Gold Standard
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TEMPLATE

MONITORING REPORT

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

This document contains the following Sections

KEY PROJECT INFORMATION

Key Project Information

GS ID (s) of Project (s)	GS 11075
Title of the project (s) covered by monitoring report	Solar water filtration units for rural areas in coastal Bangladesh
Version number of the PDD/VPA-DD (s) applicable to this monitoring report	Version 6.0 dated 23/01/2023
Version number of the monitoring report	2.0
Completion date of the monitoring report	22/01/2025
Date of project design certification	29/03/2022
Date of Last Annual Report	Not applicable
Monitoring period number	2nd of the Crediting period
Duration of this monitoring period	09/11/2023 – 31/08/2024 (both days inclusive)
Project Representative	Value Network Ventures Advisory Services Pte. Ltd.
Host Country	Bangladesh
Activity Requirements applied	☒ Community Services Activities ☐ Renewable Energy Activities ☐ Land Use and Forestry Activities/Risks & Capacities ☐ N/A
Methodology (ies) applied and version number	"Technologies and Practices to Displace Decentralized Thermal Energy Consumption"- Version 3.1- 25/08/2017
Product Requirements applied	☒ GHG Emissions Reduction & Sequestration ☐ Renewable Energy Label ☐ N/A

Table 1 - Sustainable Development Contributions Achieved

Sustainable Development Goals Targeted	SDG Impact	Amount Achieved	Units/ Products
13 Climate Action (mandatory) 13.2 Integrate climate change measures into national policies, strategies, and planning	13.2.2 Total greenhouse gas emissions per year Indicator: Amount of GHGs emissions avoided or sequestered	2023:41,291 2024:199,662 Total:240,953	tCO_2e
SDG 4 – Quality Education 4.3 By 2030, ensure equal access for all women and men to affordable and quality technical, vocational, and tertiary education, including university	4.3.1 Participation rate of youth and adults in formal and non-formal education and training in the previous 12 months, by sex Indicator: Number of employees trained per year	281	number
SDG 6 – Clean Water and Sanitation 6.1 By 2030, achieve universal and equitable access to safe and affordable drinking water for all"	6.1.1 Proportion of population using safely managed drinking water services Indicator: Proportion of population using safely managed drinking water services	98.96	percentage
SDG 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 8.6- By 2020, substantially reduce the proportion of youth not in employment, education or training	8.5.1 Average hourly earnings of female and male employees, by occupation, age, and persons with disabilities 8.6.1 Proportion of youth (aged 15-24 years) not in education, employment, or training Indicator: a. Number of jobs created (male/female) by project activity b. Number of trainings provided (filtration plant maintenance)	a. 160 b. 9	Numbers
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	15.2.1 Progress towards sustainable forest management Indicator: Total non-renewable fuelwood saved per year by the project	1102.58	Tonnes of wood per annum per system

Table 2 – Product Vintages

		Amount Achieved
Start Dates	**End Dates**	**VERs (tCO2e)**
09/11/2023	31/12/2023	41,291
01/01/2024	31/08/2024	199,662

SECTION A. DESCRIPTION OF PROJECT

A.1. General description of project

>>
The purpose of the project is to provide affordable and accessible safe drinking water to the low-income groups or in rural /coastal areas in Bangladesh. The project reduces fuel consumption such as wood, coal etc. which would have been traditionally used to boil water to make it safe to drink, in the baseline.

According to Multiple indicator cluster survey 2019[1], In Bangladesh only 11.6% of the household population have access to piped water (table WS 1.1, page 323). Although 98.5% (table WS 1.1, page 323) of household population have access to improved source of drinking water, the survey established that percentage of household population with E. coli contamination in household drinking water is 81.9% (table WS 1.7, page 333). ~40% households (table WS 1.8, page 334) with improved water source and more than 90% households (table WS 1.8, page 323) with unimproved water source were found to have E.Coli contamination in their household drinking water. Thus, most of the population needs water treatment to make it safe for drinking.

The technology installed in the project is low-GHG water purification devices which make the water safe for drinking by using a combination of treatment technologies depending upon the quality of water including multi-media filters, addition of alum, activated carbon filter and chemical disinfection (chlorination). The use of these treatment technologies renders water free from microbial contamination as may as well remove other suspended particulate matter to yield safe drinking water in project scenario.

The project WPPs result in elimination/reduction of non-renewable biomass / fossil fuels usage for water boiling in the baseline. This results in significant reduction in indoor air pollution associated with use of solid biomass / fossil fuel on inefficient stoves which has a direct correlation with respiratory illness and mortality rates, especially among school children in the project beneficiaries.

The project has been implemented in Bagerhat, Khulna, Barguna, Pirojpur, Satkhira.

[1] https://www.unicef.org/bangladesh/media/3281/file/Bangladesh%202019%20MICS%20Report_English.pdf

"Value Network Ventures Advisory Services Pte. Ltd." is the project developer and both "Value Network Ventures Advisory Services Pte. Ltd" and "BBF" are the project participants.

Beneficiaries receiving the safe drinking water under the project have agreed to the terms of the project and have ceded all rights to any VERs resulting from the project activity to BBF, as applicable. BBF then transfers the ownership to VNV through a contractual agreement.

A.2. Location of project

>>
Host Party(ies): Bangladesh
Region/State/Province: All across Bangladesh
City/Town/Community: All across Bangladesh
Physical Geographical location: The geographical boundary of Bangladesh is depicted by the map given below[2].

The Project Activity is located within Bangladesh as can be verified from the WPS installation database. Dhaka is the national capital of Bangladesh. Bangladesh lies between 20°34' to 26°38' north latitude and between 88°01' to 92°41' east longitude.

A.3. Reference of applied methodology

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Methodology Applied:
Technologies and Practices to Displace Decentralized Thermal Energy Consumption, Ver 3.1, dated 25/08/2017.
https://globalgoals.goldstandard.org/standards/407_V3.1_EE_ICS_Technologies-and-Practices-to-Displace-Decentrilized-Thermal-Energy-TPDDTECConsumption-.pdf

Standardized baseline:
Not applicable

[2] https://www.researchgate.net/figure/Political-Map-of-Bangladesh-Source_fig1_328717393

A.4. Crediting period of project

>>
09/11/2022 – 08/11/2027, 5 years (renewable twice).

SECTION B. IMPLEMENTATION OF PROJECT

B.1. Description of implemented project

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

The project activity involves installation/retrofit of low GHG water purification plants to provide access to safe drinking water to household/institutional/commercial premises of Bangladesh.

The implementer of the project is Bangladesh Bondhu Foundation. The project activity reduces GHG emissions by replacing the use of non-renewable biomass or fossil fuel to boil water for purifying it for making it safe for drinking purposes in the baseline.

b) **Description of the technology employed and installed equipment and/or infrastructure**

The technology installed are low-GHG water purification technologies which make the water safe by using a combination of treatment technologies depending upon the quality of water including multi-media filters, addition of alum, activated carbon filter and chemical disinfection (chlorination).The use of these treatment technologies renders water free from microbial contamination as well as removes other suspended particulate matter and these were sufficient to yield the safe drinking water.

A typical project plant uses solar energy to run the plant. The solar PV panels provide power supply to motor pumps and other parts of the system.

The raw water is filtered in through a staged mechanism:

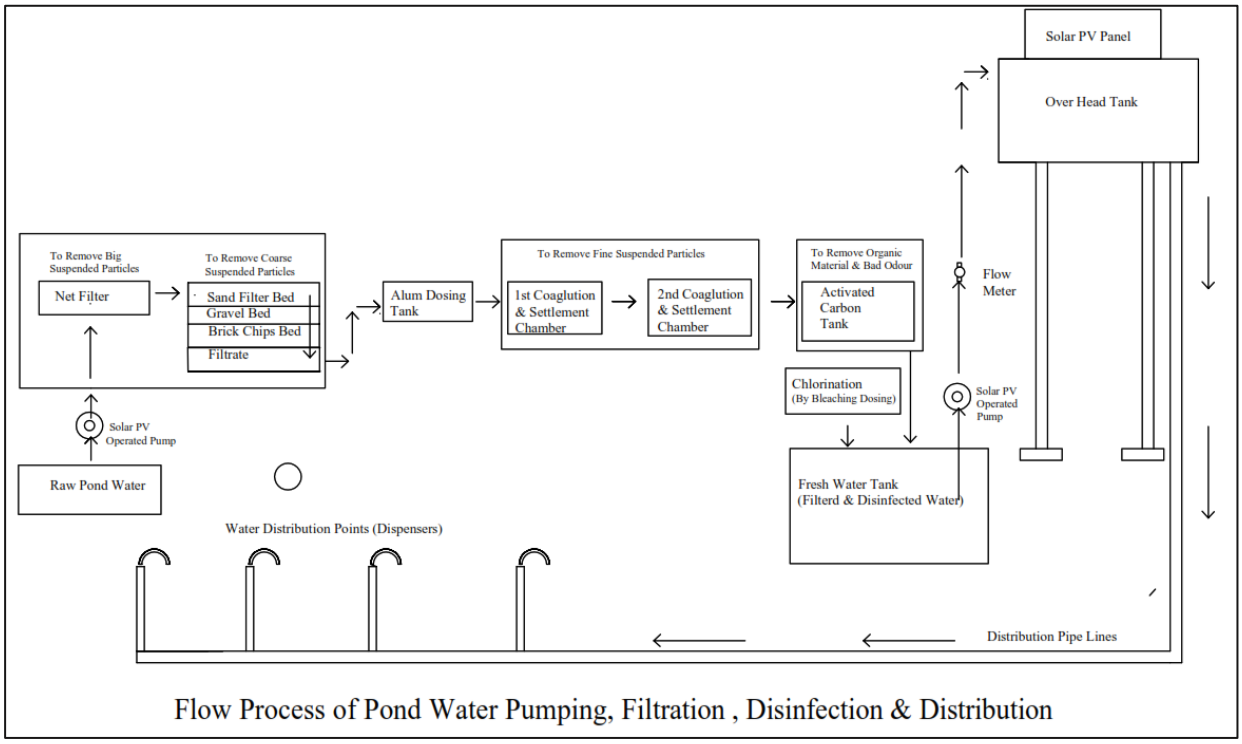
1) Pre-treatment section (Iron/Sand filter, addition of alum, activated carbon filter)
2) Chemical disinfection (chlorination)

Pre-treatment:
The raw water is pumped to the pre-treatment section which consists of Multimedia Filter, sedimentation chamber and Activated Carbon Filter. The multimedia filter reduces the level of turbidity of water by decreasing the flow rate into trickle pace. The water is treated with Alum (Aluminium Sulphate) in the sedimentation chamber to remove suspended particulate matters and then treated with activated carbon filter to reduce organic compounds and other soluble particles to remove taste and odour.

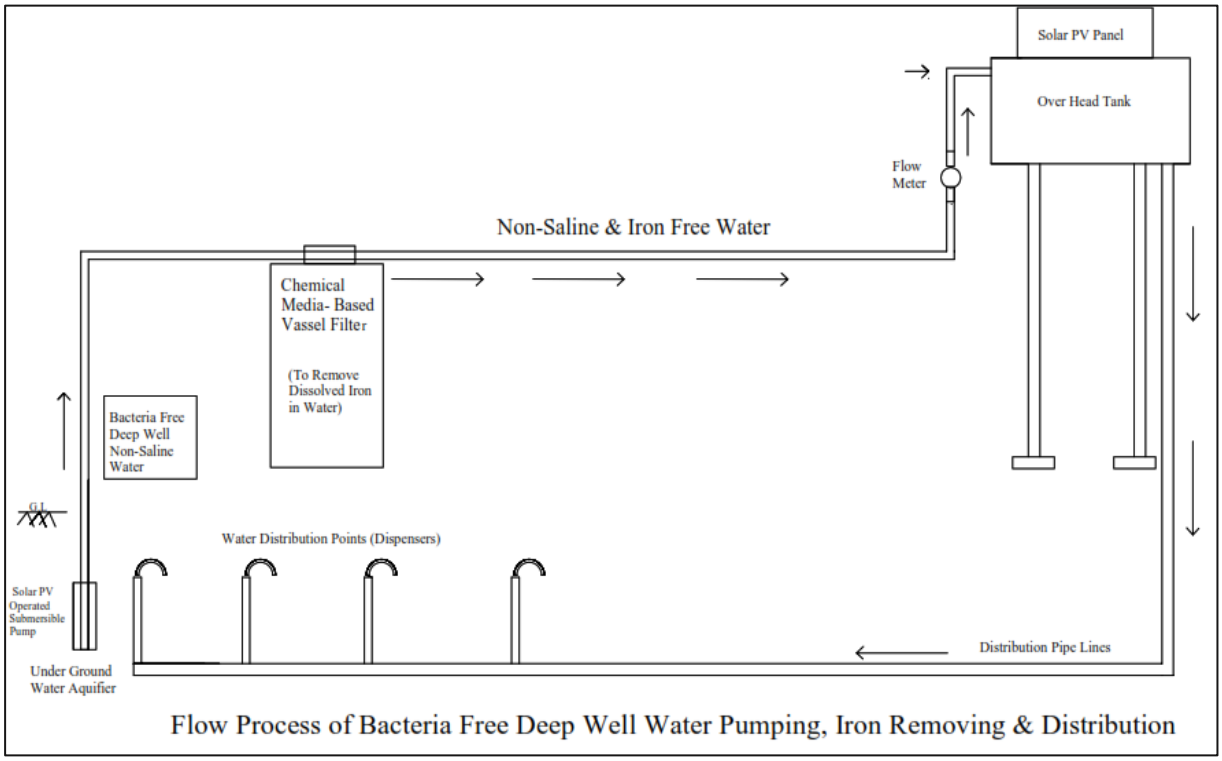
Chemical Disinfection:

After pre-treatment, as applicable, to remove the microbial contamination from the water, chemical disinfection(chlorination) is used.

The detail of WPP technology installed under the project till the end of the monitoring period:



Flow Process of Pond Water Pumping, Filtration , Disinfection & Distribution



Flow Process of Bacteria Free Deep Well Water Pumping, Iron Removing & Distribution

The Status of implementation of the project till the end of the monitoring period:

Type of installed technology (Service level)	Technology Implementation level (Cumulative Number of WPP units installed/restored)	Total number of beneficiaries premise associated with the project WPP	Total number of beneficiaries associated with the project WPP
Household/Institutional/ Commercial Premises	123	44,229	254,273

c) Relevant dates for the specific-case project activity (e.g. construction, commissioning, continued operation periods, etc.);

Start Date as per Project Design Document	09/11/2022
Continued operation period	Since the start date

d) Total GHG emission reductions or net GHG removals by sinks achieved in this monitoring period for the specific-case Project activity, including information on how double counting is avoided:

Year	Emission Reductions tCO_2e
09/11/2023 – 31/12/2023	41,291
01/01/2024 - 31/08/2024	199,662
Total	240,953

B.1.1 Forward Action Requests
>>
Not applicable

B.2. Post-Design Certification changes

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B.2.1. Temporary deviations from the approved Monitoring & Reporting Plan, methodology or standardized baseline
>>
Not applicable
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

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BBF oversaw the design, construction, and installation/restoration of water treatment plants, along with connecting water dispensing points to these facilities. Each Plant, corresponding dispensing points and beneficiary(ies) carry a unique serial number to avoid double counting. During the plant's commissioning phase, BBF registered beneficiaries and gathered essential data, facilitating tracking of those benefiting from the project. The information captured included, but not limited to, the following:

a. Name of Beneficiary
b. Address / location of the beneficiary
c. type of user (domestic / institution/Commercial)
d. unique identifier
e. Date of accessing safe water
f. Other relevant information as deemed appropriate.

The data collected was aggregated in an electronic database management system controlled by BBF which is maintained and updated regularly by BBF. The aggregated data in the electronic database forms the basis for determining the population under the project as well as serves as sampling frame for ex-post determination of monitoring parameters.

Each Water Treatment Plant has a dedicated team consisting of an Engineer, caretaker, and Management Committee (MC). Their collective responsibility is the efficient operation and maintenance of the plants, ensuring the availability of safe drinking water for corresponding beneficiary(ies).

Management Committees (MC) were formed to support BBF since initial stages of planning, site selection, selection of route for pipeline and installation of systems. The project systems were handed over to the MC who are responsible for management of the assigned plant. BBF appointed engineer and caretaker for each plant who are responsible for operation and maintenance of the plant and capturing the flow meter data.

Project Monitoring Data, for determining usage rate and other ex-post parameters, was recorded objectively during sample surveys conducted annually. For the current monitoring period, For Usage sampling was done using 95/10 as confidence / precision. Monitoring consisted of checking the representative samples against requisite monitoring parameters using a digital questionnaire-based survey. The surveys were conducted by BBF to collect feedback from sampled beneficiary premises.

For WQT, sampling was done at 90/10 as confidence / precision as per methodological requirements. WQT test samples were collected at the point of use (beneficiary), for requisite number of samples as per the registered sampling plan. The collected samples were assessed by Lab technicians to determine the quality of treated water.

Additionally, as a conservative measure, BBF also collected water samples for water quality testing, upstream from point of use (beneficiary households). Thus, project water samples were also collected from the dispensing stations and water treatment plant output points corresponding to the monitored Beneficiary. This ensured end to end quality track assessment of treated water, ensuring its safety, as it travelled from

the water treatment plant to the dispenser and, finally, to the point of use i.e., beneficiary's premise.

The data recorded at the time of user registration, as well as that collected through sampling surveys are transferred to the emission reduction calculation workbook. For results of the ER calculations, refer to the ER calculation sheet.

SECTION D. DATA AND PARAMETERS

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

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SDG13

Data/parameter	$W_{b,y}/W_{p,y}$
Unit	Tonnes/litre
Description	Quantity of fuel in tons required to treat 1 litre of water using technologies representative of baseline scenario b
Source of data	Default value for woody biomass from "Application of TPDDTEC methodology to safe water supply projects" Dated – 03/05/2021
Value(s) applied	0.0004 Tonnes/litre for woody biomass
Choice of data or Measurement methods and procedures	Default value from the GS
Purpose of data	Calculations of emission reductions
Additional comment	-

Data/parameter	$EF_{b,wood,CO_2}$ / $EF_{p,wood,CO_2}$
Unit	tCO_2/TJ
Description	CO_2 emission factor arising from use of fuels in baseline/project scenario
Source of data	IPCC Guidelines for National Greenhouse Gas Inventories, Volume 2, Energy, Chapter 2, Stationary Combustion, Table 2.5 [3]
Value(s) applied	112
Choice of data or Measurement methods and procedures	Determined as per IPCC default figures
Purpose of data	Calculation of baseline emission

[3] http://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_2_Ch2_Stationary_Combustion.pdf

Additional comment	

Data/parameter	$EF_{b,wood,nonCO_2}$ / $EF_{p,wood,nonCO_2}$
Unit	tCO_2e/TJ
Description	Non-CO2 emission factor arising from use of fuels in baseline/project scenario
Source of data	IPCC defaults For wood and charcoal, the following defaults derived from the IPCC shall be applied: AR5 GWP
Value(s) applied	9.46
Choice of data or Measurement methods and procedures	Determined as per IPCC default figures.
Purpose of data	Calculation of emission reduction
Additional comment	

Data/parameter	$NCV_{b,wood}$ / $NCV_{p,wood}$
Unit	TJ/ton
Description	Net calorific value of the fuels used in baseline/ project scenario
Source of data	TPDDTEC methodology ver 3.1, IPCC default value for wood fuel
Value(s) applied	0.0156
Choice of data or Measurement methods and procedures	IPCC default value
Purpose of data	Calculation of emission reduction
Additional comment	-

Data/parameter	$f_{NRB,i,y}$
Unit	Fractional non-renewability
Description	Non-renewability of woody biomass fuel during year y
Source of data	Registered PDD
Value(s) applied	0.843
Choice of data or Measurement methods and procedures\	-
Purpose of data	Calculation of baseline emission
Additional comment	-

Data/parameter	Cj
Unit	Percentage

Description	Portion of users of project technology who were already in baseline consuming safe water without boiling it
Source of data	Registered PDD
Value(s) applied	6.6%
Choice of data or Measurement methods and procedures	Calculated using Bangladesh Multiple Indicator Cluster Survey 2019, "Household water treatment" shows in Table WS1.9 on Page 337, that 6.6% of total population use some form of non-boiling effective water treatment (Bleach/Chlorine added 0.4%, use water filter 6.1%,other 0.1%). C_j = 6.1+0.4+0.1=6.6 C_j = 6.6%
Purpose of data	Determination of baseline emissions
Additional comment	-

Data / Parameter	$Q_{p,y,capped}$
Unit	Litres per person per day
Description	Quantity of safe water in litres consumed in the project scenario p and supplied by project technology per person per day
Source of data	Registered PDD
Value(s) applied	7 for households and full-time premises 5.5 for half time premises
Choice of data or Measurement methods and procedures	The project involves direct measurement of quantity of treated water supplied by project systems. As a cross check measure, it was ensured that the amount of water treated does not exceeds the capped water consumption/person/day * number of persons served * day of operation (346.75 per year)
Purpose of data	Emission reduction calculations
Additional comment	For cross checking QPW_y

D.2 Data and parameters monitored

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SDG 13

Data / Parameter	QPW_y
Unit	Litres
Description	litres of purified water supplied by the project activity in year y
Source of data	Beneficiary database
Value(s) applied	2023: 68,920,880.23 2024: 333,265,851.28 Total: 402,186,731.51
Measurement methods and procedures	The total water treated by the project system has been measured using flowmeters.
Monitoring frequency	Annual

QA/QC procedures	The PP has cross checked the monitored parameter values against the following (and determined ERs conservatively, refer additional comment): 1. Number of persons serviced by system *i* – based on number of Beneficiary Premises (and their size) contracted for a project system *i* 2. Total Treatment capacity of system *i* / day
Purpose of data	Emission Reduction Calculation
Additional comment	QPW_y = Minimum $\{(\sum_{i=1}^{n} \text{Number of person serviced by system } i * Q_{p,y,capped} * 282.15^4)$, $(\sum_{i=1}^{n} \text{Total treatement capacity of system } i \text{ /day} * 282.15)$, $((\sum_{i=1}^{n} \text{Monitored water supplied by project system } i)\}$

Data / Parameter	$N_{p,y}$
Unit	Person-days
Description	Number of persons consuming water supplied by project scenario p through year y
Source of data	Installation Database and user agreement between Beneficiary and PP
Value(s) applied	2023: 10,962,116.25 2024: 53,286,576.45 Total: 64,248,692.70
Measurement methods and procedures	User agreements
Monitoring frequency	The number of members of each project beneficiary premise has been recorded at the time of contract
QA/QC procedures	-
Purpose of data	-
Additional comment	-

Data / Parameter	$U_{p,y}$
Unit	Percentage
Description	Usage rate in project scenario p during year y
Source of data	Annual usage survey
Value(s) applied	98.96%
Measurement methods and procedures	PP has conducted in person questionnaire-based survey of project premises

[4] The number of days of operation for the current monitoring period has been recalculated by determining the total number of days within the monitoring period and applying a discount of 5% for maintenance.

Monitoring frequency	Annual
QA/QC procedures	-
Purpose of data	Emission Reduction calculation
Additional comment	--

Data / Parameter	Quality of treated water
Unit	%
Description	% Installations providing safe quality treated water
Source of data	Water quality test (WQT)
Value(s) applied	100%
Measurement methods and procedures	Water quality testing of the project beneficiary premises (point of use) was conducted on sampling basis. The samples of treated water collected from project beneficiary premise (point of use) were tested in laboratory against host country standards for treated water quality.
Monitoring frequency	Quarterly
QA/QC procedures	WQTs were conducted to confirm if the treated water samples collected from project beneficiary premises meet the national standard.
Purpose of data	Determination of project baseline emissions
Additional comment	-

Data / Parameter	$LE_{p,y}$
Unit	tCO_2e per year
Description	Leakage in the project scenario p through year y
Source of data	Section B.6.1 of the registered PDD
Value(s) applied	0.00
Measurement methods and procedures	
Monitoring frequency	Every two years
QA/QC procedures	-
Purpose of data	Determination of leakage
Additional comment	Leakage has already been assessed during at the time of registration. As per the approved PDD no potential leakage has been identified (Refer section B.6.1 of the PDD). 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

Data / Parameter	Hygiene campaigns
Unit	-

Description	Hygiene campaigns carried out among project technology users
Source of data	Hygiene Awareness Campaign Report
Value(s) applied	1
Measurement methods and procedures	The hygiene campaign included sample survey of project beneficiaries (148 samples) to assess the following using questionnaire-based survey: 1. Outbreak of water related disease in the sampled project beneficiary – all monitored samples reported reduction in water borne related diseases after gaining access to project treated water. 2. Assessment of handling and storage of treated water – almost all samples reported storing water adequately. 3. Adoption of Hygienic practices like handwashing, use of clean utensils etc. - all monitored samples reported dedicated handwashing points in their premises after gaining access to project treated water.
Monitoring frequency	Annual
QA/QC procedures	Transparent data analysis and reporting.
Purpose of data	-
Additional comment	-

Data / Parameter	Treatment capacity
Unit	Litre per day
Description	Treatment capacity of the project system *i*/day
Source of data	Manufacturer specification/design specification
Value(s) applied	Refer Tab: Installation summary of the ER calculator
Measurement methods and procedures	-
Monitoring frequency	-
QA/QC procedures	-
Purpose of data	The water volume values used in the calculations of emission reduction must be justified in terms of capacity of the project technology/improved sources.
Additional comment	-

Data / Parameter	$Q_{p,cleanboil,y}$
Unit	Litres per person per day
Description	Quantity of safe (treated, or from safe supply) water boiled in the project scenario p, after installation of project technology
Source of data	Project Usage survey

Value(s) applied	0.0
Measurement methods and procedures	This was determined via questionnaire surveys to check the % of treated water being boiled in the project activity by the sampled beneficiary premises
Monitoring frequency	Annual
QA/QC procedures	Transparent data analysis and reporting
Purpose of data	Project emissions
Additional comment	-

SDG 6

Data / Parameter	Clean Water and Sanitation
Unit	%
Description	Proportion of population using safely managed drinking water services
Source of data	Water quality test (WQT)
Value(s) applied	98.96
Measurement methods and procedures	-
Monitoring frequency	Annual
QA/QC procedures	-
Purpose of data	SDGs
Additional comment	-

SDG8

Data / Parameter	Decent work and economic growth
Unit	Numbers
Description	a. Number of employments provided b. Number of trainings provided (filtration plant maintenance)
Source of data	Monitoring survey
Value(s) applied	a. 160 b. 9
Measurement methods and procedures	PP's records
Monitoring frequency	Annual
QA/QC procedures	Employment proof and training proof
Purpose of data	SDGs
Additional comment	-

SDG 15

Data / Parameter	Life on Land
Unit	Tonnes of wood per annum per system

Description	Total non-renewable fuelwood saved per year by the project
Source of data	Monitoring survey
Value(s) applied	1102.58
Measurement methods and procedures	Calculation
Monitoring frequency	Annual
QA/QC procedures	Beneficary database
Purpose of data	SDGs
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
QPW_y	402,186,731.51	408,918,350.3
$N_{p,y}$	64,248,692.70	64,751,021.75
$U_{p,y}$	98.96%	100%
Quality of treated water	100%	100%
$LE_{p,y}$	0.00	0.00
Hygiene campaigns	1.00	1.00
$Q_{p,cleanboil,y}$	0.00	0.00
Decent work and economic growth	160 9	160 9
Life on Land	1102.58	1121.03
Clean Water and Sanitation	98.96%	100

D.4. Implementation of sampling plan

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a) Description of implemented single sampling design.

- **Target Population/Sampling design:**
  Stratified random sampling has been applied for determining the usage rate, Quality of treated water, and Quantity of safe water boiled in the project scenario by conducting the usage survey at the location of point of use i.e., at the Beneficiary premise.

  The database of the beneficiaries registered under each WPP (including information on date of registration, Unique serial number and user details) served for identification of sampling frame. The target population is the beneficiaries registered under the project, categorized into applicable sampling frames. Each sampling frame is homogenous within itself, given WPP 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 (chlorine, filters) is fully consumed, their consumables (chlorine/filters) are replaced/resupplied making them revive their useful lifetime (age) again.

The required sample size of beneficiary premises per WPP has been determined based on BBF's experience and professional judgement regarding expected usage rate and expected Water quality as per the Guideline: Sampling and surveys for CDM project activities and programmes of activities and "Standard for Sampling and surveys for CDM project activities and applied methodology.

- **Objectives and reliability requirements:**
  The objective was to obtain an unbiased and reliable estimate of the proportion value of the monitored parameters over the course of the monitoring period, and with 95/10 confidence/precision for annual sampling for usage surveys and 90/10 confidence/precision for annual sampling for WQTs.

- **Target Design**
  The target population for the parameters stated above are beneficiary premises under each WPP i.e., at point of use (where water treated by project WPP is being used)

  Sampling Schedule: A total of 148 Usage surveys were conducted at the beneficiary premises in June 2024. While a total of 161 WQTs were conducted on the beneficiary premises (and their upstream dispensing point and project plant). These WQTs were apportioned and conducted on a quarterly basis.

b) Collected data (electronic spreadsheets may be attached and referenced):

Data was collected by BBF team of surveyors. The team was well trained for the usage related surveys and water quality tests. Surveyors visited the beneficiary premises, did visual inspections, communicated the hygiene awareness message mentioned on the monitoring questionnaire and interviewed beneficiaries to assess usage (operational status) and necessary aspects related to hygiene, via a digital monitoring questionnaire.

The Water testing team also collected water samples for water quality testing in laboratory. The sample collected was tested in laboratory by trained technicians.

c) 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.

Usage	
Sampling Constants	**Values**
Monitoring period start	9-Nov-23
Monitoring period end	31-Aug-24
Confidence (%) (90 or 95)	95%
Margin of Error (%)	10%
Z value	1.96

WQT	
Sampling Constants	**Values**
Monitoring period start	9-Nov-23
Monitoring period end	31-Aug-24
Confidence (%) (90 or 95)	90%
Margin of Error (%)	10%
Z value	1.645

Sl. No.	Parameter	Value	Reliability / precision
1	$U_{p,y}$	98.96%	achieved
2	Quality of treated water	100%	achieved

d) 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:

Usage	
Monitoring Results	
Reliability Check	
Samples Monitored	148
$U_{p,y}$	98.96%
Standard Error	0.00%
Relative precision (Margin of error)	0.00%
Result	Ok, acceptable
Lower Bound confidence value	not applicable

WQT	
Monitoring Results	
Reliability Check	
Samples Monitored	161
Montored WaterQuality Result	100%
Standard Error	0.00%
Relative precision (Margin of error)	0.00%
Result	Ok, acceptable
Lower Bound confidence value	not applicable

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

Premises were selected randomly, after arranging them in an order and assigning a serial number to each premises under each WPP. The random numbers were generated for each WPP using an online random number generator.

Random numbers were used to identify the samples for monitoring usage and water quality. This approach ensured that the entire population under each WPP 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

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SDG	SDG Impact	Baseline estimate
15	Life on Land	0

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

SDG	SDG Impact	Baseline estimate
6	Clean Water and Sanitation	0

SDG	SDG Impact	Baseline estimate
4	Quality Education	0

For SDG13: Climate Change, baseline emissions are calculated as:

$ER_y = (\Sigma BE_{b,y} - \Sigma PE_{p,y}) * U_{p,y} - \Sigma LE_{p,y}$

Where the baseline emissions $BE_{b,y}$ is given by:
$BE_{b,y} = B_{b,y} * ((f_{NRB,b,y} * EF_{b,fuel,CO2}) + EF_{b,fuel,nonCO2}) * NCV_{b,fuel}$

Where:

$BE_{b,y}$	: Emissions for baseline scenario b during the year y in tCO_2e
$B_{b,y}$	: Quantity of fuel consumed in baseline scenario b during year y, in tons, as per by-default factors
$f_{NRB,y}$	: Fraction of biomass used during year y for the considered scenario that can be established as non-renewable biomass
$NCV_{b,fuel}$	: Net calorific value of the fuel that is substituted or reduced (IPCC default for wood fuel, 0.0156TJ/ton)
$EF_{b,fuel,CO2}$	: CO_2 emissions factor of the fuel that it substituted or reduced. 112 tCO_2/TJ for Wood/Wood waste, or the IPCC default value of the relevant fuel
$EF_{b,fuel,nonCO2}$	: Non-CO_2 emissions factor of the fuel that is substituted or reduced. 9.46 tCO_2/TJ for Wood/Wood waste, or the IPCC default value of the relevant fuel
$U_{p,y}$	: Cumulative usage rate for technologies in project scenario p during year y, based on cumulative installation rate and drop off rate.

Baseline Scenario Fuel Consumption Calculations:

$B_{b,y}$ = Number of person-days * Total Safe Water consumed in project scenario (L/p/d) * Baseline Fuel used to Treat Water (T/L)

$B_{b,y} = [(1-C_j) * QPW_y] * W_{b,y}$

Where:

QPW_y	: Quantity of safe drinking water consumed in year y
C_j	: Expressed as a percentage, this is the portion of users of the project technology j who in the baseline were already consuming safe water without boiling it
$W_{b,y}$	: Quantity of fuel in tons required to treat 1 litre of water using technologies representative of baseline scenario b during project year y, as per Baseline Water Boiling Test

The following approach will be used for determining water consumption (QPW_y):

QPW_y =Minimum {($\sum_{i=1}^{n}$ Number of person serviced by system i * $Q_{p,y,capped}$ * 346.75[5]),
($\sum_{i=1}^{n}$ Total treatement capacity of system i /day * 346.75),
($\sum_{i=1}^{n}$ Monitored water supplied by project system i)}

Where,

$N_{p,y}$: Number of person-days consuming water supplied by project scenario p through year y ($\sum_{i=1}^{n}$ Number of person serviced by system i * 346.75).

$Q_{p,y,capped}$: Quantity of safe water in litres consumed in the project scenario p and supplied by project technology per person per day (7 ltr/person/day cap from methodology).

SDG	SDG Impact	Baseline estimate
13	Climate Action	240,953

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

>>

SDG	SDG Impact	Project estimate
4	Quality Education	281

SDG	SDG Impact	Project estimate
6	Clean Water and Sanitation	98.96%

SDG	SDG Impact	Project estimate
8	Decent Work and Economic Growth Unit: Number (of employments provided/year)	160
8	Decent Work and Economic Growth Unit: Number (of training sessions/year)	9

SDG	SDG Impact	Project estimate
15	Life on Land	1102.58

project emissions $PE_{p,y}$ is given by:
$PE_{p,y} = B_{p,y} * ((f_{NRB,p,y} * EF_{p,fuel,CO2}) + EF_{p,fuel,nonCO2}) * NCV_{p,fuel}$

Project Scenario Fuel Consumption Calculation

[5] This is considering full year (with 5% discount for maintenance). The actual duration of the monitoring period is 297days and considering 5% maintenance discount results in 282.15 days of operation. This adjusted value has been used for ER calculations for the current monitoring period, refer section D.2 of the MR.

$B_{p,y}$ = Number of person-days * Total volume of water boiled in project scenario (L/p/d) * Project Fuel used to boil water (T/L)

$B_{p,y} = [(1-C_j) * N_{p,y} * (Q_{p,cleanboil,y})] * W_{p,y}$

Where:

$B_{p,y}$: Quantity of fuel consumed in project scenario p during the year y in tons

$Q_{p,cleanboil,y}$: Quantity of safe water boiled in the project scenario p per person per day

$W_{p,y}$: Quantity of wood fuel or fossil fuel in tons required to treat 1 litre of water per day using technologies representative of the project scenario p during project year y

SDG	SDG Impact	Project estimate
13	Climate action	0

E.3. Calculation of leakage

>>

Leakage has already been assessed during design certification and as per approved PDD no potential leakage has been identified, Refer section B.6.1 of the PDD. 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

SDG	SDG Impact	Leakage estimate
13	Climate Action	0

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

SDG	SDG Impact	Baseline estimate	Project estimate	Net benefit
13	Climate Change	240,953	0	240,953
15	Life on Land	0	1102.58	1102.58
8	Decent Work and Economic Growth Unit: Number (of employments provided/year)	0	160	160
8	Decent Work and Economic Growth Unit: Number (of training sessions/year)	0	9	9
6	Clean Water and Sanitation	0	98.96%	98.96%
4	Quality Education	0	281	281

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	512,445	240,953
15	1230.78	1102.58
8	300(Unit: Number (of employments provided/year))	160
8	20(Number of trainings provided (filtration plant maintenance))	9
6	100%	98.96%
4	200	281

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

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

For period of 09/11/2023 to 31/08/2024

For Ex-ante ERs

= Ex-ante ER as per PDD (section B.6.4) *(Number of Days monitored/ No. of days in a year)

= 629,773*(297/365)

= 512,445

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

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Ex-post value for SDG4 has been determined based on actual training records whereas ex-ante values are based on PP's estimation.

SECTION F. SAFEGUARDS REPORTING

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

Not applicable

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.

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The grievance mechanism is in place as per the table shown below:

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 have been placed at branch office/ other active location in various districts to allow the stakeholders with no access to internet to voice their concerns/ complaints/ grievances and feedback.
GS Contact (mandatory)	help@goldstandard.org
Other	Email: bbf@bondhufoundation.org, sandeep@vnvadvisory.net

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

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Not applicable

APPENDIX 1- CONTACT INFORMATION OF PROJECT PARTICIPANT

Organization name	Value Network Ventures Advisory Services Pte. Ltd.
Registration number with relevant authority	201903830Z
Street/P.O. Box	10 Anson Road, #29-07
Building	International Plaza
City	
State/Region	Singapore
Postcode	079903
Country	Singapore
Telephone	+91-80 42429927
E-mail	sandeep@vnvadvisory.net
Website	www.vnvadvisory.com/
Contact person	Sandeep Roy Choudhury
Title	Director
Salutation	Mr.
Last name	Choudhury
Middle name	Roy
First name	Sandeep
Department	
Mobile	+91-80 42429927
Direct tel.	+91-80 42429927
Personal e-mail	sandeep@vnvadvisory.net

Organization name	Bangladesh Bondhu Foundation
Registration number with relevant authority	
Street/P.O. Box	Lalmatia
Building	House # 3/2, Block #B
City	Dhaka
State/Region	Dhaka
Postcode	1207
Country	Bangladesh
Telephone	
E-mail	-
Website	http://bondhufoundation.org/
Contact person	
Title	
Salutation	Mr.
Last name	Khalequazzaman
Middle name	-

First name	Md.
Department	
Mobile	-
Direct tel.	-
Personal e-mail	khaleq@bondhufoundation.org

APPENDIX 2

Entity responsible for completing the TEMPLATE- Monitoring Report	
Organization name	Climate Secure
Street/P.O. Box	Club Road
Building	Pragati Apartments
City	West Delhi
State/Region	Delhi
Postcode	110063
Country	India
E-mail	info@climate-secure.com
Website	www.climate-secure.com
Contact Person	Rohit Lohia

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