of project lamps): 4
Battery type/capacity-Lead Acid Battery/110Ah, 12V
Type of charge controller -PMW
Solar Run time(SRT): 4-5hours
Warranty – 1 year

11. Super Bright Home 9 HLS (Model Number – SB9HLS):
The technical specifications of this product are –
Type and Solar Panel Wattage: Polycrystalline/75W
Lighting Wattage – 37
Luminous flux output (Lumens): 2900
Lumen maintenance (for 2,000 hours): 95.75%
Rated lamp life: greater than 10,000 hours
Lighting point (number of project lamps): 9
Battery type/capacity-Lead Acid Battery/110Ah, 12V
Type of charge controller -PMW
Solar Run time(SRT): 4-5hours
Warranty – 1 year

12. SKDLT3
The technical specifications of this product are –
Type and Solar Panel Wattage: Polycrystalline/20W
Lighting Wattage – 15
Luminous flux output (Lumens): 1350
Lumen maintenance (for 2,000 hours): 95.75%
Rated lamp life: greater than 10,000 hours
Lighting point (number of project lamps): 3
Battery type/capacity-/20Ah, 12V
Type of charge controller -PMW
Solar Run time(SRT): 4-5hours
Warranty – 1 year

13. PLT6HLS
The technical specifications of this product are –
Type and Solar Panel Wattage: Polycrystalline/75W
Lighting Wattage – 40
Luminous flux output (Lumens): 3400
Lumen maintenance (for 2,000 hours): 95.75%
Rated lamp life: greater than 10,000 hours
Lighting point (number of project lamps): 6
Battery type/capacity-Lead Acid Battery/80Ah,12V
Type of charge controller -PMW
Solar Run time(SRT): 4-5hours
Warranty – 1 year

14. PLT4HLS
The technical specifications of this product are –

Type and Solar Panel Wattage: Polycrystalline/60W
Lighting Wattage – 33
Luminous flux output (Lumens): 2750
Lumen maintenance (for 2,000 hours): 95.75%
Rated lamp life: greater than 10,000 hours
Lighting point (number of project lamps): 3
Battery type/capacity- Lead Acid Battery /80Ah,12V
Type of charge controller -PMW
Solar Run time(SRT): 4-5hours
Warranty – 1 year

15. PLT3F1HLS
The technical specifications of this product are –
Type and Solar Panel Wattage: crystalline/60W
Lighting Wattage – 20
Luminous flux output (Lumens): 1700
Lumen maintenance (for 2,000 hours): 95.75%
Rated lamp life: greater than 10,000 hours
Lighting point (number of project lamps): 3
Battery type/capacity- Lead Acid Battery /80Ah, 12V
Type of charge controller -PMW
Solar Run time(SRT): 4-5hours
Warranty – 1 year

16. PL2LT8F2HLS
The technical specifications of this product are –
Type and Solar Panel Wattage: Polycrystalline/180W
Lighting Wattage – 85
Luminous flux output (Lumens): 6950
Lumen maintenance (for 2,000 hours): 95.75%
Rated lamp life: greater than 10,000 hours
Lighting point (number of project lamps): 10
Battery type/capacity- Lead Acid Battery/180Ah,12 V
Type of charge controller -PMW
Solar Run time(SRT): 4-5hours
Warranty – 1 year

17. PL2LT6F1HLS
The technical specifications of this product are –
Type and Solar Panel Wattage: Polycrystalline/120W
Lighting Wattage – 57
Luminous flux output (Lumens): 4750
Lumen maintenance (for 2,000 hours): 95.75%
Rated lamp life: greater than 10,000 hours
Lighting point (number of project lamps): 8
Battery type/capacity- Lead Acid Battery /135Ah, 12V

Type of charge controller -PMW
Solar Run time(SRT): 4-5hours
Warranty – 1 year

18. PL1LT5HLS
The technical specifications of this product are –
Type and Solar Panel Wattage: crystalline/80W
Lighting Wattage – 45
Luminous flux output (Lumens): 3750
Lumen maintenance (for 2,000 hours): 95.75%
Rated lamp life: greater than 10,000 hours
Lighting point (number of project lamps): 6
Battery type/capacity-Lead Acid Battery/100Ah,12 V
Type of charge controller -PMW
Solar Run time(SRT): 4-5hours
Warranty – 1 year

19. PL1LT3F2HLS
The technical specifications of this product are –
Type and Solar Panel Wattage: Polycrystalline/120W
Lighting Wattage – 22
Luminous flux output (Lumens): 1900
Lumen maintenance (for 2,000 hours): 95.75%
Rated lamp life: greater than 10,000 hours
Lighting point (number of project lamps): 4
Battery type/capacity-Lead Acid Battery/100Ah, 12V
Type of charge controller -PMW
Solar Run time(SRT): 4-5hours
Warranty – 1 year

20. PL1LT3F1HLS
The technical specifications of this product are –
Type and Solar Panel Wattage: Polycrystalline /75W
Lighting Wattage – 22
Luminous flux output (Lumens): 1900
Lumen maintenance (for 2,000 hours): 95.75%
Rated lamp life: greater than 10,000 hours
Lighting point (number of project lamps): 4
Battery type/capacity- Lead Acid Battery /80Ah, 12V
Type of charge controller -PMW
Solar Run time(SRT): 4-5hours
Warranty – 1 year

21. CLT2HLS
The technical specifications of this product are –
Type and Solar Panel Wattage: Polycrystalline/40W
Lighting Wattage – 15

Luminous flux output (Lumens): 1250
Lumen maintenance (for 2,000 hours): 95.75%
Rated lamp life: greater than 10,000 hours
Lighting point (number of project lamps): 2
Battery type/capacity-Lead Acid Battery/20Ah, 12V
Type of charge controller -PMW
Solar Run time(SRT): 4-5hours
Warranty – 1 year

22. CLT2F1HLS
The technical specifications of this product are –
Type and Solar Panel Wattage: Polycrystalline/60W
Lighting Wattage – 15
Luminous flux output (Lumens):
Lumen maintenance (for 2,000 hours): 95.75%
Rated lamp life: greater than 10,000 hours
Lighting point (number of project lamps): 2
Battery type/capacity-Lead Acid Battery/60Ah, 12V
Type of charge controller -PMW
Solar Run time(SRT): 4-5hours
Warranty – 1 year

23. CLT1HLS
The technical specifications of this product are –
Type and Solar Panel Wattage: Polycrystalline/20W
Lighting Wattage – 5
Luminous flux output (Lumens): 450
Lumen maintenance (for 2,000 hours): 95.75%
Rated lamp life: greater than 10,000 hours
Lighting point (number of project lamps): 1
Battery type/capacity-Lead Acid Battery/15Ah,12 V
Type of charge controller -PMW
Solar Run time(SRT): 4-5hours
Warranty – 1 year

24. CL3LT1HLS2
The technical specifications of this product are –
Type and Solar Panel Wattage: Polycrystalline/40W
Lighting Wattage – 11
Luminous flux output (Lumens): 1050
Lumen maintenance (for 2,000 hours): 95.75%
Rated lamp life: greater than 10,000 hours
Lighting point (number of project lamps): 4
Battery type/capacity-Lead Acid Battery/30Ah, 12V
Type of charge controller -PMW
Solar Run time(SRT): 4-5hours
Warranty – 1 year

25. CL3LT1HLS
The technical specifications of this product are –
Type and Solar Panel Wattage: Polycrystalline/40W
Lighting Wattage – 11
Luminous flux output (Lumens): 1050
Lumen maintenance (for 2,000 hours): 95.75%
Rated lamp life: greater than 10,000 hours
Lighting point (number of project lamps): 4
Battery type/capacity-Lead Acid Battery/20Ah, 12V
Type of charge controller -PMW
Solar Run time(SRT): 4-5hours
Warranty – 1 year

26. CL2LT2HLS
The technical specifications of this product are –
Type and Solar Panel Wattage: Polycrystalline/40W
Lighting Wattage – 19
Luminous flux output (Lumens): 1650
Lumen maintenance (for 2,000 hours): 95.75%
Rated lamp life: greater than 10,000 hours
Lighting point (number of project lamps): 4
Battery type/capacity-Lead Acid Battery/30Ah, 12V
Type of charge controller -PMW
Solar Run time(SRT): 4-5hours
Warranty – 1 year

27. CL2HLS
The technical specifications of this product are –
Type and Solar Panel Wattage: Polycrystalline/20W
Lighting Wattage – 4
Luminous flux output (Lumens): 400
Lumen maintenance (for 2,000 hours): 95.75%
Rated lamp life: greater than 10,000 hours
Lighting point (number of project lamps): 2
Battery type/capacity-Lead Acid Battery/15Ah, 12V
Type of charge controller -PMW
Solar Run time(SRT): 4-5hours
Warranty – 1 year

28. CL1LT2HLS
The technical specifications of this product are –
Type and Solar Panel Wattage: Polycrystalline/40W
Lighting Wattage – 12
Luminous flux output (Lumens): 1100
Lumen maintenance (for 2,000 hours): 95.75%
Rated lamp life: greater than 10,000 hours

Lighting point (number of project lamps): 3
Battery type/capacity-Lead Acid Battery/20Ah, 12V
Type of charge controller -PMW
Solar Run time(SRT): 4-5hours
Warranty – 1 year

29. CL1LT1F1HLS
The technical specifications of this product are –
Type and Solar Panel Wattage: Polycrystalline/40W
Lighting Wattage – 7
Luminous flux output (Lumens): 650
Lumen maintenance (for 2,000 hours): 95.75%
Rated lamp life: greater than 10,000 hours
Lighting point (number of project lamps): 2
Battery type/capacity-Lead Acid Battery/60Ah, 12V
Type of charge controller -PMW
Solar Run time(SRT): 4-5hours
Warranty – 1 year

30. Selco 10 HLS (Model Number - S10HLS)
The technical specifications of this product are –
Type and Solar Panel Wattage: Polycrystalline/100W
Lighting Wattage – 60
Luminous flux output (Lumens): 5400
Lumen maintenance (for 2,000 hours): 95.75%
Rated lamp life: greater than 10,000 hours
Lighting point (number of project lamps): 8
Battery type/capacity-Lead Acid Battery/150Ah,12 V
Type of charge controller -PMW
Solar Run time(SRT): 4-5hours
Warranty – 1 year

31. Greenlight Planet PRO 2 (Sunking Pro2)
The technical specifications of this product are –
Type and Solar Panel Wattage: Polycrystalline/3W
Lighting Wattage – 1.1
Luminous flux output (Lumens): 150Lumen maintenance (for 2,000 hours): 96%
Rated lamp life: greater than 10,000 hours
Lighting point (number of project lamps): 1
Battery type/capacity-Lead Acid Battery/3Ah,3.3 V
Type of charge controller -Active
Solar Run time(SRT): 5-6hours
Warranty – 1 year

32. Greenlight Planet Boom (Sunking Boom)
The technical specifications of this product are –
Type and Solar Panel Wattage: Polycrystalline/2.7W

Lighting Wattage – 3
Luminous flux output (Lumens): 160
Lumen maintenance (for 2,000 hours): 100%
Rated lamp life: greater than 10,000 hours
Lighting point (number of project lamps): 1
Battery type/capacity-Lead Acid Battery/3Ah,3.3 V
Type of charge controller -Active
Solar Run time(SRT): 6hours
Warranty – 1 year

33. Greenlight Planet Home Lighting System 120 (Sunking HLS 120)
The technical specifications of this product are –
Type and Solar Panel Wattage: Polycrystalline/12W
Lighting Wattage – 5.28
Luminous flux output (Lumens): 590
Lumen maintenance (for 2,000 hours): 94%
Rated lamp life: greater than 10,000 hours
Lighting point (number of project lamps): 3
Battery type/capacity-Lead Acid Battery/12Ah,3.3 V
Type of charge controller -Active
Solar Run time(SRT): 5hours
Warranty – 1 year

4. Relevant dates for the VPA –

a. Construction/Implementation date – The improved stoves under this VPA are implemented from 03/06/2013 to 30/05/2015. The solar lighting systems under this VPA are implemented from 24/01/2017 to 20/06/2019.
b. Commissioning – 28,495 Improved cookstoves and 126,504 solar lamps (46,822 solar lighting systems) are distributed till date under this VPA. The exact commissioning/installation dates for all the CEP's are mentioned in the Emission Reduction Calculation sheet for this VPA.
c. Continued operation periods – All of the functional products were continuously operational during the course of this monitoring period. Non-functional products are discounted in emission reduction calculation.

5. Total GHG emission reductions achieved in this monitoring period for the VPA, including information on how double counting is avoided -

The total GHG emission reductions achieved in this monitoring period for the VPA is 48,924 tCO_2e.

VPA11 - GS ID: GS11481

a. Purpose of the VPA(s) and the measures taken for GHG emission reductions or net anthropogenic GHG removals–

Purpose: Under the VPA, Micro Energy Credits works with PO – Evangelical Social Action Forum (ESAF), Muthoot Microfin Limited (Muthoot) to develop a successful and diversified clean energy lending program. The clean energy program addresses typical

barriers for low income clients including education, price, finance, and supply and aftersales service. Micro Energy Credits trains the POs to implement the clean energy lending program, as well as a robust and transparent carbon credit monitoring and tracking system to quantify and record the volume of carbon emission reductions created through the clean energy program.

Measures taken: The VPA involves marketing, distributing, and financing solar lighting systems, and improved cook stoves for low income households and microentrepreneurs in Karnataka (KA), Maharashtra (MH), Kerala (KL), Gujarat (GJ), Madhya Pradesh (MP), Odisha (OD), Uttar Pradesh (UP) and Tamil Nadu (TN). These products provide clean, renewable power for lighting and efficient energy for cooking. The total number of units implemented under this VPA till date is:
Improved cookstoves – 14,220
Solar Lamps – 242,588 (i.e. 242,588 Solar Lighting Systems)

Year	**Jumbo Stove-Karnataka**	**Jumbo Stove-Kerala**	**Smart Stove-Karnataka**	**Smart Stove-Maharashtra**	**PowerGram-Tamil Nadu**
2014	-	-	-	7,322	-
2015	210	4,786	33	31	-
2016	259	164	1	-	1,327
2017	86	-	-	-	1
Total	**555**	**4,950**	**34**	**7,353**	**1,328**

Year	**Solar Lighting System**
2015	96,375
1122016	107,101
2017	39,112
Total	**242,588**

No further sales have been added under the current monitoring period (01/01/2022 to 31/12/2022).

b. Description of the installed technology, technical processes and equipment for the VPA –

Improved Cookstove:
The Improved Cookstove model implemented under this VPA are the Grameen Greenway Smart Stove(GSSV3), Grameen Jumbo Stove (GJS) and ServalS PowerGram Stove. Technical specifications are as follows –

Grameen Greenway Smart Stove (GSSV3) -
Stove Body Size: 9.8'' x 7.6'' x 11.7''
Net weight: 2.5 kg
Average Life span under standard use conditions: 5 years
The rated thermal efficiency is 25.19%

Grameen Jumbo Stove (GJS) –
Stove Body Size – 12.4" x 10.6" x 11.6"

Net weight: 5 kg
Average Life span under standard use conditions: 5 years
The rated thermal efficiency is 31.17%

ServalS PowerGram Stove (GJL) –
Stove Body Size – 31 cm X 30 cm X 30 cm
Net weight: 9 kg
Average Life span under standard use conditions: 5 years
The rated thermal efficiency is 40%

Solar lighting system:
The solar lighting system model implemented under this VPA is the Duron Mitva MS 322A.
Technical specifications are as follows –Type and Solar Panel Wattage:
Polycrystalline/1.7W
Lighting Wattage – 1
Luminous flux output (Lumens): 85
Lumen maintenance (for 2,000 hours): 95.75%
Rated lamp life: greater than 10,000 hours
Lighting point (number of project lamps):1
Battery type/capacity-Lithium ion/2.6Ah, 3.7V
Type of charge controller -PMW
Solar Run time(SRT): 4-5hours
Warranty – 1 year

c. Relevant dates for the VPA –

a. Construction/Implementation date – The improved cookstoves under this VPA are implemented from 21/01/2014 to 12/05/2017. The solar lighting systems are implemented from 27/03/2015 to 30/11/2017.
b. Commissioning – 14,220 Improved cookstoves and 242,588 solar lamps (242,588 Solar lighting systems) are distributed till end of the monitoring period under this VPA. The exact commissioning/installation dates for all the CEPs are mentioned in the Emission Reduction Calculation sheet for this VPA.
c. Continued operation periods - All of the functional products were continuously operational during the course of this monitoring period. Non-functional products are discounted in emission reduction calculation.

d. Total GHG emission reductions achieved in this monitoring period for the VPA, including information on how double counting is avoided .

The total GHG emission reductions achieved in this monitoring period for the VPA is 34,020tCO_2e.

e. Avoiding double counting –

Each Clean Energy Product sold under each VPA has 2 unique identifier numbers - one that is attached to each household and one that is attached to each installation within that VPA to ensure no double-counting within the PoA.

The 2 unique identification numbers for CEPs sold by each product are as follows –

Partner	**Unique Identification number for the households**	**Unique identification number for the CEP**
SKDRDP	Group Identification number-Member ID	Branch ID-Loan account number
Muthoot	Customer identification number	Transaction identification number
ESAF	User account number	Branch ID-Loan account number
Canara	Account number	CSA number on application

Unique identification number for the households is defined as "User Account identification number" and Unique identification number for the CEPs is defined as "Loan Account number" in the emission reduction sheets.

Unique identification numbers match with the information displayed on each VPA Credit Tracker Platform, with a copy retained by the customer, thus identifying that each CEP with its unique identification number has been distributed under a PoA managed by the CME of this PoA.

At the time of including a new VPA, Micro Energy Credits ensured that the project activity is not part of CDM/GS project activity or another PoA by the following means:

- MEC signs contracts with each microfinance institution documenting that the emissions reductions in a specific project activity are included in that project and that project alone
- The partner PO explains the concept of carbon credits to the end user. The PO signs a contract with each end user recognizing the end user's title to the emissions reductions and transferring it to the PO, which then transfers it to Micro Energy Credits via the contract signed between the PO and MEC
- Micro Energy Credits and partner PO consult with participating clean energy product suppliers to clarify that credits are not included in other projects and are included only in this PoA

The MEC Credit Tracker Platform maintains data on all installations, including each CEP unique identifier number, the date of installation and the VPA/PoA with which they are associated. The platform's use of locations for each installation will ensure that each clean energy product is only included in a single VPA under a single PoA. The credit

tracker platform also allocates a system generated number call "sysnum" to each installation under the PoA. No two CEP installations can have the same "sysnum".

B.1.1 Forward Action Requests
>>
NA

B.2. Post-Design Certification changes

>>
B.2.1. Temporary deviations from the approved Monitoring & Reporting Plan, methodology or standardized baseline
>>
NA
B.2.2. Corrections
>>
NA
B.2.3. Changes to start date of crediting period
>>
NA
B.2.4. Permanent changes from the Design Certified monitoring plan, applied methodology or applied standardized baseline
>>
NA
B.2.5. Changes to project design of approved project
>>
NA

SECTION C. DESCRIPTION OF MONITORING SYSTEM APPLIED BY THE PROJECT

>>
Micro Energy Credit's Credit Tracker Platform is used to maintain records for each VPA. The MEC Credit Tracker Platform has been designed specifically for accelerating microfinance access to clean and efficient energy. The Credit Tracker Platform is used to collect and store the information related to the unique identification number, location, installation date, and usage status of each clean energy product (CEP) in each VPA, making it easy to identify, locate and verify all of the installations that pertain to a given VPA. The MEC Credit Tracker Platform is a hosted internet service, limiting the risk of loss of data.

Monitoring system and monitoring plan of VPAs – The Credit Tracker Platform enables Micro Energy Credits to maintain consistent data on all VPAs and product installations. The process for entering data into the Credit Tracker Platform will be consistent across all VPAs. At the time of installation, the PO creates a Booking Record (in paper or electronic format) that captures detailed data on the installation:

- Household name
- Location of household (address and/or GPS location)
- Product type installed
- Product model installed
- Date of installation
- Unique identifier number for CEP
- Respective VPA number

The Credit Tracker Platform includes a VPA Dashboard that provides a summary on the status of each VPA, and includes the fields:

- Name and unique identifier of each VPA
- List of CEPs included in each VPA
- Name of PO implementing each VPA
- Number of CEPs installed
- Aggregate emissions reductions per year for each VPA

The VPA Monitoring Record maintains monitoring and auditing data on each installation in a VPA:

- Unique identifier number for CEP
- Date of monitoring
- Usage status at time of monitoring

The monitoring activity provides a framework for project preparation and monitoring processes that has been undertaken at the VPA level for each VPA. This schedule takes into account the key parameters that are needed during the crediting periods of the project. All required monitoring and documentation have been implemented, reported, consolidated and managed by the CME. Monitored data has been stored in a suite of monitoring databases.

Summary:
1. Each PO keeps a record of all the CEPs it installs in the MEC Credit Tracker Platform. The record includes the name, date of installation, model of CEP and location of the product. All records are screened by the CME and cross-checked with the PO records to confirm the installation record is authentic and no double counting occurs.

2. The values of the emission reduction parameters required for ex-post ER calculation - project fuel consumption (pp,y) or efficiency of ICS , number of ICS still operating (Up,y).

3. The records kept in the MEC Credit Tracker Platform relate to paper copies of title transfer agreements received from individual households.

Quality assurance

To increase the precision of the estimates during the survey, it is necessary to establish sampling mechanisms for avoiding non-sampling errors (bias) include good questionnaire design, well-tested questionnaires, possibly pilot testing the data collection. To remedy the incomplete questionnaires, additional households or schools will be drawn randomly until the required number is met at per the sample size determined. Then, well-trained personnel will scrutinize all the questionnaires. This will be a procedure to find outliers, and then outliers may be excluded and/or replaced. If the outliers are found according to the above analysis it will be examined further to correct for possible transcription and data entry errors, but it will be omitted from the analysis if no such administrative errors exist. All monitored data such as name, date and contact information of the end-user will be archived in the electronic database tool. Hard copies of all documents will be kept at the office of CME or an alternative place nominated by CME. All the data will be used to calculate the sample size for parameters and emission reductions. All data stored to be kept for at least two years after the crediting period or the last issuance of CERs for the project activity.
Generalities

The CME along with the PO coordinated all ex-post monitoring activities. The CME is ultimately responsible for implementing the monitoring plan, ensuring the quality of data obtained and the use of this data for emissions reduction calculations. However, the actual field measurements to be conducted during monitoring (e.g. project KPT) has been performed by enumerators trained by CME and PO field staff. Sampled households were visited for 4 days to collect the data on the fuel consumption for cooking. Fuelwood was not supplied separately but a small bundle from household stock was separated and provided to households to be used for the KPT. Each day enumerator or field staff would visit the household between 6-7 a.m. before the first meal is cooked. All enumerators would carry weighing scale and moisture meter to take the measurements. The data would be collected directly in the Microsoft excel.

CME has defined the project technology "use" versus "non-use" to determine who should be considered eligible for crediting. The criteria for defining the same has been listed below:

1. User is defined as someone who uses the stove daily. The same shall be captured in the survey questionnaire.
2. To define the use and non-use of project technology, CME has included questions in the survey questionnaire such as when was the stove last used, frequency of use, how many meals are prepared in a day.
3. Physical verification of the stove is conducted to check if the combustion chamber is intact and grate is available or not. Surveyor shall also observe physically that the stove feels warm and presence of ash in the stove.
4. Users will be asked questions on use of the baseline stove, how many meals prepared, presence or absence of the baseline stove.
5. CME shall refer to usage and project survey and Kitchen Performance Tests (KPTs) to determine if the stove was in use or not.

During sampling there may be non-response from the target population. Over-sampling by 20% have been used to avoid non-response, however, sampling may be cease once required confidence/precision is met.

Implementation - The survey for collecting the details of monitoring parameters was conducted annually at the end of the monitoring. The overall monitoring and the implementation of the sampling has been coordinated by the CME and the management staff. CME has ensured successful monitoring of the emission reductions of the proposed project during its crediting period. Furthermore, the survey of the representative sample for the parameters has been carried out by the distributor together with the CME. The survey method that used by CME include: (a) Online questionnaire (b) Face to face interview (c) Telephone Interview (cross check). Primary data was stored by the implementing entities/operators.

All efforts of sampling will be conducted by qualified personnel who have undergone training as part of the programme.

TECHNICAL FAILURE AND MAINTENANCE PROTOCOL

SKDRDP, Muthoot, ESAF and Canara have a robust aftersales mechanism in place which ensures customer complaints are registered and resolved in a timely manner. The mechanism involves various steps:

Step 1: Complain Registration
Step 2: Logging complaint
Step 3: Collection of product for repair
Step 4: Resolution of the complaint
Step 5: Feedback (optional)

Customers register complaint either through field staff of the PO who visit the customer on weekly or biweekly manner or directly call the customer support number provided to them during sale of the product. Most preferred mode of complaint registration is through field staff.

POs have in house complain logging systems (manual/automatic). Intimation is sent to supplier/manufacturer local service team. As soon as service team receives the complaint, within 48-72 hours depending on the location of the customer household, service team will visit the households for examination of the product. In case of minor issues, resolution happens on the spot however, if the problem is major then product is collected and taken to the nearest workshop.

Service team of the supplier/manufacturer is expected to resolve the issue within 30 days of receiving the complaint. Once the product is repaired, it is returned back to the customer. In case product is beyond repair then replacement product is provided to end user by the PO. Sample service request forms have been submitted.

For ICS, total repairs done were 154, 76, 32, 40, 52 for VPA 2,3,7, & 11 respectively. For SLS, total repairs done were 4072, 571, 823, 831 and 4120 for VPA 2,3,7 & 11. It can be confirmed though credit tracker output file where the data from the partner is stored. Sample tracker screenshots and sample service request forms have been submitted.

SECTION D. DATA AND PARAMETERS

D.1. Data and parameters fixed ex ante or at renewal of crediting period

>>
SDG 13
Improved Cookstoves:

Data/parameter	**$P_{b,y}$**
Unit	kg/household-day
Description	Quantity of fuel that is consumed in baseline scenario b during year y
Source of data	Baseline FT or default baseline fuelwood consumption

Value(s) applied	

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

Choice of data or Measurement methods and procedures	Baseline Study in section B.4 of the VPA-DD.
Purpose of data	For baseline emission calculations
Additional comment	-

Data/parameter	**$EF_{b,i,CO2}$**
Unit	tCO_2/t_{fuel}
Description	CO_2 emission factor arising from use of fuel type *i* in baseline scenario
Source of data	Wood: Methodology default
Value(s) applied	Fuelwood / wood chips: 112 tCO2/TJ
Choice of data or Measurement methods and procedures	Default IPCC values have been applied
Purpose of data	For baseline emission calculations
Additional comment	-

Data/parameter	**$EF_{b,i,nonCO2}$**

Unit	tCO_2/tfuel
Description	Non-CO_2 emission factor arising from use of fuel type i in baseline scenario
Source of data	IPCC default value as per 2006 IPCC Guidelines for National Greenhouse Gas Inventories volume 2, chapter 2 (Table 2.9)
Value(s) applied	Wood: 37.25 tCO2e/TJ
Choice of data or Measurement methods and procedures	Methodology defaults have been applied for wood

Parameter	Value	Average	Units	Source
EF_wood_CH4	258 – 2190	1224	kgCO2/TJ	
EF_wood_N2O	4 – 18.5	11.25	KgCO2/TJ	
GWP CH4	28		tCO2/TJ	AR5
GWP N2O	265		tCO2/TJ	AR5
$EF_{b,fuel\ non\text{-}CO2}$		**37.25**	**tCO2/TJ**	

Purpose of data	For baseline emission calculations
Additional comment	-

Data/parameter	**$EF_{p,i,CO2}$**
Unit	tCO_2/t_{fuel}
Description	CO_2 emission factor arising from use of fuel type *i* in project scenario
Source of data	Wood: Methodology default
Value(s) applied	Fuelwood / wood chips: 112 tCO2/TJ
Choice of data or Measurement methods and procedures	Default IPCC values have been applied
Purpose of data	For project emission calculations
Additional comment	-

Data/parameter	**$EF_{p,i,nonCO2}$**
Unit	tCO_2/TJ

Description	Non-CO_2 emission factor arising from use of fuel type *i* used in project scenario
Source of data	IPCC default value as per 2006 IPCC Guidelines for National Greenhouse Gas Inventories volume 2, chapter 2 (Table 2.9)
Value(s) applied	37.25 tCO2e/TJ (AR5 GWP)
Choice of data or Measurement methods and procedures	Default methodology values have been applied for wood

Parameter	Value	Average	Units	Source
EF_wood_CH4	258 – 2190	1224	kgCO2/TJ	
EF_wood_N2O	4 – 18.5	11.25	KgCO2/TJ	
GWP CH4	28		tCO2/TJ	AR5
GWP N2O	265		tCO2/TJ	AR5
$EF_{b,fuel\ non\text{-}CO2}$		**37.25**	**tCO2/TJ**	

Purpose of data	For project emission calculations
Additional comment	-

Data/parameter	**$NCV_{b,i}$**
Unit	TJ/tonne
Description	Net calorific value of the fuel type *i* used in the baseline
Source of data	Methodology default: Wood
Value(s) applied	Fuelwood / wood chips: 0.0156 TJ/tonnes
Choice of data or Measurement methods and procedures	Default IPCC values have been applied
Purpose of data	For baseline emission calculations
Additional comment	-

Data/parameter	**$NCV_{p,i}$**
Unit	TJ/tonne

Description	Net calorific value of the fuel type *i* used in the project scenario
Source of data	Wood: Methodology default
Value(s) applied	Fuelwood / wood chips: 0.0156 TJ/tonnes
Choice of data or Measurement methods and procedures	Default IPCC values for wood / wood waste are applied.
Purpose of data	For project emission calculations
Additional comment	-

Data/parameter	$f_{NRB,b,i,y}$
Unit	Fractional non-renewability
Description	Non-renewability status of woody biomass fuel type *i* that can be established as non-renewable during year y
Source of data	Calculation as per CDM methodology Tool 30 version 3.0
Value(s) applied	

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

Choice of data or Measurement methods and procedures	N.A.
Purpose of data	For emission reduction calculations
Additional comment	-

For Solar Lighting Systems

VPAs 02, 03, 04, 07 & 11 (AMS III A.R)

Data/parameter	DV
Unit	tCO_2e per project lamp
Description	Lamp Emission Factor
Source of data	Default value prescribed in AMS-III.AR (v7.0)
Value(s) applied	0.092 tCO_2e per project lamp
Choice of data or Measurement methods and procedures	Methodology default value applied
Purpose of data	Calculation of baseline emissions
Additional comment	N/A

D.2 Data and parameters monitored

>>

Improved Cookstoves
SDG 13

Data / Parameter	$P_{p,y}$
Unit	kg/household-day
Description	Quantity of fuel that is consumed in project scenario p during year y
Source of data	Project KPT
Value(s) applied	

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

		Jumbo/KL Smart/MH Powergram/TN	0.0035 0.0036 0.0033
Measurement methods and procedures	Project KPT has been conducted		
Monitoring frequency	Updated every two years		
QA/QC procedures	CME has provided guidance and training to enumerators/experts for conducting KPTs to meet specific requirement of the methodology. The equipment used for testing is externally calibrated or newly purchased at the time of use so measurements are done with the necessary guarantees. Calibration of the equipment is done annually. Type – Digital Moisture Meter Accuracy Class - +/- 1% Serial number – TM361471, TM391454, TM28591, TM300144, TM400178, TM316542 Calibration frequency – Annual Date of calibration – 27/02/2023 Validity – Until 26/02/2024 Type - Weighing Scale Accuracy Class - +/- 0.5 grams Serial number – WS010051, WS010052, WS010053, WS01495, WS010054 Calibration frequency – Annual Date of calibration – 19/02/2023 Validity – Until 18/02/2024		
Purpose of data	To calculate baseline emissions		
Additional comment	Project fuel consumption using KPT has been conducted in Jan-Feb 2023 to take into account seasonal variation in wood consumption.		

Data / Parameter	$U_{p,y}$
Unit	Fraction (or %)

Description	Usage rate in project scenario p during year y
Source of data	Annual usage survey (KS)
Value(s) applied	<table><tr><th>VPA</th><th>Model/State</th><th>Values</th></tr><tr><td>VPA4</td><td>Smart/KA</td><td>56%</td></tr><tr><td>VPA7</td><td>Smart/KA Smart/CG Smart/MP Smart/TN</td><td>57% 48% 56% 56%</td></tr><tr><td>VPA02</td><td>Smart/TN Smart/KL</td><td>52% 49%</td></tr><tr><td>VPA03</td><td>Smart/KL</td><td>54%</td></tr><tr><td>VPA11</td><td>Smart/KA Jumbo/KA Jumbo/KL Smart/MH Powergram/TN</td><td>68% 51% 59% 61% 57%</td></tr></table>
Measurement methods and procedures	Sampling surveys (physical) has been conducted to record the continued operation of project devices. The usage rate has been calculated for each age (simple random sampling to be applied as applicable)
Monitoring frequency	Annual
QA/QC procedures	CME has provided guidance and training to enumerators for conducting surveys to meet specific requirement of the methodology, if any. The value obtained has been tested to determine if the desired precision was met. The "Cookstove Usage Rate Guidelines" has been followed and CME has ensured that the value applied for this parameter is in line with the guidance provided for the Level applied. Out of the three levels to the Usage Monitoring Requirements, CME has ensured "Mandatory" and "Good Practice" level are complied with.
Purpose of data	To calculate baseline emissions

Additional comment	A single usage parameter is weighted to be representative of the quantity of project technologies of each age being credited in a given project scenario.

Data / Parameter	**Policy for encouraging discontinuation of baseline stove**
Unit	--
Description	Measures adopted to encourage use of project technology / discontinue baseline technology
Source of data	Internal records
Value(s) applied	-
Measurement methods and procedures	The end user training events were monitored to demonstrate that the users have been informed about use of project stoves and phase out of baseline stove.
Monitoring frequency	Updated every two years
QA/QC procedures	Transparent data analysis and reporting.
Purpose of data	To calculate baseline emissions
Additional comment	-

Data / Parameter	**$N_{p,y}$**
Unit	Project technologies credited (Number)
Description	Technologies in the project Database for project scenario p through year y
Source of data	Total sales record
Value(s) applied	

VPA	**Model/State**	**Installed active**	**Installed damaged**	**Days**
VPA02	Smart/TN Smart/KL	6911 18890	1659 5516	2522515 6894850
VPA03	Smart/KL	17,388	443	6346620
VPA4	Smart/KA	27696	2241	10109040
VPA7	Smart/KA Smart/CG Smart/MP Smart/TN	23,306 2,271 1,488 837	1031 221 201 140	8141690 828915 543120 305505

	VPA11	Smart/KA Jumbo/KA Jumbo/KL Smart/MH Powergram/TN	15 383 4,409 6881 1,101	19 172 541 472 227	8395 144905 1610015 2513390 405880
Measurement methods and procedures	Number of stoves listed in the Monitoring Database				
Monitoring frequency	Continuous				
QA/QC procedures	Values can be cross checked by sales records.				
Purpose of data	To calculate baseline emissions				
Additional comment	For sampling and monitoring purposes, the end user database which is a subset of the number of installations reported in the QPR has been used. In addition to methodological requirement to calculate Usage Rate (which is used to discount the ERs), as part of QA/QC defined in the PoA-DD and VPA-DD, Annual monitoring is carried out to determine the servicing requirement of all the stoves in the PoA. Based on the results of this annual monitoring survey, individual stove status is marked as installed_active and installed_damaged. The status ïnstalled_damaged" could reflect minor stove damage which does not affect the operational capability of the stove, but to be conservative the VPA does not claim emission reductions for stoves marked "installed_damaged". The ERs are adjusted accordingly (by accounting ERs only for stoves that are "installed_active").				

Data / Parameter	**$LE_{p,y}$**		
Unit	tCO_2e per year		
Description	Leakage in project scenario p during year y		
Source of data	Baseline and monitoring surveys for Leakage assessment		
Value(s) applied	**VPA**	**Model/State**	**Values**
	VPA02	Smart/TN Smart/KL	0
	VPA03	Smart/KL	0
	VPA4	Smart/KA	0
	VPA7	Smart/KA Smart/CG	0 0

		Smart/MP Smart/TN	0 0
	VPA11	Smart/KA Jumbo/KA Jumbo/KL Smart/MH Powergram/TN	0 0 0 0 0
Measurement methods and procedures	Qualitative / quantitative assessment		
Monitoring frequency	Every two years		
QA/QC procedures	N.A.		
Purpose of data	For calculation of leakage emissions		
Additional comment	-		

Solar Lighting System
VPA 02-GS 11474
SDG 13

Data / Parameter	$N_{i,j}$		
Unit	Number		
Description	Number of project lamps distributed to end users of type i with charging method j		
Source of data	MEC tracker platform		
Value(s) applied	**Year**	**State**	**Total Lamps**
	2013	Kerala	3,699
	2014	Kerala	18,119
		Tamil Nadu	7,622
		Maharashtra	1,735
		Chhattisgarh	2,154
		Madhya Pradesh	1,089
	2015	Kerala	46,747
		Tamil Nadu	3,736
		Maharashtra	2,608
		Chhattisgarh	1,737
		Madhya Pradesh	1,598
	2016	Kerala	43,124
		Tamil Nadu	11,416
		Madhya Pradesh	2
	Total		**145,386**

Measurement methods and procedures	The data has been recorded in a web based tracker platform. The data consists of unique number, number of units sold, to whom and where
Monitoring frequency	Annual
QA/QC procedures	Each solar lighting system, and number of solar lamps in each system, has been recorded in the MEC Tracker System. Associated data resides in the MEC Tracker Database, allowing each installation to be monitored.
Purpose of data	Calculation of project emissions
Additional comment	-

Data/parameter	GF_y
Unit	Fraction
Description	Grid Factor in year y
Source of data	Default value prescribed in AMS-III.AR (v7.0)
Value(s) applied	1.0
Choice of data or Measurement methods and procedures	Methodology default value applied
Purpose of data	Calculation of baseline emissions
Additional comment	N/A

Data/parameter	**DB_y**
Unit	-
Description	Dynamic Baseline Factor (change in baseline fuel, fuel use rate, and/or utilization during crediting period) in year y
Source of data	Default value prescribed in AMS-III.AR (v7.0)
Value(s) applied	1.0
Choice of data or Measurement	Methodology default value applied

methods and procedures	
Purpose of data	Calculation of baseline emissions
Additional comment	N/A

Data / Parameter	$OF_{y,i,j}$
Unit	Fraction
Description	The percentage of project lamps distributed to end users that are operating and in service
Source of data	-
Value(s) applied	

Installation year	**State**	**Crediting Period 2**	
		Year 2	Year 3
2013	Kerala	75%	75%
2014	Kerala	77%	77%
2014	Tamil Nadu	75%	75%
2014	Maharashtra	76%	76%
2014	Chhattisgarh	75%	75%
2014	Madhya Pradesh	75%	75%
2015	Kerala	78%	78%
2015	Tamil Nadu	76%	76%
2015	Maharashtra	75%	75%
2015	Chhattisgarh	75%	75%
2015	Madhya Pradesh	75%	75%
2016	Kerala	80%	80%
2016	Tamil Nadu	77%	77%
2016	Madhya Pradesh	100 %	100 %

Measurement methods and procedures	Default value for the first three years of operation of a lamp as per the methodology. Post three years, for years 4-7, this value will be determined on the basis of sampling survey carried out in year 3.

Monitoring frequency	Default value for three years. Determined based on survey conducted in year 3 for years 4-7
QA/QC procedures	-
Purpose of data	Calculation of baseline emissions
Additional comment	-

VPA 03-GS 11475
SDG 13

Data / Parameter	$N_{i,j}$
Unit	Number
Description	Number of project lamps distributed to end users of type i with charging method j
Source of data	MEC tracker platform
Value(s) applied	

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

Measurement methods and procedures	The data has been recorded in a web based tracker platform. The data consists of unique number, number of units sold, to whom and where
Monitoring frequency	Annual
QA/QC procedures	Each solar lighting system, and number of solar lamps in each system, has been recorded in the MEC Tracker

	System. Associated data resides in the MEC Tracker Database, allowing each installation to be monitored.
Purpose of data	Calculation of project emissions
Additional comment	-

Data/parameter	GF_y
Unit	Fraction
Description	Grid Factor in year y
Source of data	Default value prescribed in AMS-III.AR (v7.0)
Value(s) applied	1.0
Choice of data or Measurement methods and procedures	Methodology default value applied
Purpose of data	Calculation of baseline emissions
Additional comment	N/A

Data/parameter	DB_y
Unit	-
Description	Dynamic Baseline Factor (change in baseline fuel, fuel use rate, and/or utilization during crediting period) in year y
Source of data	Default value prescribed in AMS-III.AR (v7.0)
Value(s) applied	1.0
Choice of data or Measurement methods and procedures	Methodology default value applied
Purpose of data	Calculation of baseline emissions
Additional comment	N/A

Data / Parameter	$OF_{y,i,j}$

Unit	Fraction
Description	The percentage of project lamps distributed to end users that are operating and in service
Source of data	-
Value(s) applied	

Installation year	**State**	**Crediting Period 2**	
		Year 1	Year 2
2016	Gujarat	80%	80%
2016	Karnataka	80%	80%
2016	Madhya Pradesh	80%	80%
2016	Maharashtra	80%	80%
2016	Kerala	79%	79%
2016	Uttar Pradesh	80%	80%
2016	Odisha	82%	82%
2016	Tamil Nadu	78%	78%
2016	Puducherry	77%	77%
2017	Maharashtra	100%	100%
2017	Kerala	84%	84%
2017	Tamil Nadu	77%	77%
2018	Kerala	84%	84%
2018	Tamil Nadu	82%	82%

Measurement methods and procedures	Default value for the first three years of operation of a lamp as per the methodology. Post three years, for years 4-7, this value will be determined on the basis of sampling survey carried out in year 3.
Monitoring frequency	Default value for three years. Determined based on survey conducted in year 3 for years 4-7
QA/QC procedures	-
Purpose of data	Calculation of baseline emissions
Additional comment	-

Solar Lighting System
VPA 04-GS 11476
SDG 13

Data / Parameter	$N_{i,j}$

Unit	Number
Description	Number of project lamps distributed to end users of type i with charging method j
Source of data	MEC tracker platform
Value(s) applied	

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

Measurement methods and procedures	The data has been recorded in a web based tracker platform. The data consists of unique number, number of units sold, to whom and where
Monitoring frequency	Annual
QA/QC procedures	Each solar lighting system, and number of solar lamps in each system, has been recorded in the MEC Tracker System. Associated data resides in the MEC Tracker Database, allowing each installation to be monitored.
Purpose of data	Calculation of project emissions
Additional comment	-

Data/parameter	GF_y
Unit	Fraction
Description	Grid Factor in year y
Source of data	Default value prescribed in AMS-III.AR (v7.0)
Value(s) applied	1.0
Choice of data or Measurement methods and procedures	Methodology default value applied
Purpose of data	Calculation of baseline emissions
Additional comment	N/A

Data/parameter	DB_y
Unit	-
Description	Dynamic Baseline Factor (change in baseline fuel, fuel use rate, and/or utilization during crediting period) in year y
Source of data	Default value prescribed in AMS-III.AR (v7.0)
Value(s) applied	1.0
Choice of data or Measurement methods and procedures	Methodology default value applied
Purpose of data	Calculation of baseline emissions
Additional comment	N/A

Data / Parameter	$OF_{y,i,j}$
Unit	Fraction
Description	The percentage of project lamps distributed to end users that are operating and in service
Source of data	-
Value(s)applied	
Measurement methods and procedures	Default value for the first three years of operation of a lamp as per the methodology. Post three years, for years 4-7, this value will be determined on the basis of sampling survey carried out in year 3.
Monitoring frequency	Default value for three years. Determined based on survey conducted in year 3 for years 4-7
QA/QC procedures	-
Purpose of data	Calculation of baseline emissions

Installation year	Crediting Period 2	
	Year 2	Year 3
2013	0%	0%
2014	0%	0%
2015	69%	69%
2016	72%	72%

Additional comment	-

VPA 07-GS 11477

Data / Parameter	$N_{i,j}$
Unit	Number
Description	Number of project lamps distributed to end users of type i with charging method j
Source of data	MEC tracker platform
Value(s) applied	

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

Measurement methods and procedures	The data has been recorded in a web based tracker platform. The data consists of unique number, number of units sold, to whom and where
Monitoring frequency	Annual
QA/QC procedures	Each solar lighting system, and number of solar lamps in each system, has been recorded in the MEC Tracker

	System. Associated data resides in the MEC Tracker Database, allowing each installation to be monitored.
Purpose of data	Calculation of project emissions
Additional comment	-

Data/parameter	GF_y
Unit	Fraction
Description	Grid Factor in year y
Source of data	Default value prescribed in AMS-III.AR (v7.0)
Value(s) applied	1.0
Choice of data or Measurement methods and procedures	Methodology default value applied
Purpose of data	Calculation of baseline emissions
Additional comment	N/A

Data/parameter	DB_y
Unit	-
Description	Dynamic Baseline Factor (change in baseline fuel, fuel use rate, and/or utilization during crediting period) in year y
Source of data	Default value prescribed in AMS-III.AR (v7.0)
Value(s) applied	1.0
Choice of data or Measurement methods and procedures	Methodology default value applied
Purpose of data	Calculation of baseline emissions
Additional comment	N/A

Data / Parameter	$OF_{y,i,j}$

Unit	Fraction
Description	The percentage of project lamps distributed to end users that are operating and in service
Source of data	-
Value(s) applied	

Installation year	**State**	**Crediting Period 2**	
		Operation Year 2	Operation Year 3
2017	Karnataka	70%	70%
2017	Assam	71%	71%
2017	Bihar	73%	73%
2017	Jharkhand	75%	75%
2017	Odisha	76%	76%
2017	West Bengal	75%	75%
2017	Uttar Pradesh	82%	82%
2018	Karnataka	75%	75%
2018	Assam	74%	74%
2018	Bihar	80%	80%
2018	Jharkhand	83%	83%
2018	Odisha	80%	80%
2018	Tripura	81%	81%
2018	West Bengal	75%	75%
2019	Karnataka	77%	77%
2019	Assam	78%	78%
2019	Bihar	83%	83%
2019	Jharkhand	82%	82%
2019	Odisha	83%	83%
2019	Tripura	81%	81%
2019	Uttar Pradesh	89%	89%

Measurement methods and procedures	Default value for the first three years of operation of a lamp as per the methodology. Post three years, for years 4-7, this value will be determined on the basis of sampling survey carried out in year 3.
Monitoring frequency	Default value for three years. Determined on based of survey conducted in year 3 for years 4-7
QA/QC procedures	-
Purpose of data	Calculation of baseline emissions
Additional comment	-

VPA 11-GS 11481

Data / Parameter	$N_{i,j}$
Unit	Number
Description	Number of project lamps distributed to end users of type i with charging method j
Source of data	MEC tracker platform
Value(s) applied	

Year	State	Total Lamps
2015	*Karnataka*	9,177
	Kerala	50,375
	Maharashtra	9,940
	Tamil Nadu	26,883
2016	*Karnataka*	10,819
	Kerala	39,162
	Gujarat	3,246
	Madhya Pradesh	293
	Maharashtra	8,053
	Odisha	15
	Tamil Nadu	45,325
	Uttar Pradesh	188
2017	*Karnataka*	5,598
	Kerala	11,783
	Gujarat	1,875
	Madhya Pradesh	380
	Maharashtra	19
	Odisha	2,405
	Tamil Nadu	17,052
Total		242,588

Measurement methods and procedures	The data has been recorded in a web based tracker platform. The data consists of unique number, number of units sold, to whom and where
Monitoring frequency	Annual
QA/QC procedures	Each solar lighting system, and number of solar lamps in each system, has been recorded in the MEC Tracker System. Associated data resides in the MEC Tracker Database, allowing each installation to be monitored.
Purpose of data	Calculation of project emissions
Additional comment	-

Data/parameter	GF_y
Unit	Fraction
Description	Grid Factor in year y
Source of data	Default value prescribed in AMS-III.AR (v7.0)
Value(s) applied	1.0
Choice of data or Measurement methods and procedures	Methodology default value applied
Purpose of data	Calculation of baseline emissions
Additional comment	N/A

Data/parameter	DB_y
Unit	-
Description	Dynamic Baseline Factor (change in baseline fuel, fuel use rate, and/or utilization during crediting period) in year y
Source of data	Default value prescribed in AMS-III.AR (v7.0)
Value(s) applied	1.0
Choice of data or Measurement methods and procedures	Methodology default value applied
Purpose of data	Calculation of baseline emissions
Additional comment	N/A

Data / Parameter	$OF_{y,i,j}$
Unit	Fraction
Description	The percentage of project lamps distributed to end users that are operating and in service

Source of data	-
Value(s) applied	

Installation year	State	Crediting Period 2	
		Operation Year 2	Operation Year 3
2015	Karnataka	70%	70%
2016	Karnataka	75%	75%
2017	Karnataka	78%	78%
2015	Kerala	72%	72%
2016	Kerala	72%	72%
2017	Kerala	74%	74%
2016	Gujarat	72%	72%
2017	Gujarat	73%	73%
2016	Madhya Pradesh	76%	76%
2017	Madhya Pradesh	75%	75%
2015	Maharashtra	75%	75%
2016	Maharashtra	77%	77%
2017	Maharashtra	79%	79%
2016	Odisha	80%	80%
2017	Odisha	80%	80%
2015	Tamil Nadu	70%	70%
2016	Tamil Nadu	78%	78%
2017	Tamil Nadu	78%	78%
2016	Uttar Pradesh	66%	66%

Measurement methods and procedures	Default value for the first three years of operation of a lamp as per the methodology. Post three years, for years 4-7, this value will be determined on the basis of sampling survey carried out in year 3.
Monitoring frequency	Default value for three years. Determined on based of survey conducted in year 3 for years 4-7
QA/QC procedures	-
Purpose of data	Calculation of baseline emissions
Additional comment	-

SDG 7

Data / Parameter	**$ACS_{Project}$**

Unit	Number
Description	Number of households having operational clean energy technology
Source of data	ICS/SLS distribution records
Value(s) applied	
Measurement methods and procedures	Monitor the number of ICS/SLS distributed under the project as an indicator of providing reliable, clean and modern technology (relative to baseline stoves).
Monitoring frequency	Continuous
QA/QC procedures	-
Purpose of data	SDG 7 contribution
Additional comment	-

VPA	ICS	SLS
VPA2	16,357	94273
VPA 3	9600	63562
VPA4	16,821	8376
VPA 7	16008	35061
VPA11	8,474	179952

SDG 8

Data / Parameter	**QE IGproject**
Unit	Number
Description	Quantitative Employment and income generation
Source of data	Employment records
Value(s) applied	
Measurement methods and procedures	Recording the number of employees (male / female) in the project under administrative, sales, production and management positions. Employment record with date of birth has been provided.
Monitoring frequency	Annually

VPA	Female	Male
VPA 2	3	20
VPA 3	3	40
VPA 4	1	29
VPA 7	6	54
VPA11	3	45

QA/QC procedures	-
Purpose of data	SDG 8 contribution

D.3. Comparison of monitored parameters with last monitoring period

The monitoring period for the project is 01/01/2022-31/12/2022, which is the second monitoring period under GS4GG. Hence, SDG values for previous and current monitoring period have been added below:

SDG	Value obtained in this monitoring period	Value obtained last monitoring period
SDG 13 (ICS)		
	VPA / **ICS** VPA 2 / 31236 VPA 3 / 25745 VPA 4 / 41509 VPA 7 / 43,664 VPA 11 / 21,605	**VPA** / **ICS** VPA 2 / 37,711 VPA 3 / 26,037 VPA 4 / 44,184 VPA 7 / 44,142 VPA 11 / 22,180
SDG 13 (SLS)		
	VPA / **SLS** VPA 2 / 5875 VPA 3 / 6278 VPA 4 / 1587 VPA 7 / 8534 VPA 11 / 12415	**VPA** / **SLS** VPA 2 / 10,530 VPA 3 / 6,345 VPA 4 / 3,673 VPA 7 / 8,670 VPA 11 / 16,577
SDG 7 (ICS)		
	VPA / **ICS** VPA2 / 16357 VPA 3 / 9600 VPA4 / 16821 VPA 7 / 16008 VPA11 / 8,474	**VPA** / **ICS** VPA 2 / 17,033 VPA 3 / 9,707 VPA 4 / 17127 VPA 7 / 17036 VPA 11 / 8,714
SDG 7 (SLS)		
	VPA / **SLS** VPA2 / 94273 VPA 3 / 63562 VPA4 / 8376 VPA 7 / 35061 VPA11 / 1799552	**VPA** / **SLS** VPA 2 / 96,848 VPA 3 / 64,717 VPA 4 / 14,375 VPA 7 / 35522 VPA 11 / 183085

SDG 8

VPA	Total
VPA2	23
VPA 3	43
VPA4	30
VPA 7	60
VPA11	48

VPA	Total
VPA2	23
VPA 3	43
VPA4	30
VPA 7	60
VPA11	48

D.4. Implementation of sampling plan
>>
a. List of VPAs to which the single sampling was applied

Sampling plan was applied to all the following VPAs included in this issuance request: VPA2, VPA3, VPA4, VPA7, VPA11 values considered.

Description of implemented sampling design

As per registered POA-DD, CDM standard on "Sampling and surveys for CDM project activities and programme of activities" version 9.0, the following sampling design was implemented for the VPA –

Solar Lighting System:

AMS III AR

The following steps were taken as part of the sampling procedure for VPA2, VPA3, VPA4, VPA7and VPA 11 -

Parameter values has been estimated by sampling in accordance with the requirements in the applied methodology separately and independently for the VPAs. 90/10 confidence/precision has been used as the criteria for reliability of sampling efforts for small-scale project activities (according to EB 69 Annex 4).

Sampling Objective – The sampling objective for each parameter is to determine via survey with statistically significant value for the emission reduction calculations. This parameter is defined in the tables presented in section D.2.

During the current monitoring period, ex post monitoring has been conducted as per AMS III A.R. Monitored values has been used in the emission reduction calculations.

Sample method – Simple random sampling has been used.

Single stage simple random sampling has been applied per CDM EB Guidelines for sampling and surveys for CDM project activities and programme of activities, Version 4. To ensure a random sample selection, random number generators has been applied.

Each CEP in the target population is uniquely identifiable by its number assigned in the credit tracker platform. Each CEP within a sampling frame has been allocated a Sample Selection Number in each monitoring period, starting at 1 and increasing up to the total number of CEPs in the Credit Tracker Platform for that pre-defined sampling frame. Applying the random number generators, the CEP has been randomly chosen from the defined population up to the required sample size as calculated by the CME

For improved cookstoves:

As per registered VPA-DD and TPDDTEC v3.1, the following sampling design was implemented for the VPA-

The VPA is implemented in Kerala and Tamil Nadu (states in India). Due to the homogeneity feature within the state, simple random sampling method was applied. A simple random sample is a subset of a population (e.g. villages, individuals, buildings, pieces of equipment) chosen randomly, such that each element (or unit) of the population has the same probability of being selected. The sample-based estimate (mean or proportion) is an unbiased estimate of the population parameter.

- **Usage Survey/Project Survey**

1. As per the requirement TPDDTEC v3.1, a minimum total sample size for Usage Survey is 100 with at least 30 samples for project technologies of each age being credited. For VPAs where there are multiple POs, states and models sampling has been done PO, model and state-wise.

- **Project KPT**

For determining the sample size for project fuel consumption, Annex 4 of the TPDDTEC v3.1 was referenced. The COV value was determined based on pilot data. Additionally, simple random sampling was used to select the households from the entire population.

Considering both baseline and project KPT has been conducted, samples are selected based on INDEPENDENT sampling approach mentioned in Annex 4 of the TPDDTEC v3.1. Total of 90 samples had to be selected.

Table 2 : Sample sizes in cases of INDEPENDENT samples (households sampled in the project situation are different from households sampled in the baseline situation). This is the size required for each of the baseline and project samples.

COV	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2
90/30 precision	90	105	122	140	159	180	201	224	248

The monitoring frequency specified in the registered monitoring plan for different technologies within these VPAs is met as follows –

1. **VPA2 GSID 11474**

Parameter	Monitoring Frequency	CEPs added during this MP (01/01/2022 to 31/12/2022)	Previous monitoring dates	New Monitoring for this MP
Usage Survey	Annual	No	06/01/2021 to 15/02/2021	Yes
Project KPT	Biennial	No	-	Yes
Solar Lighting System	Annual	No	06/01/2021 to 10/02/2021	Yes

Improved Cookstoves: Considering usage survey is done annually, monitoring usage surveys for various parameters in this monitoring period was conducted in 06/01/2023 10/02/2023. Project KPT was conducted in the month of January/February 2023. For next monitoring period, fresh usage survey and KPT will be conducted.

Solar lighting systems: Monitoring field surveys for various parameters in this monitoring period were conducted in 06/01/2022 to 16/02/2022 for solar lighting systems. Quarterly monitoring will be ongoing to determine the Lamp Failure Rate. For the next monitoring period fresh monitoring may be carried.

2. **VPA3 GSID 11475**

Parameter	Monitoring Frequency	CEPs added during this MP (01/01/2022 to 31/12/2022)	Previous monitoring dates	New Monitoring for this MP
Usage Survey	Annual	No	06/01/2021 to 15/02/2021	Yes
Project KPT	Biennial	No	-	Yes
Solar Lighting System	Annual	No	06/01/2021 to 10/02/2021	Yes

Improved Cookstoves: Considering usage survey is done annually, monitoring usage surveys for various parameters in this monitoring period was conducted in 06/01/2023 10/02/2023. Project KPT was conducted in the month of January/February 2023. For next monitoring period, fresh usage survey and KPT will be conducted.

Solar lighting systems: Monitoring field surveys for various parameters in this monitoring period were conducted in 06/01/2022 to 16/02/2022 for solar lighting systems. Quarterly monitoring will be ongoing to determine the Lamp Failure Rate. For the next monitoring period fresh monitoring may be carried.

3. VPA4 GSID 11476

Parameter	Monitoring Frequency	CEPs added during this MP (01/01/2022 to 31/12/2022)	Previous monitoring dates	New Monitoring for this MP
Usage Survey	Annual	No	06/01/2021 to 15/02/2021	Yes
Project KPT	Biennial	No	-	Yes
Solar Lighting System	Annual	No	06/01/2021 to 10/02/2021	Yes

Improved Cookstoves: Considering usage survey is done annually, monitoring usage surveys for various parameters in this monitoring period was conducted in 06/01/2023 10/02/2023. Project KPT was conducted in the month of January/February 2023. For next monitoring period, fresh usage survey and KPT will be conducted.

Solar lighting systems: Monitoring field surveys for various parameters in this monitoring period were conducted in 06/01/2022 to 16/02/2022 for solar lighting systems. Quarterly monitoring will be ongoing to determine the Lamp Failure Rate. For the next monitoring period fresh monitoring may be carried.

4. VPA7 GSID 11477

Parameter	Monitoring Frequency	CEPs added during this MP (01/01/2022 to 31/12/2022)	Previous monitoring dates	New Monitoring for this MP

Usage Survey	Annual	No	06/01/2021 to 15/02/2021	Yes
Project KPT	Biennial	No	-	Yes
Solar Lighting System	Annual	No	06/01/2021 to 10/02/2021	Yes

Improved Cookstoves: Considering usage survey is done annually, monitoring usage surveys for various parameters in this monitoring period was conducted in 06/01/2023 10/02/2023. Project KPT was conducted in the month of January/February 2023. For next monitoring period, fresh usage survey and KPT will be conducted.

Solar lighting systems: Monitoring field surveys for various parameters in this monitoring period were conducted in 06/01/2022 to 16/02/2022 for solar lighting systems. Quarterly monitoring will be ongoing to determine the Lamp Failure Rate. For the next monitoring period fresh monitoring may be carried.

5. VPA11 GSID 11481

Parameter	**Monitoring Frequency**	**CEPs added during this MP (01/01/2022 to 31/12/2022)**	**Previous monitoring dates**	**New Monitoring for this MP**
Usage Survey	Annual	No	06/01/2021 to 15/02/2021	Yes
Project KPT	Biennial	No	-	Yes
Solar Lighting System	Annual	No	06/01/2021 to 10/02/2021	Yes

Improved Cookstoves: Considering usage survey is done annually, monitoring usage surveys for various parameters in this monitoring period was conducted in 06/01/2023 10/02/2023. Project KPT was conducted in the month of January/February 2023. For next monitoring period, fresh usage survey and KPT will be conducted.

Solar lighting systems: Monitoring field surveys for various parameters in this monitoring period were conducted in 06/01/2022 to 16/02/2022 for solar lighting systems. Quarterly monitoring will be ongoing to determine the Lamp Failure Rate. For the next monitoring period fresh monitoring may be carried.

The sampling approach followed and the sample size obtained for this VPA included in this monitoring report is summarized as follows –

1. **VPA2 GSID 11474**

Improved Cookstoves (ESAF)

S.No	Parameter	Sampling approach	Sample size
1	Usage rate in project scenario p during year y ($U_{p,y}$)	Simple random sampling for proportion-based parameter	**State** / **Y-1** Smart TN / 100 Smart KL / 122
2	Quantity of fuel that is consumed in project scenario p during year y ($P_{p,y}$)	Carry out KPTs- Simple random sampling for mean based parameter	90

Solar Lighting System (ESAF)

S. No.	Parameter	Sampling approach	Sample size	Comments
1	Total number of lamps checked for which a valid result was obtained	Simple random sampling for proportion-based parameter	For e.g.: **As per sample size calculation, sample size requirement for:** KL (2015)-116 MP (2016)-1 **Actual monitored samples for:** KL (2015)-116 MP (2016)-1	As per guidance given in section 6, 37 (a), page 14 of AMS III.AR version 7.0, The sampling size is determined by minimum 90 per cent confidence interval and the 10 per cent maximum error margin; the size of the sample shall be no less than 100; For e.g. if total sample size is less than 100, then minimum 100 samples are selected. For states, the total sale is less than 100, all units are sampled. For states MP (2016), the total sale is less than 100, all units (1) are sampled. Further, for some of the states KL (2015), the sample size is more than 100 therefore the required sample size is monitored. Detailed sample size for all other states and calculation is

				provided in Emission reduction calculation sheet.

2. VPA3 GSID 11475

Improved Cookstoves (ESAF)

S.No	Parameter	Sampling approach	Sample size
1	Usage rate in project scenario p during year y ($U_{p,y}$)	Simple random sampling for proportion-based parameter	**State** / **Y-1** Smart KL / 175
2	Quantity of fuel that is consumed in project scenario p during year y ($P_{p,y}$)	Carry out KPTs- Simple random sampling for mean based parameter	90

Solar Lighting System (ESAF and Muthoot)

S. No.	Parameter	Sampling approach	Sample size	Comments
1	Total number of lamps checked for which a valid result was obtained	Simple random sampling for proportion-based parameter	For e.g.: **As per sample size calculation, sample size requirement for:** TN (2016)-90 MH (2017)-5 **Actual monitored samples for:** TN (2016)-90 MH (2017)-5	As per guidance given in section 6, 37 (a), page 14 of AMS III.AR version 7.0, The sampling size is determined by minimum 90 per cent confidence interval and the 10 per cent maximum error margin; the size of the sample shall be no less than 100; For e.g. if total sample size is less than 100, then minimum 100 samples are selected. For states, the total sale is less than 100, all units are sampled. For states MH (2017), the total sale is less than 100, all units (5) are sampled. Detailed sample size for all other states and calculation is provided in Emission reduction calculation sheet.

3. VPA4 GSID 11476

Improved Cookstoves (SKDRDP)

S.No	Parameter	Sampling approach	Sample size
1	Usage rate in project scenario p during year y ($U_{p,y}$)	Simple random sampling for proportion-based parameter	127
2	Quantity of fuel that is consumed in project scenario p during year y ($P_{p,y}$)	Carry out KPTs- Simple random sampling for mean based parameter	90

Solar Lighting System (SKDRDP)

S. No.	Parameter	Sampling approach	Sample size	Comments
1	Total number of lamps checked for which a valid result was obtained	Simple random sampling for proportion-based parameter	For e.g.: **As per sample size calculation, sample size requirement for:** KA (2013)-171 **Actual monitored samples for:** KA (2013)-171	As per guidance given in section 6, 37 (a), page 14 of AMS III.AR version 7.0, The sampling size is determined by minimum 90 per cent confidence interval and the 10 per cent maximum error margin; the size of the sample shall be no less than 100; For e.g. if total sample size is less than 100, then minimum 100 samples are selected. For states, the total sale is less than 100, all units are sampled. Further, for some of the states KA (2013), the sample size is more than 100 therefore the required sample size is monitored. Oversampling is done for monitoring to account for situation if the required precision does not pass/meets. Detailed sample size for all other states and calculation is provided in Emission reduction calculation sheet.

4. VPA7 GSID 11477

Improved Cookstoves (SKDRDP)

S.No	Parameter	Sampling approach	Sample size	
1	Usage rate in project scenario p during year y ($U_{p,y}$)	Simple random sampling for proportion-based parameter	**State**	**Samples**

			KA: 101
2	Quantity of fuel that is consumed in project scenario p during year y ($P_{p,y}$)	Carry out KPTs- Simple random sampling for mean based parameter	90

Improved Cookstoves (ESAF)

S.No	Parameter	Sampling approach	Sample size
1	Usage rate in project scenario p during year y ($U_{p,y}$)	Simple random sampling for proportion-based parameter	**State / Samples** CG: 118 MP: 100 TN: 121
2	Quantity of fuel that is consumed in project scenario p during year y ($P_{p,y}$)	Carry out KPTs- Simple random sampling for mean based parameter	90 for each state

Solar Lighting System (SKDRDP and Bandhan)

S. No.	Parameter	Sampling approach	Sample size	Comments
1	Total number of lamps checked for which a valid result was obtained	Simple random sampling for proportion-based parameter	For e.g.: **As per sample size calculation, sample size requirement for:** WB (2018) - 7 AS (2018) - 111 **Actual monitored samples for:** WB (2018) - 8 AS (2018) - 111	As per guidance given in section 6, 37 (a), page 14 of AMS III.AR version 7.0, The sampling size is determined by minimum 90 per cent confidence interval and the 10 per cent maximum error margin; the size of the sample shall be no less than 100; For e.g. if total sample size is less than 100, then minimum 100 samples are selected. For states, the total sale is less than 100, all units are sampled. For e.g. if total sample size is less than 100, then minimum 100 samples are selected.For states like WB (2018), the total sale is less than 100, all units are sampled. Further, for some of the states AS (2018), the sample size is more than

				100 therefore the required sample size is monitored. Oversampling is done for monitoring to account for situation if the required precision does not pass/meets. Detailed sample size for all other states and calculation is provided in Emission reduction calculation sheet.

5. **VPA11 GSID 11481**

Improved Cookstoves(ESAF)

S.No	Parameter	Sampling approach	Sample size
1	Usage rate in project scenario p during year y ($U_{p,y}$)	Simple random sampling for proportion-based parameter	**State** / **Samples** Jumbo KA: 115 Jumbo KL: 127 Smart MH: 130 Smart KA: 31 PowerG TN: 100
2	Quantity of fuel that is consumed in project scenario p during year y ($P_{p,y}$)	Carry out KPTs- Simple random sampling for mean based parameter	90 for each model state combination

Solar Lighting System (Muthoot)

S. No.	Parameter	Sampling approach	Sample size	Comments
1	Total number of lamps checked for which a valid result was obtained	Simple random sampling for proportion-based parameter	For e.g.: **As per sample size calculation, sample size requirement for:** OD - 100 KA - 114	As per guidance given in section 6, 37 (a), page 14 of AMS III.AR version 7.0, The sampling size is determined by minimum 90 per cent confidence interval and the 10 per cent maximum error margin; the size of the sample shall be no less than 100; For e.g. if total

			Actual monitored samples for: OD - 15 KA - 114	sample size is less than 100, then minimum 100 samples are selected. For states, the total sale is less than 100, all units are sampled. Further, for some of the states e.g. KA (2017), the sample size is more than 100 therefore the required sample size is monitored. Oversampling is done for monitoring to account for situation if the required precision does not pass/meets. Detailed sample size for all other states and calculation is provided in Emission reduction calculation sheet.

Collected data/analysis of collected data and meeting required confidence/precision

The data collected after carrying out the monitoring surveys was further analysed to see if the required confidence/precision is met. The data collected from the surveys were compiled into the Excel spreadsheet. In order to achieve the 90/10 reliability level for simple random sampling few additional stoves were sampled from the database than that required to cover for non-responses, if any. The confidence/precision for solar lighting systems are met as per the CDM Standard for "Sampling and surveys for CDM project activities and programmes of activities Version 9.0" and applied methodology AMS III.AR version 7.0. The confidence/precision of 90/10 is met for all the parameters for ICS as per TPDDTEC v3.1. 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 as per TPDDTEC v3.1. This approach of calculating the precision and applying the upper/lower bound to the results is a conservative approach. These details are included in the emission reduction calculation sheets for the VPAs.

Demonstration of whether the selected samples are representative of the population and are randomly selected

The selected samples are representative of the population as they are selected using the guidance given in TPDDTEC v3.1 and CDM standard on "Sampling and surveys for CDM project activities and programme of activities version 9.0" using simple random sampling approaches.

Excel based randomization tool was used to randomly select samples from a population. This tool provides randomly generated numbers when the population size to be sampled and number of samples required are inputted.

SECTION E. CALCULATION OF SDG IMPACTS

E.1. Calculation of baseline value or estimation of baseline situation of each SDG Impact

>>

<u>Calculations for Improved Cookstoves and Solar Lighting Systems</u>

SDG 13: Climate Action (Improved Cookstoves)

The project proponent must estimate emission reductions in the project documentation prior to validation using conservative assumptions for baseline and project scenario variables. The approach followed for ex-ante estimation (baseline estimate) is as follows:

$$BE_{b,y} = B_{b,y} * ((f_{NRB,\ y} * EF_{b,fuel,\ CO2}) + EF_{b,fuel,\ nonCO2}) * NCV_{b,\ fuel}$$

Where:

$BE_{b,y}$	Emissions for baseline scenario b during the year y in tCO2e
$B_{b,y}$	Quantity of fuel consumed in baseline scenario b during year y, in tons, as per by-default factors (cases with project performance field test only)
$f_{NRB,\ y}$	Fraction of biomass used during year y for the considered scenario that can be established as non-renewable biomass (drop this term from the equation when using a fossil fuel baseline scenario)
$NCV_{b,fuel}$	Net calorific value of the fuel that is substituted or reduced (IPCC default for wood fuel, 0.015 TJ/ton)
$EF_{b,fuel,CO2}$	CO2 emission factor of the fuel that is substituted or reduced. 112 tCO2/TJ for Wood/Wood Waste, or the IPCC default value of other relevant fuel
$EF_{b,fuel,nonCO2}$	Non-CO_2 emission factor of the fuel that is substituted or reduced

EF can include a combination of emission factors from fuel production, transport, and use. CO_2 and non-CO_2 emissions factors for charcoal may be estimated from project specific monitoring or alternatively by researching a conservative wood to charcoal production ratio (from IPCC, credible published literature, project-relevant measurement reports, or project-specific monitoring) and multiplying this value by the pertinent EF for wood.

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

Where:

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

Baseline Estimate for improved cookstove is shown below:
$BE_{b,y} = B_{b,y} * ((f_{NRB,\ y} * EF_{b,fuel,\ CO2}) + EF_{b,fuel,\ nonCO2}) * NCV_{b,\ fuel}$
$B_{b,y} = N_{p,y} * P_{b,y}$

VPA Number	States	Total BE_y
VPA2	Kerala Tamil Nadu	101,767 37,877
VPA 3	Kerala	97,371
VPA4	Karnataka	83,138
VPA7	Karnataka Tamil Nadu Chhattisgarh Madhya Pradesh	118591 4557 11602 8432
VPA11	Jumbo Karnataka PowerGram Tamil Nadu Smart Karnataka Smart Maharashtra Jumbo Kerala	2152 6304 125 39350 23529

13: Climate Action: Solar Lighting Systems

AMS III.AR v7.0

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

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

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

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

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

(Eq. 3)

Parameter	Unit	Value
BE_y	tCO_2e	Baseline emissions per project lamp in year y
DV	tCO_2e per project lamp	Lamp Emission Factor (default is 0.092 tCO_2e per project lamp)
GF_y	-	Grid Factor in year y, • Equal to 1.0 when charging option defined in paragraph 3(a) is used; • Equal to 1.0 if the project activity is for off-grid households/communities (defined as no grid access or less than 12 hours grid availability per day on an annual average basis); • Otherwise it is equal to 1.0 minus (the fraction of time grid is available

		to the target households and communities/users in the region of project activity)
DB_y	-	Dynamic Baseline Factor (change in baseline fuel, fuel use rate, and/or utilization during crediting period) in year y. Calculated as either: • Option 1: default of 1.0 in the absence of relevant information; • Option 2: value of 1.0+FFg where FFg is the documented national growth rate of kerosene fuel use in lighting from the preceding years (use the most recent available data for a three or five years average fraction)

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

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

(Eq. 2)

Parameter	Unit	Value
DV	tCO_2e per project lamp	Lamp Emission Factor (default is 0.092 tCO_2e per project lamp)
FUR	liters/hour	Fuel use rate (0.03 liters/hour)
O	hours/day	Utilization rate (3.5 hours/day)
U	days/year	Annual utilization (365 days/year)
EF	$kgCO_2$/liter	Fuel emissions factor (2.4 $kgCO_2$/liter)
LF	-	Leakage factor (1.0)
n	-	Number of fuel-based lamps replaced per project lamp (1.0)
NTG	-	Net-to-gross adjustment factor (1.0)

The baseline estimates are as follows:

VPA Number	Total $BE_{i,v}$

VPA 2	5875
VPA 3	25,745
VPA 4	41,509
VPA 7	43,664
VPA11	12415

SDG 7: Affordable and Clean Energy

$ACS_{Baseline}$ Access to affordable and clean energy (Number of households with operating ICS/SLS units under Baseline) = 0

SDG 8: Decent Work and Economic Growth

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

E.2. Calculation of project value or estimation of project situation of each SDG Impact

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SDG 13: Climate Action

For SLS:

The project estimate for SLS = 0

For Improved Cookstoves:

Project estimate/emission calculations are conducted as follows:

$PE_{p,y} = B_{p,y} * ((f_{NRB,\ y} * EF_{p,fuel,\ CO2}) + EF_{p,fuel,\ nonCO2}) * NCV_{p,\ fuel}$

$B_{p,y} = N_{p,y} * ((P_{p,y} * U_{p,y}) + (P_{b,y} * (1 - U_{p,y})))$

Where:

$PE_{p,y}$ Emissions for project scenario p during year y in tCO2e

$B_{p,y}$ Quantity of fuel consumed in project scenario p during year y, in tons, and as derived from the statistical analysis conducted on the data collected during the project performance field tests (cases when no baseline performance field test are performed, e.g. by-default baseline factors)

$U_{p,y}$	Cumulative usage rate for technologies in project scenario p in year y, based on cumulative adoption rate and drop off rate revealed by usage surveys (fraction)
$f_{NRB,\ y}$	Fraction of biomass used during year y that can be established as non-renewable biomass (drop this term from the equation when using a fossil fuel baseline scenario)
$NCV_{p,fuel}$	Net calorific value of the project fuel (IPCC default for wood fuel, 0.015 TJ/ton). This is equal to the baseline fuel NCV in projects which use the same fuel.
$EF_{p,fuel,CO2}$	CO_2 emission factor of the project fuel. This is equal to the baseline fuel EF in projects which use the same fuel, 112 tCO2/TJ for Wood/Wood Waste, or the IPCC default value of other relevant fuel
$EF_{p,fuel,nonCO2}$	Non-CO_2 emission factor of the project fuel. This is equal to the baseline fuel EF in projects which use the same fuel.

$$PE_{p,y} = B_{p,y} * ((f_{NRB,\ y} * EF_{p,fuel,\ CO2}) + EF_{p,fuel,\ nonCO2}) * NCV_{p,\ fuel}$$

$$B_{p,y} = N_{p,y} * ((P_{p,y} * U_{p,y}) + (P_{b,y} * (1 - U_{p,y})))$$

$$= N_{p,y} * ((P_{p,y} * U_{p,y}) + (P_{b,y} * (1 - U_{p,y}))) * ((f_{NRB,\ y} * EF_{p,fuel,\ CO2}) + EF_{p,fuel,\ nonCO2}) *NCV_{p,\ fuel}$$

VPA Number	**States**	**PE_y**
VPA 2	*Kerala*	79,262
VPA2	*Tamil Nadu*	29146
Total		**108408**
VPA Number	**States**	**PE_y**
VPA 3	*Kerala*	71626
VPA Number	**States**	**PE_y**
VPA 4	*Karnataka*	41,629
VPA Number	**States**	**PE_y**
VPA 7	Karnataka	81,687
VPA 7	Tamil Nadu	3,071
VPA 7	Chhattisgarh	8,834
VPA 7	Madhya Pradesh	5,925
Total		**99,518**

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

SDG 7: Affordable and Clean Energy

Fr ICS

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

VPA	ICS
VPA2	16,357
VPA 3	9600
VPA4	16821
VPA 7	16008
VPA11	8,474

For SLS

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

VPA	SLS
VPA2	94273
VPA 3	63562
VPA4	8376
VPA 7	35061
VPA11	179952

SDG 8: Decent Work and Economic Growth

QE $IG_{Project}$ Quantitative Employment and income generation (Number of person (male and female) hired under Project) =

VPA	Female	Male	QE $IG_{Project}$
VPA 2	3	20	23
VPA 3	3	40	43

VPA 4	1	29	30
VPA 7	6	54	60
VPA11	3	45	48

E.3. Calculation of leakage

>>
Leakage for all VPAs for this monitoring period = 0

E.4. Calculation of net benefits or direct calculation for each SDG Impact

SDG	SDG Impact	Baseline estimate	Project estimate	Net benefit
13	Climate Action (ICS)	VPA 2- 139644 VPA 3- 97371 VPA 4- 83138 VPA 7–143182 VPA 11–71460	VPA 2-108408 VPA 3–71626 VPA 4–41629 VPA 7– 99518 VPA11–49,855	VPA 2–31236 VPA 3–25745 VPA 4–41509 VPA 7–43,664 VPA11–21,605
13	Climate Action (SLS)	VPA2- 5875 VPA 3–6278 VPA 4–1587 VPA 7–8534 VPA 11–12415	VPA 2–0 VPA 3–0 VPA 4–0 VPA 7–0 VPA 11–0	VPA 2- 5875 VPA 3–6278 VPA 4–1587 VPA 7–8534 VPA 11 -12415
7	Affordable and Clean Energy (ICS)	0	VPA 2 16357 VPA 3 9600 VPA 4 16821 VPA 7 16008 VPA11 8,474	VPA 2 16357 VPA 3 9600 VPA 4 16821 VPA 7 16008 VPA11 8,474
7	Affordable and Clean Energy (SLS)	0	VPA 2 94273 VPA 3 63562 VPA 4 8376 VPA 7 35061 VPA11 1799520	VPA 2 94273 VPA 3 63562 VPA 4 8376 VPA 7 35061 VPA11 179952
8	Decent Work and Economic Growth	0	VPA 2–23 VPA 3–43 VPA 4–30 VPA 7–60 VPA 11–48	VPA 2–23 VPA 3–43 VPA 4–30 VPA 7–60 VPA 11–48

E.5. Comparison of actual SDG Impacts with estimates in approved PDD

SDG	Values estimated in ex ante calculation of approved PDD for this monitoring period		Actual values[6] achieved during this monitoring period	
13 ICS	VPA 2	96,840	VPA 2	31,236
	VPA 3	42,625	VPA 3	25745
	VPA 4	54,210	VPA 4	41,509
	VPA 7	82,791	VPA 7	43,664
	VPA 11	45,940	VPA 11	21,605
13 SLS	VPA 2	13,376	VPA 2	5,875
	VPA 3	7,948	VPA 3	6278
	VPA 4	5,183	VPA 4	1,587
	VPA 7	11,677	VPA 7	8,534
	VPA 11	22,318	VPA 11	12415
7 ICS	VPA 2	29,678	VPA 2	16,357
	VPA 3	16,048	VPA 3	9600
	VPA 4	26,943	VPA 4	16,821
	VPA 7	25,646	VPA 7	16008
	VPA 11	12,798	VPA 11	8,474
7 SLS	VPA 2	121,676	VPA 2	94273
	VPA 3	79,849	VPA 3	63562
	VPA 4	19,794	VPA 4	8376
	VPA 7	46,822	VPA 7	35061
	VPA 11	242,588	VPA 11	179952
8	VPA 2–20		VPA 2–23	
	VPA 3–20		VPA 3–43	

[6] Whenever emission reductions are capped, both the original and capped values used for calculations must be transparently reported. Use brackets to denote original values.

VPA 4–20	VPA 4–30
VPA 7–20	VPA 7–60
VPA 11–20	VPA 11–48

E.5.1. Explanation of calculation of value estimated ex ante calculation of approved PDD for this monitoring period
>>
"Amount estimated ex ante for this monitoring period in the VPA-DD (tCO2e)" is calculated from the Total emission reduction estimated for year of operation of the VPA and number of crediting days in the current monitoring period.

To achieve a comparable value of estimates for this monitoring period for VPA2, these are the factors/values considered:

- Since both the technologies (Improved cookstoves and solar lighting systems) in these VPAs are implemented total value of ex ante emission reduction is used for estimation. Total ex ante estimated value for Year-2 (27/02/2021 to 26/02/2022) and Year-3(27/02/2022 to 26/03/2023) of CP-2 of operation of the VPAs from start date of crediting period is considered.Current monitoring period (01/01/2022 to 31/12/2022) falls between Year-2 and Year-3 of the crediting period-2.
-
- The estimation of ex ante value is made for 57 days (Year 2-CP2 I.e 01/01/2022 to 26/02/2022) and 308 days (Year 3-CP2 I.e 26/02/2022 to 31/12/2022) totaling to 365 days (which is crediting days for this monitoring period[7].

To achieve a comparable value of estimates for this monitoring period for VPA3, these are the factors/values considered:

- Since both the technologies (Improved cookstoves and solar lighting systems) in these VPAs are implemented total value of ex ante emission reduction is used for estimation. Total ex ante estimated value for Year-2(20/03/2021 to 19/03/2022) and Year-3(20/03/2022 to 19/03/2023) of CP-2 of operation of the VPAs from start date of crediting period is considered. Current monitoring period (01/01/2022 to 31/12/2022) falls between Year-2 and Year-3 of the crediting period-2.

[7] For detailed calculation of "Amount estimated ex ante for this monitoring period in the VPA-DD (t CO_2e)" of this VPA, please refer to the emission reduction calculation sheet.

The estimation of ex ante value is made for 78 days (Year 2-CP2 I.e 01/01/2022 to 19/03/2022) and and 287 days (Year 3-CP2 I.e 20/03/2022 to 31/12/2022) totaling to 365 days (which is crediting days for this monitoring period8.

To achieve a comparable value of estimates for this monitoring period for VPA4, these are the factors/values considered:

- Since both the technologies (Improved cookstoves and solar lighting systems) in these VPAs are implemented total value of ex ante emission reduction is used for estimation. Total ex ante estimated value for Year-2(20/03/2021 to 19/03/2022) and Year-3(20/03/2022 to 19/03/2023) of CP-2 of operation of the VPAs from start date of crediting period is considered. Current monitoring period (01/01/2022 to 31/12/2022) falls between Year-2 and Year-3 of the crediting period-2.

- The estimation of ex ante value is made for 78 days (Year 2 I.e 01/01/2022 to 19/03/2022) and 287 days (Year 3 I.e 20/03/2022 to 31/12/2022) totaling to 365 days (which is crediting days for this monitoring period9.

To achieve a comparable value of estimates for this monitoring period for VPA7, these are the factors/values considered:

- Since both the technologies (Improved cookstoves and solar lighting systems) in these VPAs are implemented total value of ex ante emission reduction is used for estimation. Total ex ante estimated value for Year-2(01/05/2021 to 30/04/2022) and Year-3(01/05/2022 to 30/04/2023) of CP-2 of operation of the VPAs from start date of crediting period is considered. Current monitoring period (01/01/2022 to 31/12/2022) falls between Year-2 and Year-3 of the crediting period-2.

- The estimation of ex ante value is made for 120 days (Year 2) I.e 01/01/2022 to 30/04/2022 and 245 days (Year 3) I.e 01/05/2022 to 31/12/2022 totaling to 365 days (which is crediting days for this monitoring period[10].

To achieve a comparable value of estimates for this monitoring period for VPA11, these are the factors/values considered:

[8] For detailed calculation of "Amount estimated ex ante for this monitoring period in the VPA-DD (t CO_2e)" of this VPA, please refer to the emission reduction calculation sheet.

[9] For detailed calculation of "Amount estimated ex ante for this monitoring period in the VPA-DD (t CO_2e)" of this VPA, please refer to the emission reduction calculation sheet.

[10] For detailed calculation of "Amount estimated ex ante for this monitoring period in the VPA-DD (t CO_2e)" of this VPA, please refer to the emission reduction calculation sheet.

- Since both the technologies (Improved cookstoves and solar lighting systems) in these VPAs are implemented total value of ex ante emission reduction is used for estimation. Total ex ante estimated value for Year-1 (07/12/2021 to 06/12/2022) and Year-3(07/12/2022 to 06/12/2023) of CP-2 of operation of the VPAs from start date of crediting period is considered.

- The estimation of ex ante value is made for 340 days (Year 2i.e 01/01/2022 to 06/12/2022) and 25 days (Year 3 I.e 07/12/2022 to 31/12/2022) totaling to 365 days (which is crediting days for this monitoring period 11.

E.6. Remarks on increase in achieved SDG Impacts from estimated value in approved PDD

>>
The SDG impact achieved for SGD 8 is more than the estimated value of 20. After the project implementation there was increased need on the ground for energy officers for sales, marketing, end user awareness, demonstration, monitoring, after sales services etc.

SECTION F. SAFEGUARDS REPORTING

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Data / Parameter	Principle 6.1. Labour Rights
Unit	-
Description	Project Developer shall ensure that all employment is in compliance with national labour occupational health and safety laws and with the principles and standards embodied in the ILO fundamental conventions.
Source of data	Employment Contracts
Value(s) applied	The CME had made sure that all employment complies with regional labour laws and regulations for SKDRDP, Muthoot , ESAF, Canara, Bandhan. The VPA does not entail any forced labour. All employees are confirmed to be minimum 18 years of age. The information is found confirmed and recorded in the monitoring report. Sample employment contracts of SKDRDP, Muthoot , ESAF, Canara, and Bandhan have been submitted to VVB.

[11] For detailed calculation of "Amount estimated ex ante for this monitoring period in the VPA-DD (t CO_2e)" of this VPA, please refer to the emission reduction calculation sheet.

Measurement methods and procedures	The employment contract is checked to ensure compliance with Principle 6.1
Monitoring frequency	Annual
QA/QC procedures	-
Purpose of data	For Safeguarding Principle 6.1
Additional comment	-

Data / Parameter	**Principle 9.4 Release of pollutants**
Unit	-
Description	Could the Project potentially result in the release of pollutants to the environment?
Source of data	PO interviews and scarp collection receipts
Value(s) applied	It was checked during monitoring through interviews of SKDRDP staffs, if any waste scrap disposal happened in the current monitoring. For the current monitoring period, SKDRDP received requests for waste scrap collection from the end users. Sample receipts have been submitted to VVB.
Measurement methods and procedures	Check the scrap disposal receipts and interview the PO staff to ensure compliance with Principle 9.4
Monitoring frequency	Annual
QA/QC procedures	-
Purpose of data	For Safeguarding Principle 9.4
Additional comment	-

SECTION G. STAKEHOLDER INPUTS AND LEGAL DISPUTES

G.1. List all Inputs and Grievances which have been received via the Continuous Input and Grievance Mechanism together with their respective responses/mitigations.

>>

The grievance mechanism is in place as per the table shown below. No negative comments that would require adjustments of the PoA/VPA were identified. Partner organization has feedback book at local offices for feedback collection. This was found to be the most effective input/grievance mechanism. However, during the current monitoring period, no grievance was received.

Method	**Include all details of Chosen Method (s) so that they may be understood and, where relevant, used by readers.**

Continuous Input / Grievance Expression Process Book (mandatory)	Continuous input / Grievance Expression process book is available at the office at local partner offices. By maintaining feedback book at the local office, it is ensured that stakeholders that don't have access to electronic media for expressing concerns / grievances are also able to share their concerns / feedback. Additionally, the end users always have an option to contact the partner organization (representative of MFI/ manufacturers etc.) in case of any feedback / complaints with the product post distribution.
GS Contact (mandatory)	help@goldstandard.org
Other	Email: skdrdp@skdrdpindia.org; care@sunking.com

G.2. Report on any stakeholder mitigations that were agreed to be monitored.

>>
There was no mitigation that was agreed to be monitored with any stakeholder during the monitoring period.

G.3. Provide details of any legal contest that has arisen with the project during the monitoring period

>>
There was no legal contest arises due to the project or against the project during the monitoring period. Project is in compliance with the Host Country's legal, environmental, ecological, and social regulation. Additionally, no dispute has arisen with any other party and has not reported any challenges related to the same in the current monitoring period i.e. 01/01/2022 to 31/12/2022.

Revision History

Version	Date	Remarks
1.1	14 October 2020	Hyperlinked section summary to enable quick access to key sections Improved clarity on Key Project Information Section for POA monitoring Forward action request section Improved Clarity on SDG contribution/SDG Impact term used throughout Clarity on safeguard reporting Clarity on design changes Leakage section added for VER/CER projects Addition of Comparison of monitored parameters with last monitoring period Provision of an accompanying Guide to help the user understand detailed rules and requirements
1.0	10 July 2017	Initial adoption