TRANSITION REQUEST FORM - CPA

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:

Section - Transition Request Form

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)
    0 - Contact information of VPA Implementer (mandatory)
    0 - 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-P1-0034-CP1
CPA reference weblink	*The weblink of the project page of CDM/other standard.*
	CDM: MicroEnergy Credits PoA – CPA 34 (unfccc.int)
PoA reference ID and Title	Reference ID and Title For example 0457: Cooking stoves distribution programme in Uganda 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 34
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).*
	526,580 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.*
	Start date: 21/12/2019 End date: 31/12/2020
Latest monitoring period	*The latest monitoring period that has already been issued or submitted for issuance to CDM/other standard.*
	Start date: 27/06/2020 End date: 31/12/2020

	Issuance Status	☒ Issued ☐ Awaiting issuance
	Date of Issuance, if issued.	09/12/2021

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

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

---

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

	Product Requirements) *Note – for conversion of issued CERs to GSVERs, the project must be registered with GS4GG.*	
1.3 |	**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.

2\| TRANSITION APPROVAL PROCEDURE

1.1 |	Option 1 - Is the project undergoing a preliminary review **by sustainCERT,** validation **by VVB** and design review by **SustainCERT**?	☐ Yes ☒ No
1.2 |	Option 2 - Is the project undergoing a **combined preliminary review, validation, and design review** by **SustainCERT**? (restrictions apply, see 5.3 below)	☐ Yes ☒ No
1.3 |	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
Certified Design = Registration	Validation	VVB	SustainCERT	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
   a. *If at least one VPA/CPA of the registered PoA has completed successful performance certification, and*
   b. *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.

3| CPA ELIGIBILITY

**1.1	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.*

<table>
<tr><th colspan="3" align="center">COMPLIANCE WITH RELEVANT ACTIVITY REQUIREMENTS</th></tr>
<tr>
<td>**1.2 |**</td>
<td>Does the CPA conform to the relevant Activity Requirements (CSA/RE)**?**</td>
<td>☒ Yes
☐ No</td>
</tr>
<tr>
<td>**1.3 |**</td>
<td>Does any specific eligibility criteria/requirement stipulated in Annex A of CSA/RE requirements apply to the CPA?</td>
<td>☐ Yes
☒ No</td>
</tr>
<tr>
<td>**1.4 |**</td>
<td>Does specific eligibility criteria/requirement stipulated in Annex A of CSA/RE 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.</td>
<td>☐ Yes
☒ No</td>
</tr>
<tr>
<td colspan="3">
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.
</td>
</tr>
<tr>
<td>5|</td>
<td colspan="2">**APPLICABILITY OF THE METHODOLOGY/TOOL VERSION**</td>
</tr>
<tr>
<td>**1.5 |**</td>
<td>Does the CPA apply an eligible GS methodology? Refer to list of the eligible methodologies **here**.</td>
<td>☒ Yes
☐ No</td>
</tr>
<tr>
<td>**1.6 |**</td>
<td>Does the CPA apply the version of the methodology and applicable tools **applied for CDM/other standard registration or renewal**?</td>
<td>☒ Yes
☐ No</td>
</tr>
<tr>
<td>**1.7 |**</td>
<td>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.</td>
<td>☐ Yes
☒ No</td>
</tr>
<tr>
<td colspan="3">
Requirement: (Ref: Annex B of GHG Product Requirements)

Transition CPA shall
a. conform to the relevant Activity Requirements and Gold Standard Approved Methodologies, including eligible CDM Methodologies referring to the inclusion criteria of registered PoA.
</td>
</tr>
</table>

b.	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.

6| DEMONSTRATION OF ADDITIONALITY

1.8 |	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
1.9 |	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.*

7| SUSTAINABLE DEVELOPMENT ASSESSMENT

7.1 |	Does the CPA positively contribute towards **minimum three Sustainable Development Goals (SDGs) -** SDG13 (mandatory) + two other SDGs?	☒ Yes ☐ No
7.2 |	Have you identified the monitoring parameters linked with selected SDGs and corresponding SDG targets? For example – the monitoring parameter <u>Amount of GHGs emissions avoided or sequestered</u> 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.

8| START DATE AND DURATION OF THE CREDITING PERIOD

8.1 |	Has the crediting period of the transitioning CPA registered with other carbon standard/certification scheme changed and/or extended?	☐ Yes ☒ No
8.2 |	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.*

9| SAFEGUARDING PRINCIPLES ASSESSMENT

9.1 |	Does the CPA conform to the Gold Standard Safeguarding Principles and Requirements?	☒ Yes ☐ No
9.2 |	Is there any risk and/or likely adverse outcomes of the project?	☐ Yes ☒ No
9.3 |	If answer is yes for Q **Error! Reference source not found.Error! Reference source not found.**, can the project achieve requirements with regards to the relevant principle through design, management or risk mitigation?	☐ Yes ☐ No
9.4 |	If answer is yes for Q **Error! Reference source not found.Error! Reference source not found.**, 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.*

10| STAKEHOLDER CONSULTATION REQUIREMENTS

10.1 |	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.	☐ Yes ☒ No

Please answer the below question with regards to the stakeholder consultation conducted to comply with CDM/other standard requirements?	
10.2 | Did you conduct the stakeholder consultation before the CPA start date?	☒ Yes ☐ No
10.3 | Did you discuss identified direct positive and negative impacts of the CPA with stakeholders?	☒ Yes ☐ No
10.4 | 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
10.5 | Did the invitation methods solicit input from women and marginalised groups?	☒ Yes ☐ No
10.6 | Were the stakeholders invited at least 30 days before the stakeholder meeting?	☒ Yes ☐ No
10.7 | 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
10.8 | Was a physical meeting conducted?	☒ Yes ☐ No
10.9 | Was a gender lens applied to assessing comments? (for example, if only men provided comments on household device project, was this taken into consideration when assessing the relevance of the comment?)	☒ Yes ☐ No
10.10 | Were any serious, reasonable and proportional concerns raised and taken into account and satisfactorily addressed?	☒ Yes ☐ No
10.11 | Were any points that warrant 'Mitigation measures' marked as such and monitoring plan has been designed and included in the PDD?	☒ Yes ☐ No
10.12 | Is the mandatory Continuous Input / Grievance Expression Process Book's location clearly stated (and therefore usable)?	☐ Yes ☒ No
10.13 | 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	GS11489
Title of Project	MicroEnergy Credits PoA – CPA 34
Time of First Submission Date	05/01/2022
Date of Design Certification	DD/MM/YYYY
Version number of the VPA-DD	1
Completion date of version	30/12/2021
Coordinating/managing entity	Micro Energy Credits Corporation Private Limited
VPA Implementer (s)	- Shri Kshetra Dharmasthala Rural Development Project (SKDRDP) - Svasti Microfinance - Greenlight Planet
Project Participants and any communities involved	-
Host Country (ies)	India
GS ID and Title of applicable Design Certified VPA	
GS ID and Title of applicable Performance Certified VPA	
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) Emission reduction from safe drinking water supply-version 1.0
Product Requirements applied	☒ GHG Emissions Reduction & Sequestration ☐ Renewable Energy Label

Project Cycle:	☐ N/A
	☐ Regular
	☒ Retroactive

Table 2 – 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	571,956 52,856	tCO$_2$ VERs- SLS tCO$_2$ VERs- WPS
1 End poverty in all its forms everywhere	Number of clean energy products i.e. Solar Lighting Systems (SLS) and Water Purification Systems (WPS) distributed	1,600,000 26,000	SLS WPS
3 Good Health and Wellbeing	% Households confirming less smoke with the use of WPS instead of traditional cookstoves for boiling water and Solar lighting Systems instead of kerosene lamps	100	%
5 Gender Equality	% time saving associated with boiling water on traditional stoves and fuel collection	100	% of time saving
6 (Clean Water and Sanitation)	Number of beneficiaries	26,000	WPS
7 Affordable and Clean Energy	Number of CEPs distributed	1,600,000 26,000	SLS WPS

8 Decent Work and Economic Growth	Total number of jobs created	20	jobs
12 Responsible Consumption and Production	% reduction in use of non-renewable biomass per household	100	%
15 Life on Land	% reduction in use of non-renewable biomass per household	100	%

SECTION A.   DESCRIPTION OF PROJECT

A.1.   Purpose and general description of project

\>\>

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. Moreover, in such areas, 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.

The VPA involves dissemination of technological products that 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
Year 1	26,000
Year 2	26,000
Year 3	26,000
Year 4	26,000
Year 5	26,000

*These are the actual water purifier sales in the first three years of the crediting period and post 3rd year are indicative and may vary depending on the demand of the Water purification devices from clients

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

Year	Sales
Year 1	1,500,000
Year 2	1,500,000
Year 3	1,500,000
Year 4	1,500,000
Year 5	2,000,000

* These are the actual solar lighting system sales in the first year of the crediting period. The sales numbers mentioned in this table post 3rd year are indicative and may vary depending on the demand of the solar lighting system from clients.

Sales in this VPA for water purifiers and solar lighting devices can happen in any Indian state. It will be ensured that threshold for Type 1 SSC projects is not exceeded and all requirements of the applied methodologies (namely Emission reduction from safe drinking water supply v1.0 and AMS.I.A. v14) and the PoA eligibility criteria are met. ERs shall be calculated at actual sales numbers complying with relevant methodological requirements.

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 Organizations (PO). The water purification devices included in the proposed SSC-CPA

---

[2] The sales numbers mentioned in this table are indicative and may vary depending on the demand of the Water purification devices from clients. ERs shall be calculated at actuals complying with relevant methodological requirements. 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] The actual solar lighting system sales volume might be substantially different than those mentioned in the table depending upon the demand. ERs shall be calculated at actuals complying with relevant methodological requirements. 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.

are initially envisaged to be implemented by PO – Midland Microfin Ltd. and the solar lighting systems are implemented by Satin Credit Care, Midland Microfin Ltd. and Shri Kshetra Dharmasthala Rural Development Project (SKDRDP). 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 proposed 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. Onlending 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 CPA will be working in branches located in India (Coordinates: 20.5937°N 78.9629°E)

The baseline scenario –

SOLAR LIGHTING: This VPA involves the introduction of solar lighting systems into households and SMEs 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/water boiling practices 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

\>\>

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 the use of following technologies- 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 Supporting evidence: Sales database
3	No Double	A unique numbering or identification system for the	The unique numbering is supported by the

	counting of CEPs impacts within this PoA and across other registered or deregistered PoAs	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 managed by any other CME.	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 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.	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.
			Document: Credit Tracker sales receipt showing CME and PO information, end user details including name and address and CEP ID number.
			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.
4	VER ownership	End users receiving CEP under the specific VPA and POs 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
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: Contract between the CME and MFI.
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:	Contractual agreement for VPA operators, stating that they are aware and have agreed that their activity is being subscribed to the PoA

Gold Standard®   *Climate Security and Sustainable Development*   23

		- Defines the ownership 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 from the 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. Document: 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.	Technological and performance specifications are given in section A.3 of the VPA-DD for the technologies included in the VPA. The project technologies comply with the minimum

		The VPAs will include distribution of solar lighting systems which will replace kerosene lamps in baseline	specification requirements 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 the UNFCCC webpage of the CDM PoA and CPAs to be shared with the 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 CPA 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 agreements between the end user/community head and the CME
13	Additionality of VPAs	Additionality will be demonstrated in	The VPA is in compliance with item 1.1.3 of Annex B

		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"	– 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) and Solar lighting systems (SLS). 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 financial additionality at the time of Design Certification.
14	Sampling requirements for the PoA	The VPAs will follow the usage survey and sampling requirements/guidelines of the applied methodology(ies) 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 of Methodologies	The methodologies that can be applied to a VPA include:	The methodology applied to this VPA are:

		- AMS-III.AR (version 7) or AMS-I.A (version 14.0) - TPDDTEC (version 3.1) - Emission reduction from Safe Drinking Water Supply (version 1.0) Each VPA can implement these methodologies in isolation. In addition, the following combinations of methodologies are eligible under the PoA: - AMS-III.AR (Version 7)/AMS-I.A (version 14.0) and TPDDTEC (version 3.1) - AMS-III.AR (Version 7)/AMS-I.A (version 14.0) and Emission reduction from Safe Drinking Water Supply (version 1.0)	• AMS-I.A (version 14.0), and • Emission Reductions from Safe Drinking Water Supply (version 1.0) The justification for meeting each of the applicability criterion of the applied methodologies for both Water Purification systems and Solar Lighting Systems is given in section B.2 of the VPA-DD.
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	VPA-DD outlines the approach for establishing baseline parameters in sections B.6.2 and B.7.1 and provides supporting documents including copies of any official government reports, statistics or literature sources used for

		determined. Parameters to be monitored are listed in VPA-DD.	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 of the VPA-DD. - VPA LSC report - Record of invitations sent to the stakeholders - Attendance sheet of the VPA LSC meeting
19	Unit level threshold check to avoid compliance with the appliable Small Scale thresholds at the aggregate level of the VPA	In accordance with GHG Emission Reduction & Sequestration Product Requirements, if each of the independent subsystems/measures included in the VPA of a PoA is no larger than 1,500 kW that employ distributed renewable energy generation technology (Type 1) or that achieve energy savings at a scale of no more than 600 MWh per year (Type II) or that achieve emission reductions at a scale of no more than 600 tCO2 per year (TYPE III) for household/community/SME applications, then Small Scale projects and VPAs, solely comprising of such distributed units are not required to demonstrate	No suppressed demand baseline is applied in the VPA. Each Solar lighting systems (SLS) are less than 1500 kW. Each WPS results in less than 600 tCO_2e Emission reductions per year. Product data sheets or specification or product information sheets from manufacturer are available.

		compliance with the appliable Small Scale thresholds at the aggregate level of the project and VPA, if VPAs are **NOT** applying suppressed demand baseline.[4] 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 shall be reported in the VPA-DD and shall be 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

Analysis of VCS/CDM/GS Registries:

---

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

An analysis of other registries is carried out and the following projects are observed:

Requirement as per CDM project Standard for Programme of Activities V1.0	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 technology (Eureka Forbes models) used in the proposed CPA (Gravity based filter) in CMEs PoA.	A registered CDM project activity (Reference number – 2699) exists, however, the technology (specifically the solar lamp models) used in this project are different from the solar lamp models used in the proposed CPA[5]. Also, the solar models mentioned in the registered CDM project have been discontinued by the manufacturer and also have different technical specifications than the models included in the proposed CPA.
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 CPA 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 CPA relies extensively on microfinance channel to disseminate the products.

[5]Associated evidence (product technical specifications) is submitted to the validating DOE to substantiate that the models are different.

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 CPA, 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 CPA, however, the resource (solar energy) is available in abundance and hence is not shared.

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

>>

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.

A.2.   Location of project

>>

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.

The location of each clean energy installation[6] as per a GPS location or verified address will be recorded in Micro Energy Credit's Credit Tracker Platform, which has 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.

---

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

A.3.   Technologies and/or measures

\>>

The technologies that will be employed by this project activity would include low-cost clean energy products that meet the basic needs of India's low-income demographic. In general, these technologies are deployed in homes and small businesses. All of the technologies employed by the project activity provide development benefits as well as environmental benefits.

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.

- HUL Pureit classic 23 L

  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

  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.

- Eureka Forbes 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

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.

Solar Lighting Systems

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–

Model Name	Lumen	Lighting Wattage (W)	Solar Panel Wattage (Wp)	Battery	Average Lifetime (years)
Greenlight Planet Pro300 (Sunking Pro300)	300	1.58	5.5	Li-ion, 4400mAh, 3.7 V	Module – 15 years Battery – 5 years Electronics – 5 years
Greenlight Planet Sunking HLS120	590	5.28	12	Li-Fe-PO4, 12000mAh, 3.3 V	Module – 15 years Battery – 8 years

					Electronics – 5 years
Greenlight Planet Sunking Boom	160	3	2.7	Li-Fe-PO4, 3000mAh, 3.3 V	Module – 15 years Battery – 8 years Electronics – 5 years
Selco Eco Home 2 HLS (Model Number – EH2HLS)	111	12	3.6	Lead Acid Tubular, 15 Ah, 12V	Module – 15 years Battery (Li-ion) – 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 (namely clean water and lighting) that are efficient and less polluting compared to baseline technologies/practices.
3 Good Health and Wellbeing	Water Purification systems and SLS result in lesser emissions of CO/PM2.5 therefore improving the indoor air quality and health of the end-users.
5 Gender Equality	The project results in reduced time for wood collection for women (which is used as a fuel in boiling water in baseline stoves) thereby freeing up time for them to utilize on other income generating/productive activities.
7 Affordable and Clean Energy	The project provides access to affordable and cleaner technologies, i.e., Water Purification Systems for safe drinking

	water and Solar lighting Systems for lighting purpose.
8 Decent Work and Economic Growth	Employment is generated in manufacturing, dissemination and maintenance of CEPs by the project.
12 Responsible Consumption and Production	The project leads to reduced consumption of non-renewable biomass fuel due to dissemination of energy efficient and cleaner water purification and lighting technologies.

A.4.   Scale of the project

>>

The VPA is a small-scale project activity in line with the criteria laid out in the Community Services Activity Requirements.

A.5.   Funding sources of project

>>

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.

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

B.1.   Reference of approved methodology (ies)

>>

Emission Reduction from safe drinking water supply version 1.0[7]

---

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

AMS-I.A "Electricity generation by the user" (Version 14)[8]

B.2.   Applicability of methodology (ies)

>>

Water filters- Emissions from Safe Drinking Water Supply, version 1.0			
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	Technologies include household water treatment technologies (HWT), Institutional water treatment technologies (IWT), Community level water treatment technologies (CWT) and community water supply technologies (CWS). The methodology provides two sets of calculation methods and monitoring requirements, one set that applies to the	The VPA involves dissemination of zero emission gravity water filters classified as Household water treatment technologies (HWT).

Document: Project sheet/manufacturers specification |

		HWT and IWT types of technologies, and another set that applies to the CWT and CWS types of technologies.	
3	Methodological criteria	Under this Methodology, a project's objectives are to reduce or avoid greenhouse gas 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 or institutional premises. When the drinking water is treated in the household or institution (HWT or IWT), then the water supplied from the treatment technology should be safe. When the water is supplied or retrieved from a CWT or CWS directly to the premises of the household or institution, then the water entering the end-user premises should be safe.	The VPA involves provision of clean and safe drinking water through dissemination of zero emission gravity water filters to households. Thus, the VPA replaces traditional water boiling technologies/practices leading to avoidance of greenhouse gas emissions.
2	Methodological criteria	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,	The VPA involves dissemination of zero emission gravity water filters classified as Household water treatment technologies (HWT). Document:

		membrane, etc.), UV disinfection, etc.	Project sheet/manufacturers specification
	Methodological criteria	Eligible community water supply technologies (CWS) include new installation of new borehole hand-pumps, borehole hand-pumps rehabilitation, solar powered drinking water pumps, etc. Water pumps powered by fossil-fuel engines are not eligible, with the exception of backup fossil–fuel engines that are used for no more than 10% of operating hours (parameter SWDS 33).	This VPA does not involve installation/operation of community water supply technologies (CWS). Thus, this criterion is not applicable.
	Methodological criteria	All projects involving CWT and CWS technologies must also include ongoing maintenance and repair of the project technology.	This VPA does not involve installation/operation of CWT or CWS technologies. Thus, this criterion is not applicable.
	Methodological criteria	Where the project involves the rehabilitation of an existing technology, the project developer shall provide evidence that the existing technology is non-operational and that there is no planned maintenance or repair for at least 3 months after the date it became non-operational (parameter SWDS 2).	This VPA does not involve the rehabilitation of an existing technology. Thus, this criterion is not applicable.
3	Methodological criteria	This methodology allows for project activities to include safe water	The VPA involves provision of clean and safe drinking water through

		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.	dissemination of zero emission gravity water filters to households. The water purifiers deployed are: (a) HUL Pureit classic 23L and (b) Eureka Forbes Aquasure Nakshatra, , hence the appliances provide low greenhouse gas emitting water purification for end users in households. Document: Sales database
33l	Methodological criteria	In cases where the safe water is retrieved at the CWT or CWS location, the water in its improved form shall be available within a distance of 1 km or less from the end-users, as demonstrated by satellite imaging or GPS coordinates of each CWT or CWS location. Alternatively, as a proxy, a total collection time of 30 minutes or less for a round trip, including queuing, using the travel modes of walking or pedaling may be demonstrated (parameter SDWS 1).	This VPA does not involve installation/operation of CWT or CWS technologies. Thus, this criterion is not applicable.
4	Methodological criteria	Project technology performance level (HWT and IWT): It shall be demonstrated based on report of laboratory	As mentioned in the specifications provided by the manufacturer's, the HUL Pureit classic 23L and Eureka Forbes Aquasure

		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).	Nakshatra water purification devices deployed under the proposed SSC-CPA 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.
	Methodological criteria	Project technology performance level (CWT and CWS): For each individual CWT or CWS, it shall be demonstrated at the start of each crediting period with water quality testing reports that the water directly supplied by the project water technology/source achieves both: (i) microbial quality in line with either (i) national standards or guidelines for	This VPA does not involve installation/operation of CWT or CWS technologies. Thus, this criterion is not applicable.

		microbial quality of drinking water, or in the absence of such requirements, (ii) the guideline values for verification of microbial quality from the Guidelines for drinking-water quality (Table 7.10, WHO, 2017); and (ii) compliance with (i) national standards or guidelines on priority chemical contamination and physical and aesthetic aspects, or in the absence of such requirements, (ii) international standards or guidelines on priority chemical contamination11 and physical and aesthetic aspects. (parameter SWDS 3).	
5	Methodological criteria	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 institutions, 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	The project developer /CME will capture all the SDG indicators which is relevant to this project through monitoring in Households. The

		demonstrate and confirm the project's contributions to SDGs 12. See parameter SDWS 19.	monitoring will be done using a detailed questionnaire which includes all the SDG indicators. For example, capturing water quality.
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. 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.
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-I.A (version 14.0)			
11	Methodological criteria	This category comprises renewable electricity generation units that supply individual households/users or groups of households/users included in the project boundary. The applicability of the methodology is limited to individual households and users that do not have a grid connection except when:	The VPA involves dissemination of renewable energy-based lighting systems (solar lighting systems), where the emission reduction per system is less than 5 tonnes of CO_2e per year. 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-

		(a) A group of households or users are supplied with electricity through a standalone mini-grid powered by renewable energy generation unit(s) where the capacity of the generating units does not exceed 15 MW (i.e. the sum of installed capacities of all renewable energy units connected to the mini-grid is less than 15 MW) e.g. a community-based stand-alone off-the-grid renewable electricity systems; or (b) For renewable energy-based lighting applications, the emission reductions per system is less than 5 tonnes of CO_2e a year and it shall be demonstrated that that fossil fuels would have been used in the absence of the project activity by: (i) A representative sample survey of target households; or (ii) Official statistics from the host country government agencies;	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.
12	Methodological criteria	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	The VPA does not involve installation/operation of hydro power plants. Thus, this criterion is not applicable.

		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.	
13	Methodological criteria	Combined heat and power (cogeneration) systems are not eligible under this category.	The VPA does not involve installation/operation of combined heat and power (cogeneration) systems. Thus, this criterion is not applicable.
14	Methodological criteria	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.
15	Methodological criteria	Project activities that involve retrofit or replacement of an existing	The VPA does not involve retrofit or replacement of an existing renewable

		renewable electricity generation unit 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.	electricity generation unit. Thus, this criterion is not applicable.
16	Methodological criteria	In the case of project activities that involve the addition of renewable electricity generation units to an existing renewable electricity generation facility, the total 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 addition of renewable electricity generation units to an existing renewable electricity generation facility. Thus, this criterion is not applicable.
11			

B.3.   Project boundary

>>

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	CO_2 emissions from the wood fuel utilized for boiling 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

\>\>

BASELINE DESCRIPTION – SOLAR LIGHTING

The project activity involves the introduction of solar lighting systems into households and SMEs 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". 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 VPA-DD will serve to calculate the emission reductions creditable from the installation of solar 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 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.[9]

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 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

---

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

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)[10]. 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).

---

[10] 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.

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)
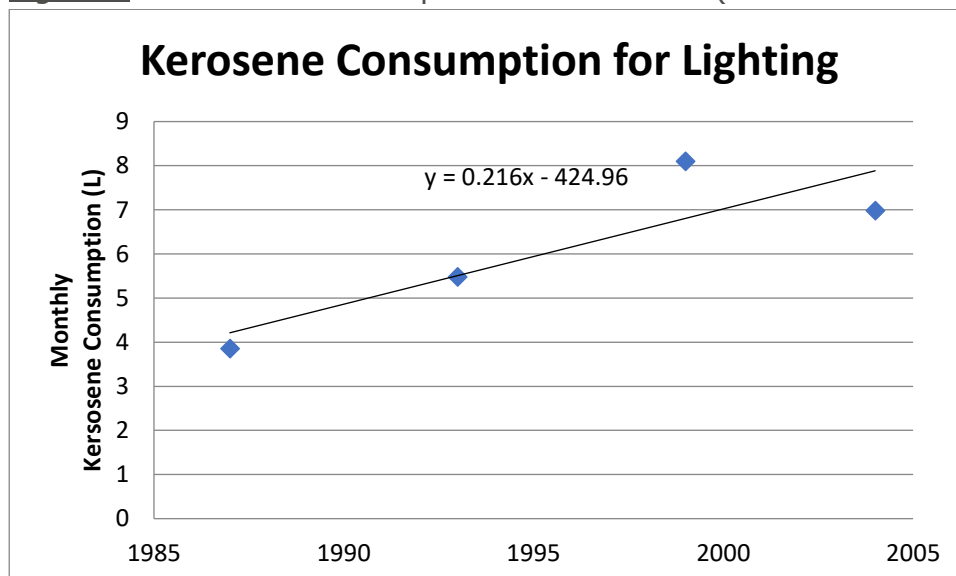
Step 3: Specific equivalent level of lighting service:

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 3

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	NSS0 511
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: 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 5

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 baseline	3.5	Meth AMS I.A. Default value
LE(ker)	Lumen/W	Specific luminous efficiency of kerosene when burnt in kerosene lantern	.13	Louineau et al 1994
EF(ker)	TCO_2/GJ	Specific CO_2 emissions of kerosene	.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 at time of VPA inclusion. This survey was carried out through a random representative approach by considering end-users in all states where sales were made till time of VPA inclusion.

A representative sample survey (90% confidence interval, +/- 10% error margin) was carried out in the 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.

A survey was conducted in October 2017 in the project boundary using 90/10-confidence precision for sampling.

Methodology for the sample survey:

1. The total sample size required to meet (90% confidence interval, +/- 10% error margin) was calculated using http://www.raosoft.com/samplesize.html.
2. The number of final samples taken will be more than the sample size required 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 will be prepared in consultation with PO's for conducting the survey. The questionnaire will include 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 will visit the selected households during the day (between 9 AM and 6 PM) to ask them the questions and collect the answers

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

Boiling is the most common treatment method for drinking water in India. Households across rural India, use woody biomass or fossil fuel to boil water to make it fit for consumption. As per the applied methodology, a weighted average emission factor is used to calculate baseline emissions.

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 at time of VPA inclusion. This survey was carried out through a random representative approach by considering end-users in all states where sales were made till time of VPA inclusion.

Assessment of baseline technology –

A survey was conducted in October 2017 in the project boundary using 90/10-confidence precision for sampling.

Methodology for the sample survey:

1.   The total sample size required to meet (90% confidence interval, +/- 10% error margin) was calculated using http://www.raosoft.com/samplesize.html.
2.   The number of final samples taken i.e. 200 was more than the sample size required 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 technology and fuel was and if the baseline technology was boiling then how much water was consumed per day. 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 6 PM) to ask them the questions and collect the answers

All households confirmed boiling water using fuelwood on inefficient/traditional stoves in the baseline.

Hence, it can be established that for water purification systems, the baseline is use of non-renewable wood-based stoves like the three-stone fired for boiling water.

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).	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 <= a. 600 MWh of thermal energy savings per year for ICS. b. 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.	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$_2$e in any year of the crediting period for SLS and 600 MWh for ICS. Thus, the project activity meets the criteria (a) and is therefore deemed additional.

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

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
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.
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

Eligibility Criteria Category	Eligibility criterion - Required condition	Justification
		quantification of GHG reductions, 'small scale' is: a. Type I: Renewable energy project activities with a maximum output capacity of 15 MW (or an 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 both Type II and type III which shall not cross the above small-scale limits due to use of suppressed demand baseline. Scale is no limit for Water Purification Systems as a Gold Standard methodology is followed and there is no suppressed demand element. Also, scale is no limit for Solar lighting systems, since each unit will be less than 1,500 kW.[11] |
| **4. Legal Ownership** | (a) 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 | The CEP owners confirm that rights to the ownership of carbon credits reside with the CME according to the end user agreement /declaration form signed via monitoring app etc (refer Eligibility under GS4GG section above). |

---

[11]See footnote #2 at https://globalgoals.goldstandard.org/ru-2020-ssc-application-of-suppressed-demand/

Eligibility Criteria Category	Eligibility criterion - Required condition	Justification
	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. (b) The transfer of Product ownership shall be discussed during local stakeholder consultations for projects.	This shall again be explained in future VPA-level LSC meetings.

B.5.1. Prior Consideration

>> N/A as VPA is submitted for transition from CDM and there is no Design Change involved.

B.5.2. Ongoing Financial Need

>>

NA (as the 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)	N/A	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	Number of households with clean energy products

	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	
3 Good Health and Well-being	3.9 By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination	% households confirming less smoke with the use of water purifiers instead of traditional cookstoves for boiling water
3 Good Health and Well-being	3.3 By 2030, end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, water-borne diseases and other communicable diseases	Increased access to improved source of water
3 Good Health and Well-being	3.9 By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination	% households confirming less smoke with the use solar lighting systems instead of kerosene lamps
5: Gender Equality	5.4 Recognize and value unpaid care and domestic work through	% time saving associated with boiling and fuel collection

	the provision of public services, infrastructure and social protection policies and the promotion of shared responsibility within the household and the family as nationally appropriate	
6: Clean Water and Sanitation	6.1 By 2030, achieve universal and equitable access to safe and affordable drinking water for all	Number of beneficiaries
7: Affordable and Clean Energy	7.1 By 2030, ensure universal access to affordable, reliable and modern energy services	Number of CEPs distributed
8: Decent Work and Economic Growth	8.3 Promote development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity and innovation, and encourage the formalization and growth of micro-, small- and medium-sized enterprises, including through access to financial services	Total no of jobs created
12: Responsible Consumption and Production	12.2 By 2030, achieve the sustainable management and efficient use of natural resources	Reduction in use of non-renewable biomass per household

15: Life on Land	15.2 By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally	Reduction in use of non-renewable biomass per household

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

>>

SDG 1: No Poverty

Applied methodology/approach	Equation/calculation
1.4.1 Proportion of population living in households with access to basic services Approach: 1. Monitor the number of households where CEPs are distributed under the project as an indicator of providing basic service access to households	1. CEP distribution records: Net Benefit (SDG 1) = $BSA_{Project} - BSA_{Baseline}$ Where: $BSA_{Baseline}$ Number of households where CEPs were distributed in baseline = 0 $BSA_{Project}$ Number of households where CEPs were distributed in Project = XXX

SDG 3: Good Health and Well Being

Applied methodology/approach	Equation/calculation
3.9.1Mortality rate attributed to household and ambient air pollution Approach: Monitoring Surveys conducted to capture information on users' perception on reduction in health issues after shifting to project CEPs	Ex-post Monitoring Surveys to check change in health issues like reduction in smoke levels. Net Benefit (SDG 3) = $SPM_{HH,Project} - SPM_{HH,Baseline}$ Where:

	SPM$_{HH,Baseline}$ % HH reporting reduction in smoke while using WPS in baseline= 0
	SPM$_{HH,Project}$ % HH reporting reduction in smoke while using WPS in project

SDG 5: Gender Equality

Applied methodology/approach	Equation/calculation
5.4.1 Proportion of time spent on unpaid domestic and care work, by sex, age and location

Approach: Monitoring Surveys conducted to capture information on time savings due to reduced fuel collection needs after shifting to project WPS | Ex-post Monitoring Survey Records measuring time savings from reduced fuel collection, due to reduced fuel consumption in households

Net Benefit (SDG 5) = HHTS$_{Project}$ − HHTS$_{Baseline}$
Where:
HHTS$_{Project}$ % HH reporting time saving from fuel collection due to reduced fuel consumption in project
HHTS$_{Baseline}$ % HH reporting time saving from fuel collection due to reduced fuel consumption in baseline = 0 |

SDG 6: Clean Water and Sanitation

Applied methodology/approach	Equation/calculation
6.1 By 2030, achieve universal and equitable access to safe and affordable drinking water for all

Approach: Monitoring Surveys conducted to capture information on the number of beneficiaries to whom water filters were disseminated. | Ex-post Monitoring Survey Records containing information on the number of beneficiaries served with water filters.

Net Benefit (SDG 6) = NBWF$_{Project}$ − NBWF$_{Baseline}$
Where:
NBWF$_{Project}$ Number of beneficiaries to whom water filters were disseminated in the project
NBWF$_{Baseline}$ Number of beneficiaries to whom water filters were |

	disseminated in the baseline = 0

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 12: Responsible Consumption and Production

Applied methodology/approach	Equation/calculation
12.2.2 - Domestic material consumption, domestic material consumption per capita, and domestic material consumption per GDP	Refer SDG 13 for determination of fuel savings due to project activity

Approach: Reduction in domestic fuel consumption after shifting to WPS for boiling water	

SDG 13: Climate Action : Water Purification Systems

Applied methodology/approach	Equation/calculation
13.2.1 Amount of CO_2e emissions reduced by the project per year Approach: Emission Reductions from Safe Drinking Water Supply v 1.0	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. **Baseline emission calculation** *The baseline emission shall be calculated as* $$BE_y = EF_b \times (1 - C_b - X_{cleanboil,y}) \times Q_y \times M_{q,y}$$ 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.

$SEw,b,y = 360.83/\eta_{wb}$

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:

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

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 actually help in increasing the NRB fraction in that area. 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

<table>
<tr><td rowspan="7"></td><td>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)</td></tr>
</table>

SDG 13: Climate Action: Solar Lighting Systems

Applied methodology/approach	Equation/calculation
13.2.1 Amount of CO_2e emissions reduced by the project per year Approach: AMS.I.A., version 14.0	The emissions reductions for solar lighting projects under AMS-I.A are determined to be the same as the baseline emissions. Therefore, the equations for calculating the emissions reductions are: The per-lamp baseline emissions are calculated in Baseline Step 3. To calculate total emission reductions, these must be aggregated across all lamps in use in the period under consideration. This is done using the following equations, as per methodology approved for use in d.Light PDD, GS448: Total baseline emissions for period *v* are calculated as the sum of the baseline emissions of each lamp type *i* in the period: $$BE_v = \sum_{i=1}^{n} BE_{i,v} \qquad \textbf{(Eq. 2)}$$ | 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:

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

(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:

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

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

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- gravity based purifier Product name- HUL Pureit classic 23L and Aquasure Nakshatra
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.

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	According to BIS 1500-2012 the acceptable limit of bacteria and other major contamination are as follows:

Test parameter	Acceptable limit	Permissible limit (In the absence of alternate source of water)
pH value	6.5-8.5	No relaxation
Turbidity	1	5
Total hardness as CaCo3, mg/l, Max	200	600
E.coli presence/absence	Shall not be detectable in any 100ml sample	Shall not be detectable in any 100ml sample
Total iron as Fe, mg/l, Max	0.3	No relaxation
Taste	Agreeable	Agreeable
Odour	Agreeable	Agreeable

	The project doesn't conflict with host country law. Please refer to Section B.4
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.

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 statistics
Value(s) applied	Please refer to Section B.4
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.

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	Please refer to Section B.4
Choice of data or Measurement methods and procedures	Baseline survey was conducted following the requirements outlined in 4.2. The details of the sampling plan followed are given in section B 7.2
Purpose of data	Calculation of baseline emissions
Additional comment	This parameter is fixed Ex-ante & shall be updated at CP renewal.

Data/parameter	QPWp
Unit	Liters/person/day
Description	Volume of drinking water per person per day for premises type p
Source of data	Option 1. Default value as per methodological tool: Emission reductions from Safe Drinking Water Supply version 1.0
Value(s) applied	4
Measurement methods and procedures	-
Monitoring Frequency	-
QA/QC Procedures	-
Purpose of data	Calculation of baseline emissions
Additional comment	This parameter is fixed Ex-ante & shall be updated at CP renewal.

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	5
Choice of data or Measurement methods and procedures	-
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.

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	Wood
Choice of data or Measurement methods and procedures	When a baseline survey is used steps under section 4.2 are followed.
Purpose of data	Calculation of baseline emissions
Additional comment	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. Further, cross-check with older sources may be used provided they provide conservative results.

	This parameter is fixed Ex-ante & shall be updated at CP renewal.

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
Value(s) applied	112
Choice of data or Measurement methods and procedures	Default IPCC value for fuelwood is applied
Purpose of data	Calculation of baseline emissions
Additional comment	-

Data/parameter	$EF_{b,f,non-CO2}$
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 and charcoal is applied
Purpose of data	Calculation of baseline emissions
Additional comment	-

Data/parameter	ηwb
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%.
Value(s) applied	10%
Choice of data or Measurement methods and procedures	*Target population:* all end users who purchase a water filter under the proposed VPA *Objective:* Confirm the baseline water boiling system being replaced *Description and Reliability Requirements:* Primary data collection No sampling is applied to this parameter. The baseline system of all end users who purchase a water filter will be tracked and recorded in the Credit Tracker. If the replaced system is a three stone fire, or a conventional system with no improved combustion air supply or flue gas ventilation system, i.e. without a grate or a chimney, then the

	parameter value shall be .1. For other types of systems using woody biomass, a default value of 0.2 shall be used.
Purpose of data	Calculation of Baseline emissions
Additional comment	This parameter is fixed Ex-ante & shall be updated at CP renewal.

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	0
Choice of data or Measurement methods and procedures	-
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.

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 Classic 23L** is a large size purifier with a 23 litre capacity. **Aquasure Nakshatra** is a medium size purifier with a 16-litre capacity (Top-8.5-litre, Bottom- 7.5-litre).
Choice of data or Measurement methods and procedures	-
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.

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	Forest Survey of India (FSI), 2011 report. Country level value.
Value(s) applied	0.8726

Choice of data or Measurement methods and procedures	A preliminary study shall be 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 tCO2/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

\>>

Calculations for Water Purification Systems and Solar Lighting Systems

SDG 1: No Poverty

1. WPS distribution records

Gold Standard®   *Climate Security and Sustainable Development*

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

Where:

$BSA_{Baseline}$ Number of WPS distributed in baseline = 0

$BSA_{Project}$ Number of WPS distributed in Project = 26,000

2. SLS distribution records

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

Where:

$BSA_{Baseline}$ Number of SLS distributed in baseline = 0

$BSA_{Project}$ Number of SLS distributed in Project = 2,000,000

2. Ex-post Monitoring Survey Records measuring money savings due to reduced fuel consumption in households

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

Where:

$HHS_{Project}$ % HH reporting money saving due to reduced fuel consumption in project = 100%

$HHS_{Baseline}$ % HH reporting money saving due to reduced fuel consumption in baseline = 0

SDG 3: Good Health and Well Being

Ex-post Monitoring Surveys to check change in health issues like reduction in smoke levels.

$$\text{Net Benefit (SDG 3)} = SPM_{HH,Project} - SPM_{HH,Baseline}$$

Where:

$SPM_{HH,Baseline}$ % HH reporting reduction in smoke while purifying water with WPS in baseline = 0

$SPM_{HH,Project}$ % HH reporting reduction in smoke while purifying water with WPS in project = 100%

SDG 5: Gender Equality

Ex-post Monitoring Survey Records measuring time savings from reduced fuel collection, due to reduced fuel consumption in households

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

Where:

$HHTS_{Project}$ % HH reporting time saving from fuel collection due to reduced fuel consumption in project = 100%

$HHTS_{Baseline}$ % HH reporting time saving from fuel collection due to reduced fuel consumption in baseline = 0

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 (Number of operating WPS units under Baseline) = 0

$ACS_{Project}$ Access to affordable and clean energy (Number of operating WPS units under Project) = 26,000

SLS distribution records

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

Where:

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

$ACS_{Project}$ Access to affordable and clean energy (Number of operating SLS units under Project) = 2,000,000

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 12: Responsible Consumption and Production

Refer SDG 13 for determination of fuel savings due to project activity

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

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

Where:

BE_y	=	Baseline emissions from the use of fuel to obtain safe water in the baseline (tCO$_2$e)
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

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

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 (SE_w,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.

$$SE_{w,b,y} = 360.83/\eta_{wb}$$

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 actually help in increasing the NRB fraction in that area. 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)

Parameter Symbol	Definition	Value	Unit	Source
$SE_{w,b,y}$	Specific energy required to boil water	KJ/L	3608.3	Calculated
n_w	Efficiency of the stoves for baseline water boiling	%	0.1	Methodological default value

x_f	Proportion of fuel f used in the baseline (fraction determined based on an energy basis)	%	100%	Baseline Survey
$f_{NRB,b,i,y}$	Fraction of biomass used in year y for baseline scenario b that can be established as non-renewable biomass	Fraction	0.8726	fNRB used for Karnataka as per registered PoA-DD
$EF_{p,i,CO2}$	CO2 emission factor of the fuel that is substituted or reduced	tCO_2/TJ	112	Methodological default value
$EF_{p,i,non-CO2}$	Non-CO2 emission factor of the fuel that is reduced	tCO_2/TJ	9.46	Methodological default value
EF_b	Emission factor for the use of fuel to obtain safe water in the baseline	$(tCO_2e/L$	0.000387	Calculated
$QPW_{hh,p,y}$	Volume of drinking water per premises p per day in year y (L)	L/HH/day	16	as per actual CDM monitored data
$U_{p,y}$	Cumulative usage rate for technologies in project scenario p in year y	Fraction	0.90	Assumption
$N_{p,y}$	Number of premises type p with at least one project technology in year y	-	26,000	Projections
$DP_{p,y}$	Days the project technology is present for end-users in the premises p in year y		365	Assumption
Q_y	Quantity of safe drinking water provided by the project in year y	L	13,66,56,000	$Qy = \sum Np,y \times Up,y \times QPWhh,p,y \times DPp,y$
C_b	Proportion of project end-	%	0	Assumption

	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	%	0	Assumption
$M_{q,y}$	Modifier for the water quality in year y		100%	Assumption
Leakage emissions	Leakage for project scenario p in year	tCO_2/year	0%	Assumption

Total emission reductions for water purification for all 26,000 WPS projected for Year 3 (ER_y) = BE_y − PE_y - LE_y

= {0.000387 x (1 − 0 - 0) x 13,66,56,000 x 1} - 0 - 0 = 52,856 tCO_2e

SDG 13: Climate Action (Solar Lighting Systems)

As explained above, the emissions reductions for solar projects under AMS-I.A. are determined to be the same as the baseline emissions. Therefore, the equations for calculating the emissions reductions are:

The per-lamp baseline emissions are calculated in Baseline Step 3. To calculate total emission reductions, these must be aggregated across all lamps in use in the period under consideration. This is done using the following equations, as per methodology approved for use in d.Light PDD, GS448:

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)**

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:

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

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:

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

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
$N_{i,a}$	The total number of solar lamps of type *i* deployed in period *a*	1	Number	To be monitored
$d_{i,a,v}$	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
L_i	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
LE_{ker}	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
EF_{ker}	The specific CO_2 emission factor of kerosene	0.0719	tCO_2/GJ	2006 IPCC guidelines for National Greenhouse Gas inventories
$CF_{i,v,LFR}$	This factor corrects the total number of lamps of type i by the share of these lamps that were found to be operational according to the sampling in period v. The statistical error is	100%		Estimate

	included in this parameter (confidence level 90%).			
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 all 1,500,000 installations projected for Year 3= 536,209 tCO$_2$e

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
Year 1	0	26,000	26,000
Year 2	0	26,000	26,000
Year 3	0	26,000	26,000
Year 4	0	26,000	26,000
Year 5	0	26,000	26,000
Total	**0**	**26,000**	**26,000**
Total number of crediting years -5			
Annual average over the crediting period	0	26,000	26,000

SDG 3: Good Health and well being

Year	Baseline estimate	Project estimate	Net benefit
Year 1	0	100%	100%
Year 2	0	100%	100%
Year 3	0	100%	100%
Year 4	0	100%	100%
Year 5	0	100%	100%
Total	**0**	**100%**	**100%**
Total number of -5 crediting years			
Annual average over the crediting period	0	100%	100%

SDG 3: Gender Equality

Year	Baseline estimate	Project estimate	Net benefit
Year 1	0	100%	100%
Year 2	0	100%	100%
Year 3	0	100%	100%
Year 4	0	100%	100%
Year 5	0	100%	100%
Total	**0**	**100%**	**100%**
Total number of -5 crediting years			
Annual average over the crediting period	0	100%	100%

Gold Standard   *Climate Security and Sustainable Development*

SDG 7: Affordable and Clean Energy

Year	Baseline estimate	Project estimate	Net benefit
Year 1	0	26,000	26,000
Year 2	0	26,000	26,000
Year 3	0	26,000	26,000
Year 4	0	26,000	26,000
Year 5	0	26,000	26,000
Total	**0**	**26,000**	**26,000**
Total number of -5 crediting years			
Annual average over the crediting period	0	26,000	26,000

SDG 8: Decent Work and Economic Growth

Year	Baseline estimate	Project estimate	Net benefit
Year 1	0	10	10
Year 2	0	10	10
Year 3	0	10	10
Year 4	0	10	10
Year 5	0	10	10
Total	**0**	**10**	**10**
Total number of -5 crediting years			
Annual average over the crediting period	0	10	10

SDG 13: Climate Action

Year	Baseline estimate	Project estimate	Net benefit
Year 1	52,856	0	52,856
Year 2	52,856	0	52,856
Year 3	52,856	0	52,856
Year 4	52,856	0	52,856
Year 5	52,856	0	52,856
Total	**264,278**	**0**	**264,278**
Total number of -5 crediting years			
Annual average over the crediting period	52,856	0	52,856

For Solar Lighting Systems

SDG 1: No Poverty

Year	Baseline estimate	Project estimate	Net benefit
Year 1	0	1,500,000	1,500,000
Year 2	0	1,500,000	1,500,000
Year 3	0	1,500,000	1,500,000
Year 4	0	1,500,000	1,500,000
Year 5	0	2,000,000	2,000,000
Total	**0**	**2,000,000**	**2,000,000**

Gold Standard *Climate Security and Sustainable Development*

Total number of crediting years -5			
Annual average over the crediting period	0	1,600,000	1,600,000

SDG 3: Good Health and well being

Year	Baseline estimate	Project estimate	Net benefit
Year 1	0	100%	100%
Year 2	0	100%	100%
Year 3	0	100%	100%
Year 4	0	100%	100%
Year 5	0	100%	100%
Total	**0**	**100%**	**100%**
Total number of -5 crediting years			
Annual average over the crediting period	0	100%	100%

SDG 3: Gender Equality

Year	Baseline estimate	Project estimate	Net benefit
Year 1	0	100%	100%
Year 2	0	100%	100%
Year 3	0	100%	100%
Year 4	0	100%	100%
Year 5	0	100%	100%
Total	**0**	**100%**	**100%**
Total number of -5 crediting years			

Annual average over the crediting period	0	100%	100%

SDG 7: Affordable and Clean Energy

Year	Baseline estimate	Project estimate	Net benefit
Year 1	0	1,500,000	1,500,000
Year 2	0	1,500,000	1,500,000
Year 3	0	1,500,000	1,500,000
Year 4	0	1,500,000	1,500,000
Year 5	0	2,000,000	2,000,000
Total	**0**	**2,000,000**	**2,000,000**
Total number of -5 crediting years			
Annual average over the crediting period	0	1,600,000	1,600,000

SDG 8: Decent Work and Economic Growth

Year	Baseline estimate	Project estimate	Net benefit
Year 1	0	10	10
Year 2	0	10	10
Year 3	0	10	10
Year 4	0	10	10
Year 5	0	10	10
Total	**0**	**10**	**10**
Total number of -5 crediting years			
Annual average over the crediting period	0	10	10

SDG 13: Climate Action

Year	Baseline estimate	Project estimate	Net benefit
Year 1	536,209	0	536,209
Year 2	536,209	0	536,209
Year 3	536,209	0	536,209
Year 4	536,209	0	536,209
Year 5	714,945	0	714,945
Total	**2,859,781**	**0**	**2,859,781**
Total number of -5 crediting years			
Annual average over the crediting period	571,956	0	571,956

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 4, 2021 value
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 SSC-CPA. The lumen output for the models sold under the proposed SSC-CPA 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/CPA implementer and recorded in Credit Tracker
Value(s) applied	1,500,000 – year 1-34 and 2,000,000 – year 5 (estimated sales)
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-CPA. *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 SSC-CPA 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

Gold Standard   *Climate Security and Sustainable Development*

	shall be checked during the following periodic verification by the contracted verifier and shall afterwards permanently replace the default value used for the relevant CPA.
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 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	100%
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	0 For solar lighting system sales to be included in the proposed SSC-CPA, data will be provided on the number of end users who confirmed using kerosene in the absence of the project activity
Measurement methods and procedures	Target population: all end users who purchased a solar lamp under a CPA 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)

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.

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.

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 (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 i. Date of sale/distribution ii. Geographic area of sale iii. Model/type of project technology sold iv. 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 7.

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	90% (Assumed for ex-ante calculation)
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.

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	-

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	Project survey
Value(s) applied	5
Measurement methods and procedures	Determined via project survey Ex-ante, Option 3. Default of 5 hours
Monitoring Frequency	Annual
QA/QC Procedures	-
Purpose of data	Calculation of baseline emissions
Additional comment	Fixed ex-ante however ex-post will be calculated annually

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	HH-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

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
Value(s) applied	4.0 (family members based on survey records)
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

Gold Standard *Climate Security and Sustainable Development*

	older sources may be used provided they provide conservative results.

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	Monitoring of SDG 12
Additional comment	-

SDG 1

Data / Parameter	BSA / HHS
Unit	Number
Description	Access to basic service to households/institutions
Source of data	1. WPS/SLS distribution records Ex-post Monitoring Survey Records
Value(s) applied	26,000 WPS2,000,000 SLS
Measurement methods and procedures	Monitoring and recording of number of WPS/SLS distributed under the project
Monitoring frequency	Annual
QA/QC procedures	-
Purpose of data	SDG 1 contribution
Additional comment	-

SDG 3

Data / Parameter	SPM_{HH}
Unit	-
Description	Air Quality in project households/institutions
Source of data	Ex-post monitoring survey records

Value(s) applied	(No sampled user reported an increase in incidence of coughing, incidence of respiratory illness, and incidence of itchy eyes after shifting to ICS)
Measurement methods and procedures	% HH reporting reduction in smoke while cooking on improved stove
Monitoring frequency	Annually
QA/QC procedures	-
Purpose of data	SDG 3 contribution
Additional comment	-

SDG 5

Data / Parameter	HHTS
Unit	Hours
Description	Time savings due to reduced fuel collection needs after shifting to project WPS
Source of data	Ex-post Monitoring Survey Records
Value(s) applied	100%
Measurement methods and procedures	Monitor the time savings reported by project households on a sampling basis due to reduced fuel collection need for boiling water (relative to baseline stoves).
Monitoring frequency	Annual
QA/QC procedures	-
Purpose of data	SDG 5 contribution
Additional comment	-

SDG 6: Clean Water and Sanitation

Data / Parameter	Number of beneficiaries
Unit	-
Description	Number of beneficiaries
Source of data	CME Database
Value(s) applied	SLS- 2,000,000 WPS-26,000

Measurement methods and procedures	The number of water purification systems distributed will be recorded as part of the CME database which will be used for this parameter
Monitoring frequency	Continuous
QA/QC procedures	-
Purpose of data	Monitoring of SDG 6
Additional comment	-

SDG 7

Data / Parameter	AACS$_{HH}$
Unit	Number
Description	Number of households having access to affordable, reliable and modern project WPS.
Source of data	WPS/SLS distribution records
Value(s) applied	26,000 WPS 2,000,000 SLS
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

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
Monitoring frequency	Annually
QA/QC procedures	-
Purpose of data	SDG 8 contribution
Additional comment	-

SDG 12

Data / Parameter	$B_{y,savings}$
Unit	Tonnes/HH/year
Description	Reduction in domestic fuel consumption after shifting to WPS
Source of data	Ex-post monitoring survey records
Value(s) applied	100%
Measurement methods and procedures	All the users using WPS in the project activity will not be using cookstoves to boil water otherwise used in baseline scenario. Hence will lead to 100% fuel savings in project scenario.
Monitoring frequency	Annually / biennially
QA/QC procedures	-
Purpose of data	SDG 12 contribution
Additional comment	-

B.7.2.   Sampling plan

>>

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 Methodology

India has a homogenous distribution of its population over the country with majority belonging to lower middle class. Due to the homogeneity feature of this program, simple

random sampling method will be applied through all CPAs. 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:

$$n \geq \frac{1.962N \times p(1-p)}{(N-1) \times 0.12 \times p2 + 1.962p(1-p)}$$

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 ICS/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.

When a baseline and project survey is used the following sample size guidelines should be applied, unless otherwise stated:

Usage Survey

- The minimum total sample size for Usage Survey is 100 with at least 30 samples for project technologies of each age being credited. 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.

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'[12] must be followed.

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

The verification method will use a sampling system to verify VPAs. In accordance with the General guidelines for sampling and surveys for small-scale CDM project activities, EB50, a 90/10 confidence/precision are used as the criteria for reliability of sampling efforts. This is applied to the selected the number of VPAs to be sampled and to selecting the number of household to be sampled for each sampled parameters used in the calculation of Emission Reductions. All parameters sampled are linked to a specific VPA and to specific households, both of which are recorded in the monitoring database.

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:

---

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

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 (efficiency of CEPs, number of CEPs still operating (SOF) 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
The sampling approaches described above follow the CDM EB General Guidelines For Sampling and Surveys for Small Scale CDM Project Activities. This applies both to single-stage and two-stage approaches.

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 DOE 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. testing of WPS selected during sampling) 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 except when a single sampling plan covering a group of VPAs is undertaken, in which case 95/10 confidence/precision is applied for the sample size calculation. A single sample plan will combine together the populations of all VPAs, and the sample

size is determined and a single survey is undertaken to collect data e.g. if the parameter of interest is daily self-reported fuel consumption, it may be feasible to undertake a single sampling and survey effort spread across geographic regions of several VPAs when either homogeneity of included VPAs relative to the fuel usage can be demonstrated or the differences among the included CPAs is taken into account in the sample size calculation, such as proportional and weighted averages. 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. This parameter is defined in the tables presented in section B.5.1 under "Data / Parameter".

Field Measurement Objective and data to be collected – This is defined in the tables in section B.5.1 under "Measurement methods and procedures".

Target population and sampling frame – The target population is the total population served under the POA, and in the case of multi-stage sampling, the sampling frame is a complete listing of sub-groups of the study area/population which constitutes all the primary sampling units. In developing sampling frames the implementer of the survey effort shall compile a clear description of the target population, including those characteristics of the population, which define membership (as in the diagram below defining sampling frames). From the description and characteristic the implementer can then select a sampling frame appropriate for the study.

Sample method – Multi-stage random sampling will be used, and detailed calculations are provided below. When project circumstances allow single stage simple random sampling will be applied per CDM guidelines EB 69 Annex 5. One example of a 2-stage random sampling approach would be to provide a first-stage sampling frame consisting of all households serviced across all VPAs categorized by region, methodology combination, end-user type, and CEP model combination – all listed by village. Random sampling of villages from the first-stage frame would provide a subset of areas to sample from. In the second stage, the sampling frame would consist of all households serviced in the randomly selected villages. Random sampling would then be conducted from the second-stage frame. To ensure a random sample selection, random number generators shall be applied. Each CEP in the target population is uniquely identifiable by its Serial ID number. Each CEP within a sampling frame 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 Credit Tracker Platform for that pre-defined 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. This will be done for each group of VPAs within a defined sampling frame or for each VPA in the case that VPAs are not grouped up for monitoring.

Desired precision / expected variance and sample size – unless otherwise noted in the measurement methods and procedures section of the monitored parameter table in section B.7.1, and as allowed by applicable methodology, the sample size will be chosen for a 90/10 precision (90% confidence interval and 10% margin of error); except when a single sampling plan covering a group of VPAs is undertaken, in which case 95/10 confidence/precision is applied for the sample size calculation.

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 sampling for surveyed data will be implemented consistent with the approach described above.

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, for this programme, whichever occurs later.

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. Monitoring records are maintained in the Credit Tracker Platform.

1. The Credit Tracker Platform keeps a record of all clean energy products that are installed.
2. The Credit Tracker Platform crosschecks the new records with the existing Platform in order to confirm that the installation record is authentic and that no double-counting occurs.
3. The values of the two emission reduction parameters required for ex-post measurement (numbers of products dropping out of use (POF), efficiency of stoves (η new) are found from sampling of the CEP installations as described in Section B.5.1.
4. The electronic files holding installation records are backed up on the Internet, reducing risk of any loss of data.
5. 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 for the PoA, whichever occurs later.
6. The unique system ID number which is linked to a gps location or verified address eliminates any risk of double-counting between VPAs.

**Organizational Diagram of Monitoring Plan**
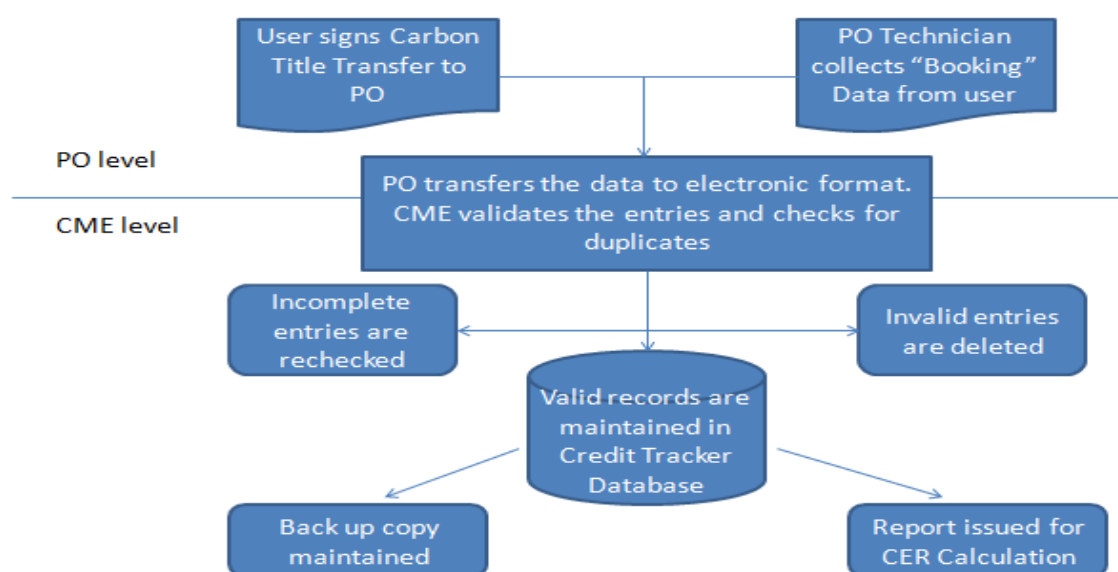
Figure B.7.2: PoA Monitoring Plan

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.

SECTION C.   DURATION AND CREDITING PERIOD

C.1.   Duration of project

C.1.1.   Start date of project

>>

01/01/2017 i.e. date of sale of first clean energy product (Solar lighting 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 0 month

C.2.   Crediting period of project

C.2.1.   Start date of crediting period

>>

21/12/2019

C.2.2. Total length of crediting period

>>

15 years

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.

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?	N/A

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
>> <NA>

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 the following address: Micro Energy Credits Corporation Private Limited, A203, business suites 9, S V road, Santacruz West, Mumbai 400054 By maintaining feedback book at the local office, it is ensured that stakeholders that don't have access to electronic media for expressing concerns / grievances are also able to share their concerns / feedback. Additionally, the end users always have an option to contact the partner organization (representative of MFI/ manufacturers etc.) in case of any feedback / complaints with the product post distribution.
GS Contact (mandatory)	help@goldstandard.org

Other	Email: contact@microenergycredits.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	No	The VPA and CME both respect human rights and are not complicit in violence or human rights abuses.	Not required
2. The Project shall not discriminate with regards to participation and inclusion	No	The VPA does not discriminate with regards to participation and inclusion	Not required
Principle 2. Gender Equality			

3. 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.	No	Not relevant	Not required
b. Slavery, imprisonment, physical and mental drudgery, punishment or coercion of women and girls.	No	Not relevant	Not required
c. Restriction of women's rights or access to resources (natural or economic).	No	Not relevant	Not required
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.	No	Not relevant	Not required
1. 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	No	Not relevant	Not required

Gold Standard® *Climate Security and Sustainable Development* 133

participation of men and women in the identified tasks/activities.			
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.	No	Not relevant	Not required
c. Ensure that these conditions do not limit the access of women or men, as the case may be, to VPA participation and benefits.	No	Not relevant	Not required
4. The Project shall refer to the country's national gender strategy or equivalent national commitment to aid in assessing gender risks	No	The Project takes into account the National Policy for the Empowerment of Women (2011)[13] 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	Not required

---

[13] National Policy for the Empowerment of Women| National Portal of India- by Ministry of Women and Child Development

Gold Standard®   *Climate Security and Sustainable Development*

5. (where required) Summary of opinions and recommendations of an Expert Stakeholder(s)	No	Not relevant	Not required
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 VPA reduces exposure to indoor air pollutants and smoke levels, further reducing incidence of respiratory illness compared to boiling water on traditional biomass stoves using solid biomass fuel.	Not required
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	Not relevant	Not required
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	Not relevant	Not required
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	Not relevant	Not required

Gold Standard   *Climate Security and Sustainable Development*

Principle 5. Corruption			
1. The Project shall not involve, be complicit in or inadvertently contribute to or reinforce corruption or corrupt Projects	No	The CME does not promote/ or is complicit in direct or indirect corruption.	Not required
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	No	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.	Not required
2. Workers shall be able to establish and join labour organisations	No	The CME puts no constraints / limitation on employees to form a union.	Not required
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	No	The CME's policies and employment contracts are compliant with the requirement	Not required

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.			
4. No child labour is allowed (Exceptions for children working on their families' property requires an Expert Stakeholder opinion)	No	The CME does not promote / or is complicit in child labour	Not required
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	No	Not relevant	Not required
Principle 6.2 Negative Economic Consequences			
1. Does the project cause negative economic consequences during and after project implementation?	No	No negative economic consequences are deemed applicable	Not required
Principle 7.1 Emissions			
1. Will the Project increase greenhouse gas emissions over the Baseline Scenario?	No	The VPA reduces GHG emissions relative to baseline scenario	Not required
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 will reduce fuel resource consumption instead	Not required
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	Not applicable	Not required
Principle 8.2 Erosion and/or Water Body Instability			
1. Could the Project directly or indirectly cause additional erosion and/or water body instability or disrupt the natural pattern of erosion?	No	The VPA shall result in 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.	Not required
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	Not applicable	Not required
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	Not applicable	Not required
Principle 9.3 Genetic Resources			
1. Could the Project be negatively impacted by or 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)?	No	Not applicable	Not required
Principle 9.4 Release of pollutants			
1. Could the Project potentially result in the release of pollutants to the environment?	No	Not applicable	Not required
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	Not applicable	Not required
Principle 9.6 Pesticides & Fertilisers			
1. Will the Project involve the application of pesticides and/or fertilisers?	No	Not applicable	Not required
Principle 9.7 Harvesting of Forests			

Gold Standard   *Climate Security and Sustainable Development*

1. Will the Project involve the harvesting of forests?	No	The VPA does not involve harvesting of forests. The VPA 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	Not applicable	Not required
Principle 9.9 Animal husbandry			
1. Will the Project involve animal husbandry?	No	Not applicable	Not required
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	Not applicable	Not required
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)? AND/OR Does the Project potentially impact other areas where endangered species may be present through transboundary affects?	No	Not applicable	Not required

APPENDIX 2- CONTACT INFORMATION OF VPA IMPLEMENTER

Organization name	Micro Energy Credits Corporation Private Limited
Registration number with relevant authority	
Street/P.O. Box	Main Varthur Road, Whitefield, India
Building	22A Waterwoods
City	Bangalore
State/Region	Karnataka
Postcode	
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

APPENDIX 3-SUMMARY OF APPROVED DESIGN CHANGES

NA

Revision History

Version	Date	Remarks
1.0	01/04/2021	Initial adoption