Gold Standard for the Global Goals

Climate Security & Sustainable Development

TEMPLATE

TRANSITION REQUEST FORM - CPA

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VERSION **1.0**

RELATED SUPPORT

- TEMPLATE GUIDE Key Project Information & VPA Design Document v.1.1

CONTACT DETAILS:

THE GOLD STANDARD FOUNDATION

Chemin de Balexert 7-9
1219 Châtelaine
International Environment House 2
Geneva, Switzerland
Tel: +41 22 788 70 80
Email: help@goldstandard.org

Summary:

The CPA transitioning from **CDM or other Standards to Gold Standard for Global Goals (GS4GG)** shall submit the transition request form and VPA - DD (this document). The **Transition Request Form** is also to be completed for CPA that are already registered with GS4GG for CER labelling and seek to move to GSVER stream to issue Gold Standard VERs.

This document contains the following Sections:

Key Project Information
Section – Voluntary Project Activity Design Document (VPA -DD)

SECTION A – Description of project
SECTION B - Application of approved Gold Standard Methodology (ies) and/or demonstration of SDG Contributions
SECTION C– Duration and crediting period
SECTION D – Summary of Safeguarding Principles and Gender Sensitive Assessment
SECTION E – Summary of Local stakeholder consultation
Appendix 1 – Safeguarding Principles Assessment (mandatory)
Appendix 2 - Contact information of VPA Implementer (mandatory)
Appendix 3- Summary of Approved Design Changes (project specific)

The following table summarises how different sections of this document shall be filled to facilitate request for transition from other standard to GS4GG.

Section	Required for	How to complete the section
Transition Request Form		
TRF.1 Eligibility check for transition	All CPAs	Answer the assessment questions and provide supporting information as needed
TRF.2 Transition project information	All CPAs	Provide CPA information pertaining to the standard, the project is transitioning from (e.g. CDM)
TFR.3 Transition checklist	All CPAs	Answer the assessment questions and provide supporting information in the section in the VPA - DD section as needed
VPA – DD		
Key project information	All CPAs	Include VPA details pertaining to GS4GG
Section A to E	All CPAs	Provide information as needed. Any section/subsections - that requires information/justification or additional information as per transition checklist, AND - that involves update/revision to the information provided for registration with other standards. In such cases, the project shall copy and paste the information from registered VPA - DD (other standard) and mark the additional information in track changes.

SECTION – TRANSITION REQUEST FORM

TRF.1 ELIGIBILITY CHECK FOR TRANSITION

To be completed for all CPAs seeking transition to GS4GG from other standards.

Requirement	CPA assessment (to be completed by CME)
The CPA must have a crediting period start date with CDM/other standard on or **after 01 January 2016**	Is the CPA(s) crediting period start date **after** 01 January 2016? ☒ Yes ☐ No (go to questions below)
The CPA that has a crediting period start date with CDM/other standard **before 01 January 2016** shall demonstrate the risk of discontinuation without carbon revenue.	*Explain the risks/barriers that may cause discontinuation of CPA without carbon revenue.* NA
The CPA that has a crediting period start date with CDM/other standard **before 01 January 2016** shall demonstrate how the project has been operational in the absence of carbon revenue, if carbon credits have not been issued to the project in recent years.	*Explain how the CPA has managed the operation in the absence of carbon revenue in recent years.* NA
List of supporting documents	*Please list all supporting documentation.* *If any of the supporting documents are confidential, please indicate here to ensure they are omitted from being published*

TRF.2 TRANSITION PROJECT INFORMATION

CME shall provide CPA information (in grey rows), pertaining to the standard, the CPA is transitioning from (e.g. CDM) in the table below.

Name of the original standard	☒ **CDM** ☐ **Other** (Add the standard name here)
CPA status with original standard	*The current status of CPA with CDM/other standard at the time of submission of this form.*
	☒ **Active** (registration status is valid) ☐ **Withdrawn** (deregistered) ☐ **Provisional** (awaiting guidance from the CMP at CMP 16, CDM CPAs only)
CDM/ other standard reference ID	*The reference number/ID allocated to the CPA by CDM/other standard.*
	CPA 9181-P1-0038-CP1
CPA reference weblink	*The weblink of the project page of CDM/other standard.*
	CDM: MicroEnergy Credits PoA – CPA 38 (unfccc.int)
PoA reference ID and Title	Reference ID and Title For example
	9181: MicroEnergy Credits – Microfinance for Clean Energy Product Lines – India
Title of CPA	*The title of the CPA used for registration with CDM/other standard.*
	MicroEnergy Credits PoA – CPA 38
New title of CPA (if applicable)	*The title of the CPA if it has been changed for registering with Gold Standard. (Follow GS4GG requirements Section 5, PoA requirements)*
	NA
Methodology used	*Methodology title and the version number applied for registration with CDM /other standard.*
	AMS-I.A "Electricity generation by the user" (Version 14) AMS-III.A.V. "Low greenhouse gas emitting water purification systems" (Version 2)
Amount of reductions	*Average annual emission reductions (tCO_2eq/year).*
	246,968 tCO_{2e}
Inclusion date	*The CPA inclusion date with CDM/other standard.*
	21/12/2019
Type of crediting period	☒ renewable crediting period ☐ fixed crediting period
Crediting period	*The CPA registered crediting period start date and end date with CDM/other standard.*
	Start date: 21/12/2019 End date: 20/12/2026

Total monitoring periods issued	*The total period that has already been issued by CDM/other standard.*	
	NA	
Latest monitoring period	*The latest monitoring period that has already been issued or submitted for issuance to CDM/other standard.*	
	NA	
	Issuance Status	☐ Issued ☐ Awaiting issuance
	Date of Issuance, if issued.	DD/MM/YYYY
Declaration	*Click on the tick box to confirm.*	
	The Coordinating/Managing Entity hereby acknowledges that project developer; ☐ Option 1 - has included information in this document that has not been validated/verified as part of CDM PDD **OR** ☒ Option 2 - has copied all validated information as it appears in the original and then used tracked changes to highlight any information that not been validated/or has changed - *Note if option 2 is selected the project developer shall fill all sections in the PDD template of this document.* The Coordinating/Managing Entity hereby acknowledges that project developer; ☒ is aware that for a given vintage, a registered Gold Standard CPA can request the issuance of the emission reductions under only one standard/certification scheme. (applicable to all projects). ☒ is aware that all CPAs that transition to GS4GG shall demonstrate Ongoing Financial Need at the time of renewal of their crediting period following applicable GS4GG requirements. (applicable to all CPAs). ☒ confirms that the project developer/representative will make a declaration, in writing, in the monitoring report submitted to Gold Standard that (applicable to CDM CPAs) CPAs will/has not issue both a CER/other compliance units under Paris Agreement and a GSVER for the same	

	vintage. CME agrees to comply with all future UNFCCC COP/CMP decisions[1] including adjustment of GWP values
Coordinating/Managing Entity / authorised signatory	*Name and designation of CME/authorised signatory* Micro Energy Credits Corporation Private Limited

TRF.3 TRANSITION CHECKLIST

Coordinating/Managing Entity shall answer all assessment questions listed below and provide additional information/justification in the VPA-DD section, where required. Please note that the checklist is based on the GHG Emissions Reductions and Sequestration Product Requirements.

The checklist also provides relevant requirements applicable to PoA/CPA transitioning to GS4GG for easy referencing. The CME shall refer to relevant GS4GG documents, as applicable, for further details. It is recommended that CME refers to Guidelines in the table below for more information on the requirements and flexibilities provided. This document (in word) shall be submitted to SustainCERT along with other required documents **for preliminary review** as listed below –

Cover Letter
Terms and Conditions
Official Development Assistance declaration
Stakeholder Consultation Report
PoA Design Document (PoA-PDD) final version (CDM/other standard)
CPA-DD registered with CDM/other standard
Validation report submitted to CDM/other standard
Last Monitoring and Verification report submitted to CDM/other standard

TRANSITION PATHWAY	
Option 1: Is CPA seeking registration with GS4GG **to issue GSCERs** while maintaining the CDM registration? (Ref: GHG Product Requirements)	☐ Yes ☒ No
Option 2: Is CPA seeking registration with GS4GG **to issue GSVERs** only and/or conversion of **issued CERs to GSVERs**? (Ref: Annex B, GHG Product Requirements)	☒ Yes ☐ No

[1] CDM clarification available on this topic as on date can be referred to here.

Note – for conversion of issued CERs to GSVERs, the project must be registered with GS4GG.	
Option 3: Is CPA seeking registration with GS4GG **to issue GSVERs only** and/or **conversion of emission reduction to GSVERs** issued by **standard other than CDM**? **(**Ref: Annex B, GHG Product Requirements**)**	☐ Yes ☒ No

Requirement:

All CPAs submitting request for transition on or after 1/1/2021 must demonstrate compliance with requirements stated in **Annex B,** GHG Product Requirements.

The CPA following ***option 1*** *above;*
may seek registration under GS4GG based on provisional CDM EB decision
may seek issuance of GSVERs in exchange of provisional CERs based on CDM EB decision but must transfer issued CERs to the Gold Standard Swiss CDM Registry Account. If there are any implications for issued volume or project eligibility due to CMP decision regarding GWP, additionality or any other decision, the CME must address these issues, as applicable in consultation with SustainCERT/GS.

The CPA transitioning to GS4GG following ***option 2*** *above,*
may convert issued CERs to GSVERs
are not required to deregister from CDM but shall not claim emission reductions under both GS4GG and CDM for the same vintage

The CPA transitioning to GS4GG following ***option 3*** *above,*
may convert issued emission reductions unit to GSVERs
may issue GSVERs
shall deregister project from other standard before registration with GS4GG

Guidelines:
PoA/CPAs already undergoing design certification for CER labelling can continue with their existing process. SustainCERT shall be notified of the intention to switch to GSVER stream, at the earliest possible opportunity.

PoA/CPAs already certified for CER labelling can switch to GSVER stream by completing this form and notifying SustainCERT. Such project may leave the VPA-DD section blank as this information has been captured in GS4GG PDD version submitted earlier.

TRANSITION APPROVAL PROCEDURE

Option 1 - Is the project undergoing a preliminary review **by sustainCERT,** validation **by VVB** and design review by **SustainCERT**?	☐ Yes ☒ No
Option 2 - Is the project undergoing a **combined preliminary review, validation, and design review** by **SustainCERT**? (restrictions apply, see 5.3 below)	☐ Yes ☒ No
Option 3- Is the project undergoing preliminary review **by SustainCERT**, combined **validation & verification by VVB**, followed by combined design and performance review by SustainCERT?	☒ Yes ☐ No

Requirement*:*
The PoA certification under GS4GG involves following key steps. Refer to Section 12. Project cycle

Programme of Activity Requirements *for details.*

Preliminary review *- Preliminary Review of the PoA is conducted once at the time of first submission to Gold Standard. It involves desk review of the Key Project Information and PoA-DD by SustainCERT. The PoA can only be listed once a preliminary review of PoA and each CPA submitted with PoA has been completed.*

Design certification (validation + design review) *- Design certification involves validation by VVB and design review by SustainCERT. With successful design certification the PoA will obtain 'Certified design' status that is equivalent to registration under CDM and other standard. The real case CPA-DD is required with PoA-DD for design review as per* Programme of Activity Requirements*.*

Performance certification (verification + performance review) *- Performance certification involves verification by VVB and performance review by SustainCERT. The positive conclusion of the Performance Review period shall result in Gold Standard 'Certified Project status' and CPAs can issue GSVERs. The CME may opt for combined Design Certification, conducting both the first Verification and Performance Review under GS4GG at the same time.*

CPAs/VPAs Inclusion – *Once a real case CPA/VPA fully design certified, the CME may include CPAs/VPAs applying same technology measures following a simplified inclusion process. It involves, VVB's compliance check followed by SustainCERT design review (two weeks) or if selected for spot - check three week design review.*

To minimise disruption and keep the transition review time and costs minimum, the PoA is provided with flexibilities as summarised in the table below;

Certification outcome	Certification stage	Option 1 Normal certification pathway	Option 2* Combined Preliminary review + Validation + Design review	Option 3 Combined validation + verification followed by combined design + performance review
PoA+ REAL Case CPA				
Listing	Preliminary review	SustainCERT	SustainCERT	SustainCERT
Certified Design = Registration	Validation	VVB		VVB
	Design review	SustainCERT		SustainCERT
Certified project = Issuance	Verification	VVB	VVB	VVB
	Performance review	SustainCERT	SustainCERT	SustainCERT
CPA/VPA inclusion				
CPA/VPA inclusion	Compliance check	VVB	SustainCERT	VVB
	Design review	SustainCERT		SustainCERT
	Verification	VVB	VVB	VVB
	Performance review	SustainCERT	SustainCERT	SustainCERT

For option 1, a validation/inclusion site visit by VVB is not required for CPAs proposed for inclusion as long as the VVB conducted a site visit as part of validation/verification in last three years (from time of first submission for preliminary review) and new/updated information can be audited based on desk review and/or using remote audit approaches.

For Option 2, SustainCERT conducts PoA/CPAs design elements desk based audit and approve PoA/CPAs transition, without VVB's opinion. ***Note that this option will involve additional review fee levied by SustainCERT. The project developer shall confirm the applicable fee and timelines with SustainCERT (help@sustain-cert.com) before submitting the request for transition.***

If transition PoA is applying a new/latest version of the methodology which requires full audit but VVB, option 2 cannot be applied.

CMEs may also directly include VPAs/CPAs in the registered PoA, without VVB compliance check

If at least one VPA/CPA of the registered PoA has completed successful performance certification, and

The VPA/CPA that has completed performance certification and the VPAs/CPAs that are included by CME without VVB compliance check shall,

- involve same technology/measure and apply same methodology in case of single technology POA

- involve same technologies/measures and apply same methodology(ies) combination in case of multi technology PoA

Refer to VPA/CPA INCLUSION REQUIREMENTS (RU 2020 P&R - PAR V1.2) for further details on applicability conditions and requirements.

This option is not captured in the table above.

This option doesn't involve additional fee levied by SustainCERT as mentioned in option 2 above.

CPA ELIGIBILITY

Is the CPA eligible project type under Gold Standard for the Global Goals?	☒ Yes ☐ No

Requirement: *The transitioning project shall be one of the eligible project types for issuance of Gold Standard VERs (Ref: GHG Product Requirements).*

Guidelines: *Typical eligible activity types are Renewable Energy Supply, End-Use Energy Efficiency Improvement, Waste Handling & Disposal, Land Use and Forests.*

Afforestation/Reforestation project registered with CDM/other standard may transition to GS4GG for issuance of GSVERs only but are not eligible for labelling of issued emission reduction units.

RE projects shall refer to Renewable Energy Activity Requirements for eligibility check.

RE projects for example - · Hydropower · biomass resources · landfill gas and biogas from agro-processing, wastewater and other residues · Waste Heat/Gas recovery · Fossil co-generation · Waste incineration and gasification · Waste handling and disposal are required to demonstrate compliance with the specific eligibility requirements. Refer to Annex – A of Renewable Energy Activity Requirements for further details.

Community Services Activities projects for example - Hydropower · biomass resources · landfill gas and biogas from agro-processing, wastewater and other residues · Waste Heat/Gas recovery · Fossil co-generation · Waste incineration and gasification · Waste handling and disposal · Relighting · End-use fossil switching are required to demonstrate compliance with the specific eligibility requirements. Refer to Annex – A of Community Services Activity Requirements for further details.

COMPLIANCE WITH RELEVANT ACTIVITY REQUIREMENTS

Does the CPA conform to the relevant Activity Requirements (CSA/RE)**?**	☒ Yes ☐ No
Does any specific eligibility criteria/requirement stipulated in Annex A of CSA/RE requirements apply to the CPA?	☐ Yes ☒ No
Does specific eligibility criteria/requirement stipulated in Annex A of CSA/RE	☐ Yes

requirements that apply to the CPA, lead to any change in the registered PoA -DD or VPA -DD? If Yes, please provide a full explanation in section A.1.3. below.	☒ No

Requirement:
(Ref: Section 4.1.1 of GHG Product Requirements)
CPA shall conform to the relevant Activity Requirements and Gold Standard Approved Methodologies, including eligible CDM Methodologies.

RE rule update / RE PoA rule update:
Grid connected Renewable Energy CPAs seeking to transition from another carbon crediting scheme to GS4GG or labelling of emission reductions under GS4GG are exempted from eligibility requirements listed in para 2.1.3 of the RE Activity Requirements. This exemption is only allowed to projects that started the first crediting period with the original carbon crediting scheme from 01/01/2016 or later but before 24/01/2020. (Ref: Section 2.1.1 and 2.1.2 of RU 2020 AR –RE V1.2)

Specific Renewable Energy Activity requirements (refer to Annex A): Hydropower, biomass resources, landfill gas and biogas from agro-processing, wastewater and other residues, Waste Heat/Gas recovery, Fossil co-generation, Waste incineration and gasification, Waste handling and disposal.

Specific Community Service Activity requirements (refer to Annex A): Hydropower, biomass resources, landfill gas and biogas from agro-processing, wastewater and other residues, Waste Heat/Gas recovery, Fossil co-generation, Waste incineration and gasification, Waste handling and disposal, Relighting, End-use fossil switching.

APPLICABILITY OF THE METHODOLOGY/TOOL VERSION

Does the CPA apply an eligible GS methodology? Refer to list of the eligible methodologies **here**.	☒ Yes ☐ No
Does the CPA apply the version of the methodology and applicable tools **applied for CDM/other standard registration or renewal**?	☒ Yes ☐ No
Does the CPA apply the latest version of the methodology and applicable tools applied in registered PoAs for inclusion of new VPAs after transition to GS4GG? If Yes, please provide a full explanation in section B below. And note that the CPA cannot opt for option 2 mentioned transition approval procedure, above.	☐ Yes ☒ No

Requirement: (Ref: Annex B of GHG Product Requirements)

Transition CPA shall
conform to the relevant Activity Requirements and Gold Standard Approved Methodologies, including eligible CDM Methodologies referring to the inclusion criteria of registered PoA.
also meet the additional GS4GG methodology eligibility requirements, where applicable. Refer to CDM Methodologies for Gold Standard Eligibility Requirements, referring to the inclusion criteria of registered PoA.

Transition CPA shall apply the version of GS approved CDM methodology or methodology tool for transition to GS4GG as follows;

a. version applied for inclusion in the registered PoAs with other standard, OR
b. latest version applied by the registered PoAs for inclusion of new VPAs after transition to GS4GG.

Note that The Transition PoA may include the latest version of the methodology and applicable tool for inclusion of new VPA(s), at the time of first submission (preliminary review) or at any later stage of certification cycle, but before submitting the request for inclusion for new VPAs. In such cases, VVB shall validate the updated PoA and VPA documents as per applied version of the methodology and or methodology tool before or with the request for inclusion of new VPAs.

DEMONSTRATION OF ADDITIONALITY

Are you aware that the transitioning CPA will be required to demonstrate Ongoing Financial Need as per the relevant GS rules and requirements available at the time of renewal of crediting period? (Refer to para 4.1.51 – 4.1.53 of Principles & Requirements.)	☒ Yes ☐ No
Does CPA meet the PoA inclusion criteria with respect to the additionality justification?	☒ Yes ☐ No

Requirement:

- *The CDM PoA/CPAs are not required to carry out additional assessment for demonstration of additionality over and above what has been done for registration/determination with the CDM unless the project falls into a category that is deemed non-additional in an applicable Gold Standard Activity Requirement. In such cases the relevant Activity Requirement shall take precedence.* ***Ref: Annex B GHG Product Requirements.***
- *Transition PoA/CPAs registered with standards other than CDM are required to undergo additionality revalidation to re-establish the validity of the underlying assumptions applied in the demonstration of additionality at the time of registration with the other standard.*
- *The PoA/CPAs seeking combined transition and renewal of crediting period with GS4GG are not required to demonstrate OFN at the time of transition but must demonstrate OFN at the time of Crediting Period renewal after transitioning to GS4GG.*

SUSTAINABLE DEVELOPMENT ASSESSMENT

Does the CPA positively contribute towards **minimum three Sustainable Development Goals (SDGs) -** SDG13 (mandatory) + two other SDGs?	☒ Yes ☐ No
Have you identified the monitoring parameters linked with selected SDGs and corresponding SDG targets? For example – the monitoring parameter Amount of GHGs emissions avoided or sequestered is linked with SDG 13. Climate action, SDG target 13.2 Integrate climate change measures into national policies, strategies and planning.	☒ Yes ☐ No

Fill section B.6. Sustainable Development Goals (SDG) outcomes and B.7 Monitoring plan, below for SDGs monitoring parameters not covered in registered CPA-DD with other standards.

Fill Table 1 – Estimated Sustainable Development Contributions below.

Requirement*:*
The transitioning CPA shall demonstrate a clear, direct contribution to sustainable development, defined as making demonstrable, positive impacts on at least three Sustainable Development Goals (SDGs), one of which must be SDG 13 (Ref: Section 4.(c) of Principles and Requirements)

Refer to Annex B, GHG Product Requirements for further guidelines for transition projects.

Guidelines:
Selected SDG impacts must not result from a one-off from design/construction/distribution/ start-up or decommissioning of the project.

You may refer to /use the SDG impact Tool (under consultation currently) to identify the relevant monitoring indicator, SDGs and corresponding SDG targets and design monitoring plan for identified indicators.

START DATE AND DURATION OF THE CREDITING PERIOD

Has the crediting period of the transitioning CPA registered with other carbon standard/certification scheme changed and/or extended?	☐ Yes ☒ No
Is the total duration of the crediting period of CPA (i.e. including period that had been issued under the host standard) less than/equal to the maximum crediting period allowed under relevant GS4GG activity requirements?	☐ Yes ☒ No

Complete the section C.2.2 Total length of crediting period below.

Requirement:

- *The crediting period of the transitioning CPA registered with other standards or certification schemes cannot be changed/extended.*
- *Maximum crediting period allowed under GS4GG are as*
  CSA – 15 Yrs, RE – 15 Yrs, if not defined in activity requirement or applicable methodology – 10 Yrs.
- *The start date of the GS crediting period shall be same as the start date of the CDM crediting period. (Annex B, GHG Product Requirements)*
- *For a transitioning CPA the total duration of the crediting period, including the period that has been claimed under the host standard, shall not exceed the maximum crediting period allowed under relevant GS4GG activity requirements.*

  If a given CPA transitioning to GS4GG, was registered under Standard X with -
  - *fixed crediting period (10 years): The total crediting period (Standard X + GS4GG) must remain 10 years. The CPA can only claim remaining years of its 10-year crediting period after transitioning to GS4GG.*
  - *renewable crediting period (7*3 year): The total crediting period (Standard X + GS4GG) must be equal to that allowed under relevant GS4GG activity requirements. The CPA can only claim remaining years of the maximum allowed crediting period after transitioning to GS4GG. For example; the maximum crediting period allowed for renewable energy project is 15 years. A renewable energy CPA that has already claimed 5 years under Standard X can only claim remaining 10 years of the total 15 years of its allowed crediting period after transitioning to GS4GG*
- *For a transitioning CPA, the start date of the Gold Standard Crediting Period starts with crediting period start date with other standard or maximum two years before the date of first submission (submission for preliminary review), whichever occurs later.. (Ref: GHG Product Requirements)*
- *All transition CPAs shall be renewed every 5 years. The first crediting period renewal under GS4GG takes into account the crediting years that has already been issued by other standard. For example, if a CPA start date with standard X is 01/01/ 2019, the CPA shall renew its crediting period with GS4GG on or before 1st Jan 2024, irrespective of date of transition approval with GS4GG.*

SAFEGUARDING PRINCIPLES ASSESSMENT

Does the CPA conform to the Gold Standard Safeguarding Principles and Requirements?	☒ Yes ☐ No

Is there any risk and/or likely adverse outcomes of the project?	☐ Yes ☒ No
If answer is yes for Q9.2Error! Reference source not found. above, can the project achieve requirements with regards to the relevant principle through design, management or risk mitigation?	☐ Yes ☐ No
If answer is yes for Q9.3. above, have the Mitigation Measures added to the Monitoring Plan (if required)?	☐ Yes ☐ No

Complete the Annex 1 and section D. Summary of Safeguarding Principles below.

***Requirement**: The transitioning project shall conform to the Gold Standard Safeguarding Principles and Requirements. (Ref: Section 4.1.19 of GS4GG Principles and Requirements)*

***Guidelines:** The detailed Safeguarding Principles and Requirements checklist is available in Annex 1 of this document.*

STAKEHOLDER CONSULTATION REQUIREMENTS

Has the CPA conducted a Stakeholder Consultation in accordance with the requirements of Gold Standard Stakeholder Consultation & Engagement Requirements? The answer to Q 10.1 is "No", if any of the questions below is answered as "No". The project should take the question(s) into account and address the gap when conducting supplementary stakeholder consultation to comply with GS4GG requirements. Please answer the below question with regards to the stakeholder consultation conducted to comply with CDM/other standard requirements?	☒ Yes ☐ No
Did you conduct the stakeholder consultation before the CPA start date?	☒ Yes ☐ No
Did you discuss identified direct positive and negative impacts of the CPA with stakeholders?	☒ Yes ☐ No
Does the invited stakeholder covers all stakeholder groups (a to g) listed in paragraph 3.1.1. of STAKEHOLDER CONSULTATION AND ENGAGEMENT REQUIREMENTS?	☒ Yes ☐ No
Did the invitation methods solicit input from women and marginalised groups?	☒ Yes ☐ No
Were the stakeholders invited at least 30 days before the stakeholder meeting?	☒ Yes ☐ No
Did a local language version of the non-technical summary with information required as per paragraph 5.1.1. of STAKEHOLDER CONSULTATION AND ENGAGEMENT REQUIREMENTS, shared with stakeholders?	☒ Yes ☐ No
Was a physical meeting conducted?	☒ Yes ☐ No
Was a gender lens applied to assessing comments? (for example, if only men provided comments on household device project, was this taken into consideration	☒ Yes ☐ No

when assessing the relevance of the comment?)	
Were any serious, reasonable and proportional concerns raised and taken into account and satisfactorily addressed?	☒ Yes ☐ No
Were any points that warrant 'Mitigation measures' marked as such and monitoring plan has been designed and included in the PDD?	☒ Yes ☐ No
Is the mandatory Continuous Input / Grievance Expression Process Book's location clearly stated (and therefore usable)?	☒ Yes ☐ No
Does PDD include a summary report of the comments received from local stakeholders?	☒ Yes ☐ No

Complete the section E. Summary of Local Stakeholder Consultation below.

***Requirement**: Ref: Section 4.1.25 of GS Principles and Requirements.*
***Guidelines:** CPA that conducted a stakeholder consultation meeting to comply with CDM/other standard requirements, should conduct, at minimum,*

one round of consultation for identified gaps i.e., gaps due to differences in stakeholder consultation requirements of GS4GG and CDM/other standard. For instance, if original consultations only involve one physical meeting, CME/PD should conduct a stakeholder feedback round covering all the identified gaps. The additional stakeholder consultations may involve a physical meeting or stakeholder feedback round, as necessary.

If COVID interim measures are applicable (currently till 30/06/2021), the physical meeting and stakeholder feedback round may be postponed, and a draft SCR shall be mandatorily submitted to cover the consultation activities carried out till date.

KEY PROJECT INFORMATION

GS ID of Project	11897
Title of Project	GS11450 - MicroEnergy Credits – Microfinance for Clean Energy Product Lines – India - MicroEnergy Credits PoA – CPA 38 – GS11897
Time of First Submission Date	11/10/2022
Date of Design Certification	DD/MM/YYYY
Version number of the VPA-DD	3.0
Completion date of version	26/06/2023
Coordinating/managing entity	Micro Energy Credits Corporation Private Limited
VPA Implementer (s)	Samasta Microfinance Ltd (Samasta) Midland Microfin Limited (Midland) Shri Kshetra Dharmasthala Rural Development Project (SKDRDP)
Project Participants and any communities involved	Micro Energy Credits Corporation Private Limited
Host Country (ies)	India
GS ID and Title of applicable Design Certified VPA	NA
GS ID and Title of applicable Performance Certified VPA	NA
Activity Requirements applied	☒ Community Services Activities ☐ Renewable Energy Activities ☐ Land Use and Forestry Activities/Risks & Capacities ☐ N/A
Scale of the project activity	☐ Micro scale ☐ Small Scale ☒ Large Scale
Other Requirements applied	-
Methodology (ies) applied and version number	AMS-I.A "Electricity generation by the user" (Version 14) Methodology for Emission reduction from safe drinking water supply-version 1.0
Product Requirements applied	☒ GHG Emissions Reduction & Sequestration ☐ Renewable Energy Label ☐ N/A

Project Cycle:	☐ Regular ☒ Retroactive

Table 1 – Estimated Sustainable Development Contributions

Sustainable Development Goals Targeted	SDG Impact (defined in B.6.)	Estimated Annual Average	Units or Products
13 Climate Action (mandatory)	Number of VERs	80,621 35,785	tCO_2 VERs- SLS tCO_2 VERs- WPS
1 End poverty in all its forms everywhere	Proportion of population living in households with access to basic services (only for WPS)	93.43%	WPS
6 (Clean Water and Sanitation)	Number of households served with safely managed water services.	24,292	WPS
7 Affordable and Clean Energy	Number of households having operational clean energy technology	225,530 10,753	SLS WPS
8 Decent Work and Economic Growth	Total number of Jobs	20	jobs

SECTION A. DESCRIPTION OF PROJECT

A.1. Purpose and general description of project

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In the rural areas of India, the predominant means of drinking water is by boiling using traditional cook stoves that use woody biomass as fuel. The smoke and fumes from these stoves contribute heavily to indoor air pollution. 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 VPA involves marketing, education, distributing, and financing solar lighting systems, and water purification devices for low-income households and microentrepreneurs in India. Micro Energy Credits Corporation Private Limited is the Coordinating and Managing Entity of this PoA and coordinates efforts of VPA implementers to distribute Clean Energy Products in India.

These products provide clean drinking water and renewable energy for lighting. The water purification devices distributed under the proposed VPA replace traditional cookstoves thereby eliminating the use of fuelwood for boiling raw water 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.

Table A.1 Estimated Water purification devices in Operation for entire VPA[2]

Year	Sales
21/12/2019- 20/12/2020	0
21/12/2020- 20/12/2021	~~45,500~~321
21/12/2021- 20/12/2022	~~45,500~~1,444
21/12/2022- 20/12/2023	~~45,500~~26,000
21/12/2023- 20/12/2024	~~45,500~~26,000

Table A.2 Estimated Solar Lighting system in Operation[3] for entire VPA

Year	Sales
21/12/2019- 20/12/2020	0
21/12/2020- 20/12/2021	54,570~~60,000~~
21/12/2021- 20/12/2022	103,078~~87,000~~
21/12/2022- 20/12/2023	120,000
21/12/2023- 20/12/2024	850,000

The program is a voluntary initiative coordinated by Micro Energy Credits Corporation Private Limited (MEC), the CME of the PoA, and implemented by several Partner

[2] Future sales can happen in any state, but in any case, all sales will be restricted to the geographical boundary of the PoA i.e. India and will be in line with all requirements of the methodology and PoA eligibility criteria.

[3] Future sales can happen in any state, but in any case, all sales will be restricted to the geographical boundary of the PoA i.e. India and will be in line with all requirements of the methodology and PoA eligibility criteria.

Organizations (PO). The water purification devices included in the proposed VPA are as of now implemented by PO – Midland Microfin Limited[4] and the solar lighting systems are implemented by Midland Microfin Limited, Samasta Microfinance Ltd (Samasta)[5] and Shri Kshetra Dharmasthala Rural Development Project (SKDRDP)[6]. Several additional PO's may implement water purification devices and the solar lighting systems. The exact identity and details of the PO's and the number of water purification devices and solar lighting systems implemented will be made available at the time of verification as deployment of these systems is done in a phased manner depending on demand from clients.

Under the 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 aftersales 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 VPA is to use carbon finance to enable installations of solar lighting systems, and water purification devices in India.

The CME has approved the inclusion of the proposed VPA in the registered PoA and also confirms that the proposed VPA will not be part of another PoA or any other carbon offset program.

The technologies/measures employed by the VPA - POs offers loans for a suite of Clean Energy Products ("CEP") including water purifiers and solar lighting systems.

The project boundary – The POs included in this VPA will be working in branches located in India (Coordinates: 20.5937°N 78.9629°E)

[4] http://midlandmicrofin.com/
[5] https://iiflsamasta.com/
[6] http://skdrdpindia.org/

The baseline scenario –

SOLAR: This VPA involves the introduction of solar lighting systems into households in several states in India to replace the main baseline fuel, kerosene.

WATER PURIFIER: The water purifiers distributed under the proposed VPA replace traditional cookstoves thereby reducing the amount of fuelwood used for boiling water in the baseline by households.

A.1.1. Eligibility of the project under approved PoA

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No.	Eligibility criterion	Description/ Required condition	Means of Verification/Supporting evidence for inclusion
1	Boundary and location of the VPA	The VPA is located within India	Location and boundary is specified in section A.2 of the VPA-DD stating that the location is limited to India and supported with GPS coordinates. Document: Statement of CME that the location and boundary is within India and supported with GPS coordinates.
2	Project technology	VPAs involves use of following technology- 1. distribution of safe drinking water systems (HWT and CWT technologies) to residential area. 2. Distribution of improved cookstoves to households 3. Distribution of Solar lighting systems to households	The VPA-DD specifies the target end-user group and the technology being distributed i.e. safe drinking water systems and Solar Lighting Systems in section A.3 This VPA doesn't include distribution of improved cookstoves. Hence, the eligibility

			criteria of improved cookstove (ICS) are not applicable for this VPA. Supporting evidence: Sales database and manufacturer specifications
3	No Double counting of CEPs within this PoA and across other registered or deregistered PoAs	A unique numbering or identification system for the CEP installed is applied. This shall ensure no double counting of CEPs within the same VPA and same PoA and ensure that CEP can be identified as belonging to this PoA and not to a PoA/ project activity registered under another voluntary or compliance GHG program or to a deregistered PoA/ project activity registered under another voluntary or compliance GHG program or to a deregistered PoA . A legally binding contract between CME and manufacturer/micro finance institution/POs would be required to ensure that all carbon title is transferred to the CME. This shall ensure that POs, stove/lamp manufacturers and distributors do not claim ERs separately.	The unique numbering stamped on each CEP supported by the individual distribution record matching such information is included in the VPA-DD and consistent with the PoA-DD A legally binding contract between CME and manufacturer/micro finance institution/POs would be established to ensure that all carbon title is transferred to the CME. A summary of projects registered with other standards- GS/VERRA/CDM and how they are not overlapping with this VPA has been presented in Table 1.2 and an analysis thereafter. Further, the VVB will be submitted with detailed information on registered projects with other standards which can be assessed and cross checked during

	Validation
	A summary of projects registered with other standards- GS/VERRA/CDM and how they are not overlapping with this VPA has been presented in Table 1.2 and an analysis thereafter. Further, the VVB will be submitted with detailed information on registered projects with other standards which can be assessed and cross checked during Validation
	Document: Credit Tracker sales receipt showing CME and PO information, end user details including name and address and CEP ID number. In addition to the sales receipt the unique numbering shall be verifiable by VVB.
	Database of other similar projects registered with GS or other GHG programs shall be submitted to VVB.
	A legally binding contract between CME

			and manufacturer/micro finance institution/POs. In addition to the sales receipt the unique numbering shall be verifiable by VVB. Database of other similar projects registered with GS or other GHG programs shall be submitted to VVB. A legally binding contract between CME and manufacturer/micro finance institution/POs.
4	VER ownership	End users receiving CEP under the specific VPA contractually cede their rights to claim and own emission reductions to the CME of the PoA.	The default CEP Booking Record is including the provision that emission reductions generated by the CEP are transferred from the end-user to the PO and ultimately owned by the CME. The receipts will clearly specify that carbon rights are ceded in favour of CME. Documents: 1. Default Booking Record 2. A legally binding contract between CME and end user to ensure that all carbon title

			is transferred to the CME
5	No Double counting of VPA	The VPA is exclusively bound to the PoA. Confirmation that the programme activity has not been and will not be registered either as a single project activity or as a VPA under another registered PoA in other offset schemes nor the project activities that have been deregistered.	A declaration from the CME on its letterhead has been provided that this VPA will not be part of another single CDM/voluntary project activity or CPA/VPA under another PoA nor has it been deregistered. In addition, declaration from VPA operators as part of their contract with the CME, stating that their activities are not registered as part of another single CDM project activity of CPA under another PoA. Evidence: Declarations to be submitted to VVB.
6	Awareness and Agreement of those operating a VPA on PoA subscription	Contractual provisions to ensure that those operating the VPA are aware and have agreed that their activity is being subscribed to the PoA. In the case that the CME is not responsible for implementing the VPA, the organization responsible for VPA implementation, known as the Partner Organisation (PO), has signed a contractual agreement with the CME to participate in the PoA. This agreement: - Defines the ownership	Contractual agreement for VPA operators, stating that they are aware and have agreed that their activity is being subscribed to the PoA

		of the carbon emission reduction rights - Covers the PO's distribution and monitoring related responsibilities - Confirms that the CEPs to be distributed under the VPA have not and will not be distributed under any other carbon project (CDM project, PoA or voluntary carbon market project) - Cedes the PO's rights to the carbon credits generated from VPAs under the PoA to the CME	
7	Non-diversion of ODA in case of Public funding	The CME and the VPA operator (in case of being different from the CME) shall confirm that there is no public funding or in the case of public funding, the Annex 1 party will confirm that funding is not a diversion of Official Development Assistance.	Statement of CME and the VPA operator (in case of being different from the CME) that there is no public funding Or In the case that there is public funding, an Annex 1 party will confirm that funding is not a diversion of ODA. Evidence: ODA Declaration
8	Specification of the technology such as the level and type of service, as well as performance specification;	The VPAs will include water filter technology which will provide safe drinking water, confirming to WHO International standards and host country norms for safe water for human consumption. The VPAs will include distribution of solar lighting	Performance specifications for each of the technology is provided in section A.3 of the VPA-DD. The project technologies comply with the minimum specification requirements

		systems which will replace kerosene lamps in baseline	prescribed in the applied methodologies (as applicable).
9	VPA Start Date	The VPA start date is the registration date of the project activity with the UNFCCC-CDM from where the project is transitioning to Gold Standard. The VPA can request issuance of GS-VERs or convert issued GS-CERs to GS-VERs for a retroactive period.	Link of CDM PoA and CPA to be submitted to VVB
10	VPA Crediting Period	Crediting period shall be 15 years in line with the Community Service Activity Requirements. The maximum crediting period includes the time that a project or VPA has been issued emission reductions under CDM. Each VPA shall provide verifiable evidence.	Maximum crediting period under Community Services Activity requirements is 15 years from start date i.e. 21/12/2019 to 20/12/2034. Details on years in which emission reductions were issued under CDM shall be provided to GS VVB.
11	Approval of VPA by CME	CME approved each VPA to be included into its registered PoA.	A letter by CME giving approval for the VPA to be included into its registered PoA.
12	Target groups of the programme	The VPAs included in the POA will involve distribution of WPS or ICS and/or SLS directly to the domestic end users individually or to community in case of WPS.	Sale invoices and agreement with the end user/community head by CME. This VPA doesn't include distribution of improved cookstove. Hence, the eligibility criteria of improved

			cookstove (ICS) are not applicable for this VPA.
13	Additionality of VPAs	For SLS Additionality will be demonstrated in accordance with EB 68 Annex 27: Guideline on the Demonstration of Additionality of SmallScale Project Activities Version 09, Paragraph 2(c) which states that a barriers analysis is not required to document Additionality for: c) Project activities solely composed of isolated units where the users of the technology/measure are households or communities or Small and Medium Enterprises (SMEs) and where the size of each unit is no larger than 5 per cent of the small-scale CDM thresholds For WPS Additionality will be demonstrated in accordance with the paragraph 1.1.3 of Annex B (Positive List) of Community Services Activity Requirements, version 1.2 "Project activities solely composed of isolated units where the users of the technology/measure are households or communities or institutions and where each unit results in <= 60 MWh (1.8 GWhth) of energy savings per year or <=600 tonnes of emission reductions per year"	For SLS 1. VPA-DD Section A.4 demonstrating that the size of each unit is no larger than 5% of the small- scale CDM threshold ~~Project provides manufacturing specifications showing the following:~~ 2. Solar lighting distributed under the CPA are not more than 5% of the SSC threshold ~~3. Ex-ante ER calculations for water purification devices showing average ER per device is less or equal to 2.25 tCO2e which is less than the 5% of the 60,000 tCO2 cap for Type 3 activities.~~ For WPS The VPA is in compliance with item 1.1.3 of Annex B – positive list mentioned in the 'Community Services Activity Requirements', Version 1.2. It is solely composed of isolated units (CEPs) where the users of the technology/ measure

			are households or communities or institutions and where each unit results in <= • 600 tCO_2 per year for Water Purification Systems (WPS) Hence, according to paragraph 4.1.9 of the 'Community Services Activity Requirements', the VPA is deemed additional and therefore is not required to prove additionality at the time of Design Certification.
14	Sampling requirements for the PoA	The VPAs will follow the usage survey guidelines of the methodology and UNFCCC guidelines on sampling and survey for Programme of Activities version 4.0	VPA-DD has incorporated the sampling procedure in section B.7.2 and sampled survey forms shall be provided to GS VVB.
15	Application Methodologies	The methodologies that can be applied to a VPA include: • AMS-III.AR (version 7) or AMS-1A (version 14.0) • TPDDTEC (version 3.1) • Emission reduction from Safe Drinking Water Supply (version 1.0) Each VPA can implement ofthese methodologies in isolation. In addition, the following combinations of methodologies are eligible under the PoA: • AMS-III.AR (Version 7) or AMS-1.A (version 14.0) and TPDDTEC (version 3.1) • AMS-III.AR (Version 7) or AMS-1.A (version 14.0)	The methodology applied to this VPA are: 1. AMS-1A (version 14.0), and 2. Emission Reductions from Safe Drinking Water Supply (version 1.0) This VPA doesn't include distribution of improved cookstove. Hence, the eligibility criteria of improved cookstove (ICS) are not applicable for this VPA. The justification for meeting each of the applicability criterion of

		and Emission reduction from Safe Drinking Water Supply (version 1.0)	the applied methodologies for both Water Purification systems and Solar Lighting Systems is given in section B.2.
16	End User Group	The VPA is either aimed at households, community organizations (e.g. schools) or small/medium enterprises.	The VPA-DD describes the target end-user group and the appropriate baseline in subsequent sections of the VPA-DD
17	Baseline parameters to be established at VPA level	Each VPA shall demonstrate how the baseline parameters for baselines not established at the PoA level (that applies for baselines and options not applicable at the first VPA at the time of PoA registration) that are to be calculated at the VPA level have been determined. Parameters to be monitored are listed in VPA-DD.	VPA-DD section B.6.2 and B.7.1 outlines the approach and provide supporting documents including copies of any official government reports, statistics or literature sources used for determining parameters. For local surveys or representative sampling, the copies of questionnaires, sampling design etc. shall be provided to GS VVB.
18	Local Stakeholder Consultation	Local stakeholder consultation for VPA to be conducted prior to the VPA start date.	The summary of LSC has been provided in section E. • VPA LSC report • Record of invitations sent to the stakeholders • Attendance sheet of the VPA LSC meeting
19	Scale of VPA	VPAs under the PoA can either be small scale or large scale.	The VPA is large scale. No suppressed demand baseline is applied in

		the VPA.
	In case of large scale VPAs, CME shall confirm that there is no suppressed demand claim for WPS. In case of small scale, the threshold limit as per GHG Emission Reduction & Sequestration Product Requirements shall be followed where maximum output capacity of distributed renewable energy generation technology shall not be more than 15MW (Type 1) or that achieve energy savings at a scale of no more than 60 GWh per year which is equivalent to 180 GWh(th) per year saving (Type II) or that achieve emission reductions at a scale of no more than 60k tCO_2 per year (TYPE III) for household/community/SME applications. Small Scale projects and VPAs, solely comprising of such distributed units are not required to demonstrate compliance with the appliable Small Scale thresholds at the aggregate level of the project and VPA, if VPAs are **NOT** applying suppressed demand baseline.[7]	Total installed capacity of Solar lighting systems (SLS) is within the small-scale Type I threshold of 15MW. Annual emission reduction for WPS may be more than 60k, hence this is a large scale VPA tCO_2e. Evidence: • Product data sheets or specification or product information sheets from manufacturer are available. This VPA doesn't include distribution of improved cookstove. Hence, the eligibility criteria of improved cookstove (ICS) are not applicable for this VPA.

[7] https://globalgoals.goldstandard.org/ru-2020-ssc-application-of-suppressed-demand/

		Please note that not all solar lighting system or WPS may have been deployed at VPA inclusion stage, but the threshold however can also be checked during verification, and in case any deployed CEP type will be found not in line with the requirement, those CEPs will not be counted for emission reduction calculation.	
20	Conditions to be met by each VPA regarding SDG outcomes assessment	The CME shall conduct the Sustainable Development Goals (SDGs) impact assessment at the VPA level as per Principles & Requirements	SDG outcome assessment report has been submitted to GS VVB.
21	Conditions to be met by each VPA regarding safeguarding principles	Projects shall conduct a Safeguarding Principles Assessment and conform to Gold Standard Safeguarding Principles and Requirements.	Safeguarding principles assessment report is provided in Appendix 1 of the VPA-DD
22	Conditions to confirm that technologies in VPAs are eligible	Specification of technology or measures, such as the level and type of service, as well as performance specification based on, intra alia, testing/certification	Project technology along with technical specifications is outlined in section A.3 above

Table 1.2 Analysis of VCS/CDM/GS Registries:

Requirement as per CDM project Standard for Programme of Activities V3.0	**Water Purification Devices**	**Solar Lighting system**
It utilizes both a different measure and a different technology from those of the former project	A registered CDM project activity (Reference number – 9432) exists, however, the technology type used by this registered PoA (membrane based filter) is different from the	There are 4 registered CDM projects (Reference number – 2699, 7281, 2279 and 9488), however, the geographical boundary and/or technology (specifically the solar lamp

	technology (HUL and Eureka Forbes models) used in the proposed VPA (activated carbon trap and gravity based filters) in CMEs PoA. There is no registered VCS project under VERRA on safe water access. Under Gold Standard, there is only 1 registered project GS ID7496 which has not issued any credits since its last document upload date on 2nd November 2021.	models) used in these project are different from the solar lamp models used in the proposed VPA[8].
It does not share or utilize any of the assets of the former project	The registered existing project activity solely utilizes the network of distributors and retailers to disseminate the products. However, the proposed VPA relies extensively on microfinance channel to disseminate the products.	The registered existing project activity solely utilizes the network of distributors and retailers to disseminate the products. However, the proposed VPA relies extensively on microfinance channel to disseminate the products.
It utilizes a different resource type compared to the former project	While the resource type is water for both, the existing registered CDM project as well as the proposed VPA, however, the resource (solar energy) is available in abundance and hence is not shared.	While the resource type is solar energy for both, the existing registered CDM project as well as the proposed VPA, however, the resource (solar energy) is available in abundance and hence is not shared.

The VPA meets the requirements of the Community Services Activity Requirements, as follows –

[8]Associated evidence (product technical specifications) shall be submitted to the validating VVB to substantiate that the models are different.

Eligibility Criteria Category	Eligibility criterion - Required condition	Justification
1. Eligible Project Types	All CSA Projects shall lead to climate change mitigation and/or adaptation by providing or improving access to services/resources at the household or community or institution level. Eligible services include electricity and energy, water and sanitation, waste management, housing, etc.	The goal of the VPA is to distribute Water Purification Systems (WPS), and Solar lighting systems (SLS) in the households/SMEs of the host country of India. This VPA doesn't include distribution of improved cookstove. Hence, the eligibility criteria of improved cookstove (ICS) are not applicable for this VPA.
GENERAL ELIGIBILITY CRITERIA		
2. Type of project	(b) End-use energy efficiency: Project activities that reduce energy requirements as compared to baseline scenario without affecting the level and quality of services or products, where the end-user of the products and services are clearly identified and when the physical intervention is required at the user end. For example, efficient cooking, heating, lighting, etc.	The PoA involves distribution of energy efficient WPS and SLS. This VPA doesn't include distribution of improved cookstove. Hence, the eligibility criteria of improved cookstove (ICS) are not applicable for this VPA.
3. Project Area, Boundary and scale	Project Area and Boundary shall be defined in line with the applicable Impact Quantification Methodologies and Product Requirements.	The project area is point location of CEP beneficiaries in the host country of the VPA. The project boundary will be limited to the geographical boundary of the host country of India. For the purpose of applying UNFCCC methodologies for quantification of GHG reductions, 'small scale' is: a. Type I: Renewable energy project activities with a maximum output capacity of 15 MW (or an

Eligibility Criteria Category	Eligibility criterion - Required condition	Justification
		appropriate equivalent) b. Type II: Energy-efficiency improvement project activities < = 60 GWh(e) or 180 GWh(th) energy savings per year c. Type III: Other project activities not included in Type I or Type II < = 60,000 tCO2eq per year The VPA involves Type I which shall not cross the above small-scale limits. Scale is no limit for Water Purification Systems as a Gold Standard methodology is followed and there is no suppressed demand element.
4. Legal Ownership	Projects involving the distribution of a large number of devices for services such as heating, cooking, lighting, electricity generation, water treatment technology such as water filter, etc. shall provide a clear description of the ownership of the Products that are generated under Gold Standard Certification all along the investment chain. In line with the FPIC requirement, the proofs that end-users are aware of and willing to give up their rights on Products shall be provided. The transfer of Product ownership shall be discussed during local stakeholder consultations for projects.	The CEP owners confirm that rights to the ownership of carbon credits reside with the CME according to the end user agreement /declaration form
ELIGIBILITY PRINCIPLES AND REQUIREMENTS		
Principle 3 – Stakeholder	Projects shall have specific stakeholder consultation	Not Applicable

Eligibility Criteria Category	Eligibility criterion - Required condition	Justification
Inclusivity	requirements for certain project types including, but limited to, hydropower and projects using biomass resource as given in Annex A of the document.	The VPA is implementing solar lighting and water purifiers and therefore, does not fall under the project types with additional eligibility criteria according to Annex A of the document.
Principle 4 – Demonstration of Real Outcomes	New Projects may seek Certification and receive Issuance of Gold Standard Certified Impact Statements or Products for a maximum of two Design Certification Renewal Cycles i.e., a total of 15 years issuance.	The VPA has a maximum crediting period of 15 years (5 years + two renewals of 5 years) in line with the GS4GG Principles and Requirements. See section C.2.2.
Principle 5 – Financial Additionality & Ongoing Financial Need	All projects seeking the issuance of Certified Impact Statements and/or Products shall demonstrate Financial Additionality in accordance with the Principles & Requirements and the applicable Product requirements.	**Not applicable.** The additionality and need for ongoing financial need have been demonstrated using the applicable GS4GG Activity Requirements: Community Services Activity Requirements (v1.2) in section B.5

A.1.2. Legal ownership of products generated by the project and legal rights to alter use of resources required to service the project

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Participation in the VPA is voluntary for every beneficiary. If a household wishes to participate in the VPA, they confirm that MEC has full and uncontested legal ownership of the CO_2 emissions reductions (SDG 13) that are generated from the use of WPS/SLS distributed under the VPA.

MEC has the legal ownership of the Verified Emission Reductions (VERs) that are generated through the Gold Standard Certification. For each CEP distributed under the VPA, the beneficiary agrees at the time of distribution/dissemination of WPS/SLS that, in return for receiving a CEP, the ownership of emissions reductions and VERs lies with MEC. With effect to this, the carbon title for the product is signed off by end user directly to MEC waiving any claim or rights on carbon credits generated under the VPA. MEC has legally binding agreement with PO which transfers the right on the carbon credits to MEC.

Further, as per Annex A of GHG Emissions Reduction and Sequestration Product Requirements version 2.1, as of now there are no mandatory caps enforced in the host country, India for use of issued GS VERs.

A.2. Location of project

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The products sold will be restricted to the boundary of the Republic of India. The VPA will involve households in many states of the host country. The location of each clean energy installation as per a GPS location or verified address will be recorded in Micro Energy Credit's Credit Tracker Platform.

Figure 1: Map of India

The location of each clean energy installation[9] as per a GPS location or verified address will be recorded in Micro Energy Credit's Credit Tracker Platform, which has

[9] Location is defined by one of the following sets of information:
Precise GPS location of the household that purchases/installs clean energy product.
GPS location within one mile of the household and credible address for household.

been designed specifically for accelerating microfinance access to clean and efficient energy. These locations will define the more precise boundary of the project activities.

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 in the VPA, making it easy to identify, locate and verify any or all of the installations that pertain to the VPA. The MEC Credit Tracker Platform is a hosted internet service, limiting the risk of loss of data.

A.3. Technologies and/or measures

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Water Purification Systems

A variety of gravity filter water purifiers will be offered under the proposed VPA. Some of the models initially distributed under this VPA are mentioned below.

1. HUL Pureit Classic 23L

This is a large size purifier with a 23-litre capacity. It includes an activated carbon trap that removes harmful pesticides and undesirable odor. It also has an auto shut-off feature that ensures water purity. In the absence of the project activity, the households would have continued to boil water for drinking purposes. The technical specifications[10] of the water purifier are as follows –

Size – 61 cm X 29 cm X 21 cm
Net weight: 4.1 kg
Flow rate: 9 l/h
US EPA and National Standard Approved
Warranty Period- 2 years

Average Life span under standard use conditions: The life span of the germ kill kit used by the purifier has a capacity of 1500 l after which it must be replaced. The life of the kit therefore depends on how much water is purified by the user every day[11].

Three of the following identifiers: purchaser name, household address, phone number, bank ID number, national ID number, product serial number, household GPS location, or GPS location within one mile of household.

[10] Manufacturer's certificate on specifications

[11] The partner organizations' have ensured that the users get access to GKK and cartridges easily. Written notices and flipcharts are pasted in the display board of branches telling users how to get these replacement cartridges and GKKs. The same is communicated to customers during weekly and monthly group meetings as well. There is a well-designed

2. Eureka Forbes - Aquasure Nakshatra

The Eureka Forbes Limited (EFL)-Aquasure Nakshatra is a medium size purifier with a 16-litre capacity (Top-8.5-litre, Bottom- 7.5-litre). AquaSure Nakshatra Storage Water Purifier is a gravity-based purifier and made of food grade material. Halopure disinfection technology used in it

It contains Multi stages Purification process which are physical filtration, carbon block and active disinfectant.

Physical Filtration:- Removes suspended impurities
Carbon block:- Removes organic and chemical impurities and bad taste of water
Active disinfectant: - Destroy bacteria

In the absence of the project activity, the households would have continued to boil water for drinking purposes. The technical specifications of the water purifier are as follows –
Size – 51 cm X 26 cm X 26 cm
Net weight: 2.38 kg
Flow Rate: 10L/h
Warranty Period – 2 years

Average Life span under standard use conditions: The life span of the cartridge used by the purifier has a capacity of 4000 l after which it must be replaced. This product comes with one additional cartridge of 4000 l capacity. The life of the kit therefore depends on how much water is purified by the user every day [12].

3. Eureka Forbes Aquasure Sampoorna 16 L

Size: 27 cm X 50 cm X 38 cm
Net Weight: 4 kg
Flow rate: 10 l/h
Warranty: 2 years

complaint registration system developed by POs which essentially assist them in systematically tracking and resolving the customer complaints in timely manner.

[12] The partner organizations' have ensured that the users get access to GKK and cartridges easi l flipcharts are pasted in the display board of branches telling users how to get these replacement cartridges and GKKs. The same is communicated to customers during weekly and monthly group meetings as well. There is a well-designed complaint registration system developed by POs which essentially assist them in systematically tracking and resolving the customer complaints in timely manner.

Average Life span under standard use conditions: The cartridges have to be replaced after every 4000 l as required by the manufacturer's specifications. The life of the kit therefore depends on how much water is purified by the user every day[13].

Solar Lighting System

There will be a variety of model(s) of solar lighting technologies will be disseminated under this VPA. Households receiving these solar lighting systems are not connected to the grid resulting in use of kerosene for lighting in the baseline scenario. Some of the models that have been distributed have are described below.
Some of the models that will be distributed, including their technical specifications are–

1. d.light S100
Luminosity – 65
Lighting Wattage – 1
Average Lifetime of product – 5 years

2. d.light S500
Luminosity – 240
Lighting Wattage – 3
Average Lifetime of product – 5 years

3. d.light ST100
Luminosity – 220
Lighting Wattage – 1
Average Lifetime of product – 5 years

4. d.light S550
Luminosity – 240
Lighting Wattage – 3
Average Lifetime of product – 5 years

5. d.light D333

[13] The partner organizations' have ensured that the users get access to GKK and cartridges easily. Written notices and flipcharts are pasted in the display board of branches telling users how to get these replacement cartridges and GKKs. The same is communicated to customers during weekly and monthly group meetings as well. There is a well-designed complaint registration system developed by POs which essentially assist them in systematically tracking and resolving the customer complaints in timely manner.

Luminosity – 520
Lighting Wattage – 6.6
Average Lifetime of product – 5 years

6. Jugnu Lightbox L2005
Luminosity – 200
Lighting Wattage – 3
Average Lifetime of product – 5 years

7. Jugnu SLT
Luminosity – 240
Lighting Wattage – 3~~6.6~~
Average Lifetime of product – 5 years

8. Jugnu TWP29006
Luminosity – 200
Lighting Wattage – 2
Average Lifetime of product – 5 years

9. Sunking Boom
Luminosity – 160
Lighting Wattage – 3
Average Lifetime of product – 5 years

10. CL1LT1F1HLS
Luminosity – 650 lumens
Lighting Wattage – 7 Watt
Average Lifetime of product (in years) –
Module – 15 years
Battery – 8 years
Electronics – 5 years

11. CL1LT1HLS
Luminosity – 650 lumens
Lighting Wattage – 7 Watt
Average Lifetime of product (in years) –
Module – 15 years
Battery – 8 years
Electronics – 5 years

12. CL1LT2HLS
Luminosity – 1100 lumens
Lighting Wattage – 12 Watt
Average Lifetime of product (in years) –

Module – 15 years
Battery – 8 years
Electronics – 5 years

13. CL2HLS
Luminosity – 400 lumens
Lighting Wattage – 4 Watt
Average Lifetime of product (in years) –
Module – 15 years
Battery – 8 years
Electronics – 5 years

14. CL2LT2HLS
Luminosity – 1650 lumens
Lighting Wattage – 19 Watt
Average Lifetime of product (in years) –
Module – 15 years
Battery – 8 years
Electronics – 5 years

15. CL2LT2HLS2
Luminosity – 1650 lumens
Lighting Wattage – 19 Watt
Average Lifetime of product (in years) –
Module – 15 years
Battery – 8 years
Electronics – 5 years

16. CL3LT1HLS2
Luminosity – 1050 lumens
Lighting Wattage – 11 Watt
Average Lifetime of product (in years) –
Module – 15 years
Battery – 8 years
Electronics – 5 years

17. CLT1HLS
Luminosity – 450 lumens
Lighting Wattage – 5 Watt
Average Lifetime of product (in years) –
Module – 15 years
Battery – 8 years
Electronics – 5 years

18. CLT2HLS
Luminosity – 1250 lumens
Lighting Wattage – 15 Watt
Average Lifetime of product (in years) –
Module – 15 years
Battery – 8 years
Electronics – 5 years

19. CLT2F1HLS
Luminosity – 1250 lumens
Lighting Wattage – 15 Watt
Average Lifetime of product (in years) –
Module – 15 years
Battery – 8 years
Electronics – 5 years

20. EH4HLS
Luminosity – 1050 lumens
Lighting Wattage – 9.6 Watt
Average Lifetime of product (in years) –
Module – 15 years
Battery – 8 years
Electronics – 5 years

21. NCL1LT1HLS
Luminosity – 650 lumens
Lighting Wattage – 7 Watt
Average Lifetime of product (in years) –
Module – 15 years
Battery – 8 years
Electronics – 5 years

22. NCL1LT2HLS
Luminosity – 1100 lumens
Lighting Wattage – 12 Watt
Average Lifetime of product (in years) –
Module – 15 years
Battery – 8 years
Electronics – 5 years

23. NCL2HLS
Luminosity – 400 lumens
Lighting Wattage – 4 Watt
Average Lifetime of product (in years) –

Module – 15 years
Battery – 8 years
Electronics – 5 years

24. NCL2LT1HLS
Luminosity – 770 lumens
Lighting Wattage – 9 Watt
Average Lifetime of product (in years) –
Module – 15 years
Battery – 8 years
Electronics – 5 years

25. NCL2LT2HLS
Luminosity – 1650 lumens
Lighting Wattage – 19 Watt
Average Lifetime of product (in years) –
Module – 15 years
Battery – 8 years
Electronics – 5 years

26. NCLT2F1HLS
Luminosity – 1250 lumens
Lighting Wattage – 15 Watt
Average Lifetime of product (in years) –
Module – 15 years
Battery – 8 years
Electronics – 5 years

27. NCLT2HLS
Luminosity – 1250 lumens
Lighting Wattage – 15 Watt
Average Lifetime of product (in years) –
Module – 15 years
Battery – 8 years
Electronics – 5 years

28. NPL1LT3F1HLS
Luminosity – 1900 lumens
Lighting Wattage – 22 Watt
Average Lifetime of product (in years) –
Module – 15 years
Battery – 8 years
Electronics – 5 years

29. NPL1LT3F2HLS
Luminosity – 1250 lumens
Lighting Wattage – 15 Watt
Average Lifetime of product (in years) –
Module – 15 years
Battery – 8 years
Electronics – 5 years

30. NPL1LT4HLS
Luminosity – 2430 lumens
Lighting Wattage – 27 Watt
Average Lifetime of product (in years) –
Module – 15 years
Battery – 8 years
Electronics – 5 years

31. NPL2LT4HLS
Luminosity – 2570 lumens
Lighting Wattage – 29 Watt
Average Lifetime of product (in years) –
Module – 15 years
Battery – 8 years
Electronics – 5 years

32. NPL2LT6F1HLS
Luminosity – 4750 lumens
Lighting Wattage – 57 Watt
Average Lifetime of product (in years) –
Module – 15 years
Battery – 8 years
Electronics – 5 years

33. NPL2LT8F2HLS
Luminosity – 6950 lumens
Lighting Wattage – 85 Watt
Average Lifetime of product (in years) –
Module – 15 years
Battery – 8 years
Electronics – 5 years

34. NPLT3F1HLS
Luminosity – 3400 lumens
Lighting Wattage – 40 Watt
Average Lifetime of product (in years) –

Module – 15 years
Battery – 8 years
Electronics – 5 years

35. NPLT4F1HLS
Luminosity – 2250 lumens
Lighting Wattage – 25 Watt
Average Lifetime of product (in years) –
Module – 15 years
Battery – 8 years
Electronics – 5 years

36. NPLT4HLS
Luminosity – 1700 lumens
Lighting Wattage – 33 Watt
Average Lifetime of product (in years) –
Module – 15 years
Battery – 8 years
Electronics – 5 years

37. PL1LT3F1HLS2
Luminosity – 3750 lumens
Lighting Wattage – 45 Watt
Average Lifetime of product (in years) –
Module – 15 years
Battery – 8 years
Electronics – 5 years

38. PL1LT3F2HLS
Luminosity – 1250 lumens
Lighting Wattage – 15 Watt
Average Lifetime of product (in years) –
Module – 15 years
Battery – 8 years
Electronics – 5 years

39. PL1LT4HLS
Luminosity – 2350 lumens
Lighting Wattage – 27 Watt
Average Lifetime of product (in years) –
Module – 15 years
Battery – 8 years
Electronics – 5 years

40. PL1LT5HLS
Luminosity – 1900 lumens
Lighting Wattage – 22 Watt
Average Lifetime of product (in years) –
Module – 15 years
Battery – 8 years
Electronics – 5 years

41. PL2LT4HLS
Luminosity – 1900 lumens
Lighting Wattage – 22 Watt
Average Lifetime of product (in years) –
Module – 15 years
Battery – 8 years
Electronics – 5 years

42. PL2LT6F1HLS
Luminosity – 4750 lumens
Lighting Wattage – 57 Watt
Average Lifetime of product (in years) –
Module – 15 years
Battery – 8 years
Electronics – 5 years

43. PL2LT8F2HLS
Luminosity – 6950 lumens
Lighting Wattage – 85 Watt
Average Lifetime of product (in years) –
Module – 15 years
Battery – 8 years
Electronics – 5 years

44. PLT3F1HLS
Luminosity – 3400 lumens
Lighting Wattage – 40 Watt
Average Lifetime of product (in years) –
Module – 15 years
Battery – 8 years
Electronics – 5 years

45. PLT4F1HLS
Luminosity – 3400 lumens
Lighting Wattage – 40 Watt
Average Lifetime of product (in years) –

Module – 15 years
Battery – 8 years
Electronics – 5 years

46. PLT4HLS
Luminosity – 1700 lumens
Lighting Wattage – 33 Watt
Average Lifetime of product (in years) –
Module – 15 years
Battery – 8 years
Electronics – 5 years

47. NCLT2HLS2
Luminosity – 1250 lumens
Lighting Wattage – 15 Watt
Average Lifetime of product (in years) –
Module – 15 years
Battery – 8 years
Electronics – 5 years

48. NCLT3HLS
Luminosity – 1350 lumens
Lighting Wattage – 15 Watt
Average Lifetime of product (in years) –
Module – 15 years
Battery – 8 years
Electronics – 5 years

49. NCLT4HLS
Luminosity – 2250 lumens
Lighting Wattage – 25 Watt
Average Lifetime of product (in years) –
Module – 15 years
Battery – 8 years
Electronics – 5 years

50. NPLT10F2HLS
Luminosity – 4650 lumens
Lighting Wattage – 55 Watt
Average Lifetime of product (in years) –
Module – 15 years
Battery – 8 years
Electronics – 5 years

51. NPLT4F2HLS
Luminosity – 2150 lumens
Lighting Wattage – 25 Watt
Average Lifetime of product (in years) –
Module – 15 years
Battery – 8 years
Electronics – 5 years

52. NPLT5HLS
Luminosity – 2600 lumens
Lighting Wattage – 30 Watt
Average Lifetime of product (in years) –
Module – 15 years
Battery – 8 years
Electronics – 5 years

53. NPLT6HLS
Luminosity – 2150 lumens
Lighting Wattage – 25 Watt
Average Lifetime of product (in years) –
Module – 15 years
Battery – 8 years
Electronics – 5 years

54. NPLT8F1HLS
Luminosity – 4010 lumens
Lighting Wattage – 45 Watt
Average Lifetime of product (in years) –
Module – 15 years
Battery – 8 years
Electronics – 5 years

55. SB2HLS
Luminosity – 1050 lumens
Lighting Wattage – 12 Watt
Average Lifetime of product (in years) –
Module – 15 years
Battery – 8 years
Electronics – 5 years

56. SB4HLS
Luminosity – 2350 lumens
Lighting Wattage – 30 Watt

Average Lifetime of product (in years) –
Module – 15 years
Battery – 8 years
Electronics – 5 years

57. SB6HLS
Luminosity – 2500 lumens
Lighting Wattage – 28 Watt
Average Lifetime of product (in years) –
Module – 15 years
Battery – 8 years
Electronics – 5 years

58. SB8HLS
Luminosity – 2500 lumens
Lighting Wattage – 32 Watt
Average Lifetime of product (in years) –
Module – 15 years
Battery – 8 years
Electronics – 5 years

All products contain a solar panel, lights as shown in the photograph –

Other models of solar lighting systems may also be offered under the VPA as long as they meet all the requirements of the methodology AMS.I.A. v14. and the PoA eligibility criteria in the registered PoA-DD.

The following table provides information on how the project helps in reducing GHG emissions and contributes to SDGs

Sustainable Development Goals Targeted	How the project contributes to the identified SDG
13 Climate Action (mandatory)	The emissions from the water purifier are less than the water boiled in baseline stove. Similarly, SLS replace kerosene lanterns and reduce emissions. Therefore, GHG emissions are reduced.
1 No Poverty	The water purification systems and SLS provides access to basic services that is efficient and less polluting form.
6 Clean Water and Sanitation	The project provides clean water and improvement in sanitation of the households of the beneficiaries
7 Affordable and Clean Energy	Project provides access to affordable and cleaner technology for drinking safe water i.e. operational WPS and Solar lighting Systems for lightning purpose.
8 Decent Work and Economic Growth	Employment is generated in manufacturing, dissemination and maintenance of CEPs by the project

A.4. Scale of the project

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For WPS (large scale limits)

The VPA is a large-scale project activity.

Emission reductions from total estimated WPS distribution in year 5= 90,914 tCO_2e

For SLS (within small scale limits)

Parameter	Unit	Value	Reference/Source
Highest Wattage of solar device	W	5.28	Highest capacity of model amongst the different types of solar lighting systems to be distributed under the VPA

Total number of solar devices till 15 MWe threshold is reached	**2,840,909**
Each device as a percentage of the	0.00004%

threshold

As evident from the above table the distribution of WPS is more than small scale thresholds therefore it is a large-scale activity whereas SLS distribution is below SSC thresholds levels.

A.5. Funding sources of project

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There is no public funding for the PoA or the VPA. No ODA funding will be used, as confirmed by signed ODA Declarations submitted to GS. MEC works with Microfinance Institutions (MFIs) to develop a successful and diversified clean energy-lending program Distribution of clean energy products i.e. WPS and SLS is done by microfinance institutions (MFIs) through micro loans.

SECTION B. APPLICATION OF APPROVED GOLD STANDARD METHODOLOGY (IES) AND/OR DEMONSTRATION OF SDG CONTRIBUTIONS

B.1. Reference of approved methodology (ies)

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Emission Reduction from safe drinking water supply version 1.0[14]

AMS-I.A "Electricity generation by the user" (Version 14)[15]
CDM Tool 30: Calculation of the fraction of non-renewable biomass v3.0

B.2. Applicability of methodology (ies)

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Water filters- Emission Reduction from Safe Drinking Water Supply, version 1.0

[14] https://www.goldstandard.org/project-developers/standard-documents

[15] https://cdm.unfccc.int/filestorage/A/R/X/ARX0JK3B48L2Z9M5VNP67QTUDOEC1Y/EB54_repan08_AMS-I.A_ver14.pdf?t=ZnB8cjJjczA2fDB22_8u7d20CXh001GrJO0V

1	Methodological criteria	This methodology is applicable to project activities that introduce a new, or rehabilitate an existing, zero-emission or low-emission technology to supply safe drinking water.	The project involves introduction of new zero emission technology to supply safe drinking water. The specifications of the water purifiers are detailed out in section A.3 of the VPA-DD. Document: Project sheet/manufacturers specification
2	Methodological criteria	As per para 2.2.1a of the methodology, Emission reductions from Safe Drinking Water Supply v.1.0, eligible household water treatment technologies (HWT), institutional water treatment technologies (IWT), and community level water treatment technologies (CWT) include bleach/chlorine, water filter (ceramic, sand, composite, membrane, etc.), UV disinfection, etc.	The project involves dissemination of zero emission water filters under Household water treatment technologies (HWT). Document: Project sheet/manufacturers specification
3	Methodological criteria	This methodology allows for project activities to include safe water treatment and/or supply technologies implemented for end-users in households, and/or commercial premises such as shops or institutional premises including half or full day/boarding schools, prisons, army camps & refugee camps.	The water purifier deployed is the HUL Pureit classic 23L, Eureka Forbes Limited (EFL) – Aquasure Nakshatra and Eureka Forbes Aquasure Sampoorna 16L, hence is an appliance that are low greenhouse gas emitting water purification for end users in households. Document: Sales database

4	Methodological criteria	Project technology performance level (HWT and IWT): It shall be demonstrated based on report of laboratory testing or official notification that the project technology or equipment achieves either (i) the performance target classification 3-star or 2-star level, meaning "Comprehensive Protection," as per the WHO International Scheme to Evaluate Household Water Treatment Technologies (World Health Organization, 2011) or (ii) compliance with the national standard or guideline for household drinking water treatment technology; if no national guideline or standard is available, then the project technology shall comply with the WHO International Scheme requirements as per (i) (parameter SDWS 2).	As mentioned in the specifications provided by the manufacturer's, the HUL Pureit classic 23L, Eureka Forbes Limited (EFL) – Aquasure Nakshatra and Eureka Forbes Aquasure Sampoorna 16L water purification devices deployed under the proposed VPA meet the host country drinking water quality requirements. Test reports from National accredited labs confirming the compliance of treated water with WHO and host country norms shall be submitted to GS VVB.

5	Methodological criteria	As per para 2.2.1 i, the project must conduct annual water hygiene education campaigns for the end-users.	Annual water hygiene education campaigns will be conducted. During monitoring of households and Institution, CME shall conduct a representative sample survey annually and will be reported as "report of annual hygiene campaign results" and summarized in the monitoring report.
6	Methodological criteria	A project applying this methodology may make SDG claims if relevant monitoring parameter(s) is included in the monitoring plan to demonstrate and confirm the project's contributions to SDGs[16]. See parameter SDWS 19.	The project developer /CME will capture all the SDG indicators which is relevant to this project through monitoring in Households. The monitoring will be done using a detailed questionnaire which includes all the SDG indicators. For example, capturing water quality.

[16] https://www.sdg6monitoring.org/indicator-611/

7	Methodological criteria	Project shall document the national, regional and local regulatory framework for provision of safe drinking water in the project boundary. The project shall not undermine or conflict with any national, sub-national and local regulations or guidance for safe drinking water supply, operation and maintenance, including any tariff requirements.	The national, regional and local regulatory framework for the safe water has been defined under Bureau of Indian Standards (BIS) and World Health Organization (WHO). The project activity devices confirm the compliance of water from water purifiers with above norms.

8	Methodological criteria	If the expected technical life of project technology (parameter SDWS 7) is shorter than the crediting period, describe measures to ensure that end users are provided replacement systems of comparable quality at the end of the expected technical life (for example, replace with comparable or better technology, retrofit with performance guarantee, etc.). This applies both for new technology and rehabilitated.	The end users in the VPA shall be provided with replacement parts including new filter, and/or access to a new model technology of comparable quality once the filters reach end of life as mentioned in section A.3. These filters will be available through the MFI offices or their retailers. Specifically, the PO field staff typically meets with the users of the improved water filters on a weekly or monthly basis, either in group meetings, or when they come to a bank branch. At group meetings the PO will make regular announcements about the availability of replacement filters, including where to buy[17] them, and discounts available due to the carbon funds. The project implementer would ensure that maintenance of the project appliances is implemented in accordance with manufacturer's specifications/ recommendations, including provisions in regards to replacement or cleansing of the involved filters.

[17] 1 extra replacement kit will be provided at the time of sale as an incentive mechanism.

9	Baseline scenario	Each Project or VPA shall determine the applicable baseline scenario for fuel, technology and end-user group as applicable.	The Pre-project practices of boiling water, or drinking unsafe water, Efficiency of water boiling systems and Baseline fuels have been defined in section B.4 of the VPA-DD
Solar Lighting Systems- AMS IA (version 14.0)			
10	Methodological criteria	Criteria1: The VPA consists of distribution of solar lighting and solar electric/PV systems, product type defined in the VPA-DD, and hence appliances involving the renewable electricity generation that supply individual households/users or groups of households/ users as per AMS I. A, ver. 14. Please note that not all solar lighting systems may have been deployed at VPA inclusion stage, the 'type and number of solar lighting systems deployed' will however also be checked during verification, and in case any deployed solar lighting systems type will be found not in line with the methodology requirement, those solar lighting systems will not be counted for emission reduction calculation.	Specification of solar lighting system type and compliance with the technological requirements of AMS I A as described in Section A.3 of the specific VPA-DD. Various models of solar lighting systems to be deployed and other models, hence are appliances involving the renewable electricity generation that supply individual households/users or groups of households/ users as per AMS I. A, ver. 14. The households/users are connected to grid hence exception criteria 1(b) of AMS I.A v14 has been applied.

11	Methodological criteria	Criteria1(b): The emissions reduction per solar lighting system included in the VPA is less than 5 tonnes of CO_2e a year.	Specification of solar lighting system type and compliance with the technological requirements of AMS I A are described in the VPA-DD Section A.3
12	Methodological criteria	Criteria1(b): The PO must prove that fossil fuel, specifically kerosene, is used in the absence of the project activity as demonstrated by: A representative sample survey (90% confidence interval, ±10% error margin) of target households; or Official statistics from the host country government agencies.	Based on official statistics from the host country government agencies (mentioned in section B.4 of the VPA-DD), in the absence of project technology, end users would have used wick-based kerosene lanterns for lighting. Document: Manufacturers specification And NSSO's 2007 report on "Energy Sources of Indian Households for Cooking and Lighting, 2004-05.

13	Methodological criteria	Criteria 1: The installed capacity of the VPA will not increase beyond 15 megawatt (MW) (threshold as per EB 61 Annex 1) throughout the crediting period of the VPA. If a VPA exceeds the applicable limit in any year, the claimable emission reduction shall be capped based on the estimated GHG reductions in the VPA-DD). Please note that not all solar lighting systems may have been deployed at VPA inclusion stage, the SSC limit for VPAs can however also be checked during verification, and in case any deployed solar lighting systems will be found not in line with VPA SSC Limit for VPAs requirement, those solar lighting systems will not be counted for emission reduction calculation.	The estimated maximum number of solar lighting systems is to be defined in the VPA-DD according to the equation provided in PoA-DD. The renewable energy systems introduced in this VPA have an average capacity of approximately 5.28 Wp. The project would need to reach over 2,840,909 installations before exceeding the CDM small-scale cap. This is beyond the expected scope of the VPA. The coordinating entity will track installations and ensure that the SSC VPA does not go beyond the limit of 15MW. Each unit is therefore 0.00004% of the smallscale limit. This is proven in the ex-ante ER calculations excel sheet provided. If a CPA exceeds the applicable limit in any.

14	Methodological Criteria	Criteria 2: Hydro power plants with reservoirs that satisfy at least one of the following conditions are eligible to apply this methodology: (a) The project activity is implemented in an existing reservoir with no change in the volume of reservoir; (b) The project activity is implemented in an existing reservoir, where the volume of reservoir is increased and the power density of the project activity is greater than 4 W/m2; (c) The project activity results in new reservoirs and the power density of the power plant, is greater than 4 W/m2.	The VPA does not involve installation/operation of hydro power plants. Thus, this criterion is not applicable.
15	Methodological Criteria	Criteria 3: Combined heat and power (cogeneration) systems are not eligible under this category	The VPA does not involve combined heat and power (cogeneration) systems. Thus, this criterion is not applicable.
16	Methodological Criteria	Criteria 4: If the unit added has both renewable and non-renewable components (e.g. a wind/diesel unit), the eligibility limit of 15 MW for a small-scale CDM project activity applies only to the renewable component. If the unit added co-fires fossil fuel, the capacity of the entire unit shall not exceed the limit of 15 MW.	The VPA does not involve installation/operation of hybrid units (having both renewable and non-renewable components). Thus, this criterion is not applicable.

17	Methodological Criteria	Criteria 5: Project activities that involves retrofit or replacement of an existing facility for renewable energy generation are included in this category. To qualify as a small-scale project, the total output of the modified or retrofitted unit shall not exceed the limit of 15 MW	The VPA does not involve retrofit or replacement of an existing facility for renewable energy generation. Thus, this criterion is not applicable.
18	Methodological Criteria	Criteria 6: In the case of project activities that involve the addition of renewable energy generation units at an existing renewable power generation facility, the added capacity of the units added by the project should be lower than 15 MW and should be physically distinct from the existing units.	The VPA does not involve the addition of renewable energy generation units at an existing renewable power generation facility. Thus, this criterion is not applicable

Comparison between AMS III AV and Safe water methodology

AMS III AV	**GS Safe Drinking Water**	**Justification**
The VPA consists of distribution of water purifiers, product type defined in the CPA-DD, and hence appliances that are low greenhouse gas emitting water purification systems to achieve water quality defined in a relevant national standard or guideline for drinking	This methodology is applicable to project activities that introduce a new, or rehabilitate an existing, zero-emission or low-emission technology to supply safe drinking water.	The project involves introduction of new zero emission technology to supply safe drinking water. The specifications of the water purifiers are detailed out in section A.3 of the VPA-DD. Document: Product data sheets from manufacturer

water quality and involve point-of use (POU) or point-of-entry (POE) treatment systems for residential or institutional applications, as per AMS III. AV, ver. 2 Please note that not all water purifiers may have been deployed at CPA inclusion stage, the 'type and number of water purifiers deployed' will however also be checked during verification, and in case any deployed water purifiers type will be found not in line with the methodology requirement, those water purifiers will not be counted for emission reduction calculation.		
As per methodology AMS III.AV v02 paragraph 3(a), prior to the implementation of each VPA project activity, it must be determined that: "...a public distribution network of safe drinking water does not exist within	-	As mentioned in Section B.4 of the VPA-DD, a public distribution network of safe drinking water does not exist in the VPA project boundary. Additionally, a testing was conducted with NABL accredited lab on water quality test of

the total project area and safe drinking water (SDW) if any is produced by the consumers by only using point-of-use or point of entry water purifiers. If during the crediting period SDW is made available in (parts of) a project area through a public distribution network, this methodology cannot be applied anymore to this project area (or part of the project area) from that point in time and the emission reductions pertaining to this project area cannot be claimed from that point onwards. This condition should be checked annually during the crediting period."		supplied water in the project area and found that it is not fit for consumption.
The PO must monitor the baseline system that is replaced to ensure that only the displacement of traditional unimproved systems is credited	Each Project or VPA shall determine the applicable baseline scenario for fuel, technology and end-user group as applicable.	The Pre-project practices of boiling water, or drinking unsafe water, Efficiency of water boiling systems and Baseline fuels have been defined in section B.4 of the VPA-DD
As per methodology AMS III.AV v02 paragraph 3(c), prior to the	If the expected technical life of project technology (parameter SDWS 7) is	As mentioned in Section A.3 of the VPA-DD, the water system unit does not

implementation of project activity, it must be determined that: "In cases where the life span of the water treatment technologies is shorter than the crediting period of the project activity, there must be documented measures in place to ensure that end users have access to replacement purification systems of comparable quality."	shorter than the crediting period, describe measures to ensure that end users are provided replacement systems of comparable quality at the end of the expected technical life (for example, replace with comparable or better technology, retrofit with performance guarantee, etc.). This applies both for new technology and rehabilitated.	have a prescribed lifetime from the manufacturer. The Germ kill kit (GKK) for Pureit and cartridge for Nakashtra and Sampoorna however has to be replaced after every 1500 l and 4000 l respectively as required by the manufacturer's specifications. The end users in the VPA shall be provided with replacement parts including new filter, and/or access to a new model technology of comparable quality. These filters will be available through the MFI offices or their retailers. Specifically, the PO field staff typically meets with the users of the improved water filters on a weekly or monthly basis, either in group meetings, or when they come to a bank branch. At group meetings the PO will make regular announcements about the availability of replacement filters, including where to buy them, and discounts

		available due to the carbon funds. The project implementer would ensure that maintenance of the project appliances is implemented in accordance with manufacturer's specifications/ recommendations, including provisions in regards to replacement or cleansing of the involved filters.
Determination of Case 1 or Case 2, as defined by SSC methodology AMS III.AV v02 paragraph 4.	-	As mentioned in Section B.4. of the VPA-DD, the VPA falls under Case 1 as determined using Option iii i.e. survey in project boundary using 90/10 confidence/precision for sampling. A survey was conducted in 300 households and it was determined that more than 95% households boil water obtained from different sources of water to make it safe. The piped supply of water provided by the Urban local body is not considered to be safe for consumption directly and

		hence these households do not have access to an improved drinking water source. Details of the baseline survey is provided in section B.4.
-	As per para 2.2.1a of the methodology, Emission reductions from Safe Drinking Water Supply v.1.0, eligible household water treatment technologies (HWT), institutional water treatment technologies (IWT), and community level water treatment technologies (CWT) include bleach/chlorine, water filter (ceramic, sand, composite, membrane, etc.), UV disinfection, etc.	The project involves dissemination of zero emission gravity water filters under Household water treatment technologies (HWT). Document: Project sheet/manufacturers specification
-	This methodology allows for project activities to include safe water treatment and/or supply technologies implemented for end-users in households, and/or commercial premises such as shops or institutional premises including half or full day/boarding schools,	The water purifier deployed is the Eureka Forbes Aquasure Nakshatra, Sampoorna and HUL PureIt Classic, hence is an appliance that are low greenhouse gas emitting water purification for end users in households. Document: Sales database

	prisons, army camps & refugee camps.	
-	Project technology performance level (HWT and IWT): It shall be demonstrated based on report of laboratory testing or official notification that the project technology or equipment achieves either (i) the performance target classification 3-star or 2-star level, meaning "Comprehensive Protection," as per the WHO International Scheme to Evaluate Household Water Treatment Technologies (World Health Organization, 2011) or (ii) compliance with the national standard or guideline for household drinking water treatment technology; if no national guideline or standard is available, then the project technology shall comply with the WHO International Scheme requirements as per (i) (parameter SDWS 2).	As mentioned in the specifications provided by the manufacturer's, the Eureka Forbes Aquasure Nakshatra, Sampoorna and Hindustan Unilever (HUL)-PureIt water purification devices deployed under the proposed VPA meet the host country drinking water quality requirements. Test reports from National accredited labs confirming the compliance of treated water with WHO and host country norms shall be submitted to GS VVB.
-	As per para 2.2.1, the	Annual water hygiene

	project must conduct annual water hygiene education campaigns for the end-users.	education campaigns will be conducted. During monitoring of households and Institution, CME shall conduct a representative sample survey annually and will be reported as "report of annual hygiene campaign results" and summarized in the monitoring report.
-	A project applying this methodology may make SDG claims if relevant monitoring parameter(s) is included in the monitoring plan to demonstrate and confirm the project's contributions to SDGs 12. See parameter SDWS 19.	The project developer /CME will capture all the SDG indicators which is relevant to this project through monitoring in Households. The monitoring will be done using a detailed questionnaire which includes all the SDG indicators. For example, capturing water quality.
-	Project shall document the national, regional and local regulatory framework for provision of safe drinking water in the project boundary. The project shall not undermine or conflict with any national, sub-national and local regulations or guidance for safe drinking water supply,	The national, regional and local regulatory framework for the safe water has been defined under Bureau of Indian Standards (BIS) and World Health Organization (WHO). The project activity devices confirm the compliance of water from water purifiers with above norms.

	operation and maintenance, including any tariff requirements.	

B.3. Project boundary

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SOLAR:

Source		GHGs	Included?	Justification/Explanation
Baseline scenario	Combustion of kerosene fuel used for light;	CO_2	Yes	Primary source of emissions
		CH_4	No	Minor source
		N_2O	No	Minor source
Project Scenario	Renewable energy source solar lamps used for light	CO_2	No	Project activity does not involve consumption of fossil fuels or electricity therefore no CO2 emissions are generated
		CH_4	No	Minor source
		N_2O	No	Minor source

WATER PURIFICATION SYSTEMS

Source		GHGs	Included?	Justification/Explanation
Baseline scenario	Emissions from the wood fuel utilized for obtaining safe drinking water displaced due to project activity	CO_2	Yes	Major source of emissions
		CH_4	Yes	Minor source of emissions
		N_2O	Yes	Minor source of emissions
Project Scenario	Emissions from electricity/fossil fuel for operating project water supply/ treatment technology	CO_2	No	Project activity does not involve consumption of fossil fuels or electricity therefore no CO_2 emissions are generated
		CH_4	No	No emissions
		N_2O	No	No emissions

B.4. Establishment and description of baseline scenario

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BASELINE DESCRIPTION – SOLAR LIGHTING

The project activity involves the introduction of solar lighting systems into households throughout India. Solar lighting systems replace the main baseline fuel, kerosene. Baseline parameters for this project activity were primarily derived from data presented in India's National Sample Survey Organisation's (NSSO) 2007 report,

"Energy Sources of Indian Households for Cooking and Lighting, 2004-05"[18]. It reports information from the national Household Consumer Expenditure survey conducted from July 2004 to June 2005, and contains the most recent data on household lighting consumption in India. Other supporting studies were used for non-India specific parameter values, such as luminous efficiency and the net calorific value of kerosene.

Households in India use kerosene, gas, candle, electricity, and other oil for lighting. Among these, kerosene and electricity are most commonly used. At a national level, kerosene and electricity is used by 99% of the households in both rural and urban areas. The use of kerosene as the primary source of lighting is common in rural areas where nationally 44% of the rural population consumes kerosene for lighting, as compared to 7% in urban areas.

According to Methodology AMS-I.A (version 14), the energy baseline is: the fuel consumption of the technology in use or that would have been used in the absence of the project activity to generate the equivalent quantity of energy, estimated using one of three options. This project activity will use Option 3, a trend-adjusted projection of historic fuel consumption in situations where an existing technology is replaced, to calculate emissions baseline in year y (BE_{CO2}), as outlined in the methodology.

Data from the 2007 NSSO report is used to calculate this projection. The baseline scenario identified in this PDD will serve to calculate the emission reductions creditable from the installation of renewable energy lighting applications, and the replacement of kerosene lanterns.

Objectives and Reliability Requirements

The 2004-05 Household Consumer Expenditure survey presents the distribution of rural and urban households by primary source of energy used for cooking and lighting in all of the states and UTs of India. The survey sampling design and instruments, as well as the preparation of the 2007 report, were developed by NSSO's Survey Design and Research Division. The field work was conducted by the Field Operations Division and the data processing and table generation by the Data Processing Division.

Target Population

The target population for this project activity consists of households throughout India where the CME's partner Microfinance Institutions (MFIs) operate. NSSO survey

[18] Report No (mospi.gov.in)

sample was collected to represent all Indian states and different socio-economic categories. NSSO data is used to calculate historic consumption rates of kerosene for the baseline of this project activity.

Sample Size

The 2004-05 NSSO survey covered all the States and UTs in India. The data was collected from a sample of 79,298 rural and 45,346 urban households spread over 7,999 villages and 4,602 urban blocks, respectively.

BASELINE SAMPLING DESIGN

Sampling Method

Clustered random sampling was used to select villages and urban blocks included in the survey. Each district within a state or UT was divided into two clusters that were comprised of all rural areas and all urban areas within a district. The number of villages or blocks sampled within a state or UT was determined based on the proportion of population as per the 2001 Census, and was subject to the availability of investigators to ensure a uniform workload. The allocation of the sample between the rural and urban sectors was determined by the proportion of the population as per the 2001 Census with a 1.5 weighting for the urban sector. Households were selected using simple random sampling without replacement with respect to rural/urban location, income, and monthly per capita expenditure.[19]

Sampling Frame

The sampling frame comprised of two different sources: For households in rural areas, a list of villages from the 2001 National census constituted the sampling frame. For households in the urban sector, the latest available list from the Urban Frame Survey (UFS) blocks was used as the sampling frame.

Quality Assurance/Quality Control

Technical guidance from the governing council NSSO and survey working group was provided at every stage of the survey. Since surveying was conducted over four

[19]See Appendix B of "Energy Sources of Indian Households for Cooking and Lighting, 2004-5" for detailed description of sampling procedures.

rounds, an equal number of villages/blocks were sampled in each to ensure a uniform spread.

BASELINE DATA ANALYSIS

According to Methodology AMS-I.A (version 14), the energy baseline is: *the fuel consumption of the technology in use or that would have been used in the absence of the project activity to generate the equivalent quantity of energy.* The technology that would have been used in the absence of the project activity is determined as a simple wick-based kerosene lantern.

PARAMETER: $BE_{CO2,y}$

Calculation Definitions

To calculate the energy baseline, this project activity will use Option 3 (which is specifically recommended for lighting devices) listed in AMS.I.A*, a trend-adjusted projection of historic fuel consumption in situations where an existing technology is replaced*. The fuel consumption trend of India shows the average level of kerosene consumption for lighting in the target households over the years. The trend extrapolation is used to ensure that no carbon credits can be claimed for a lighting service which exceeds the general lighting service that people could obtain from their average kerosene consumption. The specific equivalent level of lighting service is calculated for each improved lamp model, to ensure that in the end only the actual lighting service which is provided by an improved lamp will be converted into carbon credits.

As defined by AMS.I.A., paragraph 11, emissions in the baseline ($BE_{CO2,y}$)is calculated using the following equation:

Equation 1

$$BE_{CO2,y} = \sum_{j} FC_{j,y} * NCV_{j} * EF_{CO2,j}$$

Where:

Table 2

Parameter	Unit	Project Calculation
$BE_{CO2,y}$	tCO_2	Emissions in the baseline in year *y*
$FC_{j,y}$	kg	Amount of kerosene consumption in year *y*
NCV_j	GJ/kg	Net calorific value of kerosene
$EF_{CO2,j}$	tCO_2/GJ	CO_2 emission factor of kerosene
J	Kg	Kerosene

Step 1: Baseline Technology

Applying a conservative approach we assume the kerosene lamp model in the baseline is a hurricane lamp, which is conservative because it has a glass cover making it more efficient than most homemade lanterns. This baseline lantern has an average efficiency of 0.13 lumen/watt (Louineau et al, 1994)[20]. This again is conservative, as the World Bank has reported an efficiency of 0.1 lumen/Watt for this model.

Step 2: General Energy Baseline:

The most recent kerosene consumption volume of households that use kerosene for lighting in all of rural India is 6.98 L/month (NSSO data, 2004
; see Table 3 below).

Table 3

Year	Kerosene usage (L/month)
1987	3.85
1993	5.48
1999	8.1
2004	6.98

Source: NSSO, 1987, 1993, 1999, and 2004.

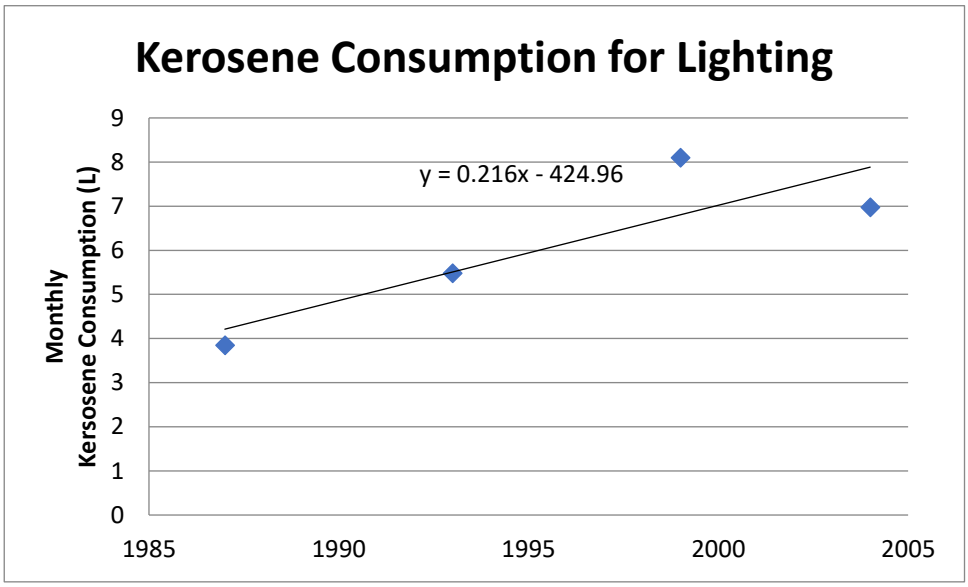
The following values were calculated based on the following formula:

Equation 2

KChh = KCcapita * HHsize / P(ker all India)

Figure 1: Kerosene Consumption in Rural India (based on historic NSSO data)

[20] Jean-Paul Louineau, Modibo Dicko, Peter Fraenkel, Roy Barlow and Varis Bokalders, "Rural Lighting: A Guide for Development Workers, Intermediate Technology (IT)" publications in association with The Stockholm Environment Institute 1994.



Step 3: Specific equivalent level of lighting service:

As a next step, the energy baseline calculated in Step 2 will be adjusted according to the actual level of lighting service provided by the improved lamps, in lumen*hours. The units of kerosene consumption per month per household will be adjusted to lumen*hours per month per household in the following way:

1. Calculate the lighting service provided to a household using the volume of kerosene consumption established in Step 2.
2. Compare the calculated lighting service in the previous step to the lighting service provided by the project lamps
3. Ensure carbon credits for project lamps per household do not surpass the lighting service of the energy baseline
4. Calculate the actual baseline emissions per project lamp based on the actual specific lighting service provided

The above steps are followed with detailed calculations below. As mentioned in Step 1, the luminous efficiency of the baseline technology = .13 lumens / watt (using a conservative value as described above).

Using the parameters below, the equivalent level of lighting service of the kerosene consumed by households in the baseline can be calculated:

Table ~~34~~

Parameter	Unit	Description	Value	Source
LS(month)	Lumen*hr/month	Lighting per month	9021.4	Calculated

KC(HH)	Liter/ month	Household Kerosene consumption per month	6.98	NSSO 2004~~0 51~~1
LE(ker)	Lumen / W	Luminous efficiency of kerosene with baseline lantern	0.13	Louineau et al, 1994
NCV(ker)	TJ/Gg	Net calorific value of kerosene	43.8	IPCC 2006
Dens (ker)	KG/L	Density of kerosene	0.81715	www.simetric.co.u

1. Methodology AMS-I.A. allows for a default daily lighting usage of 3.5 hours in the baseline. The calculation below represents the average light output that households get from the kerosene consumed. This value will be used to compare the lighting output of the new technology from this project.

The Lighting per month can be calculated using the following formula:
Equation 3

$$LS_{month} = KC_{HH} * LE_{ker} * NCV_{ker} * \frac{10^3}{3.6} * dens_{ker}$$

The lighting per month based on 2004 kerosene usage = 9021.4 Lumen hr / month. The reference cap can then be calculated using the formula:

Equation 4

RC = LS (month) * 12/ 365*h

The reference cap equals 84.7, based on 2004 data, and will be extrapolated to future years as new data arises on usage. The reference cap for possible carbon savings is defined such that in a single household it shall not be allowed more emission reductions claimed than those that arise from the general baseline lighting service.

2. The possible carbon savings in a single household has a reference cap as defined by the baseline light output. According to AMS-I.A, it shall not be allowed that for a single household more emission reductions are claimed than those that arise from the general baseline lighting service. The reference cap values for all years of the crediting period are presented in the table below:

Table ~~4~~5: Extrapolated monthly kerosene consumption per household, equivalent lighting service and reference cap values

Year	Extrapolation of Kerosene Consumption (L/month)	Equivalent lighting service (lumen*hours/month)	Reference Cap (lumens)
2012	9.632	12448.96	116.9374
2013	9.848	12728.14	119.5598
2014	10.064	13007.31	122.1821
2015	10.28	13286.48	124.8045
2016	10.496	13565.65	127.4268
2017	10.712	13844.82	130.0492
2018	10.928	14123.99	132.6715
2019	11.144	14403.16	135.2939
2020	11.36	14682.33	137.9162
2021	11.576	14961.5	**140.5386**
2022	11.792	15240.68	143.1609

3. The baseline emissions for the lighting systems that are being distributed under this project are calculated as the emissions corresponding to the specific equivalent level of lighting service in the baseline.

The following equation is used to calculate baseline emissions for a solar lamp (n) in period (v); the emissions that would have been generated by the burning of kerosene in the baseline to generate that same lighting as provided by n lamp over period v:

Equation 5

$$BE_{n,v} = l_n * d_v * h * \frac{1}{LE_{ker}} * EF_{ker} * 10^{-6} * 3.6$$

The values are defined as follows:

Table 56

Parameter	Unit	Description	Value	Source
l(n)	Lumen	Lumen output of solar lamp, n	Variable (see table)	Technical specs (see references)
D	Days	Number of days in period v	365	-
h	Hours / day	Average operating hours of kerosene lamps in the	3.5	Meth AMS I.A. Default value

		baseline		
LE(ker)	Lumen/W	Specific luminous efficiency of kerosene when burnt in kerosene lantern	0.13	Louineau et al 1994
EF(ker)	TCO2/GJ	Specific CO2 emissions of kerosene	0.0719	IPCC 2006

For the solar lighting component, baseline scenario is the use of fossil fuel to provide lighting in the households in the project boundary as per AMS-I.A. "Electricity generation by the user" (Version 14).

Rural households in India rely on kerosene for lighting. As per the "Energy sources of Indian Households for cooking and lighting" report (dated September 2012) of the Government of India's National Sample Survey Office, 44% of households in rural India use kerosene for lighting. Since, the solar lighting systems are implemented in a phased manner, the baseline scenario for individual solar lighting system will be identified in line with the guidelines given in AMS-I.A. version 14.

To ensure that the baseline requirements of the methodology and the registered PoA-DD are complied with by the VPA, the CME also carried out a baseline survey to determine the baseline attime of VPA inclusion. This survey was carried out through a random representative approach by considering end-users that have expressed an interest in buying the solar products.

A representative sample survey (90% confidence interval, +/- 10% error margin) was carried out in the anticipated project population to determine their pre-project fuel. All respondents said that they used kerosene in wick lamps in the baseline scenario and are not connected to the grid.

Methodology for the sample survey:

1. The total sample size required to meet (90% confidence interval, +/- 10% error margin) wascalculated using http://www.raosoft.com/samplesize.html.
2. The number of final samples taken i.e. 70 was more than the sample size required (68 samples as per http://www.raosoft.com/samplesize.html calculation) to meet 90% confidence interval, +/- 10% error margin to cover for contingencies like residents not being in the house, residents not willing to talk etc.
3. A questionnaire was prepared in consultation with PO's for conducting the survey. The questionnaire includes the name of the product owner, address

and ask questions on what their baseline fuel was. The questions are designed to make sure that they are not leading and ensure that the respondents are not asked questions with bias.

4. MEC enumerators visited the selected households during the day (between 9 AM and 6PM) to ask them the questions and collect the answers

During transition, CME conducted additional survey to ensure that the baseline requirements of the methodology and the registered PoA-DD are still complied with by the VPA at the time of transition, a baseline survey was conducted by CME in September to November 2020. This survey was carried out through a random representative approach by considering end-users that have expressed an interest in buying the solar products from Partner Organisations (PO) who are part of the VPA.

The baseline survey was carried out in all the India states which are part of the VPA. Representative branches are selected from these states from different POs operating in these regions. Then smaller set of sample population was selected randomly from 2-3 villages in each of the branch area.

MEC staff, branch staff and head office staff from PO have been trained to conduct survey. The staff members chosen for the survey had prior experience of conducting on-field surveys and were familiar with local area, culture, and local language. MEC staff and branch staff of PO organizations have in turn have trained the local field staffs from the same villages who are familiar with local area. The training was adequately tailored to the baseline surveys and included an interactive discussion of questions with surveyors, going through the questions of the baseline survey questionnaire (data collection form), role plays as well as interview techniques. The geographical area was divided into state-wise and each of CME staff supervising the on-field surveys carried out by the partner organizations branch staff.

Methodology for the sample survey:

1. The number of final samples taken i.e. 45 per state to meet 90% confidence interval, +/- 10% error margin.
2. The samples selected cover the states covered under the VPA at the time of submission for transition to GS.
3. A questionnaire was prepared in consultation with PO for conducting the survey. The questionnaire includes the name of the surveyed household member, address and ask questions on

a. **Present lighting arrangement**
b. **Usage of kerosene for lighting needs**
c. **Number of kerosene lamps**
d. **Hourly usage of kerosene lamps**
e. **Power cut in the area**
f. **Issues/ problems faced while using kerosene lamp (health/financial/ illumination)**

4. MEC enumerators visited the selected households during the day (between 9 AM and 6PM) to ask them the questions and collect the answers.

All surveyed households responded that they used kerosene lamps in the baseline scenario. On an average the households burned kerosene lamps for 4-5hrs per day for their lighting needs.

As an additional measure, since solar sales in this VPA will be made in a phased manner across several states in India, and to ensure that the baseline requirements of the applied methodology AMS.I.A. v14 and registered PoA-DD are met, the baseline is also, one of the monitoring parameters in Section B.5.1 of the VPA-DD. As part of the monitoring, it will be recorded whether or not households being given the solar lighting system used kerosene in the pre-project scenario. Only those households that used kerosene for lighting in the baseline scenario are included in the VPA for crediting.
Hence, it can be established that for households with solar lighting systems in the proposed VPA, the baseline is use of kerosene.

BASELINE DESCRIPTION – Water purification systems

Under the applied methodology for emission reduction from safe drinking water supply- version 1.0, the project's objective is to reduce or avoid GHG emissions from boiling unsafe drinking water in the baseline and to supply drinking water that is safe for consumption when it enters the project households and /or institutional premises.

As per section 3.4 of the applied GS methodology, the general baseline scenario is that users would have boiled drinking water in the absence of the project activity. The project activity will only claim credits for end-users that boil water and suppressed demand is not included in the baseline scenario. As per section 3.5.1 of the applied GS methodology, the applicable baseline scenario for fuel and technology is determined based safe water methodology. The baseline survey provides critical information on the following pre-project conditions:

1. Pre-project practices of boiling water, or drinking unsafe water (suppressed demand): Document the safe drinking water sources and/or treatment technologies available and used in the project boundary (e.g. no treatment, boiling, piped water, chlorine tablets, etc.). This critical information

corresponds to the percentage of households available of safe drinking water in baseline survey.

2. Efficiency of water boiling systems: Document the stove or water boiling technologies used in the project boundary. This critical information corresponds to the percentage of households treat unsafe water by boiling and the efficiency of water boiling systems.
3. Baseline fuels: Document the cooking fuels used in the project boundary. This critical information corresponds to the percentage of households treat unsafe water by boiling and the percentage of fuel type for each type stove**.**

The baseline survey requires in person interviews with a robust sample of local households in the target project area. As per Safe water methodology, the baseline survey should be carried out for each baseline scenario using representative and random sampling, following these guidelines for minimum sample size:
Group size <300: Minimum sample size 30 or population size, whichever is smaller
Group size 300 to 1,000: Minimum sample size 10% of group size
Group size > 1,000 Minimum sample size 100

The baseline survey was conducted in 7 states for the VPA. For baseline survey, 90/10 precision level was selected as per the methodology. Total samples selected per state was 100 and total samples selected was 700.

Based on the presence of PO branches, branches were selected from different clusters to have a good representation of geographical spread. A smaller set of sample population was selected randomly from 2-3 villages in each of the branch area. Six staff members of MEC, and head office staff from PO have been trained to conduct survey. The staff members chosen for the survey had prior experience of conducting on-field surveys and were familiar with local area, culture, and local language. MEC staff and branch staff of PO organization have in turn have trained the local field staffs who are from the same villages familiar with local area. The training was adequately tailored to the baseline surveys and included an interactive discussion of questions with surveyors, going through the questions of the baseline survey questionnaire (data collection form), role plays as well as interview techniques.

Literature review was done to understand the demographics of the country for which recognized journals/articles and Census data was used. Accessibility and local authorities' permission were the basis for selecting a district. The survey employed simple random sampling approach to randomly choose areas/villages within the districts. Random sampling also ensured that the results captured the diversity of the communities which represent commonly observed fuel choices. The survey was carried out from September to December 2020 by CME with the help of POs. A questionnaire was prepared in consultation with PO for conducting the survey. The

questionnaire includes the name of the surveyed household member, address and ask questions on

1. Institution or a household
2. Source of drinking water
3. Water quality before drinking (without boiling)
4. Practiced treatment methods for drinking water (Boiling/ other method)
5. Water purification methods used in different seasons
6. Boiling process (traditional stove/ ICS/ LPG)
7. Type of fuel used in boiling (fuelwood/charcoal/LPG/kerosene/ other)
8. Person responsible for water collection (from source)
9. Time spent in boiling water and collect fuel
10. Challenges/ problems faced using traditional stove to boil water (health/ financial/ inadequate amount of drinking water)
11. Interest in buying a water purification system

Sources of water

16% (110HH/700HH) of the households have access to piped water. 19% (134HH/700HH) of the households take water from boreholes. 1% (5HH/700HH) of the households take water from protected wells. As per Annex 2 of the applied GS methodology, piped water and water from boreholes or protected wells belong to improved sources of drinking water. For the rest of 64% (451HH/700HH) households, the most common sources of water are from unprotected well, unprotected spring and surface water, which belong to unimproved sources of drinking water. This parameter is corresponding to the water sources in the project boundary which the parameter ID is SDWS 5 in section B.6.2.

Sources of water	Borehole or tube well	Piped into dwelling	Protected Well	Surface water	Unprotected well	Unprotected spring
BH	19	12	2	0	65	2
HR	13	20	0	1	64	2
PJ	22	33	0	4	40	1
KA	15	15	0	1	67	2
MP	22	10	1	0	65	2
UP	22	9	2	1	63	3
WB	21	11	0	5	61	2
Total	134 (19%)	110 (16%)	5 (1%)	12 (2%)	425 (61%)	14 (2%)

Sources of water	Improved Sources	Unimproved Sources
BH	33	67
HR	33	67

PJ	55	45
KA	30	70
MP	33	67
UP	33	67
WB	32	68
Total	249 (36%)	451 (64%)

Practices of boiling water or drinking unsafe water

The percentage of households who have access to safe drinking water before project activity is 36% (249HH/700HH). However, over 90% still treated (mainly boiling) water before drinking. These households upon asking the reason for treatment didn't believe the source water was safe for direct consumption. Additionally, CME conducted water testing of improved sources for 6 months starting September 2020 to February 2021 to check if improved sources are actually safe for drinking. 92%-96% of the samples confirmed presence of E.coli and fecal coliform in the states. This is also cross checked with Central Pollution Control Board (CPCB) water quality testing reports under their National Water Quality Monitoring Programme (NWQP) which is done in all state[21].

As per a report published by Global Wellness Institute[22] in partnership with School of Public Health, SRM Institute of Science & Technology and WTS international, many states in India have 10-50% or >50% ground water sources contaminated with fecal coliform. The report also says that lack of access to safe drinking water and good WASH conditions particularly plague certain segments of India's population, because of the social/economic/environmental/political contexts they live in. The children who die of diarrhea in India are likely to be from the 260 Mn people living below the poverty line (BPL), 450 Mn migrant laborers, 1.2 Mn tribal population, 889 Mn living in rural villages, 5 Mn of the internally displaced people, and 65 Mn slum dwellers. Despite the effort of increasing access to improved sources, there is a high level of morbidity that in turn reflect contamination of drinking water at source and/or supply and/or at the point of use.

As per a report by Centre for Affordable Water and Sanitation Technology (CAWST)[23], despite of having high access to improved sources of water, India has the highest rate of water-borne illness deaths in the world due to the fact that an "improved" water source may not necessarily be safe. Sources such as untreated tap water, hand

[21] https://cpcb.nic.in/wqm/2020/NWMP_DATA_2020.pdf
[22] https://globalwellnessinstitute.org/wp-content/uploads/2021/09/Access-to-safe-drinking-water-in-India.pdf
[23] https://www.engineeringforchange.org/research/household-water-treatment-trends-india/

pumps, and bore/tube wells are all included in the definition of improved water sources but can be easily contaminated during collection and distribution.

Figure 2: Water from handpump

64% (451HH/700HH) of households in 7 states didn't have access to safe water sources. 96% (431HH/451HH) households receiving unsafe water, were treating water before consumption and 4% (20HH/451HH) households drink unsafe water directly without any treatment. Data and information collected from the questionnaires show that all the households surveyed are involved in water treatment for domestic consumption. Among those who treat water, 94% (406HH/431HH) boil water before drinking.

Practices of treating water	**No of HH treating water supplied with unsafe water**	**%**	**No of HH drinking unsafe water without treatment**	**%**
BH	64	96%	3	4%
HR	63	94%	4	6%
PJ	43	96%	2	4%
KA	67	96%	3	4%
MP	67	100%	0	0%
UP	63	94%	4	6%
WB	64	94%	4	6%
Total	**431**	96%	**20**	4%

Practices of treating water	**No of HH boiling water**	**%**	**No of HH treating without boiling**	**%**
BH	62	97%	2	5%

HR	59	94%	4	4%
PJ	40	93%	3	4%
KA	64	96%	3	4%
MP	63	94%	4	6%
UP	57	90%	6	6%
WB	61	95%	3	5%
Total HH supplied with unsafe water	**406**	**94%**	**25**	**6%**

Efficiency of water boiling systems and baseline fuels

Among those who treat drinking water by boiling, 92% (374HH/406HH) use three-stone fired stove using non-renewable biomass (firewood). Rest 8% (32HH/406HH) used LPG (fossil fuel) for boiling water. Efficiency of the three-stone fired stove is 10% as per methodology default value and for gas stove efficiency of 55% has been used based on literature[24]. Breakdown of fuel type against type of stove are shown as the following tables.

Stove Type	**Three stone fired Stove (Fuel type-Firewood)**	**%**	**Gas Stove (Fuel type-LPG)**	**%**
BH	59	95%	3	5%
HR	55	93%	4	7%
PJ	36	90%	4	10%
KA	60	94%	4	6%
MP	57	90%	6	10%
UP	51	89%	6	11%
WB	56	92%	5	8%
Total	**374**	**92%**	**32**	**8%**

[24] https://nepis.epa.gov/Exe/ZyPDF.cgi/P100T7UD.PDF?Dockey=P100T7UD.PDF

Figure 4: Three-stone fired stove for boiling

Further as a cross check measure other sources as mentioned in the methodology for the parameter x_f and C_b were used.

C_b (Proportion of project end-users who in the baseline were already using safe water, either from an improved water source, or from a water treatment method other than boiling)

According to baseline survey conducted by CME, C_b can be calculated as below:
Bihar: Improved sources in the state of Bihar is 33%. As per CME test reports of improved sources, 91% sources had microbial contamination which means only 9% out of 33% improved sources are safe for drinking. Additionally, 67% households had access to unimproved sources, out of which 3% used some other treatment method (not boiling) to make water safe for drinking. Hence, for state of Bihar, C_b is calculated as below:
33%*9% + 67%*3% = 5.06%

Haryana: Improved sources in the state of Haryana is 358% as per Jal Jeevan Mission. As per CME test reports of improved sources, 91% sources had microbial contamination which means only 9% out of 33% improved sources are safe for drinking. Additionally, 67% households had access to unimproved sources, out of which 6% used some other treatment method (not boiling) to make water safe for drinking. Hence, for state of Haryana, C_b is calculated as below:
58%*9% + 67%*6% = 9.47%

Punjab: Improved sources in the state of Punjab is 55%. As per CME test reports of improved sources, 93% sources had microbial contamination which means only 7%

out of 55% improved sources are safe for drinking. Additionally, 45% households had access to unimproved sources, out of which 7% used some other treatment method (not boiling) to make water safe for drinking. Hence, for state of Punjab, C_b is calculated as below:
55%*7% + 45%*7% = 6.99%

Karnataka: Improved sources in the state of Karnataka is 30%. As per CME test reports of improved sources, 93% sources had microbial contamination which means only 7% out of 30% improved sources are safe for drinking. Additionally, 70% households had access to unimproved sources, out of which 4% used some other treatment method (not boiling) to make water safe for drinking. Hence, for state of Karnataka, C_b is calculated as below:
30%*7% + 70%*4% = 5.23%

Madhya Pradesh: Bihar: Improved sources in the state of Madhya Pradesh is 33%. As per CME test reports of improved sources, 96% sources had microbial contamination which means only 4% out of 33% improved sources are safe for drinking. Additionally, 67% households had access to unimproved sources, out of which 6% used some other treatment method (not boiling) to make water safe for drinking. Hence, for state of Madhya Pradesh, C_b is calculated as below:
33%*4% + 67%*6% = 5.32%

Uttar Pradesh: Improved sources in the state of Uttar Pradesh is 33%. As per CME test reports of improved sources, 96% sources had microbial contamination which means only 4% out of 33% improved sources are safe for drinking. Additionally, 67% households had access to unimproved sources, out of which 10% used some other treatment method (not boiling) to make water safe for drinking. Hence, for state of Uttar Pradesh, C_b is calculated as below:
33%*4% + 67%*10% = 7.70%

West Bengal: Improved sources in the state of West Bengal is 32%. As per CME test reports of improved sources, 96% sources had microbial contamination which means only 4% out of 32% improved sources are safe for drinking. Additionally, 68% households had access to unimproved sources, out of which 6% used some other treatment method (not boiling) to make water safe for drinking. Hence, for state of West Bengal, C_b is calculated as below:
32%*4% + 68%*5% = 4.47%

As per Jal Jeevan Mission by Government of India, piped supply in rural parts of the 12 states[25].

State	Piped Water supply Coverage
Bihar	1.89%
Haryana	58.08%
Punjab	49%
Karnataka	24.22%
Madhya Pradesh	11.27%
Uttar Pradesh	1.95%
West Bengal	1.18%

This has been used as cross check. Considering the baseline value are more conservative for all states except for Haryana, hence baseline values have been used for all states except Haryana where Jal Jeevan Mission values is used. Further, CME has conducted water testing of the improved sources including piped supply which clearly shows contamination hence, the above calculation has been considered for C_b.

x_f (Percentage of fuel f use in target population)

As per CEEW report 2018, 92% of rural households reported that LPG is too expensive to use it as primary fuel for cooking or to fulfil all cooking needs. This has been used as cross check. Considering 18% rural household use LPG and out of that 92% believe it is too expensive to use, the percentage households using LPG as main cooking fuel is
x_f = (1-92%) * 18% = 1.44%. This has been used as a cross check. As per our baseline study, the percentage of people using LPG is more conservative than the available literature.

Considering values from baseline survey is more conservation hence, baseline survey values has been considered which is 5-11% for boiling using LPG.

[25] https://ejalshakti.gov.in/jjmreport/JJMIndia.aspx

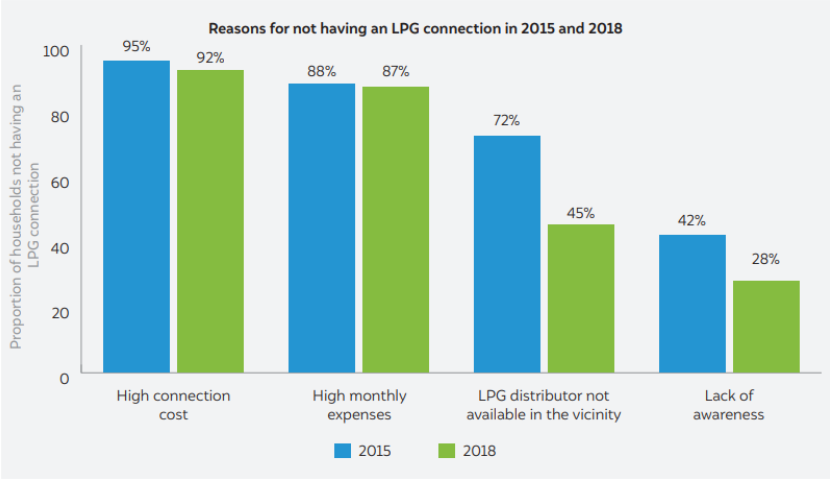


Figure 3: High connection cost and high recurring expenses continue to be the two primary reasons for non-adoption of LPG

BASELINE DETERMINATION - Non-renewable biomass (NRB) Assessment

The methodology tool TOOL30, Calculation of the fraction of non-renewable biomass, Version 3.0 is used to determine the non-renewable biomass (f_{NRB}). The tool provides guidance and step-wise procedure/method to calculate values of f_{NRB}. This tool is applied for calculating f_{NRB} that is used in baseline emissions in applicable methodologies that displaces the use of non-renewable biomass.

The tool is used by project proponent to calculate project specific f_{NRB} values for various Indian states. In this section, the f_{NRB} value estimated for the states of Punjab, Bihar, Haryana and Karnataka has been included. The area where biomass is sourced is the geographical area of these states encompassing all the districts of the state.

Table 6: Determination of fraction of non-renewable biomass (fNRB) for 4 states of India

State	Fraction of non-renewable biomass in the applicable area in the relevant period (%) (fNRB)
Punjab	0.939
Bihar	0.97
Haryana	0.935
Karnataka	0.675
Madhya Pradesh	0.842
Uttar Pradesh	0.954
West Bengal	0.952

Based on equation 1 of TOOL30, the calculations of f_{NRB} are shown in above table. The detailed calculations of RB and NRB have been provided in an excel sheet to VVB.

During transition, CME is undergoing combined crediting period renewal and design certification. During renewal, CME has moved from AMS III. AV to Methodology for emission reductions from safe drinking water supply. Comparative analysis has been done in the table below:

Emission Reduction	**AMS III.AV**	**Safe Drinking Water Supply Meth**
f_{NRB}	Bihar: 0.872 Haryana: 0.4465 Punjab: 0.7252 Karnataka: 0.872 Madhya Pradesh: 0.872 Uttar Pradesh: 0.872 West Bengal: 0.872	Bihar: 0.97 Haryana: 0.935 Punjab: 0.939 Karnataka: 0.675 Madhya Pradesh: 0.842 Uttar Pradesh: 0.954 West Bengal: 0.952
EF_{CO2}	81.6 tCO_2/TJ	112 tCO_2/TJ
EF_{nonCO2}	-	9.46 tCO_2/TJ
ER per device (average)	2.28	3.3

The increase is mainly because of change in emission factor. Under GS Safe Water Meth, both CO_2 emission factor (112 tCO_2/TJ) and non-CO_2 (9.46 tCO_2/TJ) are accounted for. However, under AMS III AV, only CO_2 emission factor for fossil fuel (81.6 tCO_2/TJ) is accounted.

B.5. Demonstration of additionality

>>

Specify the methodology, activity requirement or product requirement that establishes deemed additionality for the proposed project (including the version number and the specific paragraph, if applicable).	**For SLS** Additionality will be demonstrated in accordance with EB 68 Annex 27: Guideline on the Demonstration of Additionality of Small- Scale Project Activities Version 09, Paragraph 2(c) which states that a barriers analysis is not required to document Additionality for: c) Project activities solely composed of isolated units where the users of the technology/measure are households or communities or Small and Medium

Enterprises (SMEs) and where the size of each unit is no larger than 5 per cent of the small- scale CDM thresholds.

For WPS

Community Services Activity Requirements (Version 1.2), paragraph 4.1.9: "Projects that meet any of the following criteria are considered as deemed additional and therefore are not required to prove Financial Additionality at the time of Design Certification:

(a) Positive list (Annex B) i.e. All VPAs will be solely composed of isolated units (CEPs) where the users of the technology/ measure are households or communities or institutions and where each unit results in <=

600 tCO_2 per year for HWT and IWT technologies

(b) Projects located in LDC, SIDS, LLDC

(c) Micro-scale projects"

Describe how the proposed project meets the criteria for deemed additionality.	**For SLS** 1. VPA-DD Section A.4 demonstrating that the size of each unit is no larger than 5% of the small-scale CDM threshold 2. Manufacturer's specifications showing that solar lighting products are less than the 5% of the 15 mw cap. 3. ~~Manufacturer's specifications showing that water purifiers are less than the 5% of the 60,000 tCO_2 cap~~ **For WPS** Project activities under the VPA are solely composed of isolated units where the users are households or institutions and where each unit results in GHG emission not exceeding 600 ton of CO_2e in any year of the crediting period for WPS Thus, the project activity meets the criteria (a) and is therefore deemed additional

B.5.1. Prior Consideration

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As per template guideline for transition request form, only (non-CER) retroactive projects and all projects undergoing design changes to include new technologies/measures are required to demonstrate Prior consideration by submission timelines. Considering this is a CDM CER project transitioning to GS4GG and is not including any new technologies/measures, it is not required to demonstrate prior consideration.

B.5.2. Ongoing Financial Need

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NA (as VPA is not renewing its crediting period with transition).

B.6. Sustainable Development Goals (SDG) outcomes

Relevant Target/Indicator for each of the three SDGs

Sustainable Development Goals Targeted	Most relevant SDG Target	SDG Impact Indicator (Proposed or SDG

		Indicator)
13 Climate Action (mandatory)	13.2 Integrate climate change measures into national policies, planning and strategies	Emission Reductions
1 End poverty in all its forms everywhere	1.4 By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance	Proportion of population living in households with access to basic services (only for water)
6: Clean Water and Sanitation	6.1 By 2030, achieve universal and equitable access to safe and affordable drinking water for all	Number of households served with safely managed water services
7: Affordable and Clean Energy	7.1 By 2030, ensure universal access to affordable, reliable and modern energy services	Number of households with operational clean energy products
8: Decent Work and Economic Growth	8.5 By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of	Total no of jobs created

equal value

B.6.1. Explanation of methodological choices/approaches for estimating the SDG Impact

>>

SDG 1: No Poverty

Applied methodology/approach	Equation/calculation

Applied methodology/approach	Equation/calculation
1.4.1Proportion of population living in households with access to basic services Approach: Monitor the percentage of households where WPS are distributed under the project as an indicator of providing basic service access to households	Proportion of households with WPS Net Benefit (SDG 1) = $BSA_{Baseline}$ – $BSA_{Project}$ Where: $BSA_{Baseline}$ Percentage of households having access to basic services in baseline (safe water) $BSA_{Project}$ Percentage of households having access to basic services in project (safe water)

SDG 6: Clean Water and Sanitation

Applied methodology/approach	Equation/calculation
6.1.1 Proportion of population using safely managed drinking water service Approach: Monitor the number of WPS distributed under the project as an indicator of providing clean water (relative to baseline scenario).	WPS distribution records Net Benefit (SDG 6) = $N_{p,y}$ * (1-C_b)*$U_{p,y}$*$M_{q,y}$ Where: $N_{p,y}$ Accumulated number of premises with at least one individual project technology in year C_b Proportion of project end-users who in the baseline were already using a safe water supply that did not require boiling $U_{p,y}$ Usage rate of the project

	technology $M_{q,y}$ Modifier for the water quality

SDG 7: Affordable and Clean Energy

Applied methodology/approach	Equation/calculation
7.1.2 Proportion of population with primary reliance on clean fuels and technology Approach: Monitor the number of WPS and SLS distributed under the project as an indicator of providing clean technology (relative to baseline stoves).	WPS and SLS distribution records Net Benefit (SDG 7) = $ACS_{Project}$ - $ACS_{Baseline}$ Where: $ACS_{Baseline}$ Access to affordable and clean energy (Number of operating WPS and SLS units under Baseline) = 0 $ACS_{Project}$ Access to affordable and clean energy (Number of operating WPS and SLS units under Project)

SDG 8: Decent Work and Economic Growth

Applied methodology/approach	Equation/calculation
8.5.1 Average hourly earnings of female and male employees, by occupation, age and persons with disabilities Approach: Recording the number of employees (male / female) in the project under administrative, sales, production and management positions	Employment records Net Benefit (SDG 8) = QE $IG_{Project}$ - QE $IG_{Baseline}$ Where: QE $IG_{Baseline}$ Quantitative Employment and income generation (Number of person (male and female) hired under Baseline) = 0 QE $IG_{Project}$ Quantitative Employment and income generation (Number of person (male and female) hired under Project)

SDG 13: Climate Action : Water Purification Systems

Applied methodology/approach	Equation/calculation
13.2.2 Amount of CO_2e emissions reduced by the project per year Approach: Emission	The total safe water consumed in the project scenario is the amount of safe water supplied by the project technology and consumed in the project scenario. This total is assumed to be equivalent to the unsafe water boiled in the baseline.

Reductions from Safe Drinking Water Supply v 1.0	**Baseline emission calculation** *The baseline emission shall be calculated as* $BE_y = EF_b \times (1 - C_b - X_{cleanboil,y}) \times Q_y \times M_{q,y}$ (Eq. 1) Where: BE_y = Baseline emissions from the use of fuel to obtain safe water in the baseline (tCO_2e) C_b = Proportion of project end-users who in the baseline were already using a safe water supply that did not require boiling (%) $X_{cleanboil,y}$ = Proportion of project end-users that boil safe water in the project year y (%) Q_y = Quantity of safe drinking water provided by the project in year y (L) $M_{q,y}$ = Modifier for the water quality in year y The baseline emission factor shall be calculated as $EF_b = SE_{w,b,y} * \sum(xf * (EF_{b,f,CO2} * f_{NRB,f,y} + EF_{b,f,nonCO2})) \div 10^9$ Where: EF_b = Emission factor for the use of fuel to obtain safe water in the baseline (tCO2e/L) $SE_{w,b,y}$ = Specific energy required to boil water (kJ/L), to be calculated as per the paragraph below xf = Proportion of fuel f used in the baseline (fraction determined based on an energy basis) $EF_{b,f,CO2}$ = CO2 emission factor from use of fuel f (tCO2/TJ) $EF_{b,f,nonCO2}$ = Non-CO2 emission factor arising from use of fuel f, when the baseline fuel f is biomass or charcoal (tCO2e/TJ). This parameter is omitted when f is a fossil fuel.

	$f_{NRB,f,y}$ = Fractional non-renewability status of woody biomass fuel during year y (fraction). For biomass, it is the fraction of woody biomass that can be established as non-renewable. This parameter is omitted when f is a fossil fuel. f = Index for baseline fuel types The specific energy required to boil water using the baseline technology (SEw,b,y) is determined as follows, by calculating the energy input required to obtain 1 L of boiling water, including boiling and vaporization losses, taking into account default or measured stove efficiency. SEw,b,y = 360.83/η_{wb} Where: 360.83 = Default amount of energy required to obtain 1 L of water after 5 minutes of boiling from a first principles approach kJ/l ηwb = Efficiency of the stoves for baseline water boiling (%). Weighted average of baseline stove types. The quantity of safe drinking water provided by the project Q_y is calculated using following method (for HWT and IWT) $Q_y = \sum N_{p,y} \times U_{p,y} \times QPW_{hh,p,y} \times DP_{p,y}$ Where: $N_{p,y}$ = Number of premises type p with at least one project technology in year y $U_{p,y}$ = Usage rate of the project technology by premises type p during year y (%) $QPW_{hh,p,y}$ = Volume of drinking water per premises p per day in year y (L) $DP_{p,y}$ = Days the project technology is present for end-users in the premises p in year y

The volume of drinking water per premises per day is determined by considering whether the capacity of the project device is sufficient to provide at least the default amount of drinking water, as follows:

$QPW_{hh,p,y}$ = min (($q_i \times t_{p,y} \times DN_{p,y}$), ($QPW_p \times HN_{p,y}$))

Where:

q_i	=	Capacity of the HWT or IWT individual project technology (L/h)
$t_{p,y}$	=	Usage time of the project technology by premises type p in year y (h/day)
$DN_{p,y}$	=	Average number of individual project technologies in each project premises type p in year y
$HN_{p,y}$	=	Number of individuals per premises type p (e.g. household, school) in year y
QPW_p	=	Volume of drinking water per person per day for premises type p (L). Apply the default value or monitored value through water consumption field tests in the project scenario, capped at 5.5 L per person per day.

Project Scenario Fuel Consumption Calculation

Since the water purifiers do not use fossil fuel or electricity for filtration the project emissions would be zero.

PEy = Project emissions in year y (t CO_2e/yr) = 0

Leakage Emissions

Where relevant, leakage relating to the non-renewable woody biomass shall be assessed as follows. Other types of leakage are excluded for simplification. Leakage emissions, LE_y, shall be calculated as follows:

The project developer has evaluated, ex-ante, the following potential sources of leakage and provide an evidence-based description and preliminary quantification of each potential source and its relevance for the project:

a. A survey was conducted to verify if the use of non-

	renewable biomass has increased among the members of the population who do not participate in the project, and were previously using lower emitting energy sources. The survey showed that the NRB consumption has not increased in the non-participating members of the population. b. The purpose of the project is reducing the use of NRB otherwise used in cookstoves for boiling water and instead use water purifier which does not require any NRB or any other fuel for its operations. So, the project would not lead significant reduction in NRB fraction within an area where other GHG mitigation project activities account for NRB fraction in their baseline scenario. Therefore, the condition that the project involves reducing the NRB fraction within an area where other GHG mitigation project activities account for NRB fraction in their baseline scenario is not applicable, hence no leakage emissions. c. The project population is in the area where the annual average temperature is above 20C. Hence there is no requirement to compensate for loss of the space heating effect of water boiling by adopting some other form of space heating or by retaining some baseline wood fuel-burning practices. Thus, the leakage emissions can be considered as nil and can be ignored for the project activity. **Emission Reductions** The Emission reductions are calculated as follows: $ERy = BEy - PEy - LEy$ Where: ERy = Emission reductions in year y (t CO2e/yr) BEy = Baseline emissions in year y (t CO2e/yr) PEy = Project emissions in year y (t CO2e/yr) LEy = Leakage emissions in year y (t CO2e/yr)

SDG 13: Climate Action: Solar Lighting Systems

<table>
<tr><th>Applied methodology/approach</th><th>Equation/calculation</th></tr>
<tr><td>13.2.1 Amount of CO_2e emissions reduced by the project per year

Approach: AMS.I.A., version 14.0</td><td>
Total baseline emissions for period v are calculated as the sum of the baseline emissions of each lamp type i in the period:

$$BE_v = \sum_{i=1}^{n} BE_{i,v}$$ (Eq. 2)

<table>
<tr><th>Parameter</th><th>Unit</th><th>Type</th><th>Value</th></tr>
<tr><td>BE_v</td><td>tCO_2</td><td>Calculated</td><td>Emissions generated in the absence of the project activity in period v by all lamps</td></tr>
<tr><td>$BE_{i,v}$</td><td>tCO_2</td><td>Calculated</td><td>Emissions generated in the absence of the project activity in period v by all lamps of type i</td></tr>
</table>

Ex post baseline emission for each lamp type i is calculated with the following equation:

$$BE_v = \sum_{a=1}^{n}(N_{i,a} * d_{i,a,v}) * l_i * h * \frac{1}{LE_{ker}} * EF_{ker} * 10^{-6} * 3.6 * CF_{i,v,LFR}$$

<table>
<tr><th>Parameter</th><th>Unit</th><th>Type</th><th>Value</th></tr>
<tr><td>BE_v</td><td>tCO_2</td><td>Calculated</td><td>Emissions generated in the absence of the project activity in period v by all lamps of type i</td></tr>
<tr><td>$N_{i,a}$</td><td>Number</td><td>Monitored</td><td>The total number of solar lamps of type i deployed in period a</td></tr>
<tr><td>$d_{i,a,v}$</td><td>Days</td><td>Monitored/ calculated</td><td>Average number of days lamps of type i that have been deployed in period a were operating in period v</td></tr>
</table>
</td></tr>
</table>

l_i	Lumen	Monitored (once per lamp type)	Nominal lumen output of solar lamps of the type I deployed as part of the project activity
H	Hours /day	Fixed	Average operating hours of kerosene lamps in the baseline
LE_{ker}	Lumen/W	Fixed	The specific light output of kerosene when burnt in a kerosene lantern
EF_{ker}	tCO_2/ GJ	Fixed	The specific CO_2-emissions of kerosene
$CF_{i,v,LFR}$	-	Monitored/ Calculated	This factor corrects the total number of lamps of type *i* by the share of these lamps that were found to be operational according to the sampling in period *v*. The statistical error is included in this parameter (confidence level 90%).

Where:

$$CF_{i,v,LFR} = 1\text{-} \left(LFR_{i,v} + z^* \sqrt{\frac{LFR_{i,v}*(1\text{-}LFR_{i,v})}{n_{i,v,total}}}\right) \quad \textbf{(Eq. 4)}$$

Parameter	Unit	Type	Value
$CF_{i,v,LFR}$	-	Calculated	This factor corrects the total number of lamps of type *i* by the share of these lamps that were found to be operational according to the sampling in period *v*. The statistical error is included in this

			parameter (confidence level 90%).
$LFR_{i,v}$	%	Monitored	Share of lamps of lamp type *i* in checked sample group $g_{i,v}$ not operational in period *v*.
Z	-	Given	Standard normal for a confidence level of 90%
$n_{i,v,total}$	-	Monitored	Total number of lamps checked for which a valid result was obtained.

In line with the applied methodology and the registered PoA, project emissions and leakage emissions are not present and hence not included.

B.6.2. Data and parameters fixed ex ante

SDG13- For Water Purification Systems

Parameter ID	*SDWS 2*
Data/parameter	Project Technology Description
Unit	N/A
Description	The following is the detailed description of the planned project technology: HWT and IWT: Manufacturer- Hindustan Unilever Limited (HUL) and The Eureka Forbes Limited (EFL) Technology type- activated carbon trap (HUL) and gravity-based purifier (EFL) Product name- HUL Pureit, EFL Nakshatra and EFL Sampoorna
Source of data	Manufacturer's specifications

Value(s) applied	Please refer to Section A.3
Choice of data or Measurement methods and procedures	-
Purpose of data	-
Additional comment	This parameter is fixed ex-ante & shall be updated at CP renewal.

Parameter ID	*SDWS 4*
Data/parameter	Regulatory Framework for safe water supply
Unit	N/A
Description	Regulatory Framework for safe water supply
Source of data	BIS Standards for Drinking Water
Value(s) applied	The VPA contributes to: National Water Policy (2012)[26] The policy states in paragraph 1.2 (v) that access to safe water for drinking still continues to be a problem and 1.3 (vi) that safe water for drinking and sanitation should be considered as pre-emptive needs followed by other needs. In addition, the importance of community sensitization and utilization of water as per local availability of waters before providing water through long distance transfer is highlighted (paragraph 3.6.). Jal Jeevan Mission JJM (2019-2024)[27] The vision of the JJM is that every household has drinking water supply in adequate quantity of prescribed quality on regular and long-term basis at affordable service delivery charges leading to improvement in living standards of rural

[26] Government of India. Ministry of Water Resources. (2012) National Water Policy. Source: http://jalshaktidowr.gov.in/policies-guideline/policies/national-water-policy
[27] Government of India. Ministry of Jalshakti. Department of Drinking Water & Sanitation. (2019-2014) Jal Jeevan Mission. Source: https://jalshakti-ddws.gov.in/sites/default/files/JJM_Operational_Guidelines.pdf

	communities. JJM further stresses the importance of awareness raising and involvement of stakeholders (paragraph 3.3 viii.) and highlight the contribution of technological interventions for removal of contaminants where water quality is an issue (paragraph 3.4 ii.). The VPA contributes to three core aspects mentioned in the National Water Policy (2012) and the Jal Jeevan Mission (2019-2024): 1. Supply of rural communities with safe drinking water (point-of-use treatment) 2. Awareness raising on WASH aspects 3. Stakeholder participation in project activities. The water quality of the treated water is in line with the national drinking water standard of India: 0 CFU E.Coli/100ml (IS 10500 : 2012[28])
Choice of data or Measurement methods and procedures	The test reports from national accredited labs confirms that the filtered water from the purifier is in compliance with the above values.
Purpose of data	-
Additional comment	This parameter is fixed Ex-ante & shall be updated at CP renewal.

Parameter ID	*SDWS 5*
Data/parameter	Water sources in the project boundary
Unit	N/A
Description	The water sources in the project boundary are identified and if classified to be used for drinking water, then further classified as improved and unimproved water source.
Source of data	Baseline study /Credible published literature for project region/ Studies by academia, NGOs or multilateral institutions/ or Official government publications or

[28] Bureau of Indian Standards (2012) Indian Standard. Drinking Water – Specification. IS 10500 : 2012. Source: https://law.resource.org/pub/in/bis/S06/is.10500.2012.pdf

	statistics
Value(s) applied	Please refer to Section B.4
Choice of data or Measurement methods and procedures	Baseline Study
Purpose of data	-
Additional comment	This parameter is fixed Ex-ante & shall be updated at CP renewal.

Parameter ID	*SDWS 6*
Data/parameter	Stove technologies used in the project boundary
Unit	N/A
Description	The stove type/technology used in premises in the geographical area of the project is mainly traditional three stone fired cookstoves having an efficiency of 10%.
Source of data	Baseline survey
Value(s) applied	**Fuel Type** / **Firewood** / **LPG** BH / 95% / 5% HR / 93% / 7% PJ / 90% / 10% KA / 94% / 6% MP / 90% / 10% UP / 89% / 11% WB / 92% / 8%
Choice of data or Measurement methods and procedures	Baseline survey was conducted following the requirements outlined in 4.2. Cross check was done using studies by CEEW, an established and credible NGO which has been working in the space of energy and water for a long time. Details are provided in section B 4.2.
Purpose of data	Calculation of baseline emissions
Additional comment	This parameter is fixed Ex-ante & shall be updated at CP renewal.

Parameter ID	*SDWS 7*
Data/parameter	Expected technical life of project technology
Unit	Volume or Years

Description	The expected technical life of an individual project technology is defined in section A.3 of the VPA-DD. The details include the life of different product types used.
Source of data	Manufacturer specifications
Value(s) applied	4000 litres (EFL Nakshatra and EFL Sampoorna) 1500 (HUL Pureit) The technical specification of the water purification systems, provided by the manufacturer, does not specify the life span of the water purification system unit/console rather it mentions only the life span (in terms of litres of purified water) of the Germ Kill Kit (GKK) and cartridges.
Choice of data or Measurement methods and procedures	Manufacture specification
Purpose of data	Calculation of baseline emissions
Additional comment	In cases where the life span of the water purifier technologies is shorter than the crediting period of the PoA, the project proponent shall ensure that the units are replaced in order to continue claiming emission reductions. There shall be measures in place to ensure that end users have access to replacement purification systems of comparable quality. The technology/equipment will be replaced prior to the life span so that end users can access the same level of water purification. If no replacement or retrofitting is provided, emission reduction claims are limited to the expected technical life.

Parameter ID	*SDWS 8*
Data/parameter	x_f
Unit	Percentage of fuel f use in target population
Description	The proportion of each different cooking fuel f used in the project boundary by end-users: - % among the target population if single fuel is used for water boiling. If the project covers different types of end-user premises (e.g. households, schools), then the fuels used in the geographical area of the project by the same types of end-users are to be determined for each end-user premises

	type.
Source of data	Baseline survey cross checked with credible published literature for project region/studies by academia/NGOs or multilateral institutions, or Official government publications or statistics
Value(s) applied	<table><tr><th>Fuel Type</th><th>Firewood</th><th>LPG</th></tr><tr><td>BH</td><td>95%</td><td>5%</td></tr><tr><td>HR</td><td>93%</td><td>7%</td></tr><tr><td>PJ</td><td>90%</td><td>10%</td></tr><tr><td>KA</td><td>94%</td><td>6%</td></tr><tr><td>MP</td><td>90%</td><td>10%</td></tr><tr><td>UP</td><td>89%</td><td>11%</td></tr><tr><td>WB</td><td>92%</td><td>8%</td></tr></table>
Choice of data or Measurement methods and procedures	When a baseline survey is used steps under section 4.2 are followed. Cross check was done using studies by CEEW, an established and credible NGO which has been working in the space of energy and water for a long time. Details are provided in section B 4.2.
Purpose of data	Calculation of baseline emissions
Additional comment	This parameter is fixed Ex-ante & shall be updated at CP renewal.

Parameter ID	*SDWS 9*
Data/parameter	$EF_{b,f,CO2}$
Unit	tCO_2/TJ
Description	CO_2 emission factor arising from use of fuels in baseline Scenario
Source of data	IPCC default CO_2 emission factor for wood and LPG
Value(s) applied	Firewood – 112 LPG – 63.1
Choice of data or Measurement methods and procedures	Default IPCC value for fuelwood and LPG is applied
Purpose of data	Calculation of baseline emissions
Additional comment	-

Parameter ID	*SDWS 10*

Data/parameter	$EF_{b,f,non\text{-}CO2}$
Unit	tCO_{2e}/TJ
Description	Non-CO_2 emission factor from use of fuels, in case the baseline fuel is biomass or charcoal
Source of data	IPCC defaults for wood
Value(s) applied	Wood: 9.46
Choice of data or Measurement methods and procedures	Default IPCC value for fuelwood is applied
Purpose of data	Calculation of baseline emissions
Additional comment	-

Parameter ID	*SDWS 11*
Data/parameter	η_{wb}
Unit	%
Description	Weighted average efficiency of the baseline water boiling devices. Calculate the weighted average of the water boiling efficiency in the project boundary using the proportion of different stove types used and the stove efficiencies.
Source of data	As per methodology Emission Reductions from Safe drinking water supply version 1.0, the following default values may be applied to calculate the weighted average of the water boiling efficiency in the project boundary: - Three-stone fire or a conventional system for woody biomass lacking improved combustion air supply mechanism and flue gas ventilation system, that is without either a grate or a chimney: default efficiency 10%. – Other conventional systems using woody biomass: default efficiency 20%. - Improved cookstoves: manufacturer specification, or if not available, default efficiency 30%.

	For LPG Stove- Literature review
Value(s) applied	Three-stone fired 10% Gas Stove – 57[29]%
Choice of data or Measurement methods and procedures	Default defined in "Methodology for Emission Reductions from Safe Drinking Water Supply" v1.0 for traditional stove. Literature review for gas stove efficiency.
Purpose of data	Calculation of Baseline emissions
Additional comment	This parameter is fixed Ex-ante & shall be updated at CP renewal.

Parameter ID	*SDWS 12*
Data/parameter	C_b
Unit	Percentage
Description	Proportion of project end-users who in the baseline were already using safe water, either from an improved water source, or from a water treatment method other than boiling
Source of data	Baseline survey/Published literature for project region
Value(s) applied	Bihar - 5.06% Haryana – 9.47% Punjab – 6.99% Karnataka – 5.23% Madhya Pradesh – 5.32% Uttar Pradesh – 7.70% West Bengal – 4.47%
Choice of data or Measurement methods and procedures	According to the applied methodology, the percentages applied shall be cross-checked against at least one other source on the list. For cross-check purposes, sources applied may be up to 5 years old. In this project the cross-check document is Jal Jeevan Mission (JJM) dashboard by Govt. of India.

[29] https://www.ceew.in/sites/default/files/CEEW-Roadmap-for-Access-to-Clean-Cooking-Energy-in-India-Report-31Oct19-min.pdf

	As per baseline study, percentage of households having access to improved sources is at maximum 33%, 33%, 55%, 30%, 33%, 33% and 32% for Bihar, Haryana, Punjab, Karnataka, Madhya Pradesh, Uttar Pradesh and West Bengal respectively (for example). As per JJM dashboard, piped supply in 2019 is 1.89%, 58%, 49%, 24.2%, 11.27%, 1.95%, 1.18% for Bihar, Haryana, Punjab, Karnataka, Madhya Pradesh, Uttar Pradesh and West Bengal respectively. Considering, the baseline study gives more conservative values for all states except Haryana, hence baseline values have been used except for Haryana. Additionally, CME conducted water testing for 6 months for the improved sources and found over 91% sources had presence of E.coli in 100ml samples which makes them unsafe for drinking. Value of C_b calculated in section B4.2 is based on the above justification.
Purpose of data	Calculation of baseline emissions
Additional comment	The safe water sources and percentages shall be consistent with the information reported for parameter Water sources in the project boundary (SWDS 5). Users who have access to a source of safe water in the baseline (either from an improved water source, or from a water treatment method other than boiling) may not be credited under the project, unless project demonstrates that the baseline source of water does not meet safe water quality criteria, by conducting water quality tests over a representative period of time of 6 months or by referring to credible published literature or other sources. This parameter is fixed Ex-ante & shall be updated at CP renewal.

Parameter ID	*SDWS 13*
Data/parameter	q_i
Unit	Litres per hour
Description	Capacity of the household or institutional water treatment technology
Source of data	Manufacturer specifications/ Design specifications
Value(s) applied	HUL Pureit: 9 EFL Nakshatra and Sampoorna: 10

	Average: 9.5 (for ex ante estimation)
Choice of data or Measurement methods and procedures	Manufacture specification
Purpose of data	Calculation of baseline emissions
Additional comment	This depends on water filtration device model and fixed for each model introduced. The capacity of the water treatment technology will help in calculating the amount of water treated. This parameter is fixed Ex-ante & shall be updated at CP renewal.

Parameter ID	*SDWS 21*
Data/parameter	$f_{NRB,f,y}$
Unit	Percentage
Description	Fractional non-renewability status of woody biomass fuel during year y, in case the baseline fuel is biomass or charcoal
Source of data	Assessment based on CDM Methodological tool 30: Calculation of the fraction of non-renewable biomass, Version 03.0
Value(s) applied	Bihar - 0.97 Haryana – 0.935 Punjab – 0.939 Karnataka – 0.675 Madhya Pradesh-0.842 Uttar Pradesh-0.954 West Bengal-0.952
Choice of data or Measurement methods and procedures	A preliminary study has been conducted in accordance with the CDM Methodological tool 30: Calculation of the fraction of non-renewable biomass, Version 02.0
Purpose of data	Calculation of baseline emissions
Additional comment	The f_{NRB} value will remain fixed during the crediting period.

For Solar Lighting Systems

Data/parameter	LE_{ker}

Unit	Lumen/W
Description	The specific luminous efficiency of kerosene when burnt in a kerosene lantern
Source of data	Jean-Paul Louineau, Modibo Dicko, Peter Fraenkel, Roy Barlow and Varis Bokalders; Rural Lighting: A Guide for Development Workers, Intermediate Technology (IT) Publications in association with The Stockholm Environment Institute 1994
Value(s) applied	0.13
Choice of data or Measurement methods and procedures	Louineau et al (1994) state an efficiency range of 0.05 to 0.21 lumens/W for hurricane kerosene lanterns. Another study by the World Bank states an efficiency of 0.1 lumen/W for hurricane lanterns. Values for the widely used homemade wick lamps are scarcely available as designs vary. Anyway, these lamps have much lower efficiencies than hurricane lanterns. It is assumed that the kerosene lamp model in the baseline is a hurricane lamp. This is conservative since the vast majority of households use self-made kerosene lanterns without a glass cover, which are less efficient due to wind disturbance and very basic design. The average efficiency value of 0.13 lumen/watt for hurricane lamps from Louineau et al (1994) is chosen, being conservative with respect to the lower value of 0.1 lumen/W provided by the World Bank.
Purpose of data	Calculation of baseline emissions
Additional comment	The parameter is fixed for the entire crediting period.

Data/parameter	EF_{ker}
Unit	tCO_2/GJ
Description	The specific CO_2 emissions of kerosene
Source of data	2006 IPCC guidelines for National Greenhouse Gas inventories
Value(s) applied	0.0719
Choice of data or Measurement methods and procedures	The default value of other kerosene in 2006 IPCC guidelines for National Greenhouse Gas Inventories is 71.900 tCO_2/TJ.
Purpose of data	Calculation of baseline emissions
Additional comment	The parameter is fixed for the entire crediting period.

Data/parameter	*Z*

Unit	n/a
Description	Standard normal for a confidence interval of 90%
Source of data	Köhler, Schachtel, Voleske, 2002; Biostatistik, Springer Verlag Berlin Heidelberg; Tafel 2, p. 279
Value(s) applied	1.290, 1.645; 1.96
Choice of data or Measurement methods and procedures	This is the statistical standard value for standard normal for a confidence level of 90% for a one-sided test, and 90% and 95% for a two-sided test, respectively.
Purpose of data	Calculation of baseline emissions
Additional comment	-

B.6.3. Ex ante estimation of SDG Impact

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Calculations for Water Purification Systems and Solar Lighting Systems

SDG 1: No Poverty

Access to basic services (safe water)

$$\text{Net Benefit (SDG 1)} = BSA_{Project} - BSA_{Baseline}$$

Where:

$BSA_{Baseline}$ Percentage household having access to basic services (safe water) in baseline = 6.57%

$BSA_{Project}$ Percentage household having access to basic services (safe water) in Project = 100%

Net Benefit (SDG1) = 100% - 6.57% = 93.43%

SDG 6: Clean Water and Sanitation

WPS distribution records

$$\text{Net Benefit (SDG 6)} = N_{p,y}*(1-C_b)*U_{p,y}*M_{q,y}$$

States	Np,y	Cb	Up,y	Mq,y	SDG 6 values
Punjab	19,760	6.99%	100%	1	18,379
Bihar	1,300	5.06%	100%	1	1,234
Haryana	260	9.47%	100%	1	235

Karnataka	1,040	5.23%	100%	1	986
Madhya Pradesh	260	5.32%	100%	1	246
Uttar Pradesh	520	7.70%	100%	1	480
West Bengal	2,860	4.47%	100%	1	2,732
Total	**26,000**				**24,292**

SDG 7: Affordable and Clean Energy

WPS distribution records

$$\text{Net Benefit (SDG 7)} = ACS_{Project} - ACS_{Baseline}$$

Where:

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

$ACS_{Project}$ Access to affordable and clean energy (Average Number of households with operating WPS units under Project) = 10,753

SLS distribution records

$$\text{Net Benefit (SDG 7)} = ACS_{Project} - ACS_{Baseline}$$

Where:

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

$ACS_{Project}$ Access to affordable and clean energy (Average Number of households with operating SLS units under Project) = 225,530

SDG 8: Decent Work and Economic Growth

Employment records

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

Where:

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

QE $IG_{Project}$ Quantitative Employment and income generation (Number of person (male and female) hired under Project) = 20

SDG 13: Climate Action (Water Purification Systems)

The overall GHG reductions achieved by the project activity will be calculated as follows:

Baseline emission calculation

The baseline emission shall be calculated as

$BE_y = EF_b \times (1 - C_b - X_{cleanboil}) \times Q_y \times M_{q,y}$

Where:

BE_y	=	Baseline emissions from the use of fuel to obtain safe water in the baseline (tCO_2e)
C_b	=	Proportion of project end-users who in the baseline were already using a safe water supply that did not require boiling (%)
$X_{cleanboil,y}$	=	Proportion of project end-users that boil safe water in the project year y (%)
Q_y	=	Quantity of safe drinking water provided by the project in year y (L)
$M_{q,y}$	=	Modifier for the water quality in year y

The baseline emission factor shall be calculated as

$EFb = SEw,b,y * \Sigma(xf * (EFb,f,CO2 * fNRB,f,y + EFb,f,nonCO2)) f \div 10^9$

Where:

EF_b	=	Emission factor for the use of fuel to obtain safe water in the baseline (tCO2e/L)
$SE_{w,b,y}$	=	Specific energy required to boil water (kJ/L), to be calculated as per the paragraph below
xf	=	Proportion of fuel f used in the baseline (fraction determined based on an energy basis)
$EF_{b,f,CO2}$	=	CO2 emission factor from use of fuel f (tCO2/TJ)
$EF_{b,f,nonCO2}$	=	Non-CO2 emission factor arising from use of fuel f, when the baseline fuel f is biomass or charcoal (tCO2e/TJ). This parameter is omitted when f is a fossil fuel.
$f_{NRB,f,y}$	=	Fractional non-renewability status of woody biomass fuel

during year y (fraction). For biomass, it is the fraction of woody biomass that can be established as non-renewable. This parameter is omitted when f is a fossil fuel.

F = Index for baseline fuel types

The specific energy required to boil water using the baseline technology (SEw,b,y) is determined as follows, by calculating the energy input required to obtain 1 L of boiling water, including boiling and vaporization losses, taking into account default or measured stove efficiency.

$SE_{w,b,y}$ = 360.83/η_{wb}

Where:

360.83 = Default amount of energy required to obtain 1 L of water after 5 minutes of boiling from a first principles approach kJ/l

η_{wb} = Efficiency of the stoves for baseline water boiling (%). Weighted average of baseline stove types.

The quantity of safe drinking water provided by the project Qy is calculated using following method (for HWT and IWT)

$Q_y = \sum N_{p,y} \times U_{p,y} \times QPW_{hh,p,y} \times DP_{p,y}$

Where:

$N_{p,y}$ = Number of premises type p with at least one project technology in year y

$U_{p,y}$ = Usage rate of the project technology by premises type p during year y (%)

$QPW_{hh,p,y}$ = Volume of drinking water per premises p per day in year y (L)

$DP_{p,y}$ = Days the project technology is present for end-users in the premises p in year y

The volume of drinking water per premises per day is determined by considering whether the capacity of the project device is sufficient to provide at least the default amount of drinking water, as follows:

$QPW_{hh,p,y}$ = min (($q_i \times t_{p,y} \times DN_{p,y}$), ($QPW_p \times HN_{p,y}$))

Where:

q_i = Capacity of the HWT or IWT individual project technology (L/h)

$t_{p,y}$	=	Usage time of the project technology by premises type p in year y (h/day)
$DN_{p,y}$	=	Average number of individual project technologies in each project premises type p in year y
$HN_{p,y}$	=	Number of individuals per premises type p (e.g. household, school) in year y
QPW_p	=	Volume of drinking water per person per day for premises type p (L). Apply the default value or monitored value through water consumption field tests in the project scenario, capped at 5.5 L per person per day.

Project Scenario Fuel Consumption Calculation

Since the water purifiers do not use fossil fuel or electricity for filtration the project emissions would be zero.

PE_y = Project emissions in year y (t CO_2e/yr) = 0

Leakage Emissions

Where relevant, leakage relating to the non-renewable woody biomass shall be assessed as follows. Other types of leakage are excluded for simplification. Leakage emissions, LEy, shall be calculated as follows:

CME has evaluated, ex-ante, the following potential sources of leakage and provide an evidence-based description and preliminary quantification of each potential source and its relevance for the project:

a. A survey was conducted to verify if the use of non-renewable biomass has increased among the members of the population who do not participate in the project, and were previously using lower emitting energy sources. The survey showed that the NRB consumption has not increased in the non-participating members of the population.

b. The purpose of the project is reducing the use of NRB otherwise used in cookstoves for boiling water and instead use water purifier which does not require any NRB or any other fuel for its operations. So, the project would not lead significant reduction in NRB fraction within an area where other GHG mitigation project activities account for NRB fraction in their baseline scenario. Therefore, the condition that the project involves reducing the NRB fraction within an area where other GHG mitigation project activities account for NRB fraction in their baseline scenario is not applicable, hence no leakage emissions.

c. The project population is in the area where the annual average temperature are above 20C. Hence there is no requirement to compensate for loss of the space heating effect of water boiling by adopting some other form of space heating or by retaining some baseline wood fuel-burning practices.

Thus, the leakage emissions can be considered as nil and can be ignored for the project activity.

Emission Reductions

The Emission reductions are calculated as follows:

$$ERy = BEy - PEy - LEy$$

Where:

ERy = Emission reductions in year y (t CO2e/yr)

BEy = Baseline emissions in year y (t CO2e/yr)

PEy = Project emissions in year y (t CO2e/yr)

LEy = Leakage emissions in year y (t CO2e/yr)

The following table provides sample calculation for each WPS in the state of Bihar for year 5

Parameter	Description	Units	BH
$SE_{w,b,y}$ - Traditional Stove	Specific energy required to boil water	KJ/L	3608.3
$SE_{w,b,y}$ - Gas Stove	Specific energy required to boil water	KJ/L	633.04
n_{wb} – Traditional Stove	Efficiency of the stoves for baseline water boiling	%	10%
n_{wb} - Gas Stove	Efficiency of the stoves for baseline water boiling	%	57%
x_f – Wood	Proportion of fuel f used in the baseline (fraction determined based on an energy basis)	%	95%
x_f - LPG	Proportion of fuel f used in the baseline (fraction determined based on an energy basis)	%	5%
$f_{NRB,b,i,y}$	Fraction of biomass used in year y for baseline scenario b that can be established as non-	Fraction	0.97

	renewable biomass		
$EF_{b,f,CO2}$	CO2 emission factor of the fuel that is substituted or reduced	tCO2/TJ	112
$EF_{b,f,non-CO2}$	Non-CO2 emission factor of the fuel that is reduced	tCO2/TJ	9.46
$EF_{b,f,CO2}$	CO2 emission factor of the LPG that is substituted or reduced	tCO2/TJ	63.1
Combined EF_b		tCO2/TJ	118.1
Combined EF_b		tCO2/TJ	63.1
EF_b	Emission factor for the use of fuel to obtain safe water in the baseline	(tCO2e/L	0.000407
$QPW_{hh,p,y}$	Volume of drinking water per premises p per day in year y (L)	L/HH/day	30.25
QPW_p	Volume of drinking water per person per day for premises type p (L)	L	5.5
$HN_{p,y}$	Number of individuals per premises type p in year y		5.5
q_i	Capacity of the HWT or IWT individual project technology	L/h	9.5
$t_{p,y}$	Usage time of the project technology by premises type p in year y	h/day	5
$DN_{p,y}$	Average number of individual project technologies in each project premises type p in year y		1

$U_{p,y}$	Cumulative usage rate for technologies in project scenario p in year y	Fraction	100%
$N_{p,y}$	Number of premises type p with at least one project technology in year y	-	1
$DP_{p,y}$	Days the project technology is present for end-users in the premises p in year y		365
Q_y	Quantity of safe drinking water provided by the project in year y	L	11,041
C_b	Proportion of project end-users who in the baseline were already using a safe water supply that did not require boiling	%	5.06%
$X_{cleanboil,y}$	Proportion of project end-users that boil safe water in the project year y	%	0
$M_{q,y}$	Modifier for the water quality in year y		1
Leakage emissions	Leakage for project scenario p in year	tCO2/year	5%
ER_y	**Emission reductions**	**tCO_2**	**4.10**

Total emission reduction for WPS for year 5 for all states (Bihar, Punjab, Haryana, Karnataka, Madhya Pradesh, Uttar Pradesh and West Bengal) = 86,521 tCO_2e.

SDG 13: Climate Action (Solar Lighting Systems)

Total baseline emissions for period *v* are calculated as the sum of the baseline emissions of each lamp type *i* in the period:

$$BE_v = \sum_{i=1}^{n} BE_{i,v} \quad \textbf{(Eq. 2)}$$

Parameter	Unit	Type	Value
BE_v	tCO_2	Calculated	Emissions generated in the absence of the project activity in period *v* by all lamps
$BE_{i,v}$	tCO_2	Calculated	Emissions generated in the absence of the project activity in period *v* by all lamps of type *i*

Ex post baseline emission for each lamp type *i* is calculated with the following equation:

$$BE_v = \sum_{a=1}^{n}(N_{i,a}*d_{i,a,v})*l_i * h * \frac{1}{LE_{ker}}*EF_{ker}*10^{-6}*3.6*CF_{i,v,LFR} \quad \textbf{(Eq. 3)}$$

Parameter	Unit	Type	Value
BE_v	tCO_2	Calculated	Emissions generated in the absence of the project activity in period *v* by all lamps of type *i*
$N_{i,a}$	Number	Monitored	The total number of solar lamps of type *i* deployed in period *a*
$d_{i,a,v}$	Days	Monitored/ calculated	Average number of days lamps of type *i* that have been deployed in period *a* were operating in period *v*
l_i	Lumen	Monitored (once per lamp type)	Nominal lumen output of solar lamps of the type *I* deployed as part of the project activity
h	Hours/day	Fixed	Average operating hours of kerosene lamps in the baseline
LE_{ker}	Lumen/W	Fixed	The specific light output of kerosene when burnt in a kerosene lantern
EF_{ker}	tCO_2/GJ	Fixed	The specific CO_2-emissions of kerosene
$CF_{i,v,LFR}$	-	Monitored/ Calculated	This factor corrects the total number of lamps of type *i* by the share of these lamps that were found to be operational according to the sampling in period *v*. The statistical error is included in this parameter (confidence level 90%).

Where:

$$CF_{i,v,LFR} = 1\text{-} \left(LFR_{i,v} + z^* \sqrt{\frac{LFR_{i,v}{}^*(1\text{-}LFR_{i,v})}{n_{i,v,total}}} \right) \quad \textbf{(Eq. 4)}$$

Parameter	Unit	Type	Value
$CF_{i,v,LFR}$	-	Calculated	This factor corrects the total number of lamps of type *i* by the share of these lamps that were found to be operational according to the sampling in period *v*. The statistical error is included in this parameter (confidence level 90%).
$LFR_{i,v}$	%	Monitored	Share of lamps of lamp type *i* in checked sample group $g_{i,v}$ not operational in period *v*.
z	-	Given	Standard normal for a confidence level of 90%
$n_{i,v,total}$	-	Monitored	Total number of lamps checked for which a valid result was obtained.

In line with the applied methodology and the registered PoA, project emissions and leakage emissions are not present and hence not included.

Parameter Symbol	Definition	Value	Unit	Source
Ni,a	The total number of solar lamps of type *i* deployed in period *a*	1	Number	To be monitored
di,a,v	Average number of days lamps of type *i* that have been deployed in period *a* were operating in period *v*	365	Days	Assumption for ex-ante emission reduction calculation

Li	Nominal lumen output of solar lamps of the type I deployed as part of the project activity	140.538	Lumen	The PoA-DD prescribes a cap of 140.538 Lumens for individual household with solar lighting systems implemented under the PoA in 2021 and hence a Lumen value of 140.538 is applied. For all solar lighting systems, the Lumen value will be capped at 140.538 for individual households.
h	Average operating hours of kerosene lamps in the baseline	3.5	hrs/day	Methodology default
LEker	The specific light output of kerosene when burnt in a kerosene lantern	0.13	Lumen/ Watt	Jean-Paul Louineau, Modibo Dicko, Peter Fraenkel, Roy Barlow and Varis Bokalders; Rural Lighting: A Guide for Development Workers, Intermediate Technology (IT) Publications in association with The Stockholm Environment Institute 1994
EFker	The specific CO_2 emission factor of kerosene	0.0719	tCO2/GJ	2006 IPCC guidelines for National Greenhouse Gas inventories
z	Standard normal for a confidence interval of 90%	1.29.	-	Standard normal for a confidence interval of 90%
CFi,v,LFR	This factor corrects the total			Estimate

	number of lamps of type *i* by the share of these lamps that were found to be operational according to the sampling in period *v*. The statistical error is included in this parameter (confidence level 90%).	100%		
Emission Reduction per solar lighting system	Emissions reductions generated by 1 solar lighting system	**0.3575**		Calculated

Leakage: No leakage emissions from solar lighting systems

Total emission reductions for solar lighting for 1,500,000 installations projected for Year 5= 850,000 X 0.3575 = 303,852 tCO_2

B.6.4 Summary of ex ante estimates of each SDG outcome

For Water Purification Systems

SDG 1: No Poverty

Year	Baseline estimate	Project estimate	Net benefit
21/12/2019 – 20/12/2020	6.57%	100%	93.43%
21/12/2020 – 20/12/2021	6.57%	100.00%	93.43%
21/12/2021 – 20/12/2022	6.57%	100.00%	93.43%
21/12/2022 – 20/12/2023	6.57%	100.00%	93.43%
21/12/2023 – 20/12/2024	6.57%	100.00%	93.43%
Total	**6.57%**	**100.00%**	**93.43%**
Total number of crediting years	**5**		
Annual average over the crediting period	**6.57%**	**100%**	**93.43%**

SDG 6: Clean Water and Sanitation

Year	Baseline estimate	Project estimate	Net benefit

21/12/2019 – 20/12/2020	0	0	0
21/12/2020 – 20/12/2021	0	305	43013
21/12/2021 – 20/12/2022	0	1,349	43013
21/12/2022 – 20/12/2023	0	24,292	43013
21/12/2023 – 20/12/2024	0	24,292	43013
Total	**0**	**24,292**	**24,292**

SDG 7: Affordable and Clean Energy

Year	Baseline estimate	Project estimate	Net benefit
21/12/2019 – 20/12/2020	0	0	0
21/12/2020 – 20/12/2021	0	321	45500
21/12/2021 – 20/12/2022	0	1,444	45500
21/12/2022 – 20/12/2023	0	26,000	45500
21/12/2023 – 20/12/2024	0	26,000	45500
Total	**0**	**26,000**	**26,000**
Total number of crediting years	**5**		
Annual average over the crediting period	**0**	**10,753**	**10,753**

SDG 13: Climate Action

Year	Baseline estimate	Project estimate	Net benefit
21/12/2019 – 20/12/2020	0	0	0
21/12/2020 – 20/12/2021	1,067	0	1,067
21/12/2021 – 20/12/2022	4,816	0	4,816
21/12/2022 – 20/12/2023	86,521	0	86,521
21/12/2023 – 20/12/2024	86,521	0	86,521
Total	**178,924**	**0**	**178,924**

Total number of crediting years	**5**		
Annual average over the crediting period	35,785	0	35,785

For Solar Lighting Systems

SDG 7: Affordable and Clean Energy

Year	Baseline estimate	Project estimate	Net benefit
21/12/2019-20/12/2020	0	0	0
21/12/2020- 20/12/2021	0	54,570	54,570
21/12/2021- 20/12/2022	0	103,078	103,078
21/12/2022-20/12/2023	0	120,000	120,000
21/12/2023- 20/12/2024	0	850,000	850,000
Total	**0**	**850,000**	**850,000**
Total number of crediting years	**5**		
Annual average over the crediting period	**0**	**225,530**	**225,530**

SDG 8: Decent Work and Economic Growth[30]

Year	Baseline estimate	Project estimate	Net benefit
21/12/2019-20/12/2020	0	0	0
21/12/2020-20/12/2021	0	20	20
21/12/2021-20/12/2022	0	20	20
21/12/2022-20/12/2023	0	20	20

[30] Total employment generation irrespective of technology type.

21/12/2023-20/12/2024	0	20	20
Total	**0**	**20**	**20**
Total number of crediting years	**5**		
Annual average over the crediting period	**0**	**20**	**20**

SDG 13: Climate Action

Year	Baseline estimate	Project estimate	Net benefit
21/12/2019-20/12/2020	0	0	0
21/12/2020- 20/12/2021	19,507	0	19,507
21/12/2021- 20/12/2022	36,848	0	36,848
21/12/2022-20/12/2023	42,897	0	42,897
21/12/2023- 20/12/2024	303,852	0	303,852
Total	**403,103**	**0**	**403,103**
Total number of crediting years	**5**		
Annual average over the crediting period	**80,621**	**0**	**80,621**

B.7 Monitoring plan

B.7.1 Data and parameters to be monitored

SDG 13 (For Solar Lighting Systems)

Data / Parameter	Ln
Unit	Lumens
Description	Lumen output of each solar lamp n deployed as part of the project activity
Source of data	Table 45, 2021 value in section B.4 of the PDD
Value(s) applied	140.54
Measurement methods and procedures	Will be recorded at time of sale/installation in MEC Credit Tracker system

Monitoring frequency	Annual
QA/QC procedures	Each light installation will be geocoded (GPS coordinate or other specific location data) or provide address/location of household in the MEC Tracker System. Associated data will reside in the MEC Tracker Database, allowing each installation to be monitored on a regular basis.
Purpose of data	Calculation of baseline emissions
Additional comment	If lamp types allow for different settings of light intensity, the conservative value shall be chosen unless an accurate average value is substantiated through a representative sample survey (90% confidence interval +/- 10% error). A variety of solar lighting systems will be offered under the proposed VPA. The lumen output for the models sold under the proposed VPA will be used for calculating the final emission reduction. In line with the information given in the eligibility criteria section in this VPA-DD, the lumen value for solar lighting systems in this VPA will be capped at 140.54 Lumen for individual households (based on Table 4 for the year 2021).

Data / Parameter	$N_{i,a}$
Unit	Lamps
Description	Total number of solar lamps of type *i* that have been deployed in period *a*
Source of data	Primary data collected by PO/VPA implementer and recorded in Credit Tracker
Value(s) applied	850,000 - year 5 (estimated)
Measurement methods and procedures	*Target population:* all solar lamps of type *i* that have been deployed *Objective:* Establish the number of solar lamps of type *i* deployed during period *a* as part of the proposed SSC-VPA. *Description and Reliability Requirements:* Primary data collection

	No sampling is applied to this parameter. All deployed solar lamps of type *i* will be recorded. $N_{i,a}$ is adjusted according to actual operational days during a given monitoring period y. The sales date for each solar lamp of type *i* listed in Credit Tracker for proposed VPA signifies the start of operation for each solar lamp. The operational days of each solar lamp is divided by the total number of days of the current monitoring period to determine the adjusted $N_{i,a}$number of solar lamps of type *i* in operation.
Monitoring frequency	Annual
QA/QC procedures	Each light installation will be geocoded (GPS coordinates or other specific location identifiers) in the MEC Tracker System. Associated data will reside in the MEC Tracker Database, allowing each installation to be monitored on a regular basis. The data in MEC tracker system can be crosschecked with the MIS system of the PO.
Purpose of data	Calculation of baseline emissions
Additional comment	-

Data / Parameter	$d_{i,a,v}$
Unit	Days
Description	Average number of days lamps of type *i* that have been deployed in period a were operating in period v
Source of data	Monitoring partner, Credit Tracker
Value(s) applied	365
Measurement methods and procedures	Exact date of sale (in the case of solar lights) and installation (in the case of solar lighting systems) for all clean energy products is tracked by monitoring partners and recorded in Credit Tracker. For products newly sold/installed in period *v*, the date of sale or installation will be used to calculate total days of operation in period *v*. For products sold/installed prior to period *v*, $d_{i,a,v}$ will be equal to the total number of days in period *v*. *Target population:* all solar lamps of type *i* that have been deployed *Objective:* Establish the number of days solar lamps of

	type I that have been deployed in period *a* were operating in period *v*. *Description and Reliability Requirements:* Primary data collection No sampling is applied to this parameter.
Monitoring frequency	Annual
QA/QC procedures	Results will be checked by contracted verifier
Purpose of data	Calculation of baseline emissions
Additional comment	The data in MEC tracker system can be crosschecked with the MIS system of the PO. Contracted verifier will check results.

Data / Parameter	H
Unit	Hours/day
Description	Average operating hours of kerosene lamps in the baseline
Source of data	Default value from par.8(c) of AMS I.A version I4. Updated value will come from field survey results in baseline population.
Value(s) applied	3.5 or other baseline value based on field surveys or other available data before implementation
Measurement methods and procedures	AMS I.A version 14 par.8(c) states: *For the specific case of lighting devices a daily usage of 3.5 hours shall be assumed, unless it is demonstrated that the actual usage hours adjusted for seasonal variation of lighting is different based on representative sample survey (90% confidence interval +/-10% error) done for minimum of 90 days.* In practice, usage of more than 3.5 hours/day is expected. A representative sample survey (90% confidence interval +/- 10% error) within the baseline population may be conducted. The results of the survey shall be checked during the following periodic verification by the contracted verifier and shall afterwards permanently replace the default value used for the relevant VPA.
Monitoring frequency	Annual

QA/QC procedures	Results will be checked by contracted verifier
Purpose of data	Calculation of baseline emissions
Additional comment	-

Data / Parameter	$LFR_{i,v}$
Unit	%
Description	Lamp failure rate: Share of lamps of lamp type i in checked sample group $g_{i,v}$ not operational in period v
Source of data	Monitoring partner, Credit Tracker
Value(s) applied	0% (Ex-ante estimate). The real LFR shall be determined during annual monitoring
Measurement methods and procedures	CME/PO/Monitoring partner will track usage status of all lamps (or solar lighting systems) from each quarterly of the year with results recorded in Credit Tracker. Any lamps that are non-operational (due to failure or disuse by owner) will be recorded as "failed" lamps. Lamp failure rate will be calculated as: LFR = (Number of failed lamps/Total number of lamps monitored)
Monitoring frequency	Annual
QA/QC procedures	The lamp failure rate will also be checked by the verifier. The LFR measure in use based on regular monitoring for the full portfolio of lamps will be down-rated as appropriate according to the verifier rating.
Purpose of data	Calculation of baseline emissions
Additional comment	-

Data / Parameter	$CF_{i,v,LFR}$
Unit	%
Description	This factor corrects the total number of lamps of type i by the share of these lamps that were found to be non-operational according to the sampling in period v. The statistical error is included in this parameter (confidence level 90%) when 90/10 precision is not met. Otherwise, the mean value of LFR will be used.
Source of data	$LFR_{i,v}$
Value(s) applied	100%

Measurement methods and procedures	The value is calculated using the recorded value for $LFR_{i,v}$ – $$CF_{i,v,LFR} = 1 - \left(LFR_{i,v} + z * \sqrt{\frac{LFR_{i,v} * (1 - LFR_{i,v})}{n_{i,v,total}}} \right)$$
Monitoring frequency	Annual
QA/QC procedures	This value is calculated based on the results of other monitored parameters. Calculation results will be checked by the CME to confirm accuracy.
Purpose of data	Calculation of baseline emissions
Additional comment	-

Data / Parameter	$n_{,i,v,total}$
Unit	Lamps
Description	Total number of lamps checked for which a valid result was obtained.
Source of data	Monitoring partner, Credit Tracker
Value(s) applied	30
Measurement methods and procedures	CME/PO/Monitoring partner will randomly and representatively track households contacted and reached for monitoring lamp usage status for each lamp type *i* in the monitoring period, *p*. This data will be recorded in Credit Tracker. Survey methods will be used.
Monitoring frequency	Annual
QA/QC procedures	Results will be checked by contracted verifier.
Purpose of data	Calculation of baseline emissions
Additional comment	-

Data / Parameter	Kerosene Usage in the Baseline
Unit	n/a
Description	Determination of whether or not the end user used kerosene for lighting prior to the project activity
Source of data	Primary data collected by PO/CME/monitoring partner and recorded in Credit Tracker
Value(s) applied	100%
Measurement methods	Target population: all end users who purchased a solar

and procedures	lamp under a VPA included in this PoA Objective: Confirm whether or not the end user used kerosene for lighting prior to the project activity Description and Reliability Requirements: Primary data collection No sampling is applied to this parameter. All end users who purchased a solar lamp will be tracked.
Monitoring frequency	Annual
QA/QC procedures	Each light installation will be geocoded (GPS coordinates or other specific location identifiers) in the MEC Tracker System. Associated data will reside in the MEC Tracker Database, allowing each installation to be monitored on a regular basis.
Purpose of data	Calculation of baseline emissions
Additional comment	-

SDG 13 (For Water Purification Systems)

Parameter ID	*SDWS 18*
Data/parameter	$M_{q,y}$
Unit	Fraction
Description	Ongoing water quality indicated as the fraction of the samples that pass microbial quality standard requirements specified in relevant microbial quality standard for drinking water of the host country. In case a national standard is not available, the water quality shall comply with WHO Guideline values for verification of microbial quality i.e., all water directly intended for drinking must not have detectable E.Coli in any 100 ml sample i.e., less than 1 Colony Forming Unit (CFU) of E.Coli /100 ml.
Source of data	Testing of water at the exits of the treatment technology for a representative sample of end-users
Value(s) applied	1
Measurement methods and procedures	-
Monitoring Frequency	Annual sampling, and the first round of testing shall be conducted at least after six months from the start date.

QA/QC Procedures	1. Laboratories used for water quality testing must be approved by local health authorities and/or have quality accreditation; and 2. The laboratory used must demonstrate that it has an adequate quality management plan in place which addresses both quality assurance and quality control test procedures. 3. Field testing kits also are eligible, e.g. based on Colony Forming Unit method or Most Probable Number method. To use the field testing kits the project shall meet the following requirements: a. Testing kits must be approved by national agency or meet standards set by relevant international organisation e.g. US-EPA, and b. Testing kits shall be tested for its accuracy and robustness prior to application for project level monitoring, whereby local or accredited laboratory shall conduct water quality tests using testing kits and a relevant ISO standard or an equivalent standard, in parallel with field testing kits. 4. Follow 4.2 |General requirements for sampling. The sampling results shall satisfy at minimum the 90/10 rule.
Purpose of data	Related to water quality
Additional comment	If the proportion of samples not meeting Safe Drinking Water Quality Standards exceeds a threshold, no emission reductions will be claimed for the corresponding monitoring period. Thresholds: - Project or VPA year 1: 20% - Project or VPA year 2: 15% - Project or VPA year 3 or above: 10% When the crediting period is renewed, the year number count continues, i.e. the second crediting period would encompass year 6, year 7, year 8, etc. Additionally, when the threshold is exceeded, the project shall provide an explanation for why this occurred and provide a remediation plan.

Parameter ID	*SDWS 20*
Data/parameter	Water hygiene education campaigns
Unit	-
Description	Hygiene campaigns carried out among project safe water end-users.
Source of data	Report of annual hygiene campaigns results
Value(s) applied	-

Measurement methods and procedures	The following guidelines apply for conducting these campaigns -The project developer shall report the activities conducted each year in a detailed "Report of annual hygiene campaigns results" and summarize the results in the project monitoring reports. - Any major changes in the health status of the water users as a result of contaminated water (e.g. an outbreak of water related disease) must be reported and, if relevant, a strategy put in place to address it through the subsequent hygiene campaign. - The detailed method used to assess hygienic handling of clean water must be provided with the PDD and verified by the VVB. - The details of the method should be adjusted to suit the circumstances of each project and also to suit learning year on year. The impacts of the hygiene campaign shall be assessed using the WHO/UNICEF Joint Monitoring Programme Core questions for drinking water and hygiene to determine the fraction of the households and institutions where Safe water and Hygiene practices are found to fulfill "safely managed" or "basic" requirements. In-person or telephone or by messaging (e.g. text, app) based survey shall be conducted covering all the JMP core questions for drinking water and core questions for hygiene. For sampling requirements, follow section 4.2 |General requirements for sampling of the methodology. The JMP core questions for households, schools and health care facilities are available at https://washdata.org/monitoring/methods/core-questions
Monitoring Frequency	Annual
QA/QC Procedures	The fraction of the households where Safe water and Hygiene practices are found to fulfill "safely managed" or "basic" requirements is expected to increase over time as a result of the hygiene campaigns.
Purpose of data	-
Additional comment	-

Parameter ID	*SDWS 22*

Data/parameter	$X_{cleanboil,y}$
Unit	Percentage
Description	Proportion of project end-users that boil safe (treated, or from safe supply) water after installation of project technology in year y.
Source of data	Project survey
Value(s) applied	0
Measurement methods and procedures	Sampling survey is carried out to determine the value
Monitoring Frequency	Annual
QA/QC Procedures	-
Purpose of data	Calculation of baseline emissions
Additional comment	For sampling, follow the section 4.2 |General requirements for sampling, below.

Parameter ID	*SDWS 24*
Data/parameter	QPW_p
Unit	Litre/person/day
Description	Volume of drinking water per person per day for premises type p
Source of data	Option 1: Apply the default value per person. In the case of institutions, such as schools, the value should reflect the expected drinking water use per person while on the premises of the institution, in line with the following defaults: - Full-day premises: 4 L/person/day - Boarding school: 4 L/person/day - Half-time premises: 3 L/person/day Option 2: Water Consumption Field Tests. - In all cases, the value is capped at 5.5 L/person/day The water consumption field test (WCFT) measures project-supplied clean water consumption volumes. The WCFT is conducted with end users representative of the project scenario target population and currently using the project technology. The WCFT must be designed to ensure that monitoring is representative of typical technology use practices and that: - it is transparent and can easily be replicated,

	- it is evidently conservative, - the sample is randomly selected so as to not introduce a material bias, and - the impact of daily and seasonal variations on the expected average water consumption is accounted for The WCFT must be conducted over 3 days, not including weekends, and averaged value (l/person/day) value should be determined after excluding outliers. It must be made explicit to the households/institutions that they must behave and consume water normally, reflecting typical daily water consumption pattern. Any sampling methods can be used, provided that the sample is selected randomly. Minimum sample size for HWT is 30. In case of IWT, the minimum sample size shall be determined considering the project technology type and in line with the sampling approach applied. For minimum sample size requirements for different sampling approach Guidelines for sampling and surveys for CDM project activities and programmes of activities
Value(s) applied	5.5 (for ex ante estimation)
Measurement methods and procedures	In case of Option 2, minimum sample size is 30.
Monitoring Frequency	Every two years
QA/QC Procedures	-
Purpose of data	Calculation of baseline emissions
Additional comment	-

Parameter ID	*SDWS 25*
Data/parameter	$HN_{p,y}$
Unit	-
Description	Number of individuals per premises type p in the project boundary in year y
Source of data	Project survey/ official government publication For ex-ante India census 2011 for states has been used (https://censusindia.gov.in/census.website/data/census-tables)
Value(s) applied	

State	HH size
Punjab	5
Bihar	5.5
Haryana	5.2

	<table><tr><td>Karnataka</td><td>4.5</td></tr><tr><td>Madhya Pradesh</td><td>4.8</td></tr><tr><td>Uttar Pradesh</td><td>6</td></tr><tr><td>West Bengal</td><td>4.5</td></tr></table>
Measurement methods and procedures	Sampling for project survey should be carried out following the General requirements for sampling as per section 4.2.
Monitoring Frequency	Annual
QA/QC Procedures	CME/PO to conduct surveys with expert party assistance. Training will be provided to enumerators and testers.
Purpose of data	Calculation of baseline emissions
Additional comment	The value applied shall be cross-checked against at least one other source on the list. For cross-check purposes, sources applied may be up to 5 years old. Further, cross-check with older sources may be used provided they provide conservative results.

Parameter ID	*SDWS 28*
Data/parameter	$N_{p,y}$
Unit	Number
Description	Accumulated number of premises type p with at least one individual project technology in year y
Source of data	Sales or distribution records
Value(s) applied	26,000– year 5 (estimated)
Measurement methods and procedures	The no. of units distributed shall be recorded and data maintained for no. of units in each household.
Monitoring Frequency	Annual
QA/QC Procedures	Sales or distribution records to include 1. Date of sale/distribution 2. Geographic area of sale 3. Model/type of project technology sold 4. Quantity of project technologies sold Name and telephone number, and address (if available) or other traceable indicator of premises identity and location for all end users.
Purpose of data	Calculation of baseline emissions
Additional comment	Units shall not be counted in $N_{p,y}$ after the end of their technical life, unless this is addressed by the measures to

	manage the cases where the expected technical life of the project technology is shorter than the crediting period, namely replacement or retrofit as described in the parameter SDWS 6 and SWDS 7.

Parameter ID	*SDWS 29*
Data/parameter	$U_{p,y}$
Unit	Percentage
Description	Usage rate of the project technology by premises type p during year y
Source of data	Project Survey of the premises using a project technology to determine the usage rate of the project technology during the year.
Value(s) applied	100%
Measurement methods and procedures	Option 1: In-person survey of project premises. Households that show at least once-in-two-days use may be counted as users. The resulting fraction is multiplied by 100% to get $U_{p,y}$. Where project technologies of different ages are being credited, the sample shall be representative of the distribution of project technology ages. The minimum sample size for HWT - for individual technology age group shall be minimum 30 household. For minimum sample size requirements for different sampling approach *Guidelines for sampling and surveys for CDM project activities and programmes of activities* to be followed.
Monitoring Frequency	Annual
QA/QC Procedures	Where a WCFT is undertaken to determine QPW_p, this may be used to cross check the usage percentage.
Purpose of data	Calculation of baseline emissions
Additional comment	The usage survey provides a single usage parameter that is representative for project technologies in the total sales record.

Parameter ID	*SDWS 30*
Data/parameter	$t_{p,y}$
Unit	Hours per day
Description	Usage time of the project technology by premises type p in

	year y
Source of data	Will be determined via Project survey based on anyone of the option below: Option 1. Observational sample-based survey of project household practices. Option 2. Interview survey performed by telephone or messaging (e.g. text, app). Option 3. Default of 5 hours.
Value(s) applied	5 hours (for ex ante estimation)
Measurement methods and procedures	Default Value of 5 hours
Monitoring Frequency	Annual
QA/QC Procedures	-
Purpose of data	Calculation of baseline emissions
Additional comment	-

Parameter ID	*SDWS 31*
Data/parameter	$DP_{p,y}$
Unit	Days
Description	Average days the project technology is present for end-users in the premises p in year y
Source of data	Sales or distribution records.
Value(s) applied	365
Measurement methods and procedures	Ex-ante it is assumed to be present 365 days. However ex-post, based on the sales or distribution records of "Date of sale/distribution" and ex-ante parameter "Expected technical life of project technology," it shall be determined for each project device how many days of the 365 days of the year it was in the premises and within its technical life. The average for all the project technology by premises type p shall be calculated to obtain this parameter.
Monitoring Frequency	Annual
QA/QC Procedures	For schools and other institutions, as applicable, the days must also be limited by the number of school days in the period, taking into account weekends and holidays.
Purpose of data	Calculation of baseline emissions
Additional comment	-

Parameter ID	*SDWS 32*
Data/parameter	$DN_{p,y}$
Unit	Number
Description	Average number of individual project technologies in each project premises type p in year y
Source of data	Sales or distribution records.
Value(s) applied	1
Measurement methods and procedures	Based on the sales or distribution records of "Quantity of project technologies sold" and identifying information of buyer/recipient, the average number of project devices per premises are calculated. Ex-ante it is assumed that only 1 device will be sold per household. If the project covers different types of end-users (e.g. households, institutions), the average number must be determined per premises type p.
Monitoring Frequency	Annual
QA/QC Procedures	-
Purpose of data	Estimation of baseline emissions
Additional comment	Applies to HWT and IWT project

Parameter ID	*SDWS 35*
Data/parameter	LE_y
Unit	tCO_2e per year
Description	Leakage emissions during year y
Source of data	Sources established by following Leakage emissions section
Value(s) applied	5% (ex-ante estimation)
Measurement methods and procedures	As per section 3.8.3 of the methodology, "If the ex-ante evaluation shows that leakage emissions are less than 5% of total emission reductions, then no monitoring is needed, and emission reductions simply shall be adjusted 5% down." Therefore, the Emission reductions have been adjusted by 5% to account for leakage emissions
Monitoring Frequency	Every two years
QA/QC Procedures	Compliance with the general requirements for sampling and

	general requirements for data and information sources
Purpose of data	Estimation of baseline emissions
Additional comment	Monitoring parameters required for calculating leakage emissions shall be included in the monitoring plan in the PDD as required to monitor and quantify the sources of leakage determined by following the Leakage emissions section.

SDG 1

Paramter ID	*SDWS 19*
Data / Parameter	BSA / HHS
Unit	Number
Description	Access to basic service to households/institutions
Source of data	WPS distribution records Ex-post Monitoring Survey Records
Value(s) applied	93.43% WPS (Annual average)
Measurement methods and procedures	Monitoring and recording of number of WPS distributed under the project
Monitoring frequency	Annual
QA/QC procedures	-
Purpose of data	SDG 1 contribution
Additional comment	-

SDG 6

Parameter ID	*SDWS 19*
Data / Parameter	Number of beneficiaries
Unit	Number
Description	Number of households served with safely managed water services
Source of data	CME Database
Value(s) applied	WPS-24,292
Measurement methods and procedures	Using formula, Np,y*(1-Cb)*Up,y*Mq,y
Monitoring frequency	Annual
QA/QC procedures	-
Purpose of data	Monitoring of SDG 6

Additional comment	-

SDG 7

Parameter ID	*SDWS 19*
Data / Parameter	$AACS_{HH}$
Unit	Number
Description	Number of households having access operational clean energy product
Source of data	WPS/SLS distribution records
Value(s) applied	10,753 WPS (Annual average) 225,530 SLS (Annual average)
Measurement methods and procedures	Monitor the number of WPS/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	-

SDG 8

Parameter ID	*SDWS 19*
Data / Parameter	QE IG
Unit	Number
Description	Quantitative Employment and income generation
Source of data	Employment records
Value(s) applied	20
Measurement methods and procedures	Recording the number of employees (male / female) in the project under administrative, sales, production and management positions. Employment contract with date of birth will be provided.
Monitoring frequency	Annually
QA/QC procedures	-
Purpose of data	SDG 8 contribution
Additional comment	-

B.7.2 Sampling plan

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Solar Lighting System

To reduce monitoring efforts a single sample is drawn based on which all of the parameters determined via sampling shall be monitored. The CME will determine the number of users/appliances monitored during sampling for each of the parameters separately. The reason is that the variation within the values obtained will be different for each parameter. Since the precision of a sampled parameter depends on the variation of its values, the necessary number of users/appliances to be monitored in order to achieve the 5% or 10% precision will also depend on the variation of values. Therefore, although the monitoring team will undertake monitoring of various parameters simultaneously and on the same sample, the PP may decide to stop monitoring of a particular parameter during the campaign once the required precision for this parameter is achieved. The monitoring team will continue to monitor appliances in the sample with respect to the remaining parameter(s) until again the required precision for these parameters is achieved.

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. Simple random sampling is conceptually straightforward and easy to implement – provided that a sampling frame of all elements of the population exists. Its simplicity makes it relatively easy to analyse the collected data. It is also appropriate when only minimum information of the population is known in advance of the data collection. The costs of data collection under simple random sampling could be higher than other sampling approaches when the population is large and geographically dispersed.

Sampling Size

Sample size shall be determined using the following formula:

$$\mathbf{n} \geq \frac{1.645^2 N \times p(1-p)}{(N-1) \times 0.12 \times p2 + 1.\underline{645}^2 p(1-p)}$$

Where:

- (c) Minimum required number of clusters to be sampled.
- Confidence:
  - 90% = 1.645 (as indicated in the formula above)
  - 95% = 1.96 (1.645 in formula will be replaced)
- Precision:
  - 10% = 0.1 (as indicated in the formula above)
  - 5% = 0.05 (0.1 in formula will be replaced)

Sampling frame

Sample sizes will be sufficient to ensure that the precision of the sample means/proportions are in accordance to the Sampling Frame established for the VPA within the PoA to estimate emissions reductions. In cases where survey results indicate that the desired precision is not achieved, the lower bound value of corresponding confidence interval of the parameter value may be used as an alternative to repeat the survey. Alternatively, the survey may be expanded to reach the required confidence/precision. To ensure a simple random sample selection, random number generators shall be applied. Each SLS in the target population is uniquely identifiable by its Serial ID number. Each CEP can thus be allocated a Sample Selection Number in each monitoring period, starting at 1 and increasing up to the total number of CEPs in the Database for that pre-defined simple random sampling frame. Applying the random number generators, the CEP can then be randomly chosen from the defined population up to the required sample size as calculated by the CME.

Water Purification System

If homogeneity of population can be demonstrated, or differences are taken into account (stratification) in the sample size calculation then 90/10 confidence/precision will be applied. A statistically valid sample can be used to determine parameter values, as per the relevant requirements for sampling in the "Methodology for Sampling and surveys for CDM project activities and programme of activities." Minimum 90% confidence interval and a 10% margin of error requirement shall be achieved for the sampled parameters. In any case, for proportion parameter values, a minimum sample size of 30, or the whole group size if this is lower than 30, must always be applied.

Sampling objective

The sampling objective for each parameter is to determine a statistically significant parameter value for the emission reduction calculations through a sampling survey and/or test. The parameters to be sampled are classified into monitored parameters and monitoring parameters where sampling is done ex-ante and annually respectively, as follows:

Parameter	**Description of Parameter**	**Type of survey**
Water sources in Project boundary	Water sources in Project boundary	Baseline
Stove technologies used in project boundaries	Stove technologies used in project boundaries	Baseline
Percentage of fuel f used in the target population	Percentage of fuel f used in the target population	Baseline

Average time saving associated with cooking and fuel collection	Average time saving associated with cooking and fuel collection	Baseline
$n_{w,b}$	Weighted average efficiency of the baseline water boiling devices.	Baseline
C_b	Proportion of project end-users who in the baseline were already using safe water, either from an improved water source, or from a water treatment method other than boiling	Baseline

Monitoring Parameter	**Description of Parameter**	**Monitoring frequency**	**Type of survey**
$X_{cleanboil,y}$	Proportion of project end-users that boil safe (treated, or from safe supply) water after installation of project technology in year y.	Annual	Project
$M_{q,y}$	Ongoing water quality indicated as the fraction of the samples that pass microbial quality standard requirements specified in relevant microbial quality standard for drinking water of the host country. In case a national standard is not available, the water quality shall comply with WHO Guideline values for verification of microbial quality i.e., all water directly intended for drinking must not have detectable E.Coli in any 100 ml sample i.e., less than 1 Colony Forming Unit (CFU) of E.Coli /100 ml	Annual	Project
$U_{p,y}$	Usage rate of the project technology by premises type p during year y	Annual	Usage
QPW_p	Volume of drinking water per	Annual	Usage

	person per day for premises type p (L)		
$t_{p,y}$	Usage time of the project technology by premises type p in year y	Annual	Project
$HN_{p,y}$	Number of individuals per premises type p in the project boundary in year y	Annual	Usage
$DN_{p,y}$	Average number of individual project technologies in each project premises type p in year y	Annual	Project

Sampling Size

Usage/Project Survey

- For usage survey, the minimum sample size for HWT - for individual technology age group shall be minimum 30 household. The majority of interviews in a usage survey must be conducted in person. Thus, if technologies of age 1-5 are credited, the usage survey must include 30 representative samples from each age for total of 150 samples. The resulting usage parameter should be weighted based on the proportion of technologies in the total sales record of each age. For project survey, below mentioned guideline should be followed:

Group size	**Minimum sample size**
<300	30 or population size, whichever is smaller
300 to 1000	10% of group size
>1000	100

In line with the applied methodology, any sampling methods can be used, provided that the sample is selected randomly. If sampling approach other than simple random sampling is applied, 'Guidelines for sampling and survey for CDM project activities and program of activities'[31] must be followed.

[31] https://cdm.unfccc.int/sunsetcms/storage/contents/stored-file-20151023152925068/Meth_GC48_%28ver04.0%29.pdf (site visited 03/06/2020)

When applicable the Usage Survey and the Project Survey will be implemented together using the same sample.

Usage survey shall be designed in line with the requirement of Usage Survey Guidelines outlined in Annex-1 of the applied methodology.

TOPIC-1	**Introductory question and water treatment**		
Questions	**Reason**	**Answer**	**Success or Failure**
Did you do anything to make your water safer to drink?	This is to clarify if the respondent purifies water and does not consume raw/untreated water in the project scenario.	Yes	Success; Any other response would mean failure
How did you make this water safer to drink?	This question will address if the project specific HWT technology is used.	Project Device - WPS	Success; Any other response would mean failure
Are you the primary user of the filter in the household?	This ensures that usage related questions are directed to the person who is aware of how to use the filter. Based on reporting	Yes	Success; Any other response would mean failure
TOPIC-2	**Rate of Usage**		
Are you a daily user of the Household water purifier in the household?	This question checks the previous questions by quantifying it and obtains additional information on the frequency of use Based on reporting	Yes	Success; Any other response would mean failure
When was the last time respondent filtered water using the safe technology?		Yes	Success; Any other response would mean failure
Have respondent used the safe		Yes	Success; Any other response would

water technology device in the last two days?			mean failure
TOPIC-3	**Water storage**		
Is there a safe storage container that contains filtered water in it?	This question will inform whether filtered water can be or is being stored. Based on observation and reporting	Yes	Success; Any other response would mean failure
How the respondent store drinking water?		Any of the below response: - water filter itself has storage - in container with cover - in container with cover and small outlet	Success; Any other response would mean failure
If 'no', when was the last time there was filtered water in it?		In last 2 days	Success; Any other response would mean failure
TOPIC-4	**Physical signs of usage**		
Is the device wet?	This may give an indication of whether the unit has been in use recently. Based on observations rather than reporting	Yes	Success; Any other response would mean failure
Is dust present on the filter which could indicate non-- usage of the HWT unit		No	Success; Any other response would mean failure
TOPIC-5	**Demonstration & Knowledge**		
Can I see the water filtration device	A user shall be capable of using the HWT unit.	Yes	Success; Any other response would mean failure
Do you know how to fill the raw water (unsafe water) in the filter?		Yes	Success; Any other response would mean failure
Do you know when to change/replace the filter element in the device?		Yes	Success; Any other response would mean failure
If yes, what is the		Any of the below	Success; Any other

indication to replace		response: - reduced flow - filter stop working - overflow from filter	response would mean failure
Is the filter element intact?		Yes	Success; Any other response would mean failure
Is the tap working?		Yes	Success; Any other response would mean failure

Water quality testing

The sample for water quality testing will be made following the 90/10 precision rule indicated by the applied methodology.

B.7.3 Other elements of monitoring plan

>>

Monitoring for typical VPAs is described below. The monitoring activity provides a framework for project preparation and monitoring processes that will be undertaken at the VPA level for each VPA. This schedule takes into account the key parameters that are needed during the crediting period of the project. All required monitoring and documentation would be implemented, reported, consolidated and managed by the CME or a qualified expert partner to meet verification requirements. Monitored data will be stored in a suite of monitoring databases. These will be updated each monitoring period:

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 crosschecked with the PO records to confirm the installation record is authentic and no double counting occurs.

2. The values of the two emission reduction parameters required for ex-post ER calculation – usage rate of the water purifiers ($U_{p,y}$), usage time ($t_{p,y}$), household size ($HN_{p,y}$), volume of water consumed (QPW_p), number of devices in the premises ($DN_{p,y}$), proportion of end users that boil safe water in the project year ($X_{cleanboil,y}$), water quality (M_q), number of not operational SLS ($LFR_{i,v}$), average operating hours

(h), average number of operational days of lamps ($d_{i,a,v}$) are found from sampling of CEP installations

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 will coordinate all ex-post monitoring activities in the PoA. 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. The CME will provide the VVB with a single monitoring report for verification purposes for all VPA's requesting issuance together. However, the actual field measurements to be conducted during monitoring (e.g. WCFT and water testing) will most likely be performed by third parties contracted to the CME and/or PO. In the case of using contractors, however, the CME will still be responsible for setting the procedures and providing oversight and training to the contractors. The choice between conducting the actual monitoring activities itself or employing another organization (for example, local marketing firm, university etc.) will depend on locational, operational factors and financial factors. In any case, a local partner will be important for providing local insight in questionnaire design, interview technique and for gaining physical access to project beneficiaries to obtain accurate results during monitoring.

Parameter values shall be estimated by sampling in accordance with the requirements in the applied methodology separately and independently for each of the VPAs

included in a PoA. If a sampling plan is developed for each VPA, and where there is no specific guidance in the applicable methodology, project proponents shall use 90/10 confidence/precision 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.

Desired precision / expected variance and sample size –

To monitor the required parameters, data will be collected from a statistically valid sample in the database as per this sampling plan during the monitoring period. The monitoring frequency for each parameter will be followed as per the methodology applied. After that, the relevant data will be archived in the electronic database tool and be used to determine sample size for each parameter. As per the methodology the relevant requirements for sampling in the "Standard for sampling and surveys for CDM project activities and programme of activities" shall be followed. A 90% or 95% confidence interval and a 10% margin of error requirement shall be achieved for the sampled parameters. As per "Guidelines for Sampling and Surveys for CDM Project Activities and Programme of Activities", version 04, the following Sampling plan has been developed.

The data from the survey will be analyzed to calculate the value of the parameters. Data will be used for the preparation of monitoring reports for each VPA. The results of all monitoring will be included in the CME's management database. Where it is found that an installed WPS/SLS is no longer in use, the installation will be removed from inclusion in the VPA.

During sampling there may be non-response from the target population. Over-sampling by 20% may be 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 will be conducted at least annually at the end of the calendar year. The overall monitoring and the implementation of the sampling will be coordinated by the CME and the management staff. They will ensure successful monitoring of the emission reductions of the proposed project during its crediting period. Furthermore, the survey of the representative sample for the parameters will be carried out by the distributor together with the CME. The survey method that will be used by CME include: (a) Hard-copy questionnaires (b) Face to face interview (c) Telephone Interview.

All efforts of sampling will be conducted by qualified personnel who have undergone training as part of the programme. All the persons who carry out sampling plan will be required to speak the native language(s) allowing for a full understanding of any

responses given by users and any questions therein. The date of all monitoring shall be recorded in the VPA database.

Primary data will be stored by the implementing entities/operators:

The MEC Credit Tracker Platform is used to keep detailed records of all installations under each VPA. Each installation is monitored annually to check usage status. The Project shall monitor a representative sample of households that have received both stoves and water technologies. All monitoring records are maintained in the Credit Tracker Platform.

1. The PO maintains in the Credit Tracker Platform a record of all clean energy products that areinstalled

2. The PO identifies the exact location of the CEP using GPS location and/or address of thehousehold or organization.

3. The emissions parameters required for ex-post management are also maintained in the Credit Tracker Platform. These include the number of solar lighting systems still in operation, and then performance of the solar lighting systems. These parameters are determined through a samplingstudy as described above.

4. The CME uses the Credit Tracker Platform to cross-check the new records with the existing Platform in order to confirm that the installation record is authentic and that no double-countingoccurs.

5. The electronic files holding installation records are backed up on the Internet, reducing risk ofany loss of data.

6. All monitored data required for verification and issuance will be kept for two years after the end of the crediting period or the last issuance of CERs/VERs for the PoA, whichever occurs later. The unique system ID number which is linked to a GPS location and/or verified address eliminates anyrisk of double-counting between VPAs.

Technical Failure and Maintenance Protocol

PO 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.

Organizational Diagram of Monitoring Plan

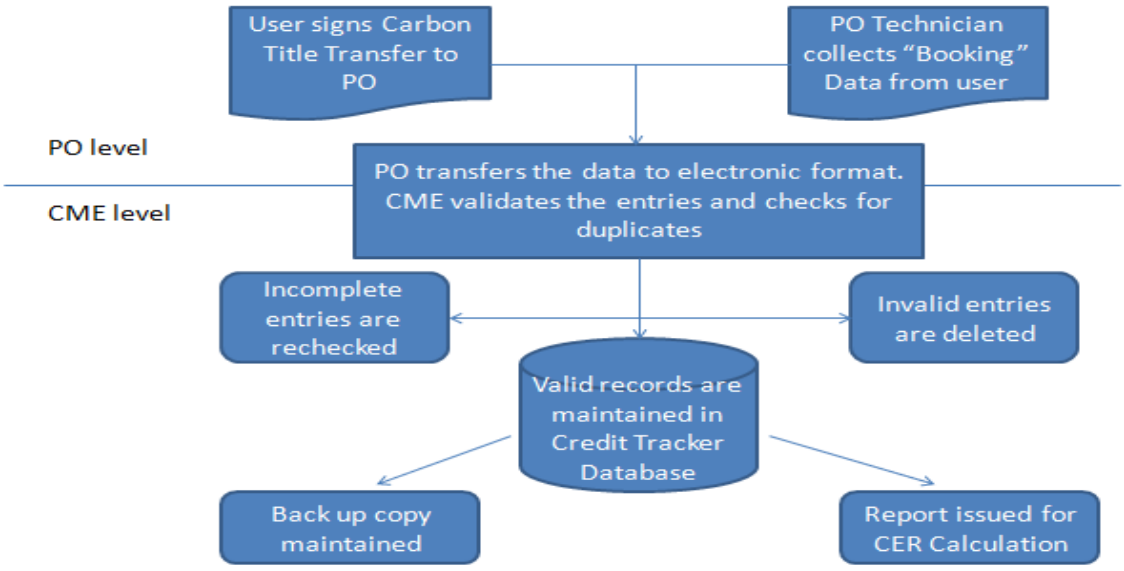

Figure B.7.2: PoA Monitoring Plan

Quality Assurance/Quality control

As the PoA is intended to include multiple regions within India with a high level of cultural diversity as well as different end user groups, there is no "one size fits all" approach for dealing with these issues. However, in order to avoid many of these problems the CME will undertake the following strategies, tailoring the specific approach to the local circumstances:

1) Ensuring end user awareness. At the time of sale, the CEP customer is made aware that they are required to participate in monitoring activities. This will be via training sales personnel to explain the importance of monitoring to each customer, and during regularly scheduled microfinance group meetings for end-users.

2) Questionnaire design. The design of the questionnaire will ensure that the questions are non-intrusive and easy to understand for both the interviewee and interviewer.

3) Drawing on local knowledge. The local contractors to be hired by the CME in each region will play an important role in tailoring the approach to suit local circumstances. For example, in some instances, it may be essential for a local person to conduct the interview in order to obtain accurate results.

4) Quality of contractors. Any third parties hired by the CME to carry out sampling will be required to demonstrate a high level of cultural awareness, local language skills and appropriate experience with data entry and data management. The CME will ensure that contractors are adequately trained for the tasks they are contracted. Training will also be provided on how to deal with non-responses, refusals and other problems should these occur.

The program will be independently verified on a regular basis according to the rules of the applied UNFCCC CDM Methodology and Gold Standard methodology. The verifier will confirm the accuracy of the monitoring by visiting a sample of the installations.

Hygiene Campaign

The hygiene campaign will be designed as per the guidelines laid out in the methodology. Water hygiene education campaigns will include the following activities:

- Educating customers on proper handling and storage of raw and processed water.
- Emphasizing the importance of hygiene to prevent infections or water borne diseases. The training campaigns would be organised during the product demonstrations and during weekly or monthly group meetings.
- Designing survey questionnaire for water filters to include all the necessary questions related to the project in line with JMP Core questionnaire by

WHO/UNICEF. On annual basis, customers will be assessed to check the effectiveness of the education campaign. Customers will be selected randomly from the total population.

The project will report the activities conducted each year in the annual monitoring report. Any major changes in the health status of the water users as a result of contaminated water (e.g. an outbreak of water related disease) will be reported and, if relevant, a strategy put in place to address it through the hygiene campaign.

The program will be independently verified on a regular basis according to the rules of the applied UNFCCC CDM Methodology and Gold Standard methodology. The verifier will confirm the accuracy of the monitoring by visiting a sample of the installations.

SECTION C. DURATION AND CREDITING PERIOD

C.1 Duration of project

C.1.1 Start date of project

>>

01/01/2021 i.e. date of sale of first clean energy product (Water purification system under the proposed VPA. (Installation certificate for the first CEP in this VPA is provided).

C.1.2 Expected operational lifetime of project

>>

15 years

C2. Crediting period of project

C2.1 Start date of crediting period

>>

21/12/2019. Since the start date of the GS crediting period shall be same as the start date of the CDM crediting period, GS Crediting period start date- 21/12/2019.

C2.2 Total length of crediting period

>>

CDM Crediting period: 21 years from 21/12/2019

GS4GG Crediting period: 15 years

CDM CERS claimed upto: NA[32]

GS4GG crediting period remaining: 01/01/2021- 20/12/2034

CP1 under GS4GG: 01/01/2021 – 20/12/2024

SECTION D. SUMMARY OF SAFEGUARDING PRINCIPLES AND GENDER SENSITIVE ASSESSMENT

D.1 Safeguarding Principles that will be monitored

A completed Safeguarding Principles Assessment is in Appendix 1.

Parameter	Mitigation measures added to the monitoring plan
Principle 6.1 Labour Rights	The project will ensure the project employment are in compliance with national labour laws. Also, all the employees will be minimum of 18 years of age. The same is documented in the Monitoring Report
Principle 9.4 Release of Pollutants	The beneficiaries are informed about proper waste handling and disposal of scrap material due to end of life or non-operational product. PO collects the waste scrap or end-of-life or non-operational product and give it to scrap to recyclers which is documented in the Monitoring Report.

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

[32] No credits have been issued for the VPA under CDM

	safety laws and with the principles and standards embodied in the ILO fundamental conventions.
Source of data	Employment Contracts
Value(s) applied	Employment contacts shall be checked to see compliance with principle 6.1
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 scrap collection receipts
Value(s) applied	Based on interviews and receipts
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	-

D.2 Assessment that project complies with GS4GG Gender Sensitive requirements

Question 1 - Explain how the project reflects the key issues and requirements of Gender Sensitive design and implementation as outlined in the Gender Policy?	The local stakeholder consultation meeting will be carried out following a gender sensitive approach. The project will incorporate measures to ensure that there is no discrimination based on gender. Water Purification Systems (WPS) and Solar Lighting Systems (SLS) will be distributed to all willing customers within the project

	boundary. The project will have a positive impact on women considering that they will spend less time on boiling water for treatment or walking for miles to collect water and fuel.
Question 2 - Explain how the project aligns with existing country policies, strategies and best practices	The project will contribute towards the goal of host country policy by providing women with efficient water purifiers, thereby they will spend less time on boiling water or fuel procurement and will be able to in cleaner environment.
Question 3 - Is an Expert required for the Gender Safeguarding Principles & Requirements?	Not required. Water Purification systems or Solar Lighting systems projects not following Gender responsive approach do not require to contract an expert as per Gender Equality Requirements & Guidelines.
Question 4 - Is an Expert required to assist with Gender issues at the Stakeholder Consultation?	Not required. There is no need for an expert to assist with Gender issues at the Stakeholder Consultation. The project is prepared and implemented in line with the Gold Standard GS4GG Principles & Requirements as well as the Stakeholder Consultation and Engagement Requirements and Guidelines. The carbon technical team was present on the day of the consultation which has extensive experience in conducting this type of meeting, and followed the Gold Standard Stakeholder Consultation and Engagement Requirements, which includes gender guidelines, and specifies which social groups must be included in the consultation. The stakeholder consultation included interactions with potential beneficiaries including women and their feedback were considered appropriately.

SECTION E. SUMMARY OF LOCAL STAKEHOLDER CONSULTATION

The below is a summary of the 2 step GS4GG Consultation for monitoring purposes. Please refer to the separate Stakeholder Consultation Report for a complete report on the initial consultation and stakeholder feedback round.

E.1 Summary of stakeholder mitigation measures

>>

Under CDM, LSC was conducted for the VPA before VPA inclusion. Details of the same has been provided below:

For solar lighting system and water purifier:

Local holder consultation was held on 06/01/2017

Location of meeting: Rayya Branch Office, Amritsar District, Punjab

Stakeholders were invited by emails to attend the meeting at the aforementioned location on 06/01/2017 at 11.00 AM (IST). Stakeholders were notified of the meeting approximately 15 days before the date of the meeting. The invited stakeholders included representatives from not-for-profit organisations, development agencies, and relevant department of state, household-level clean energy product developer/ supplier, microfinance agency, and customers from low-income populations in the region. Minutes of the meeting were recorded, and additional feedbacks were submitted by the attendees in the Local Stakeholder Consultation template.

Supplementary stakeholder consultation meeting was conducted by CME to comply with the GS4GG requirements. Physical stakeholder meeting was conducted on 29th August 2022, 26th September 2022 and 19th December 2022 respectively for SKDRDP, Midland and Samasta. The email invitations were sent 30 days prior to the meeting. Relevant stakeholders were also invited via telephonic calls and emails. The agenda of the meeting was to explain the participants regarding the programme, technologies, benefits, carbon title transfer, social, economic and environmental impacts, safeguarding principles and grievance mechanism.

The consultation process included invitation to wide range of invitees to include effective and equal participation of both men and women. Prior to consultation,

CME/PO had provided with the following documents in the language that allows local stakeholders to understand and engage with the project:

- Non-Technical summary with relevant information (local language)
- Summary of the economic, social and environmental impacts of the project
- Contact details of the CME/PO for technical and project related information
- Email ID of CME/PO was provided to the stakeholders

Meeting started with an opening remark by the PO followed by presentation on the clean energy programme. Subsequently, stakeholder feedback on SDG, monitoring plan, safeguarding principles were collected. Meeting was concluded by explaining the grievance mechanism system CME has put in place.

Stakeholder feedback round was initiated on 31st July for SKDRDP, 29th August 2022 for Midland and 08th November 2022 for Samasta. The official closing email was sent on 07th September 2022 for SKDRDP, 29th September for Midland and 10th December 2022 for Samasta. There were no negative comments which would need change in design of the project. Detailed SCR has been submitted.

E.2 Final continuous input / grievance mechanism

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

Telephone Access (Optional)	-
Other	Email: info@midlandmicrofin.com, skdrdp@skdrdpindia.org, customer.care@iiflsamasta.com

APPENDIX 1 - SAFEGUARDING PRINCIPLES ASSESSMENT

Complete the Assessment below and copy all Mitigation Measures for each Principle into SECTION D above. Please refer to the instructions in the Guide to Completing this Form below.

Assessment Questions/ Requirements	Justification of Relevance (Yes/potentially/no)	How Project will achieve Requirements through design, management or risk mitigation.	Mitigation Measures added to the Monitoring Plan (if required)
Principle 1. Human Rights			
1. The Project Developer and the Project shall respect internationally proclaimed human rights and shall not be complicit in violence or human rights abuses of any kind as defined in the Universal Declaration of Human Rights	Yes	The constitution of host country (India) considers it a legal offence to violate human rights during any business activity. India endorses the United Nations Guiding Principles (UNGPs) on Business and Human Rights adopted in the UN Human Rights Council (UNHRC) in 2011. The CME complies with the legal requirements of the	N/A
2. The Project shall not discriminate with regards to participation and inclusion			N/A

		host country. This is not violated at any point during the project. The VPA does not discriminate with regards to participation and inclusion	
Principle 2. Gender Equality			
1. The Project shall not directly or indirectly lead to/contribute to adverse impacts on gender equality and/or the situation of women a. Sexual harassment and/or any forms of violence against women – address the multiple risks of gender-based violence, including sexual exploitation or human trafficking.	Yes	The project activity doesn't endorse any form of discrimination based on gender. Water Purification Systems (WPS) will be distributed to all willing customers within the project boundary. The project will have a positive impact on women considering that they will spend less time on boiling water for treatment or walking for miles to collect water and fuel. The projects shall apply the principles of non-discrimination and would pay equally to people employed. The Project takes into account	N/A
b. Slavery, imprisonment, physical and mental drudgery, punishment or coercion of women and girls.			
c. Restriction of women's rights or access to resources (natural or economic).			
d. Recognise women's ownership rights regardless of marital status – adopt project measures where possible to support to women's access to inherit and own land, homes, and other assets or natural resources.			
2. Projects shall apply the principles of non-			

discrimination, equal treatment, and equal pay for equal work a. Where appropriate for the implementation of a VPA, paid, volunteer work or community contributions will be organised to provide the conditions for equitable participation of men and women in the identified tasks/activities.		the National Policy for the Empowerment of Women (2011) in the "advancement of gender equality and empowerment of women". The Project is designed to empower women and improve livelihoods. No gender risks are envisaged in the PoA	
b. Introduce conditions that ensure the participation of women or men in Project activities and benefits based on pregnancy, maternity/paternity leave, or marital status.			
c. Ensure that these conditions do not limit the access of women or men, as the case may be, to VPA participation and benefits.			
3. The Project shall refer to the country's national gender strategy or equivalent national commitment to aid in assessing gender risks			
4. (where required) Summary of opinions and recommendations of an Expert Stakeholder(s)			
Principle 3. Community Health, Safety and Working Conditions			
1. The Project shall avoid community exposure to increased health risks and shall not adversely affect the health of the workers and the community	Yes	The project doesn't expose the community to increased health risks and is not adversely affecting the health of workers and the	N/A

		community. Use of WPS will contribute in improving the health of users as compared to baseline by reducing the smoke from baseline stoves used to boil water and decrease in chances of water-borne diseases through an efficient and zero GHG emission device. The workers participating in the project activity are not exposed to unsafe or unhealthy work environments as the sale/distribution of WPS or the monitoring activities of the project will not include any hazardous chemicals or other hazardous material.	
Principle 4.1 Sites of Cultural and Historical Heritage			
1. Does the Project Area include sites, structures, or objects with historical, cultural, artistic, traditional or religious values or intangible forms of culture?	No	Since this is a WPS/SLS project distributed to households, there is no risk to cultural, historical, traditional	N/A

		or religious values.	
Principle 4.2 Forced Eviction and Displacement			
1. Does the Project require or cause the physical or economic relocation of peoples (temporary or permanent, full or partial)?	No	Since this is a WPS/SLS project at household level, there is no risk of forced eviction and displacement.	N/A
Principle 4.3 Land Tenure and Other Rights			
1. Does the Project require any change, or have any uncertainties related to land tenure arrangements and/or access rights, usage rights or land ownership?	No	Since this is a WPS project, there is no risk of uncertainty due to land rights/ownership.	N/A
Principle 4.4 Indigenous People			
1. Are indigenous peoples present in or within the area of influence of the Project and/or is the Project located on land/territory claimed by indigenous peoples?	No	Since this is a safe water supply and solar lighting project at household/institution level, there is no risk to land/territory claimed by indigenous people. Safe water and solar devices will be distributed to all willing customers within the project boundary.	N/A
Principle 5. Corruption			

1. The Project shall not involve, be complicit in or inadvertently contribute to or reinforce corruption or corrupt Projects	Yes	CME/VPA implementor will ensure that the project doesn't involve, be complicit in or inadvertently contribute to or reinforce corruption or corrupt Projects.	N/A
Principle 6.1 Labour Rights			
1. The Project Developer shall ensure that all employment is in compliance with national labour occupational health and safety laws and with the principles and standards embodied in the ILO fundamental conventions	Yes	The VPA does not involve any forced labour and the CME/VPA Implementer ensures that all employment is in compliance with local labour regulations and laws. The CME puts no constraints / limitation on employees to form a union. The CME's policies and employment contracts are compliant with the requirement The CME does not promote / or is complicit in child labour. All the workers will be provided with appropriate equipment, training documentation and reporting	The project will ensure the project employment are in compliance with national labour laws. Also, all the employees will be minimum of 18 years of age. The same is documented in the Monitoring Report
2. Workers shall be able to establish and join labour organisations			
3. Working agreements with all individual workers shall be documented and implemented and include: a. Working hours (must not exceed 48 hours per week on a regular basis), AND b. Duties and tasks, AND c. Remuneration (must include provision for payment of overtime), AND d. Modalities on health insurance, AND e. Modalities on termination of the contract with			

provision for voluntary resignation by employee, AND f. Provision for annual leave of not less than 10 days per year, not including sick and casual leave.		of accidents and incidents, and emergency preparedness and response measures.	
4. No child labour is allowed (Exceptions for children working on their families' property requires an Expert Stakeholder opinion)			
5. The Project Developer shall ensure the use of appropriate equipment, training of workers, documentation and reporting of accidents and incidents, and emergency preparedness and response measures			
Principle 6.2 Negative Economic Consequences			
1. Does the project cause negative economic consequences during and after project implementation?	No	The project involves sale of WPS/SLS to willing customers within the project boundary. Carbon revenues are important for creating awareness among the end users and strengthening the local sales and distribution services.	N/A
Principle 7.1 Emissions			

1. Will the Project increase greenhouse gas emissions over the Baseline Scenario?	No	The project reduces GHG emissions relative to baseline scenario	N/A
Principle 7.2 Energy Supply			
1. Will the Project use energy from a local grid or power supply (i.e., not connected to a national or regional grid) or fuel resource (such as wood, biomass) that provides for other local users?	No	The project does not use energy from a local grid or power supply. Use fuelwood/ charcoal for boiling water in baseline using traditional stoves will be significantly reduced by introducing WPS.	N/A
Principle 8.1 Impact on Natural Water Patterns/Flows			
1. Will the Project affect the natural or pre-existing pattern of watercourses, ground-water and/or the watershed(s) such as high seasonal flow variability, flooding potential, lack of aquatic connectivity or water scarcity?	No	The project is a WPS/SLS distribution programme and will not affect the natural or pre-existing pattern of watercourses, ground-water and/or the watershed(s) such as high seasonal flow variability, flooding potential, lack of aquatic connectivity or water scarcity.	N/A
Principle 8.2 Erosion and/or Water Body Instability			
1. Could the Project directly or indirectly cause	No	The project shall result in	N/A

additional erosion and/or water body instability or disrupt the natural pattern of erosion?		reduction in demand of biomass fuel in the region putting less pressure on forests for deforestation and will hence indirectly avoid erosion associated with tree cutting/ felling.	
Principle 9.1 Landscape Modification and Soil			
1. Does the Project involve the use of land and soil for production of crops or other products?	No	The project is a WPS/SLS distribution programme and does not involve the use of land and soil for production of crops or other products.	N/A
Principle 9.2 Vulnerability to Natural Disaster			
1. Will the Project be susceptible to or lead to increased vulnerability to wind, earthquakes, subsidence, landslides, erosion, flooding, drought or other extreme climatic conditions?	No	The project is a WPS/SLS distribution programme and will not be susceptible to or lead to increased vulnerability to wind, earthquakes, subsidence, landslides, erosion, flooding, drought or other extreme climatic conditions.	N/A
Principle 9.3 Genetic Resources			
1. Could the Project be negatively impacted by or	No	The Project is not negatively	N/A

involve genetically modified organisms or GMOs (e.g., contamination, collection and/or harvesting, commercial development, or take place in facilities or farms that include GMOs in their processes and production)?		impacted by the use of genetically modified organisms or GMOs.	
Principle 9.4 Release of pollutants			
1. Could the Project potentially result in the release of pollutants to the environment?	Yes	The Project is a WPS/SLS distribution programme which result in zero GHG emission products and does not result in the release of pollutants to the environment	The beneficiaries are informed about proper waste handling and disposal of scrap material due to end of life or non-operational product. PO collects the waste scrap and give it to scrap to recyclers which is documented

			in the Monitoring Report
Principle 9.5 Hazardous and Non-hazardous Waste			
1. Will the Project involve the manufacture, trade, release, and/ or use of hazardous and non-hazardous chemicals and/or materials?	No	The Project does not involve the manufacture, trade, release, and/or use of hazardous chemicals and or materials.	N/A
Principle 9.6 Pesticides & Fertilisers			
1. Will the Project involve the application of pesticides and/or fertilisers?	No	The project does not involve the application of pesticides and/or fertilisers.	N/A
Principle 9.7 Harvesting of Forests			
1. Will the Project involve the harvesting of forests?	No	The project does not involve harvesting of forests. The project shall result in reduction in demand of biomass fuel in the region putting less pressure of forests for deforestation and will hence indirectly avoid erosion associated with tree cutting/ felling.	Not required

Principle 9.8 Food			
1. Does the Project modify the quantity or nutritional quality of food available such as through crop regime alteration or export or economic incentives?	No	The project does not modify the quantity or nutritional quality of food available such as through crop regime alteration or export or economic incentives.	N/A
Principle 9.9 Animal husbandry			
1. Will the Project involve animal husbandry?	No	The project does not involve animal husbandry.	N/A
Principle 9.10 High Conservation Value Areas and Critical Habitats			
1. Does the Project physically affect or alter largely intact or High Conservation Value (HCV) ecosystems, critical habitats, landscapes, key biodiversity areas or sites identified?	No	The project is a WPS distribution programme and does not physically affect or alter largely intact or High Conservation Value (HCV) ecosystems, critical habitats, landscapes, key biodiversity areas or sites identified.	N/A
Principle 9.11 Endangered Species			
Are there any endangered species identified as potentially being present within the Project boundary (including those that may route through the area)?	No	The project boundary is geographical sites of WPS distributed and there are no endangered species identified	N/A

AND/OR Does the Project potentially impact other areas where endangered species may be present through transboundary affects?		as potentially being present within the Project boundary.	

APPENDIX 2- CONTACT INFORMATION OF VPA IMPLEMENTER

Organization name	Micro Energy Credits Corporation Private Limited
Registration number with relevant authority	CIN U74999MH2012PTC331308
Street/P.O. Box	75 SARASWATI ROAD, Near PODDAR HIGH SCHOOL, SANTACRUZ (WEST), IN
Building	KINGS ACRES
City	Mumbai City
State/Region	Mumbai, Maharashtra
Postcode	4000054
Country	India
Telephone	+91-8076844056 +91 9884273950
E-mail	sriskandh@microenergycredits.com
Website	www.microenergycredits.com
Contact person	Sriskandh Subramanian
Title	Mr
Salutation	Chief Sustainability Officer
Last name	Subramanian
Middle name	-
First name	Sriskandh
Department	-
Mobile	-
Direct tel.	+91-8076844056
Personal e-mail	sriskandh@microenergycredits.com

Organization name	Samastha Microfinance Ltd
Registration number with relevant authority	
Street/P.O. Box	110/3, 1st floor, Lal Bagh Main Rd, Krishnappa Layout, Doddamavalli, Sudhama Nagar,
Building	
City	Bengaluru
State/Region	Karnataka
Postcode	560027
Country	India
Telephone	+91-8897932589
E-mail	ambulas@samasta.co.in
Website	https://www.samasta.co.in/
Contact person	Sudheer Ambula
Title	
Salutation	
Last name	
Middle name	
First name	
Department	
Mobile	
Direct tel.	
Personal e-mail	

Organization name	Midland Microfin Limited
Registration number with relevant	

authority	
Street/P.O. Box	Midland Microfin Ltd., The Axis, BMC Chowk, G.T. Road
Building	
City	Jalandhar
State/Region	Punjab
Postcode	
Country	India
Telephone	+91-7347044660
E-mail	bhimanshu.gupta@midlandmicrofin.com
Website	http://midlandmicrofin.com/
Contact person	Bhimanshu Gupta
Title	
Salutation	
Last name	
Middle name	
First name	
Department	
Mobile	
Direct tel.	
Personal e-mail	

Organization name	Shri Kshetra Dharmasthala Rural Development Project (SKDRDP)
Registration number with relevant authority	BLT-4-00083-2017-18
Street/P.O. Box	Belthangadi, 4th Block,
Building	Dharmashri Building
City	Dakshina Kannada District

State/Region	Karnataka
Postcode	574216
Country	India
Telephone	+91-8256-277215
E-mail	ed@skdrdpindia.org
Website	www.skdrdpindia.org
Contact person	Dr. L.H. Manjunath
Title	
Salutation	Dr.
Last name	Manjunath
Middle name	-
First name	L.H.
Department	-
Mobile	-
Direct tel.	+91-8256-277215
Personal e-mail	ed@skdrdpindia.org

APPENDIX 3-SUMMARY OF APPROVED DESIGN CHANGES

NA

Revision History

Version	Date	Remarks
1.0	01/04/2021	Initial adoption