Gold Standard
for the Global Goals

TEMPLATE

MONITORING REPORT

PUBLICATION DATE **14.10.2020**
VERSION **v. 1.1**
RELATED SUPPORT **- TEMPLATE GUIDE Monitoring Report v. 1.1**

This document contains the following Sections

KEY PROJECT INFORMATION

Programme of Activity Information – (delete below table if N/A)

GS ID of Programme	GS11189
Title of Programme	Improved Cookstove and Safe Water Programme
Version of POA-DD applicable to this monitoring report	5.0 dated 25/05/2022
Name and GS ID of fully Validated CPA/VPAs (i.e. non compliance check)	GS11289: Improved Cookstove and Safe Water Programme – Kenya - VPA 31. GS11290: Improved Cookstove and Safe Water Programme – Kenya - VPA 32. GS11291: Improved Cookstove and Safe Water Programme – Kenya - VPA 33. GS11292: Improved Cookstove and Safe Water Programme – Kenya - VPA 34. GS11293: Improved Cookstove and Safe Water Programme – Kenya - VPA 35. GS11294: Improved Cookstove and Safe Water Programme – Kenya - VPA 36. GS11295: Improved Cookstove and Safe Water Programme – Kenya - VPA 37. GS11296: Improved Cookstove and Safe Water Programme – Kenya - VPA 38. GS11297: Improved Cookstove and Safe Water Programme – Kenya - VPA 39. GS11298: Improved Cookstove and Safe Water Programme – Kenya - VPA 40. GS11299: Improved Cookstove and Safe Water Programme – Kenya - VPA 41. GS11300: Improved Cookstove and Safe Water Programme – Kenya - VPA 42. GS11301: Improved Cookstove and Safe Water Programme – Kenya - VPA 43. GS11302: Improved Cookstove and Safe Water Programme – Kenya - VPA 44. GS11303: Improved Cookstove and Safe Water Programme – Kenya - VPA 45. GS11304: Improved Cookstove and Safe Water Programme – Kenya - VPA 46. GS11305: Improved Cookstove and Safe Water Programme – Kenya - VPA 47.

Key Project Information

GS ID (s) of Project (s)	PoA ID: GS11189 VPA ID: GS11289, GS11290, GS11291, GS11292, GS11293, GS11294, GS11295, GS11296, GS11297, GS11298, GS11299, GS11300, GS11301, GS11302, GS11303, GS11304, GS11305
Title of the project (s) covered by monitoring report	PoA: Improved Cookstove and Safe Water Programme VPA: Improved Cookstove and Safe Water Programme – Kenya- VPA 31.

<table>
<tr><td></td><td>Improved Cookstove and Safe Water Programme – Kenya - VPA 32.
Improved Cookstove and Safe Water Programme – Kenya - VPA 33.
Improved Cookstove and Safe Water Programme – Kenya - VPA 34.
Improved Cookstove and Safe Water Programme – Kenya - VPA 35.
Improved Cookstove and Safe Water Programme – Kenya - VPA 36.
Improved Cookstove and Safe Water Programme – Kenya - VPA 37.
Improved Cookstove and Safe Water Programme – Kenya - VPA 38.
Improved Cookstove and Safe Water Programme – Kenya - VPA 39.
Improved Cookstove and Safe Water Programme – Kenya - VPA 40.
Improved Cookstove and Safe Water Programme – Kenya - VPA 41.
Improved Cookstove and Safe Water Programme – Kenya - VPA 42.
Improved Cookstove and Safe Water Programme – Kenya - VPA 43.
Improved Cookstove and Safe Water Programme – Kenya - VPA 44.
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Improved Cookstove and Safe Water Programme – Kenya - VPA 46.
Improved Cookstove and Safe Water Programme – Kenya - VPA 47.</td></tr>
<tr><td>Version number of the PDD/VPA-DD (s) applicable to this monitoring report</td><td>
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<tr><th>Type</th><th>GS ID</th><th>Version Number</th></tr>
<tr><td>PoA-DD</td><td>GS11189</td><td>05 dated 25/05/2022</td></tr>
<tr><td>VPA-DD</td><td>GS11289, GS11290, GS11291, GS11292, GS11293, GS11294, GS11295, GS11296, GS11297, GS11298, GS11299, GS11300, GS11301, GS11302, GS11303, GS11304, GS11305</td><td>06 dated 11/08/2022</td></tr>
</table>
</td></tr>
<tr><td>Version number of the monitoring report</td><td>5.0</td></tr>
<tr><td>Completion date of the monitoring report</td><td>26/09/2022</td></tr>
<tr><td>Date of project design certification</td><td>02/02/2022</td></tr>
<tr><td>Date of Last Annual Report</td><td>Not applicable</td></tr>
<tr><td>Monitoring period number</td><td>1st</td></tr>
<tr><td>Duration of this monitoring period</td><td>01/01/2021 – 31/12/2021</td></tr>
</table>

Project Representative	Impact Carbon LLC Impact Water LLC
Host Country	Kenya
Activity Requirements applied	☒ Community Services Activities ☐ Renewable Energy Activities ☐ Land Use and Forestry Activities/Risks & Capacities ☐ N/A
Methodology (ies) applied and version number	"Emission reductions from Safe Drinking Water Supply" Version 1.0 – 03/5/2021.
Product Requirements applied	☒ GHG Emissions Reduction & Sequestration ☐ Renewable Energy Label ☐ N/A

Table 1 - Sustainable Development Contributions Achieved

Sustainable Development Goals Targeted	SDG Impact	Amount Achieved	Units or Products
13 Climate Action (mandatory)	13.2.1 Amount of CO2e emissions reduced by the project per year	861,807	tCO_2e (VER)
SDG: 1 No Poverty 1.4 By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance	1.4.1 Proportion of population living in households with access to basic services Indicator: Indicator: Total number of premises (Schools / institutions) with at least one WPS distributed / installed under the project	9,963	Number
SDG: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.	3.9.2 Mortality rate attributed to unsafe water, unsafe sanitation and lack of hygiene (exposure to unsafe Water, Sanitation and Hygiene for All (WASH) services Indicator: % sampled Schools / institutions reporting reduction in incidence of diarrhoea and water borne diseases etc. after shifting to the project WPS	96.08%	Percentage
6 Clean Water and sanitation 6.1 By 2030, achieve universal and equitable	6.1.1 Proportion of population using safely managed drinking water services	91.64%	Percentage

access to safe and affordable drinking water for all	Indicator: % of WPS distributed/installed providing safe drinking water quality		
7 Affordable and Clean Energy 7.1 By 2030, ensure universal access to affordable, reliable and modern energy services	7.1.2 Proportion of population with primary reliance on clean fuels and technology Indicator: % Schools / institutions reporting an operational WPS in project	94.49%	Percentage
8 Decent Work and Economic Growth 8.5 By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value	8.5.1Average hourly earnings of female and male employees, by occupation, age and persons with disabilities Indicator: Number of male / females employment created by project	13	Number

Table 2 – Product Vintages

		Amount Achieved					
Start Dates	**End Dates**	**VERs (tCO2e)**	**ABS (SDG1)**	**IH (SDG3)**	**SWQ (SDG6)**	**AACS (SDG7)**	**QE IG (SDG8)**
01/01/2021	31/12/2021	861,807	9,963	96.08%	91.64%	94.49%	13

SECTION A. DESCRIPTION OF PROJECT

A.1. General description of project

>>

The stated goal of proposed VPA is the widespread dissemination of water purification systems (WPS) to schools and other institutions in Kenya. The VPA will use carbon finance to support local partners engaged in the production, distribution, and maintenance of various WPS technologies.

The VPA will reduce GHG emissions by reducing or replacing the use of non-renewable biomass / fossil fuel for boiling water to purify it for drinking purposes.

In Kenya, only 36.8% of the population have access to piped water, with only 22.8% population having access to piped water within their homes.

Nationwide 54.6% and 14.6% of Kenya's household population utilize firewood and charcoal for cooking respectively thereby exerting enormous pressure on the environment[1]. 84.3% of rural and 16.1% of urban households use firewood for cooking[2]. On the other hand, 8.9% of rural and 21.9 % of urban households use charcoal for cooking[3]. Thus, cooking/water boiling using solid biomass fuel over traditional inefficient stoves remains the prominent cooking practice. AS per the baseline study conducted to assess the baseline scenario in schools and institutions in Kenya only 4.44% of school/institutions in the baseline are already using safe water, either from an improved water source, or from a water treatment method other than boiling. Out of the total population who are using boiling for treating water, approximately 98.8% school/institutions are using woodfuel and 1.2% of users are using charcoal for water boiling and almost all are using traditional/3-stone fire for boiling water.

The project WPS will result in elimination/reduction of non-renewable biomass / fossil fuels usage for water boiling. This will result in significant improvement in indoor air pollution associated with use of solid biomass / fossil fuel based inefficient cookstove used for water boiling practice which has a direct correlation with respiratory illness and mortality rates, especially among school children in the project beneficiaries.

In this VPA, the VPA implementer is Impact Water LLC, and the CME is Impact Carbon LLC. The VPA Implementer shall operate the VPA as per the CME management system and provide the CME with information required to include the project activity under the PoA, perform monitoring and verification of the activity, and renew the crediting period, besides other responsibilities.

Beneficiaries receiving the project technologies under the VPA will agree to the terms of the PoA and will cede all rights to any VERs resulting from the VPA to CME (Impact Carbon) or VPA Implementer (Impact Water), as applicable.

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[1] Table 3.18 Basic Report Based on 2015/16 Kenya Integrated Household Budget Survey published in March 2018

[2] Table 3.18 Basic Report Based on 2015/16 Kenya Integrated Household Budget Survey published in March 2018

[3] Table 3.18 Basic Report Based on 2015/16 Kenya Integrated Household Budget Survey published in March 2018

A.2. Location of project

>>
Host Country: Kenya

Region/State/Province etc.: All regions of Kenya

City/Town/Community etc.: All cities and towns in Kenya

PoA Title: Improved Cookstove and Safe Water Programme
VPA Title: Improved Cookstove and Safe Water Programme – Kenya – VPA 31 to Improved Cookstove and Safe Water Programme – Kenya – VPA 47
PoA GS ID: 11189
VPA GS ID: 11289 to 11305

Physical/Geographical location:

Kenya is spread from 5.03⁰ N to -4.65⁰ N latitude, while the longitude spread is between 34.03⁰ E to 41.9⁰ E. With the land area of 581,309 km². The capital of Kenya is Nairobi and its geographic coordinates are $1^0$16'S latitude and $36^0$48'E longitude.

The map of Kenya, for reference purpose, is as follows:

A.3. Reference of applied methodology

>>
Methodology Applied:
"Emission reductions from Safe Drinking Water Supply" Version 1.0 – 03/5/2021 for baseline and monitoring requirements.
The applied methodology can be access at the following link:
https://www.goldstandard.org/project-developers/standard-documents

Methodological Tools:
CDM Tool 30: Calculation of the fraction of non-renewable biomass

Standardized baseline:
Not applicable

A.4. Crediting period of project

>>

GS Ref ID	Crediting Period Start Date	Length of Crediting Period
GS11289	01/01/2021 to 31/12/2025	5 years
GS11290		
GS11291		
GS11292		
GS11293		
GS11294		
GS11295		
GS11296		
GS11297		
GS11298		
GS11299		
GS11301		
GS11302		
GS11303		
GS11304		
GS11305		

SECTION B. IMPLEMENTATION OF PROJECT

B.1. Description of implemented project

>>

a) **Purpose of the specific-case VPA(s) and the measures taken for GHG emission reductions or net GHG removals by sinks;**

The VPA involves the distribution of water purification to institutions/schools in Kenya. The implementer of the VPAs is Impact Water. The VPAs will reduce GHG emissions by replacing the use of non-renewable biomass or fossil fuel to boil water to purify water for drinking purposes in the baseline.

b) **Description of the technology employed and installed equipment and/or infrastructure, including information requested by the eligibility criteria;**

Only water purification technology has been distributed under the VPA till the end of the monitoring period. The technology distributed offer two kinds of product type:
(a) UltraFlo
(b) UltraTab

The detail of technology distributed under the two categories under the VPA till the end of the monitoring period is as follows:

Type of installed technology (Service level)	Technology / operating concept	Technology	Implementation level (Cumulative Number of units installed)
Institution/School	**Chlorination:** This uses activated chlorine to kill pathogens in water	UltraFlo	2021- 3,132
Institution/School		UltraTab	2021- 6,831

c) **Water Purification Technology Specifications**

WPS Models	Technology Type	Lifetime[4]	Fixed or Portable	Removal of E. coli	Minimum Watt / Voltage
UltraFLO	Chemical	Expiry: 5 year Capacity: 340,000 ltrs	Fixed	99 (2-log)	Not applicable
UltraTAB	Chemical	Expiry: 5 years Capacity: Big pack: 48,000 ltrs Small pack: 10,000 ltrs	Portable	99 (2-log)	Not applicable

[4] Estimated lifetime from manufacturer specification sheet. This expiry is the valid lifetime of the chlorine tablet / cartridge within which it is deemed to be effective. The system lifetime is deemed greater than 20 years as other than the tablet, cartridge it consists on tanks and piped connections (for UltraFLO) which are highly durable and long lasting and can be easily replaced.

d) Relevant dates for the specific-case VPA(s) (e.g. construction, commissioning, continued operation periods, etc.);

Start Date as per VPA-DD	01/01/2021
Continued operation period	Since the start date

e) Total GHG emission reductions or net GHG removals by sinks achieved in this monitoring period for the specific-case VPA(s), including information on how double counting is avoided

Year	**Emission Reductions[5] tCO_2e**
2021	861,807
Total	**861,807**

B.1.1 Forward Action Requests
>>
FAR from Deviation:
FAR#1

1. The stratified random sampling approach applied for sample size calculation for the monitoring survey must meet all the requirements under Appendix 3 of Guideline: Sampling and surveys for CDM project activities and programmes of activities.
2. Continuity in the project's monitoring activities is maintained, and PD can justify that no monitoring gaps exist (especially for SDG parameters) within the Monitoring Period(s). However, if gap(s) exist, the project shall justify that conservative approach(es) have been applied in line with section 3 of the Deviation Approval Requirements and Procedures (version 1.1) and overarching GS principles (as applicable).

Response:

1. Appendix 3 pertains to reliability / precision achievement of the sampled data. Please note the appropriate reliability calculations haven been already provided in the Monitoring Report (section D.4(e)) as well as ER sheet (Assumption and ER values).
2. This is the first monitoring period; hence continuity of monitoring is not deemed appliable for this monitoring period. However, for future monitoring period, this shall be ensured by virtue of registered monitoring plan which stipulates annual monitoring frequency for monitoring parameters

FAR#2
The PD shall ensure that no systemic bias exists in the usage of chlorine tablets which might be leading to an overestimation of emission reduction. If a bias is identified, the PD must apply a conservative approach and shall also propose a revision to the monitoring plan to ensure a continuous supply of UltraTAB.

[5] For VPA wise ERs refer section E.5

The verifying VVB (through the end-user database and onsite verification) ensure that the PD meets the mentioned requirement and is following a conservative approach.

Response:

The programme does not include any systemic bias wrt to usage of chlorine tablets. For each beneficiary school / institution, the number of UltraTAB packs supplied, during a monitoring period is monitored with their product IDs to accurately determine the total treatment capacity supplied. Further, the Impact Water customer care team at regular intervals check with the beneficiary schools / institutions regarding the supply status to ensure continuity. The schools also have access to the Impact Water contact details which is used in case reinforcements are needed thereby ensuring continuity.

Further, the ER calculation approach adopted in the project ensures that credits are claimed only for the period for which the school / institution is operational and has treatment supplies available. As a conservative measure, if there is a supply shortfall in a school / institution, the VERs calculated are limited by the available treatment capacity. This ensures that any period affected by dis-continuity in the supplies is not accounted in the emission reductions. Hence PD has ensured that no systemic bias exists in the usage of chlorine tablets/cartridges and there is no over-estimation of ERs

B.2. Post-Design Certification changes

>>
B.2.1. Temporary deviations from the approved Monitoring & Reporting Plan, methodology or standardized baseline
>>
Refer Appendix 2
B.2.2. Corrections
>>
Not Applicable
B.2.3. Changes to start date of crediting period
>>
Not Applicable

B.2.4. Permanent changes from the Design Certified monitoring plan, applied methodology or applied standardized baseline
>>
Not Applicable

B.2.5. Changes to project design of approved project
>>
Not Applicable

SECTION C. DESCRIPTION OF MONITORING SYSTEM APPLIED BY THE PROJECT

>>
The CME uses a management system to ensure all VPA Implementers under the PoA implement, operate, and monitor their respective VPAs in an effective and verifiable manner. The Implementation of the PoA will follow the following management and operational System:

1. The Program Manager is responsible for keeping records and implement a documentation control process for each VPA under the PoA.

2. CME ensured that end users are aware of, and have agreed, that their unit (ICS/WPS) is being subscribed to the PoA. Awareness and agreement are secured through informational material / trainings / social media or in contractual agreements.

3. Each VPA implementer collected and reported the required data as much as possible to effectively monitor the emission reductions of each VPA in accordance with the monitoring plan in the VPA-DD.

4. The CME provided guidance/training/instructions to customer engagement staff to collect requisite data at the point of delivery. Records of trainings are being maintained by the Program Manager. The customer engagement staff compiled the list of units installed/distributed along with required end user / baseline information and transferred the same to the electronic database management system at regular intervals, which was managed at CME/VPA Implementer office by Program Manager.

5. **Total Sales Record**: The total sales record documents information of the WPS (UltraFLO / UltraTAB) implemented in the beneficiary institution. The total sales record is kept electronically with supporting evidence in form of paper records and/or SMS tracking records. The Total Sales Record contains information related to WPS system, including the following, but not limited to:
    a. Type of system (UltraFLO / UltraTAB)
    b. Unique serial number of the units installed / distributed
    c. Date of installation / distribution
    d. Address and details of school and contact detail (if available) of representative
    e. Type of School (Boarding / Non-boarding)
    f. Number of project technology installed/distributed in an institution
    g. School population count (number of students / staff in boarding / non-boarding category)

The CME ensured that there is no double counting of any unit in the electronic database by means of the unique ID that will be uniquely associated with each unit.
The CME coordinated all ex-post monitoring activities in the PoA. The CME checked and reviewed the monitoring data and calculated the emission reductions based on precision/reliability levels achieved for the monitored parameters supported by external experts/consultant.

SECTION D. DATA AND PARAMETERS

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

SDG Indicator	**SDG 1: No Poverty**
Data/parameter	$ABS_{Baseline}$
Unit	Number
Description	Access to Basic Services (number of premises with at least one WPS distributed / installed under the baseline)
Source of data	--
Value(s) applied	0
Choice of data or Measurement methods and procedures	--
Purpose of data	SDG 1 Impact calculation
Additional comment	--

SDG Indicator	**SDG 3: Good Health and Well Being**
Data/parameter	$IH_{,Baseline}$
Unit	%
Description	% Of users reporting reduction in incidence of diarrhoea and water borne diseases etc. in baseline (improved health)
Source of data	--
Value(s) applied	0
Choice of data or Measurement methods and procedures	--
Purpose of data	SDG 3 Impact calculation
Additional comment	--

SDG Indicator	**SDG 6: Clean Water and sanitation**
Data/parameter	$SWQ_{baseline}$
Unit	%
Description	% Users reporting safe water quality in baseline
Source of data	--
Value(s) applied	4.44
Choice of data or Measurement methods and procedures	--
Purpose of data	SDG 6 Impact calculation
Additional comment	--

SDG Indicator	**SDG 7: Affordable and Clean Energy**
Data/parameter	$AAC_{Baseline}$
Unit	%
Description	Access to affordable and clean energy (% of operating WPS units under Baseline)
Source of data	--
Value(s) applied	0
Choice of data or Measurement methods and procedures	--
Purpose of data	SDG 7 Impact calculation
Additional comment	-

SDG Indicator	**SDG 8: Decent Work and Economic Growth**
Data/parameter	QE $IG_{Baseline}$
Unit	number
Description	Quantitative Employment and income generation (Number of person (male and female) hired under Baseline)
Source of data	--
Value(s) applied	0
Choice of data or Measurement methods and procedures	--
Purpose of data	SDG 8 Impact calculation
Additional comment	--

SDG Indicator	**SDG 13: Climate Change**
Data/parameter	Project technology description
Unit	NA
Description	The detailed description of the planned project technology
Source of data	- Manufacturer specifications - Third-party certification by a qualified entity, for example recognized certification agency by National/ International Standard body
Value(s) applied	Description: UltraFLO / Ultra TAB Manufacturer: Medentech / Medentech Product Name: UltraFLO / Big Pack, Small Pack Technology type: Chlorination / Chlorination

	Performance classification | Complies with National standard | Complies with National standard
Choice of data or Measurement methods and procedures	Fixed Ex-ante as per methodology and VPA-DD
Purpose of data	--
Additional comment	--

SDG Indicator	**SDG 13: Climate Change**
Data/parameter	Regulatory framework for safe water supply
Unit	NA
Description	National, sub-national and local regulations or guidance for safe drinking water supply, operation and maintenance, including any tariff requirements in host country Kenya.
Source of data	National, sub-national and local authorities
Value(s) applied	Kenya environmental sanitation and hygiene policy 2016-2030 recognizes that unsafe drinking water, along with inadequate hygiene and sanitation contributes much of the disease burden in Kenya. This policy therefore recommends development and implementation of sanitation and hygiene interventions that address faecal contamination and vector breeding in household/school water storage and promoting appropriate technology options for household/school water treatment and safety in tandem with sanitation and hygiene interventions at household/School/ community levels. The implementation of the project is fully in line with the relevant water resources policies/framework of Kenya. The project does 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. Further, the national standards and local regulations for safe drinking water supply do not impose any cap on parameters used by the methodology and therefore have no implications on emission reduction calculations.
Choice of data or Measurement methods and procedures	--
Purpose of data	Related to water quality
Additional comment	--

<table>
<tr><td>SDG Indicator</td><td>SDG 13: Climate Change</td></tr>
<tr><td>Data/parameter</td><td>Water sources in the project boundary</td></tr>
<tr><td>Unit</td><td>NA</td></tr>
<tr><td>Description</td><td>Improved and Unimproved drinking water sources in Kenya</td></tr>
<tr><td>Source of data</td><td>Kenya Schools and Institutions:
Baseline survey</td></tr>
<tr><td>Value(s) applied</td><td>
<table>
<tr><th>S.No</th><th>Drinking water source</th><th>School/Institutions (%)</th></tr>
<tr><td>1.</td><td>Government/ Private piped connection</td><td>22.78</td></tr>
<tr><td>2.</td><td>Surface water</td><td>10.56</td></tr>
<tr><td>3.</td><td>Well, /Borehole</td><td>42.22</td></tr>
<tr><td>4.</td><td>Rainwater</td><td>20.00</td></tr>
<tr><td>5.</td><td>Trucked Water</td><td>3.33</td></tr>
<tr><td>6.</td><td>Others</td><td>1.11</td></tr>
</table>

As per Annex 2 of the applied GS methodology, piped water,
rainwater, packed or delivered water (ex-Trucked water) and water from boreholes or protected wells belong to improved sources of drinking water. For the remaining, the water source has been considered as unimproved.
<table>
<tr><th>S.No</th><th>Source of drinking water</th><th>% Premises</th></tr>
<tr><td>1.</td><td>Improved sources</td><td>88.33</td></tr>
<tr><td>2.</td><td>Unimproved Sources</td><td>11.67</td></tr>
</table>
</td></tr>
<tr><td>Choice of data or Measurement methods and procedures</td><td>--</td></tr>
<tr><td>Purpose of data</td><td>--</td></tr>
<tr><td>Additional comment</td><td>--</td></tr>
</table>

<table>
<tr><td>SDG Indicator</td><td>SDG 13: Climate Change</td></tr>
<tr><td>Data/parameter</td><td>Stove technologies used in the project boundary</td></tr>
<tr><td>Unit</td><td>NA</td></tr>
<tr><td>Description</td><td>The proportion of different stove types used in premises in the geographical area of the project. If the project covers different types of end-users premises (e.g. households, institutions), then the stoves technologies should be determined for each premises type.</td></tr>
<tr><td>Source of data</td><td>Kenya-Schools and Institutions:</td></tr>
</table>

	Baseline survey
Value(s) applied	<table><tr><th>S.no</th><th>Stove Technology</th><th>School/Institutions (%)</th></tr><tr><td>1</td><td>Traditional / 3 Stone Fire</td><td>98.84</td></tr><tr><td>2</td><td>Traditional Charcoal Pot</td><td>1.16</td></tr></table>
Choice of data or Measurement methods and procedures	Fixed Ex-ante as per methodology and VPA-DD
Purpose of data	Determination of baseline emissions
Additional comment	-

SDG Indicator	**SDG 13: Climate Change**
Data/parameter	Expected technical life of project technology
Unit	Treatment volume or operational hours or time period (e.g. "eight years")
Description	The expected technical life of an individual project technology shall be defined in the PDD. The details include both technology/device life and filter life, if a filter is used and it is replaceable.
Source of data	Manufacturer specifications
Value(s) applied	<table><tr><th>Description</th><th>UltraFLO</th><th>UltraTAB</th></tr><tr><td>Treatment Volume (Ltrs)</td><td>340,000</td><td>Big Pack: 48,000 Small Pack: 10,000</td></tr><tr><td>Life Span / Expiry-filter</td><td>5 years</td><td>5 years</td></tr><tr><td>Life Span / Expiry - system</td><td>20 years</td><td>20 years</td></tr></table>
Choice of data or Measurement methods and procedures	Fixed Ex-ante as per methodology and VPA-DD
Purpose of data	Determination of baseline emissions
Additional comment	--

SDG Indicator	**SDG 13: Climate Change**
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:
Source of data	Kenya-School/institution: Baseline Survey

Value(s) applied	<table><tr><th>S.no</th><th>Baseline Fuel Usage</th><th>School/Institutions (%)</th></tr><tr><td>1.</td><td>Woodfuel</td><td>98.84</td></tr><tr><td>2.</td><td>Charcoal</td><td>1.16</td></tr></table>
Choice of data or Measurement methods and procedures	Fixed Ex-ante as per methodology and VPA-DD
Purpose of data	Determination of baseline emissions
Additional comment	--

SDG Indicator	**SDG 13: Climate Change**
Data/parameter	$EF_{b,\ f,CO2}$
Unit	tCO_2/TJ
Description	CO2 emission factor from use of fuels
Source of data	IPCC defaults
Value(s) applied	Wood = 112 tCO_2/TJ Charcoal = 165.22 tCO_2/TJ (includes charcoal production emissions)
Choice of data or Measurement methods and procedures	Fixed Ex-ante as per methodology and VPA-DD
Purpose of data	Calculation of baseline emissions
Additional comment	--

SDG Indicator	**SDG 13: Climate Change**
Data/parameter	$EF_{b,\ f,\ nonCO2}$
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
Value(s) applied	AR5 GWP - Wood: 9.46 tCO2e/TJ - Charcoal: 44.83 tCO2e/TJ (includes production emissions of CH4 and N2O)
Choice of data or Measurement methods and procedures	Fixed Ex-ante as per methodology and VPA-DD
Purpose of data	Determination of baseline emissions
Additional comment	--

SDG Indicator	**SDG 13: Climate Change**

<table>
<tr><td>Data/parameter</td><td>η_{wb}</td></tr>
<tr><td>Unit</td><td>Percentage</td></tr>
<tr><td>Description</td><td>Weighted average efficiency of the baseline water boiling devices.</td></tr>
<tr><td>Source of data</td><td>Kenya-Schools/Institutions:
Baseline Survey
methodology default value</td></tr>
<tr><td>Value(s) applied</td><td>Stove Technology Usage:
<table><tr><th>S.no</th><th>Stove Technology</th><th>School/ Institutions (%)</th></tr><tr><td>1
2</td><td>Traditional / 3 Stone Fire
Traditional Charcoal Pot</td><td>98.84
1.16</td></tr></table>
Stove Efficiency:
<table><tr><th>S.no</th><th>Stove Technology</th><th>% Efficiency</th></tr><tr><td>1
2</td><td>Traditional / 3 Stone Fire
Traditional Charcoal Pot</td><td>10
20</td></tr></table>
Thus, η_{wb} = 98.84%* 0.1+1.16%*0.20 = 10.12%</td></tr>
<tr><td>Choice of data or Measurement methods and procedures</td><td>Fixed Ex-ante as per methodology and VPA-DD</td></tr>
<tr><td>Purpose of data</td><td>Determination of baseline emissions</td></tr>
<tr><td>Additional comment</td><td>--</td></tr>
</table>

SDG Indicator	**SDG 13: Climate Change**
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
Value(s) applied	4.44%
Choice of data or Measurement methods and procedures	Fixed Ex-ante as per methodology and VPA-DD
Purpose of data	Determination of baseline emissions
Additional comment	-

SDG Indicator	**SDG 13: Climate Change**
Data/parameter	q_i
Unit	Liters/cartridge or Liters/Tab Pack

Description	Capacity of the household or institutional water treatment technology
Source of data	Manufacturer specifications
Value(s) applied	<table><tr><td>Description</td><td>UltraFLO</td><td>UltraTAB</td></tr><tr><td>Dosage rate (Treatment Capacity)</td><td>340,000L/Cartridge</td><td>Big Pack: 48,000 L/Tab Pack Small Pack: 10,000 L/Tab Pack</td></tr></table>
Choice of data or Measurement methods and procedures	Fixed Ex-ante as per methodology and VPA-DD
Purpose of data	Determination of baseline emissions
Additional comment	An alternative approach is being used given the project technologies does not have a standard flow rate.

SDG Indicator	**SDG 13: Climate Change**
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	UN Data and FRA 2015
Value(s) applied	93.51
Choice of data or Measurement methods and procedures	Calculated using Tool 30 of CDM Fixed Ex-ante as per methodology and VPA-DD
Purpose of data	Determination of baseline emissions
Additional comment	-

SDG Indicator	**SDG 13: Climate Change**
Data/parameter	QPW_p
Unit	Litres per person per day
Description	Volume of drinking water per person per day for premises type p
Source of data	Parameter table SWDS 24 of methodology
Value(s) applied	

	<table><tr><th>Type of Premises</th><th>Default value</th><th>Applicability</th></tr><tr><td>Full-day premises</td><td>4 L /person / day</td><td>Premises like households etc.</td></tr><tr><td>Boarding school</td><td>4 L /person / day</td><td>-</td></tr><tr><td>Half time premises</td><td>3 L /person / day</td><td>Premises like day schools, offices etc.</td></tr></table>
Choice of data or Measurement methods and procedures	Fixed Ex-ante as per methodology and VPA-DD
Purpose of data	Baseline emission calculations
Additional comment	-

D.2 Data and parameters monitored

>>

SDG Indicator	**SDG 1: No Poverty**
Data / Parameter	$ABS_{Project}$
Unit	Number
Description	Access to Basic Services (number of premises with at least one WPS distributed / installed under the project)
Source of data	Sales / Installation records
Value(s) applied	9,963
Measurement methods and procedures	Not applicable
Monitoring frequency	Continuous
QA/QC procedures	--
Purpose of data	SDG 1 contribution
Additional comment	--

SDG Indicator	**SDG 3: Good Health and Well Being**
Data / Parameter	$IH_{Project}$
Unit	%
Description	% of users reporting reduce in incidence of diarrhoea and water borne diseases etc. (improved health) in project
Source of data	Ex-post monitoring surveys
Value(s) applied	96.08
Measurement methods and procedures	Not applicable
Monitoring frequency	Annual / Biennial
QA/QC procedures	--
Purpose of data	SDG 3 contribution

Additional comment	--

SDG Indicator	**SDG 6: Clean Water and sanitation**
Data / Parameter	$SWQ_{Project}$
Unit	%
Description	% WPS distributed / installed providing safe drinking water to beneficiaries in project
Source of data	Ex-post water quality tests
Value(s) applied	96.08
Measurement methods and procedures	Not applicable
Monitoring frequency	Annual / Biennial
QA/QC procedures	--
Purpose of data	SDG 6 contribution
Additional comment	--

SDG Indicator	**SDG 7: Affordable and Clean Energy**
Data / Parameter	$AAC_{Project}$
Unit	%
Description	Access to affordable and clean energy (% of operating WPS units under Project)
Source of data	Ex-post monitoring surveys
Value(s) applied	94.49
Measurement methods and procedures	Not applicable
Monitoring frequency	Annual / Biennial
QA/QC procedures	--
Purpose of data	SDG 7 contribution
Additional comment	--

SDG Indicator	**SDG 8: Decent Work and Economic Growth**
Data / Parameter	$QE\ IG_{project}$
Unit	number
Description	Quantitative Employment and income generation (Number of person (male and female) hired under project)
Source of data	HR records/ Sales and marketing records
Value(s) applied	13
Measurement methods and procedures	Not applicable
Monitoring frequency	Annual / Biennial
QA/QC procedures	--

Purpose of data	SDG 8 contribution
Additional comment	--

SDG Indicator	**SDG 13: Climate Change**
Data / Parameter	$M_{q,y}$
Unit	fraction
Description	Ongoing water quality indicated as the fraction of the samples that pass microbial quality standard
Source of data	WQT performed using Field Test kits
Value(s) applied	0.9608
Measurement methods and procedures	Water quality testing of the project devices was conducted on sampling basis. The samples of treated water collected from project devices, and tested using field testing kits.
Monitoring frequency	Annually or more frequently.
QA/QC procedures	Field testing kits have been used, e.g. based on Colony Forming Unit method or Most Probable Number method.
Purpose of data	Determination of baseline emissions
Additional comment	If the proportion of samples not meeting Safe Drinking Water Quality Standards exceeds a threshold, no emission reductions can 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% Since proportion of samples not meeting Safe Drinking Water Quality Standards in 1st year of VPA is less than 20% hence no adjustments are required

SDG Indicator	**SDG 13: Climate Change**
Data / Parameter	Water hygiene education campaigns
Unit	NA
Description	Hygiene campaigns carried out among project safe water end users
Source of data	Annual hygiene campaigns records
Value(s) applied	108 schools, selected for project monitoring, were physically visited by enumerators and hygiene awareness was propagated to the school representatives. The questionnaire used for project monitoring also has questions related to hygiene.

	As part of project monitoring, none of the schools reported any increase in diarrhoea or any other water borne disease. For detail refer "Hygiene Awareness Campaign Report".
Measurement methods and procedures	Usage Survey (in person) A questionnaire-based survey has been used to assess hygienic handling of clean water as per CME knowledge and experience and WHO/UNICEF JMP core questions on drinking and hygiene.
Monitoring frequency	Annual
QA/QC procedures	Transparent data analysis and reporting.
Purpose of data	--
Additional comment	--

SDG Indicator	**SDG 13: Climate Change**
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
Source of data	Project survey
Value(s) applied	0 %
Measurement methods and procedures	This survey was performed in person
Monitoring frequency	Annually
QA/QC procedures	Transparent data analysis and reporting is ensured through the use of personnel extensively trained in conducting Project Surveys.
Purpose of data	Determination of baseline emissions
Additional comment	-

SDG Indicator	**SDG 13: Climate Change**
Data / Parameter	$HN_{p,y}$
Unit	Number
Description	Number of individuals per premises type p in the project boundary in year y
Source of data	Sales/distribution database

Value(s) applied	452[6]
Measurement methods and procedures	The total number of individuals for each project premise type in each specific VPA is tracked in the Sales or distribution records
Monitoring frequency	Annual
QA/QC procedures	Actual school population data for each of the 9,963 has been used for ER calculations, deem the most relevant (geographical and temporal) in line with para 3.11.2 of the methodology.
Purpose of data	Determination of baseline emissions
Additional comment	-

SDG Indicator	**SDG 13: Climate Change**
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	9,963
Measurement methods and procedures	The total number of premises with at least one individual technology type is tracked in the Sales or distribution database.
Monitoring frequency	Annually
QA/QC procedures	Sales or distribution record includes: 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
Purpose of data	Determination of baseline emissions
Additional comment	--

[6] This value is the average value across all the VPAs covered in this monitoring report. However, the ERs for each VPA have been calculated separately as mentioned in section F below. Thus, for each VPA, the corresponding $HN_{p,y}$ value has been used for ER calculations. Refer ER Calculator (tab 'ERs Summary') for details.

SDG Indicator	**SDG 13: Climate Change**
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 Surveys
Value(s) applied	94.49
Measurement methods and procedures	PP has conducted in person survey of project premises
Monitoring frequency	Annually
QA/QC procedures	--
Purpose of data	Determination of baseline emissions
Additional comment	The usage survey provides a single usage parameter that is representative for project technologies in the total sales record.

SDG Indicator	**SDG 13: Climate Change**
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 and distribution records and School Academic Calendar
Value(s) applied	209
Measurement methods and procedures	For schools and other institutions, the days has been calculated based on the number of operational school days in the monitoring period, excluding weekends, holidays and term-breaks, as applicable for boarding and non-boarding premises.
Monitoring frequency	Annually
QA/QC procedures	-
Purpose of data	Determination of baseline emissions
Additional comment	

SDG Indicator	**SDG 13: Climate Change**
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	Refer tab "Installation database" column Q of the ER sheet

Measurement methods and procedures	The total number of individual project units by each project premise type in each specific VPA is tracked in the Sales or distribution records
Monitoring frequency	Annually
QA/QC procedures	-
Purpose of data	Determination of baseline emissions
Additional comment	-

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

Data/Parameter	Value obtained in this monitoring period	Value obtained last monitoring period
$ABS_{Project}$	9,963	NA
$IH_{Project}$	96.08	NA
$SWQ_{Project}$	96.08	NA
$AAC_{Project}$	94.49	NA
QE $IG_{project}$	13	NA
$M_{q,y}$	0.9608	NA
Water hygiene education campaigns	108 samples monitored	NA
$X_{cleanboil,y}$	0%	NA
$HN_{p,y}$	452	NA
$N_{p,y}$	9,963	NA
$U_{p,y}$	94.49	NA
$DP_{p,y}$	209	NA
$DN_{p,y}$	1.0	NA

D.4. Implementation of sampling plan

>>
A single sampling plan was carried out for GS11289(VPA31) to GS11305(VPA47) (covered in this monitoring report).

a) Description of implemented single sampling design

(i) Sampling design

Due to the large number of units projected to be distributed in the VPA, coupled with the difficulties with monitoring in some regions, it is not economically feasible to monitor each unit distributed in the VPA. Therefore, the project will employ representative sampling in line with the requirements of the applied methodology.

(ii) Objectives and Reliability Requirements

The objective was to obtain an unbiased and reliable estimate of the proportion value of the following parameters over the course of the monitoring period, and with 95/10 confidence/precision for annual sampling across VPAs.

Sl. No.	Parameter	Description of parameter

1	$M_{q,y}$	Ongoing water quality indicated as the fraction of the samples that pass microbial quality standard
2	$U_{p,y}$	Usage rate of the project technology by premises type p during year y

(iii) Target Design

The target population for the parameters stated above are schools where WPS Units installed / distributed and recorded in the project sales database.

(iv) Sampling Frame

The target population are schools where WPS Units installed / distributed, recorded in the project sales database. The parameters for monitoring are homologous (i.e., implemented in schools), hence a common sampling was followed for all the parameters monitored.

b) Sampling Method

The required sample sizes were derived using para 14 of the "Standard: Sampling and surveys for CDM project activities and programmes of activities", version 9.0 and equations (1), (2), (3), (4) and (9) of Appendix 3 of the Guideline: Sampling and surveys for CDM project activities and programmes of activities, Version 04.0 for proportion-based parameter as follows:

$$n \geq \frac{z^2 * N * V}{(N-1) * precision^2 + z^2 * V}$$

Where,

n = number of WPS to be sampled

N = Total number of WPS in the population

z = Constant referring to level of confidence (1.96 for 95 % Confidence)

Precision = Required precision (e.g. 10% = 0.1)

Where:

$$V = SD^2 / p^2$$

$$SD^2 = \frac{\sum_{i=1}^{k} g_i * p_i * (1 - p_i)}{N}$$

$$\overline{p} = \frac{\sum_{i=1}^{k} g_i * p_i}{N}$$

Where,

gi = weight of strata i in the population

pi = expected proportion of strata i in the population

k = total number of strata in the population

Stratified random sampling has been applied for determining the usage rate and water quality of units distributed. The expected parameter values (proportion) were determined as per para 12(a)(iii), 13(b),13(c) of the "Standard: Sampling and surveys for CDM project activities and programmes of activities", version 9.0. The units in the population has been categorized (based on technology deemed appropriate) and sample size has been determined based on expected usage rate in each category using stratified random sampling approach as per the Guideline: Sampling and surveys for CDM project activities and programmes of activities and Standard "Sampling and surveys for CDM project activities and programmes of activities". The sample size determined has been distributed within each category based on percentage of units in corresponding category.
A deviation (from monitoring methodology) on the sampling approach has been approved by GS4GG for the first crediting period. Please refer Appendix 5 of the VPA-DDs.
Detail of approved deviation:
Reference: Dev_184
Title: Deviation from ageing-based survey for WPS
Date of approval: 07/12/2021
Link: https://www.goldstandard.org/project-developers/standard-documents

Sample Size - $U_{p,y}$			
WPS Type (Sampling Frame)	**Total Sales (Sampling Frame Size)**	**expected operational rate (%)**	**Calculated Sample Size (n)**
UltraFlo	3132	90%	32
UltraTab	6831	90%	69
Sample size determination			
Estimated Operation Unitsi (p)			90%
Estimated Standard Deviation of Operational Unitsi (SD)			30.0%
$V = (SD/p)^2$			0.11
Sample Size required (Operational Unitsi)			100

Sample Size - $M_{q,y}$			
WPS Type (Sampling Frame)	**Total Sales (Sampling Frame Size)**	**expected water quality (Fraction)**	**Calculated Sample Size (n)**
UltraFLO	3132	0.90	32
UltraTAB	6831	0.90	69
Sample size determination			
Estimated Water Qualityi (p)			0.90
Estimated Standard Deviation of Water Qualityi (SD)			0.300
$V = (SD/p)^2$			0.11
Sample Size required (Water Qualityi)			100

c) Collected Data

Data was collected by the Impact Water team. The team is well trained for the usage related surveys and water quality tests given prior experience of monitoring WPS devices. Surveyors visited the school premises, did visual inspections, and interviewed school representatives to assess usage (operational status) and via a monitoring questionnaire. The Monitoring team also collected water samples for water quality testing using Aquagenx test kits. The monitoring (Surveys and Water Quality Tests) was conducted from 13-09-2021 to 22-09-2021.

d) Analysis of the collected data

Data obtained from the surveys / tests were used to estimate proportions values for the parameters described above. The values were then being factored into the emissions reduction calculations.

Sampling Constants	Values
Monitoring period start	1-Jan-21
Monitoring period end	31-Dec-21
Level of sampling	PoA
Confidence (%) (90 or 95)	95%
Margin of Error (%)	10%
Z value	1.96

Sl. No.	Parameter	Value	Reliability / precision
1	$U_{p,y}$	94.49%	achieved
2	$M_{q,y}$	0.9608	achieved

e) Demonstration of whether the required confidence/precision has been met

The following tables demonstrate the status of precision/confidence for each of the monitored parameters

Sample Size - $U_{p,y}$			
Monitoring Results			
WPS Type (Sampling Frame)	Total Sales (Sampling Frame Size)	Monitored Sample Size (n)	Monitored Operational Rate (%)
UltraFlo	3132	35	91.43%
UltraTab	6831	73	95.89%
Reliability Check			
Samples Monitored			108
Monitored Operational Unitsi (p)			94.49%
Standard Error of Operational Unitsi			2.17%
Relative precision (Margin of error)			4.50%
Result			Ok, acceptable
Lower Bound confidence value			not applicable

Sample Size - $M_{q,y}$			
Monitoring Results			
WPS Type (Sampling Frame)	Total Sales (Sampling Frame Size)	Monitored Sample Size (n)	Monitored Water Quality (Fraction)
UltraFLO	3132	32	0.9688
UltraTab	6831	70	0.9571
Reliability Check			
Samples Monitored			102
Monitored Water Qualityi (p)			0.9608
Standard Error of Water Qualityi			0.02
Relative precision (Margin of error)			3.90%
Result			Ok, acceptable
Lower Bound confidence value			not applicable

f) Demonstration of whether the samples were randomly selected and are representative of the population

Premises were selected randomly from each stratum, after arranging them in chronological order by date of sale and assigning a serial number to each premises. Random numbers were used to identify the samples to the monitored. This approach ensured that the entire population had an equal chance of being selected, and hence samples picked are representative of the population.

SECTION E. CALCULATION OF SDG IMPACTS

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

>>

SDG	SDG Impact	Baseline estimate
1	No Poverty	0

SDG	SDG Impact	Baseline estimate
3	Good Health and Well-Being	0

SDG	SDG Impact	Baseline estimate
6	Clean Water and Sanitation	4.44%

SDG	SDG Impact	Baseline estimate
7	Affordable and Clean Energy	0

SDG	SDG Impact	Baseline estimate
8	Decent Work and Economic Growth	0

For SDG13: Climate Change, baseline emissions are calculated as:
The baseline emission factor shall be calculated as follows:

$$EF_{b} = SE_{w,b,y} * \sum(x_{f} * (EF_{b,f,CO2} * f_{NRB,f,y} + EF_{b,f,nonCO2})) \div 10^{9}$$

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
x_{f}	= 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

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 L of boiling water, including boiling and vaporization losses[7], taking into account default or measured stove efficiency

$SE_{w,b,y}$ = 360.83/η_{wb}

Where:

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

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

The baseline emissions shall be calculated as follows:

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

Where:

BE_y = Baseline emissions from the use of fuel to obtain safe water in the baseline (tCO2e)

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

In the case of IWT, the quantity of safe drinking water provided by the project Q_y is determined as follows

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

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 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:

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

Where:

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

$DN_{p,y}$ = 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) inyear y

[7] The previous version of TPDDTEC Annex 3 assumed that purifying water by boiling would require boiling water for 10 minutes. This assumption is revised to 5 minutes, following WHO technical information that less than 5 minutes of boiling is sufficient for inactivation of enteric bacteria (Technical Brief WHO/FWC/WSH/15.02, 2015).

QPW_p = Volume of drinking water per person per day for premises type p (L) * average number of operational days in the year

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

SDG	SDG Impact	Baseline estimate
13	Climate Action	861,807

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

>>

SDG	SDG Impact	Project estimate
1	No Poverty	9,963

SDG	SDG Impact	Project estimate
3	Good Health and Well-Being	96.08%

SDG	SDG Impact	Project estimate
6	Clean Water and Sanitation	96.08%

SDG	SDG Impact	Project estimate
7	Affordable and Clean Energy	94.49%

SDG	SDG Impact	Project estimate
8	Decent Work and Economic Growth	13

For SDG13: Project emissions are not envisaged in the VPA as chlorination does not require any fuel/ electricity use.

SDG	SDG Impact	Project estimate
13	Climate Action	0

E.3. Calculation of leakage

>>

Leakage has already been assessed in the VPA-DDs and as per VPA-DD (GS11289 to GS11305) no potential leakage has been identified, Refer section B.6.1 of the VPA-DD. Since the monitoring frequency for leakage is "Every two year" therefore next leakage assessment is deemed due after the end of second year of crediting period

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

>>

For SDG 1: No Poverty

Net Benefit (SDG 1) = $ABS_{Project} - ABS_{Baseline}$

Where:

$ABS_{Baseline}$ Access to basic services (number of premises with at least one WPS distributed / installed under the project in baseline)

$ABS_{Project}$ Access to basic services (number of premises with at least one WPS distributed / installed under the project in Project)

For SDG 3: Good Health and Well Being

Net Benefit (SDG 3) = $IH_{USERS,Project} - IH_{,Baseline}$

Where:

$IH_{Baseline}$ % of users reporting reduction in incidence of diarrhoea and water borne diseases etc. in baseline

$IH_{Project}$ % of users reporting reduction in incidence of diarrhoea and water borne diseases etc. after shifting to the project WPS

For SDG 6: Clean water and Sanitation

Net Benefit (SDG 6) = $SWQ_{Project} - SWQ_{Baseline}$

Where:

$SWQ_{Baseline}$ % users reporting safe water quality in baseline

$SWQ_{Project}$ % users reporting safe water quality in baseline

For SDG 7: Affordable and Clean Energy

Net Benefit (SDG 7) = $AAC_{Project}$ - $AAC_{Baseline}$

Where:

$AAC_{Baseline}$ Access to affordable and clean energy (% of operating WPS units under Baseline)

$AAC_{Project}$ Access to affordable and clean energy (% of operating WPS units under Project)

For SDG 8: Decent Work and Economic Growth

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)

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

For SDG 13: Climate Action

The emission reductions are calculated as follows:

$$ER_y = BE_y - PE_y - LE_y$$

Where:

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

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

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

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

SDG	SDG Impact	Baseline estimate	Project estimate	Net benefit
1	No Poverty	0	9,963	9,963

SDG	SDG Impact	Baseline estimate	Project estimate	Net benefit
3	Good Health and Well Being	0	96.08%	96.08%

SDG	SDG Impact	Baseline estimate	Project estimate	Net benefit
6	Clean Water and Sanitation	4.44	96.08%	91.64%

SDG	SDG Impact	Baseline estimate	Project estimate	Net benefit
7	Affordable and Clean Energy	0	94.49%	94.49%

SDG	SDG Impact	Baseline estimate	Project estimate	Net benefit
8	Decent Work and Economic Growth	0	13	13

SDG	SDG Impact	Baseline estimate	Project estimate	Net benefit
13	Climate Action	861,807	0	861,807

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

>>

SDG	Values estimated in ex ante calculation of approved PDD for this monitoring period	Actual values[6] achieved during this monitoring period
13-GS11289	59,898	49,126
13-GS11290	59,898	50,534
13-GS11291	59,898	55,139
13-GS11292	59,898	56,291
13-GS11293	59,898	55,758
13-GS11294	59,898	58,085
13-GS11295	59,898	58,367
13-GS11296	59,898	57,350
13-GS11297	59,898	58,010
13-GS11298	59,898	55,185
13-GS11299	59,898	57,706
13-GS11300	59,898	55,058
13-GS11301	59,898	49,735
13-GS11302	59,898	54,633
13-GS11303	59,898	55,714
13-GS11304	59,898	20,753
13-GS11305	59,898	14,363
Total	**1,018,266**	**861,807**

E.5.1. Explanation of calculation of value estimated ex ante calculation of approved PDD for this monitoring period

>>

The ex-ante estimate for the monitoring period has been calculated as follows:

For Ex-ante ERs
= Ex-ante ER as per VPA-DD x duration of monitoring period / days in a year

= 59,898[8]

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

>>
The actual emission reductions are lower as compared to ex-ante calculation in the registered PDD.

SECTION F. SAFEGUARDS REPORTING

>>
Not applicable, Refer VPA-DD appendix 1

SECTION G. STAKEHOLDER INPUTS AND LEGAL DISPUTES

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

>>
The grievance mechanism is in place as per the table shown below. No negative comments that would require adjustments of the PoA were identified. Impact Carbon/ Impact Water engages office-based staff to complete feedback collection phone calls on a regular basis. This was found to be the most effective input/grievance mechanism. Comment books have been made available for written comments at Head Office and sales people's also carries with them.

Method	Include all details of Chosen Method (s) so that they may be understood and, where relevant, used by readers.	Justification
Continuous Input / Grievance Expression Process Book (mandatory)	Continuous input / Grievance Expression process book is available at the office at the following address: **Impact Water** PO Box 1903-00606, Nairobi House #44, Muthithi Road Westlands, Nairobi	In line with section 2.1 of the Annex W Expression book has been placed at office of **Impact Water** in Kenya. Stakeholders are free to voice their concerns via the Grievance Expression Book. 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 revert to the

[8] refer section B.6.4 of the VPA-DD

		salesperson (representative of distribution/retail partners etc.) in case of any feedback / complaints with the product post distribution.
GS Contact (mandatory)	help@goldstandard.org	--
Other	Contact number: +256 790 911 934	As the project is spread across a huge area hence telephone access has also been provisioned for in line with Annex W, section 2.3 of Gold Standard.
	Email: info@impactcarbon.org	As per para 2.4 of Annex W of GS, the stakeholders with internet access have an option of contacting Impact Carbon through the email id provided.

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

>>
Not Applicable

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

>>
Not Applicable, project is in compliance with the Host Country's legal, environmental, ecological, and social regulation and has not reported any challenges related to the same in the concerned monitoring period.

Appendix 1: Contact information of project participants and responsible persons/entities

Project participant and/or responsible person/ entity	☒ Project participant ☐ Person/entity responsible for completing the GS-MR-FORM
Organization name	Impact Carbon
Street/P.O. Box	47 Kearny Street
Building	Suite 600
City	San Francisco
State/region	California
Postcode	94108
Country	United States
Telephone	+1 415 968 9087
Fax	-
E-mail	ehaigler@impactcarbon.org
Website	www.impactcarbon.org
Contact person	Evan Haigler
Title	Director
Salutation	Mr.

Last name	Haigler
Middle name	-
First name	Evan
Department	-

Project participant and/or responsible person/ entity	☐ Project participant ☒ Person/entity responsible for completing the GS-MR FORM
Organization name	Climate Secure India Pvt. Ltd.
Street/P.O. Box	Club Road
Building	Pragati Apartments
City	West Delhi
State/Region	Delhi
Postcode	110063
Country	India
Telephone	+91 11 2521 3080
Fax	--
E-mail	info@climate-secure.com
Website	www.climate-secure.com
Contact person	Rohit Lohia
Title	Director

Appendix 2: Deviation from the monitoring methodology
Reference: Dev_184

Date of approval: 07/12/2021

Validity: first crediting period of the VPA

Description:

Methodological requirement:

1. *Parameter table SDWS 29 - The minimum sample size for IWT – for individual technology age group shall be determined considering the project technology type and in line with the sampling approach applied*

2. *Also, page 51 of the applied methodology, for parameter SDWS29, refers a minimum sample size of 30 per technology age.*

3. *Para 4.2.2. of the applied methodology prohibits grouping more than 10 VPAs together.*

Deviation proposed:
Conduct the project surveys for WPS stratifying each technology irrespective of their age, and by grouping more than 10 small scale VPAs together.

Justification:
WPS technologies are not affected by ageing, and are resupplied, maintained, and/or replaced on an ongoing basis. The water purification technologies operate

on consumable modules basis i.e., once their treatment capacity (cartridge / tablets / filters) is fully consumed, their consumables (cartridges / tablets / filters) are replaced making them revive their useful lifetime (age) again. Also, WPS operate on binary performance rather than reducing performance i.e., a WPS irrespective of its age will either provide safe water or unsafe water. Thus, requirement to monitor the systems per technology age is deemed superfluous and only the monitoring of each WPS technology, irrespective of age shall be applicable for WPS devices.

The VPAs in each country are identical as they follow same management plan, operational plan and technologies. The limit on grouping by number of VPAs (maximum 10) is not a correct parameter to determine the limits for sampling.

GS Decision:

The deviation request is approved for the first crediting period of the VPAs GS11259 to GS11305. However, the PD must ensure that:

1. The stratified random sampling approach applied for sample size calculation for the monitoring survey must meet all the requirements under Appendix 3 of Guideline: Sampling and surveys for CDM project activities and programmes of activities.

2. Continuity in the project's monitoring activities is maintained, and PD can justify that no monitoring gaps exist (especially for SDG parameters) within the Monitoring Period(s). However, if gap(s) exist, the project shall justify that conservative approach(es) have been applied in line with section 3 of the Deviation Approval Requirements and Procedures (version 1.1) and overarching GS principles (as applicable).

Revision History

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