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TEMPLATE

MONITORING REPORT

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VERSION **v. 1.1**

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

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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 | 3.0 |
| Completion date of the monitoring report | 13/05/2024 |
| Date of project design certification | 29/03/2022 |
| Date of Last Annual Report | Not applicable |
| Monitoring period number | 1 st of the Crediting period |
| Duration of this monitoring period | 09/11/2022 – 08/11/2023 (both days inclusive) |
| Project Representative | Value Network Ventures Advisory Services Pte. Ltd. |
| Host Country | Bangladesh |
| Activity Requirements applied | <input checked="" type="checkbox"/> Community Services Activities <input type="checkbox"/> Renewable Energy Activities <input type="checkbox"/> Land Use and Forestry Activities/Risks & Capacities <input type="checkbox"/> 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 | <input checked="" type="checkbox"/> GHG Emissions Reduction & Sequestration <input type="checkbox"/> Renewable Energy Label <input type="checkbox"/> 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 | 2022:36,282 2023:211,279 Total:247,561 | tCO ₂ e |
| 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 | 100 | 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 | 1121.03 | Tonnes of wood per annum per system |

Table 2 – Product Vintages

| | | Amount Achieved |
|-------------|------------|---------------------------|
| Start Dates | End Dates | VERs (tCO ₂ e) |
| 09/11/2022 | 31/12/2022 | 36,282 |
| 01/01/2023 | 08/11/2023 | 211,279 |

SECTION A. DESCRIPTION OF PROJECT

A.1. General description of project

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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 2019¹, 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

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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 below².



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-Decentralized-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

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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)

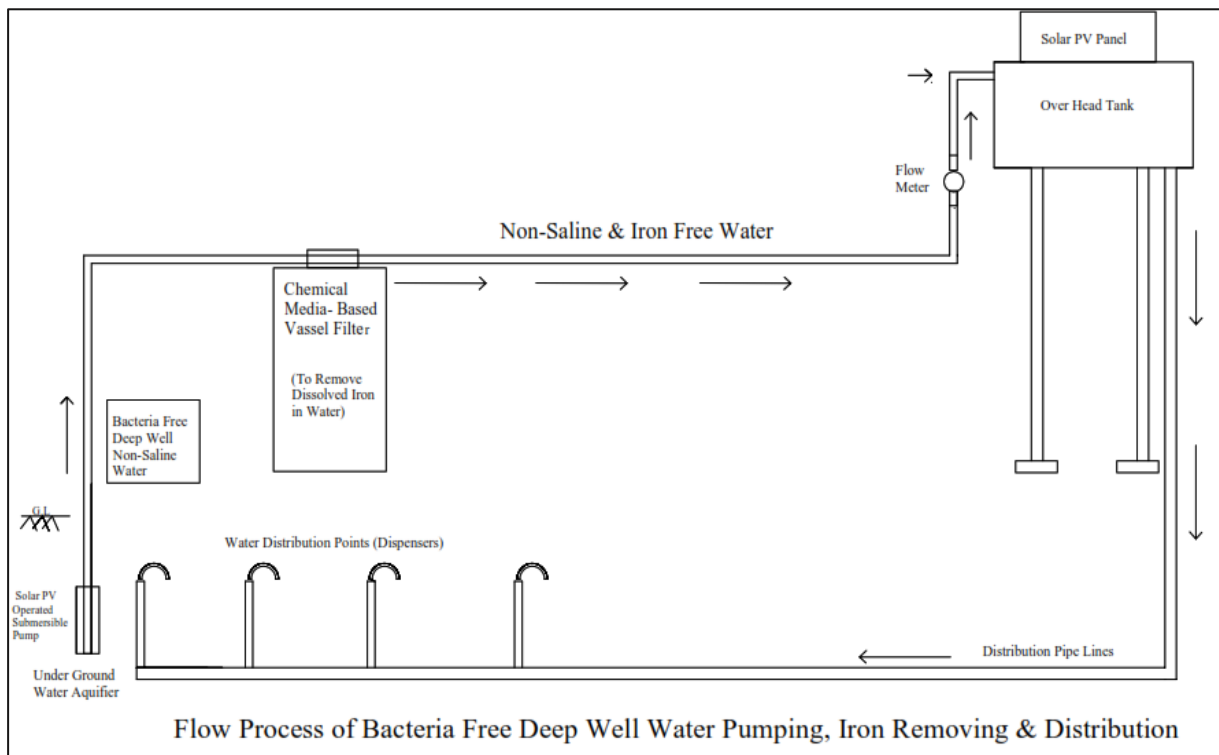
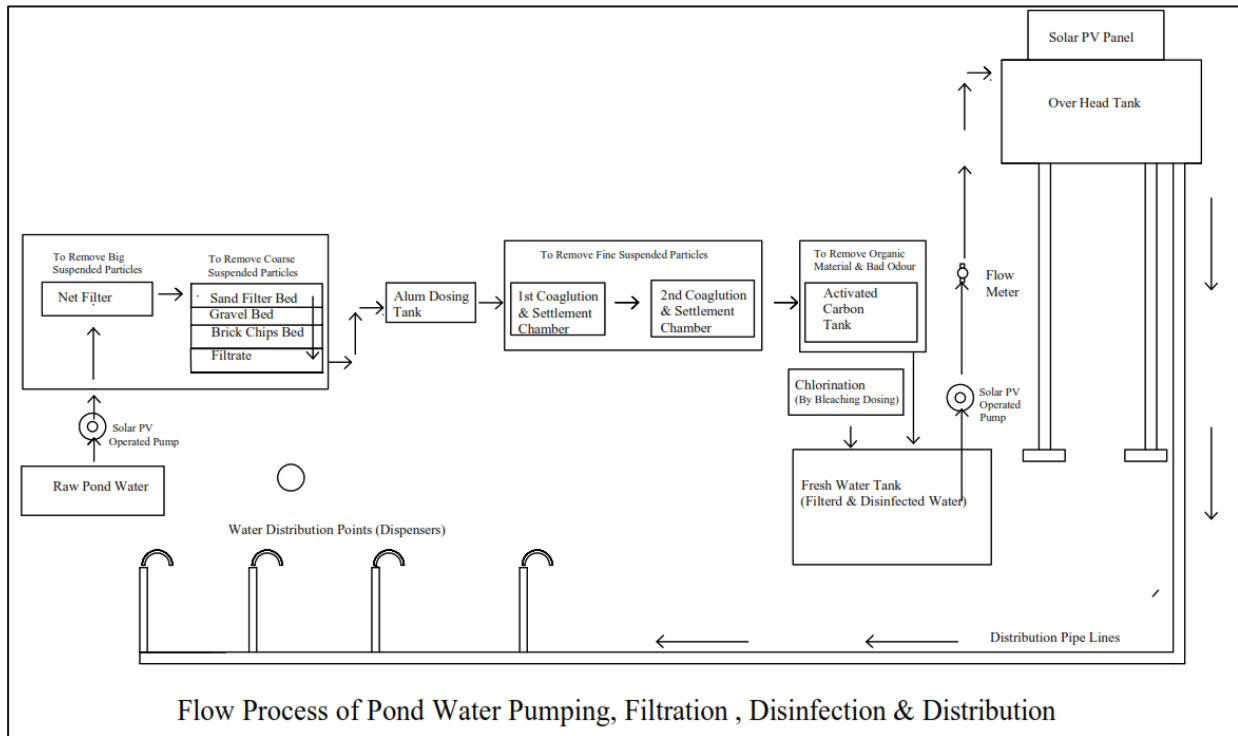
Pre-treatment:

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:



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 | 38,112 | 203,111 |

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} |
|-------------------------|---------------------------------------|
| 09/11/2022 - 31/12/2022 | 36,282 |
| 01/01/2023 - 08/11/2023 | 211,279 |
| Total | 247,561 |

B.1.1 Forward Action Requests

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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 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 ₂ e/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 | C _j |
| 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

>>

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 | 2022: 59,930,826.03 2023: 348,987,524.25 Total: 389,154,120.38 |
| 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 | $QPW_y = \text{Minimum}$ $\{(\sum_{i=1}^n \text{Number of person serviced by system } i * Q_{p,y,capped} * 346.75^4),$ $(\sum_{i=1}^n \text{Total treatment capacity of system } i / \text{day} * 346.75),$ $((\sum_{i=1}^n \text{Monitored water supplied by project system } i))\}$ |

| | |
|------------------------------------|-----------------------------------------------------------------------------------------------------|
| 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 | 2022: 9,544,569.35 2023: 55,206,452.40 Total: 64,751,021.75 |
| 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 | 100% |
| Measurement methods and procedures | PP has conducted in person questionnaire-based survey of project premises |

⁴ This is considering full year (=365 days discounted by 5% for maintenance). In case of monitoring period shorter than a year, this shall be pro-rated.

| | |
|----------------------|--------------------------------|
| 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 | Once before first verification |
| 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 ₂ e 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 (153 samples) to assess the following using questionnaire-based survey: <ol style="list-style-type: none"> 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>i</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 | $Q_{p, \text{cleanboil}, y}$ |
| Unit | Litres per person per day |
| Description | Quantity of safe (treated, or from safe supply) water boiled in the project scenario <i>p</i> , 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 | 100 |
| 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 | 1121.03 |
| Measurement methods and procedures | Calculation |
| Monitoring frequency | Annual |
| QA/QC procedures | Sales 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 | 408,918,350.3 | NA |
| N _{p,y} | 64,751,021.75 | NA |
| U _{p,y} | 100% | NA |
| Quality of treated water | 100% | NA |
| LE _{p,y} | 0.00 | NA |
| Hygiene campaigns | 1.00 | NA |
| Q _{p,cleanboil,y} | 0.00 | NA |
| Decent work and economic growth | 160 9 | NA |
| Life on Land | 1121.03 | NA |
| Clean Water and Sanitation | 100 | NA |

D.4. Implementation of sampling plan

>>

a) Description of implemented single sampling design.

- **Sampling design:**

Simple 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 survey sample size were determined considering the project population as homogeneous given 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 (chlorine, filters) is fully consumed, their consumables (chlorine/filters) are replaced/resupplied making them revive their useful lifetime (age) again.

The number of beneficiary premises sample size 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 i.e., at point of use (where water treated by project WPP is being used)
- **Sampling Frame and Schedule:** The total group size is 38,112. A total of 153 Usage surveys and 123 WQT were conducted on the beneficiary premises (and their upstream dispensing point and project plant). Usage surveys were conducted during Sep 2023 while WQT were conducted during July – August 2023

Usage Rate:

| Usage | | | |
|--------------------------------------------|-----------------------------------------------------------------------|---------------------------|----------------------------|
| Sampling Frame | Total Beneficiary premises associated with WPPs (Sampling Frame Size) | expected Usage (Fraction) | Calculated Sample Size (n) |
| Project Plant | 38112 | 0.90 | 100 |
| Sample size determination | | | |
| Estimated Usage(p) | | | 0.90 |
| Estimated Standard Deviation of Usage (SD) | | | 0.300 |
| $V = (SD/p)^2$ | | | 0.11 |
| Sample Size required (Usage) | | | 100 |

Quality of Water Treated:

| WQT | | | |
|-----------------------------------------------------|-----------------------------------------------------------------------|-----------------------------------|----------------------------|
| Sampling Frame | Total Beneficiary premises associated with WPPs (Sampling Frame Size) | expected water quality (Fraction) | Calculated Sample Size (n) |
| Project Plant | 38112 | 0.90 | 100 |
| 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 |

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 monitoring questionnaire.

The Monitoring 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 | | WQT | |
|---------------------------|----------|---------------------------|----------|
| Sampling Constants | Values | Sampling Constants | Values |
| Monitoring period start | 9-Nov-22 | Monitoring period start | 9-Nov-22 |
| Monitoring period end | 8-Nov-23 | Monitoring period end | 8-Nov-23 |
| Confidence (%) (90 or 95) | 95% | Confidence (%) (90 or 95) | 90% |
| Margin of Error (%) | 10% | Margin of Error (%) | 10% |
| Z value | 1.96 | Z value | 1.645 |

| Sl. No. | Parameter | Value | Reliability / precision |
|---------|--------------------------|-------|-------------------------|
| 1 | $U_{p,y}$ | 100% | 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 | | | |
| Sampling Frame | Total Beneficiary premises associated with WPPs (Sampling Frame Size) | Monitored Sample Size (n) | Monitored Usage rate(%) |
| Project Plant | 38112 | 153 | 100% |
| Reliability Check | | | |
| Samples Monitored | | | 153 |
| Standard Error | | | 0.00% |
| Relative precision (Margin of error) | | | 0.00% |
| Result | | | Ok, acceptable |
| Lower Bound confidence value | | | not applicable |

| WQT | | | |
|--------------------------------------|-----------------------------------------------------------------------|---------------------------|-------------------------|
| Monitoring Results | | | |
| Sampling Frame | Total Beneficiary premises associated with WPPs (Sampling Frame Size) | Monitored Sample Size (n) | Monitored WQT result(%) |
| Project Plant | 38112 | 123 | 100% |
| Reliability Check | | | |
| Samples Monitored | | | 123 |
| 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. The random numbers were generated 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 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 |
|-----|--------------|-------------------|
| 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:

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

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 tCO₂e
- $B_{b,y}$: 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)
- $EF_{b,fuel,CO2}$: CO₂ emissions factor of the fuel that it substituted or reduced. 112 tCO₂/TJ for Wood/Wood waste, or the IPCC default value of the relevant fuel
- $EF_{b,fuel,nonCO2}$: Non-CO₂ emissions factor of the fuel that is substituted or reduced. 9.46 tCO₂/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):

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

Where,

- $N_{p,y}$: Number of person-days consuming water supplied by project scenario p through year y ($\sum_{i=1}^n \text{Number of person serviced by system } i * 346.75$).
- $Q_{p,y,capped}$: 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 | 247,561 |

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 | 100% |

⁵ This is considering full year (with 5% discount for maintenance). In case of monitoring period shorter than a year, this shall be pro-rated.

| 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 | 1121.03 |

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

$B_{p,y}$ = 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 | 247,561 | 0 | 247,561 |
| 15 | Life on Land | 0 | 1121.03 | 1121.03 |
| 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 | 100% | 100% |
| 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 | 590,307 | 247,561 |
| 15 | 1230.78 | 1121.03 |
| 8 | 300(Unit: Number (of employments provided/year)) | 160 |
| 8 | 20(Number of trainings provided (filtration plant maintenance)) | 9 |
| 6 | 100% | 100% |
| 4 | 200 | 281 |

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.

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 period of 09/11/2022 to 08/11/2023

For Ex-ante ERs

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

= 590,307*(365/365)

= 590,307

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

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:

| 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 (mandatory) / Expression Book | 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

>>

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 | <u>Rohit Lohia</u> |

Revision History

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