Gold Standard for the Global Goals

TEMPLATE

MONITORING REPORT

PUBLICATION DATE **14.10.2020**

VERSION **v. 1.1**

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

This document contains the following Sections

Key Project Information
SECTION A - Description of project
SECTION B - Implementation of project
SECTION C - Description of monitoring system applied by the project
SECTION D - Data and parameters
SECTION E - Calculation of SDG Impacts
SECTION F - Safeguards Reporting
SECTION G - Stakeholder inputs and legal disputes

KEY PROJECT INFORMATION

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

GS ID of Programme	GS 3964
Title of Programme	Native Energy Hydraid BioSand Water Filter Programme South East Asia (GS 3698)
Version of POA-DD applicable to this monitoring report	Version 04
Name and GS ID of fully Validated CPA/VPAs (i.e. non compliance check)	Native Energy Clean Water Programme South East Asia: NE_VPA 01_IND; GS 3964

Key Project Information

GS ID (s) of Project (s)	GS 3964
Title of the project (s) covered by monitoring report	Native Energy Clean Water Programme South East Asia: NE_VPA 01_IND
Version number of the PDD/VPA-DD (s) applicable to this monitoring report	Version 05
Version number of the monitoring report	Version 03
Completion date of the monitoring report	08/08/2023
Date of project design certification	03/06/2019
Date of Last Annual Report	04/01/2021
Monitoring period number	2nd & 3rd monitoring period
Duration of this monitoring period	01/05/2020 – 30/04/2021 & 01/05/2021 – 30/04/2022
Project Representative	Native Energy
Host Country	The Republic of India
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 1.0[1]
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
SDG 13: climate action	Emission reductions		
	01/05/2020 –30/04/2021	7,144	VERs
	01/05/2021 –30/04/2022	7,142	VERs
	Volume of water consumed.	(8.41)7	l/p/d
	Number of people trained in water filtration technology	23	People
SDG 3: Ensure healthy lives and promote well-being for all at all ages	Reduction in water borne diseases.	100	Percentage
	Reduction in smoke levels,		
	Reduction in coughing and	100	Percentage
	Reduction in itchy eyes.	100	Percentage
	Number of filters sold	100	Percentage
		726	Filters
SDG 6: Ensure availability and	Number of People trained on water,	23	people

[1] https://www.goldstandard.org/resources/energy-requirements

sustainable management of water and sanitation for all	hygiene and sanitation management		
SDG 8: Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all	Income generation	Confidential please *refer: GS 3964 Employment records_NYDHEE_Confidential*	INRs
	Number of people employed	7	People
	Number of women and youths employed by the project	2 women and 2 youths	People

Table 2 – Product Vintages

Amount Achieved MP2 (01/05/2020-30/04/2021)		
Start Dates	**End Dates**	**VERs (tCO_2e)**
01/05/2020	31/12/2020	4,796
01/01/2021	30/04/2021	2,348
TOTAL		7,144

Amount Achieved MP3 (01/05/2021-30/04/2022)		
Start Dates	**End Dates**	**VERs (tCO_2e)**
01/05/2021	31/12/2021	4,794
01/01/2022	30/04/2022	2,348
TOTAL		7,142

SECTION A. DESCRIPTION OF PROJECT

A.1. General description of project

>> NE – VPA 01 – IND herein after referred to as the project activity, is centered on the introduction of zero energy water filters for point of use application to replace the use of wood fuels for water treatment and in the alternative alleviate situations of suppressed demand where raw water is consumed but would have been boiled in the absence of both the project activity and prevailing energy poverty barriers. In so doing the project activity is designed so as to abate greenhouse gas emissions, Indoor air pollution as well as to reduce the pressure on non-renewable biomass resources within the project boundary.

The project activity seeks to distribute approximately 1,629 filters in the specific districts in Jharkhand and West Bengal states in the Republic of India as per the registered VPA-DD. These districts are East of Medinipur, North 24 Parganas, South 24 Parganas in West Bengal state and Ranchi, Ghumla and Khunti districts in Jharkhand state. The project qualifies as sectoral Scope 03, Type III project activity. As a gold standard micro scale project activity, the VPA shall generate greenhouse gas emissions 9,784 tCO2e per annum average for the crediting period as per the registered VPA-DD.

(a) Implementation Status of the Project:
The project activity sold the first filter on 13/01/2018. Up to the time of this verification, a total of 726 filters had been sold all which are fully operational. All the filters are installed within the states of West Bengal and Jharkhand in India which is the project boundary and are thus eligible for crediting. Below is the project milestones achieved to this monitoring period.

1. Start date of the project is 13/01/2018, which is the date when the first filter sale was made.
2. The 1st LSC meeting was conducted on 05/12/2014 and the additional LSC meeting was held on 08/12/2014 during the design change process.
3. Registration Date –03/06/2019
4. This is the 2nd and 3rd periodic monitoring period, and which is covering 01/05/2020 to 30/04/2021 and 01/05/2021 to 30/04/2022.
6. Monitoring surveys and Water Quality tests were conducted between 10/03/2022- 31/03/2022.

7. WCFT is conducted biannually therefore the results used in this monitoring period is the same as the ones used in the previous monitoring period which were conducted between 27/02/2020 to 17/02/2021.

(b) Total GHG emission Reductions or net anthropogenic GHG removals by sinks achieved in this monitoring period.

The total GHG emission reductions achieved in this monitoring period is 13,078 covering the period between 01/05/2020 to 30/04/2021 -7,144 tCO_2e and between 01/05/2021 to 30/04/2022 - 7,142 tCO_2e. All the VERS are not exceeding the 10,000 maximum VERs as per the micro-scale requirement both per Monitoring period as well as per vintage years. See the table below of VERs distribution per calenda Year.

MP 2 (01/05/2020-30/04/2021		
Start Date	End Date	VERs Achieved
01/05/2020	31/12/2020	4,796
01/01/2021	30/04/2021	2,348
Total		**7,144 tCO_2e**

MP 3 (01/05/2021-30/04/2022		
Start Date	End Date	VERs Achieved
01/05/2021	31/12/2021	4,794
01/01/2022	30/04/2022	2,348
Total		**7,142 tCO_2e**

A.2. Location of project

>> The VPA will be implemented in the states of West Bengal and Jharkhand, Districts of Ranchi, Khuni, Gumla, Tamluk, North 24 Parganas and South 24 Parganas regions of the Republic of India as shown in the co-ordinates below.

State	District	Coordinates
Jharkhand	Ranchi	23.3500° N, 85.3300° E
	Khunti	23.0140° N, 85.2724° E
	Gumla	23.0000° N, 84.5000° E
West Bengal	Tamluk	22.3000° N, 87.9200° E
	North 24 Parganas	22.1300° N, 88.5000° E

	South 24 Parganas	22.5300° N, 88.3300° E

Figure 1: Map of India highlighting project boundary.

A.3. Reference of applied methodology

>> The project is eligible under the GS methodology: Technologies and Practices to Displace Decentralized Thermal Energy Consumption 2011[2], Version 1.0.

[2] https://www.goldstandard.org/resources/energy-requirements

Other Gold Standard tools and annexes included in the project development include:

1. Guidelines for carrying out usage surveys for projects implementing household water filtration technologies 3

A.4. Crediting period of project

>> The fixed 10-year crediting period started on 01/05/2019 and will end on 30/04/2029. The breakdown of this has been provided below:

MR 1 –01/05/2019 – 30/04/2020
MR 2 – 01/05/2020 – 30/04/2021
MR 3 – 01/05/2021 – 30/04/2022
MR 4 – 01/05/2022 – 30/04/2023
MR 5 – 01/05/2023 – 30/04/2024
MR 6 – 01/05/2024 – 30/04/2025
MR 7 – 01/05/2025 – 30/04/2026
MR 8 – 01/05/2026 – 30/04/2027
MR 9- 01/05/2027 – 30/04/2028
MR 10- 01/05/2028 – 30/04/2029

[3] https://www.goldstandard.org/wp-content/uploads/2011/09/Rule-Update-Guidelines-for-carrying-out-water-usage-surveys.pdf

SECTION B. IMPLEMENTATION OF PROJECT

B.1. Description of implemented project

>> The project activity sold the first filter on 13/01/2018. As of 12/12/2018, a total of 726 filters had been sold all which are fully operational. All the filters are installed within the states of West Bengal and Jharkhand in India which is the project boundary and are thus eligible for crediting. **The PP has ensured that the emission reductions for this monitoring period doesn't exceed 10,000 tCO2e, which is the maximum amount credible in a year for microscale projects**. Each filter distributed under NE_VPA 01_IND has a tag/sticker containing a unique number which identifies the filter and can be tracked against other data such as the end username and location. Records of sales were recorded in electronic format by the VPA operator as well as the Carbon Asset developer. At point of the installation of the filter, households were required to relinquish rights to carbon credits by signing VER transfer agreements.

Description of the Hydraid BioSand Water Filter

The Hydraid BioSand Water Filter is an effective and sustainable point of use water filtration system that provides a family of about 8 – 10 persons in developing countries with enough safe water to meet all their daily domestic water consumption needs. The water consumption per day of an adult as per WHO is 7 liters therefore with the hydraid Bio-sand Filtering Capacity of 47 liters/hour with intermittent use as per specification see below and the support document[4] provided this water is enough to cater for about 8-10 persons which is inclusive of children.

The project technology is based on patented technology and diligent research. Native Energy, the filter distributor, possesses a global network of partners for installation, education, maintenance and support and has the potential to bring the same health gains seen in US cities in the early 20th century to individuals, families and communities in developing countries, with the potential to save a million or more lives annually.

[4]Ref: Hydraid Product Features

The water filter consists of enclosed layers of sand, gravel and a biological surface layer that consumes pathogens to clean water. It has no moving parts and is powered by gravity. The water filter has a conservative lifetime of 10 years.

The Hydraid unit offers an affordable, efficient, and easy-to-use alternative for water purification within the areas in which the project activity is located.

Figure 2: Hydraid BioSand filter and safe water collection pot

Technical Specifications of the Bio-sand Filter[4].

• Dimensions: Height - .77m (30.5”), diameter - .42m (16.5”)
• Weight: Empty - 3.6kg (8 lbs.), Filled – 63.5kg (140 lbs.)
• Construction: UV resistant, medical-grade plastic, FDA approved materials
• Intended Use: Point-of-use in homes
• Easy Installation: About 30 minutes (level and fi ll with sand)
• Prep Time: Surface biological layer forms naturally in about 2 weeks
• Power Source: Gravity (no electricity or plumbing required)
• Convenient: Operates on demand
• Filtering Capacity: 47 liters/hour with intermittent use

• Family Size: Serves the needs of 8-10 people daily
• Low Maintenance: Cleaned in place by user, no parts to replace, instructions provided
• Average life expectancy is 8 - 10 years *
• No moving parts
• Uses pre-bagged filter media
• Limited one-year warranty
• Patented technology developed by Dr. David Manz based on the traditional slow sand filter process

The benefits of the Bio-Sand Water Filter include:
• Proven removal of parasites, viruses and bacteria;
• High user acceptability, due to ease of use and minimal effect on water taste;
• Includes materials that are locally sourced;
• One-time installation with minimal maintenance needed; and
• Long life (10+ years).

NYDHEE is the local implementer, dealing in the local management of the project. NYDHEE employs and trains personnel who are responsible for installation of the filters, conducting follow-up on end users and undertaking monitoring exercises.

B.1.1. Forward Action Requests

>>

FAR 1:

The PP must survey on how many times the users fill in their filter per day for cross-checking with the total water demand.

During this monitoring period the PP included a question under the usage survey to determine the number of times the households refill the filter. The results are as shown below "*ref Er Calculations and Monitoring Survey summary_27.06.2022 Tab;Usage Survey*":

FAR Question on Filter refill per day	Number	Percentage
Thrice a day	35	33%
Ones a day	19	18%
Twice a day	51	49%
Total	**105**	**100%**

The result of the survey shows that all the households refilled the filters daily to meet their daily water demand thus making all the households' to be users of the filters.

FAR 2:

The PP must check the double counting issue with the owners of filters ID 10001880, 10001334, 10001701, 10002572, 10001657, 10001678. If there is over claimed of emission reduction, the total ER of next verification must be deducted accordingly.

The PP has given the following clarification on the above FAR:

1. In the case of **ID 10001880** and **ID 10001334** Raju kujur, The PP clarified that two persons/households are from different villages with different filter IDs but their address had been wrongly mentioned in the survey data sheet. Raju Kujur having filter **ID 10001880** is from Village- Budri, Block- Namkum, District Ranch while Raju kujur having filter **ID 10001334** is from Village- Deshwali, Block-Chanho,Dist- Ranchi thus, the correction has been made in data sheet.

2. In the case of Nasima Bibi - **ID 10001701** and Nasima Bibi - **ID 10002572** the PP clarified that both people/households are different, having the same name and belonging to the same village. Filter ID for both people/households are different.

3. In the case of Sanjay Oraon- **ID 10001657** and Sanjay Oraon- **ID 10001678**; the PP clarified that both people/households are different, having the same name and belonging to the same village and address with different Filter IDs for both people/households. They do not have any contact number thus, the contact numbers mentioned in the data sheet belong to the person who installed the filters.

The conclusion on this FAR is that only one correction has been made in TSR - Address of (**Raju Kujur having filter ID 10001880**) as Village- Budri, Block- Namkum, District Ranchi. Therefore, no issue of double counting and overclaiming of emissions reductions.

B.2. Post-Design Certification changes

>>

B.2.1. Temporary deviations from the approved Monitoring & Reporting Plan, methodology or standardized baseline

>>The PP requested for approval to postpone the monitoring activities for the project for the monitoring period covering from 01/05/2020 to 30/04/2021(Approved), and

PD to apply credible, conservative assumptions or discount factors to ensure that GHG emission reductions will not be overestimated as a result of the postponement of Monitoring (*ref: GS 3964 T-V4.0-Deviation-Request-Form SC 22*). During the annual survey, actual data for the monitored parameters was taken and used for the calculation of emission reductions. This ensures that there was no issue of over estimation of the claimed Emission Reductions. Additionally, an annual report was done and submitted on 04/01/*2021 (Ref: GS 3964 T-PerfCert_V1.2-Annual-Report (1)). The annual report showed continuous monitoring of the project parameters.*
Further, the PP would like to highlight there were delays in getting the water testing kits to the project implementer thus field surveys delayed and commenced on 10/03/2022 to 31/03/2022. Due to the delays, PP decided to extend the monitoring period covering 01/05/2020 – 30/04/2021 & 01/05/2021 – 30/04/2022 as the data collected is applicable for the two periods.
The previous water quality test for the period 2019-2020 was conducted between 01/03/2020-15/02/2021 while the WQT for the period 2020-2022 was conducted between 10/03/2022-31/03/2022 therefore the monitoring frequency of annual was met as the Testing kit delayed to arrive to the project implementor leading to a delay of only 23 days (15/02/2021-10/03/2022) from when the WQT surveys were supposed to commence.
Below is a summary of recommendations given and how they were met;

1. WATER QUALITY TEST:

While all other monitoring parameters can be postponed, Project Developer shall carry remote surveys to assess the water quality of the units distributed. Project Developer shall include the following qualitative criteria for Water Quality–

- Reported incidence of water borne disease in child/members in last 30 days
- User satisfaction
- Level of hygiene including but limited to Hand washing & Safe storage practices being followed.

The above criteria has been included in the survey questionnaires and the results recorded If for a particular household/school, the answer to any of the above criteria indicates that the treated water may not be fit for consumption, the household/schools has been considered not providing safe drinking water and failing the water quality test. For example, if any incidence of water borne disease is reported in last 30 days the

water quality should be assumed as not meeting the requirements and the emission reductions shall be discounted accordingly.

Project Developer shall carry out a Water Quality Test as per the approved monitoring plan within three months of end of the interim measure validity date or earlier, where possible.

The monitoring frequency for WQT has been meet as per the table below.

MP 2019-2020	WQT Start Date	WQT end date
	01/03/2020	15/02/2021
MP 2020-2022	WQT Start Date	WQT end date
	10/03/2022	31/03/2022

All the above requirements were included in the surveys. Below is a summary of the findings.

	Parameter	Results	**Percentage of samples**	**Explanation of results**	Analysis
Incidence of water borne diseases	Yes	0	0%	No household reported water borne diseases	Non-Users
	No	105	100%		Users
	Total	**105**	**100%**		
Level of satisfaction	Highly satisfied	43	41%	43 House households were Highly Satsfied, While 62 households were Moderately satisfied with the use of the filter thus 100% considered users.	100% Usage
	Moderately satisfied	62	59%		
	Not satisfied	0			Non-Users
	Total	105	100%		
Hygiene practices	Yes	105	100%	All households were practicing hygiene practices	Users
	No	0	0%		Non-Users

	Total	**105**	**100%**		
Presence or absence of E.Coli	Present	0	0%	No households had Ecoli in their filtered water hence considered as users	Non-User
	Absent	105	100%		Users
	Total	**105**	**100%**		
Users/ non-users	Users	105	100%	This includes households who have; not experienced any water borne diseases, those highly satisfied and moderately satisfied, those practising hygiene practices.	
	Non-Users	0	0%	This includes households who have; experienced water borne diseases, reported not satisfied with the filter and do not practice hygiene practices.	
	Total	**105**	**100%**		

B.2.2. Corrections

>> None

B.2.3. Changes to start date of crediting period.

>> No Changes

B.2.4. Permanent changes from the Design Certified monitoring plan, applied methodology or applied standardized baseline.

>> No changes made.

B.2.5. Changes to project design of approved project

>>No changes

SECTION C. DESCRIPTION OF MONITORING SYSTEM APPLIED BY THE PROJECT

>> The monitoring plan in this project activity includes continuous and periodic updates of the following records:

a) Total sales Record
b) VPA Database
c) Ongoing Monitoring Survey.

a) Total Sales Record

An accurate and complete sales record has been maintained by the project proponent and backed up electronically by ClimateCare Limited, the carbon asset development consultant. As illustrated in the Total Sales record used in this monitoring exercise, which is attached as an appendix to this monitoring report, it is developed in accordance with the selected baseline and monitoring methodology which is required the following data:

1) Date of sale
2) Geographic area of sale
3) Model/type of project technology sold
4) Quantity of project technologies sold
5) Name and telephone number and address:
6) Mode of use: domestic, commercial or other:
7) Unique Filter serial number

b) Project Database

The Project Database is a combination of data from the Total Sales Record and on-going Monitoring Surveys. It is divided into Baseline Emission Reductions and Project Emission Reductions, based on the results of the ongoing monitoring studies for the Project Scenario. This is done so that emission reductions can be calculated appropriately section by section. Technologies aged beyond their useful lifetime or no longer in use, as established in the usage survey, are removed from the Project Database and no longer credited.

1. On-going Monitoring Studies

The monitoring exercise was a combination of the usage survey and the monitoring survey. The Water consumption field test (WCFT) is biennially conducted and was

conducted in the previous monitoring period therefore the same results has been used to calculate the ERs for this monitoring period. A total of 105 households were randomly selected (please refer to the sampling plan detailed under section D4 of this MR) with each vintage year having more than 30 households selected in line with the GS guidelines.

a) Monitoring Survey- Completed annually, beginning 1 year after project registration. It is conducted to investigate changes over time in the Project Scenario by surveying end users with project technologies on an annual basis. The project participant conducted the annual monitoring surveys which were used to investigate annual changes in the project scenario. The monitoring period in this exercise is from 01/05/2020 to 30/04/2021 & 01/05/2021 to 30/04/2022. The parameters assessed in these surveys include:

i. Usage rate in project scenario

ii. Quantity of safe water in litres consumed in the project scenario p and supplied by project technology per person per day.

iii. Quality of the treated water

iv. The raw or unsafe water that is still boiled after installation of the water treatment technology

v. Quantity of safe (treated, or from safe supply) water boiled in the project scenario p, after installation of project technology.

b) Usage Survey- Completed annually, or more frequently, and in all cases on time for any request of issuance. The usage survey in this monitoring exercise provides a single usage parameter that is weighted based on drop off rates that are representative of the age distribution for project technologies in the total sales record. The usage parameter in the usage survey shall be based on users who completely abandon use of the filter and those that do not properly use or maintain the filter which could affect the quality of water treated. This survey was carried out using closed questionnaires and spot checks. The usage survey in this monitoring period was held between 05/03/2022-30/03/2022. All the 105 (100%) samples were considered as users. Results are as follows;

Usage Survey Analysis	
Users	105
Non-users	0
Sample Size	105
Usage Rate (Up,y)	100%

c) Project Field Test Update- This is completed every other year. The project technology will not have any material changes throughout the crediting period and given the fact that it is a zero-energy technology, the PFT will focus primarily on an age test, water quality test and details of increased sales within the crediting period.

d) Water Quality Test - The PP collected samples from each household which had been selected as a sample unit from technology specific sampling frame. Each sample of filtered water was tested for presence or absence of E. coli using the Aquagenx CBT kit. At a central field laboratory, all the samples were tested, and results recorded for each individual sample. This ensured that the PP's water quality testing was representative and robust. Field laboratory testing was selected because it allows for near immediate testing without contamination or any other distortion from the transportation to laboratories. The use of field laboratory tests is approved in the methodology and is a commonly accepted international approach. PP also included qualitative questions on the survey questionnaire to further investigate water quality. Results were as follows;

	Parameter	Results	**Percentage of samples**	**Explanation of results**	Analysis
Incidence of water borne diseases	Yes	0	0%	No household reported water borne diseases	Non-Users
	No	105	100%		Users
	Total	**105**	**100%**		
Level of satisfaction	Highly satisfied	43	41%	43 House households were Highly Satsfied, While 62 households were Moderately	100% Usage
	Moderately satisfied	62	59%		

				satisfied with the use of the filter thus 100% considered users.	
	Not satisfied	0			Non-Users
	Total	105	100%		
Hygiene practices	Yes	105	100%	All households were practicing hygiene practices	Users
	No	0	0%		Non-Users
	Total	**105**	**100%**		
Presence or absence of E.Coli	Present	0	0%	No households had Ecoli in their filtered water hence considered as users	Non-User
	Absent	105	100%		Users
	Total	**105**	**100%**		
Users/ non-users	Users	105	100%	This includes households who have; not experienced any water borne diseases, those highly satisfied and moderately satisfied, those practising hygiene practices.	
	Non-Users	0	0%	This includes households who have; experienced water borne diseases, reported not satisfied with the filter and do not practice hygiene practices.	
	Total	**105**	**100%**		

Sample water quality test photo results for filter number 10001337 and Filter Number 10001528.

e) Leakage Assessment - As demonstrated in section B.3 of the PDD, there are no perceived leakage risks for this parameter.

The core of the methodology prescribes possible parameters that should be evaluated for leakage emissions as below;

Traditional fuel wood consumption was mainly restricted to the domestic setting it is highly unlikely that fuel wood consumption in regions outside the target area will increase.

i) The displaced baseline technologies are reused outside the project boundary in placeof lower emitting technology or in a manner suggesting more usage than would have occurred in the absence of the project.

Traditional fuel wood consumption was mainly restricted to the domestic setting it is highly unlikely that fuel wood consumption in regions outside the target area will increase. The project activity will not displace the baseline technology but rather, it seeks to displace the baseline practice of boiling water. Therefore, there is minimal risk of the baseline technologies being reused outside the project boundary.

ii) **The non-renewable biomass or fossil fuels saved under the project activity are used by non- project users who previously used lower emitting energy sources.**

Fuel wood previously used was sourced or obtained individually and domestic fuel wood consumption is a function of market forces of demand and supply. There is no indication that the fuel wood consumption would increase amongst non-project users who previously relied on lower-emitting sources.

iii) The project significantly impacts the NRB fraction within an area where other CDM or VER project activities account for NRB fraction in their baseline scenario.

This is a micro-scale VPA and hence have minimal aggregate effect on the total NRB fraction in respective countries in which the VPAs are to be implemented with regards to other CDM or VER project activities baseline scenario.

iv) The project population compensates for loss of the space heating effect of inefficient technology by adopting some other form of heating or by retaining some use of inefficient technology.

Not applicable to the project activity.

v) By virtue of promotion and marketing of a new technology with high efficiency, the project stimulates substitution within households who commonly used a technology with relatively lower emissions, in cases where such a trend is not eligible as an evolving baseline.

The Hydraid BioSand Water Filter are zero energy technologies that provides an alternative to boiling water using fuel wood. Most of the households targeted boiled water using fuel wood in the baseline scenario. There is no envisioned scenario where these consumers will substitute fuel wood to a technology with lower emissions i.e even if households who in the baseline were using treatment chemicals opt to use the filter, there is no risk of emissions.

Thus Leakage = 0

As demonstrated in the registered VPA DD as well as this monitoring report, there are no perceived leakage risks for this parameter.

f) Non-Renewable Biomass Assessment Update - The NRB assessment update will not occur for the project given its fixed baseline and the fact that the project scale is not large enough to affect the national NRB fraction.

g) Registration with other Carbon standards - The project is not registered with any other carbon standard and hence there is no likelihood that double counting would occur. Additionally, each filter is provided with a unique serial number which gives a distinction on the end users to ensures there is no double counting.

h) Hygiene Campaigns –During the monitoring survey exercise, the enumerators sensitized the importance of maintaining hygiene to all the 105 households that were selected on the sample frame.

g) Project survey – This refers to the scenario before the households bought the water filter, i.e., the baseline scenario. PP asked the relevant questions to assess the source of water, water treatment options that the households used and the type of fuel that they used before purchasing the filter.

The results of the project survey are as follows:

		Number	**Percentage**
Fuel used in the baseline	Firewood	69	66%
	Charcoal	27	26%
	Dried leave	3	3%
	Dried dung of Animal	3	3%
	Charcoal+LPG	3	3%
	Total	**105**	**100%**
Water Purification in the baseline	Boiling	84	80%
	Treatment Chemicals	0	0%
	None/ Raw Water	21	20%
	Total	**105**	**100%**
Supressed Demand	Would Have Boiled	21	100%
	Would Have Used Treatment Chemicals	0	0%
	Total	**21**	**100%**
	Piped water	0	0%

water sources	Local Spring, River or Lake	15	14%
	Private or Community Well	61	58%
	Hand Pump	29	28%
	Total	**105**	**100%**
Barriers to Water Purification	Too Expensive	13	62%
	Lack of awareness	7	33%
	Not satisfied with available methods	1	5%
	Total	**21**	**100%**

Water Consumption Field Test Protocol Report:

The WCFT took place over a 3-day period for each household with functional water filters. The WCFT exercise is conducted biennially hence the results used for this monitoring period were for the WCFT exercise for the previous monitoring period done between dates 27/02/2020 to 17/02/2021. The PP limited the water measured to the water used for cooking, personal hygiene (washing hands) and drinking only as per the Gold Standard requirements. The households were instructed to keep this water measured separate from water used for other uses to maintain the integrity of the exercise.

The enumerators used calibrated containers with different capacities to measure the volume of water. The capacities ranged between 5 litres to 20 litres. to measure the volume of water. The water is measured before pouring into the buckets that the households use on their daily routine. Water from the bucket is the poured into the filter.

Day 1: Surveys and Introduction

The PP executed the Usage surveys, SD assessments assessment and other non-field exercise surveys for the same sampling frame as the WCFT per technology. The PP then informed households of the three-day WCFT exercise informing them to purify water as they normally do year-round. Households told the PP on the time which they would be purifying water every day, and specifically for the coming 3 days. The time reported was recorded to allow enumerators to go to households the following day before raw water is treated.

Day 2 – 4: WCFT exercise

Based on the schedule of respective households' water treatment, enumerators conducted a volumetric assessment for raw water before it is added to the Hydraid water filter. The enumerator recorded the value of raw water to be filtered prior to

filtration. This assessment was conducted using volumetric container of a known volume. Raw water was measured prior to it either being filtered or boiled. The mean value of the total raw water (the total water filtered per day aggregated over a three-day period) was used to determine parameter Qp,y per household. This parameter was then aggregated (after elimination of outliers) to determine the value used to calculate Emission Reductions for the whole project per technology. The PP has demonstrated the determination of safe water consumed per person per day that is provided from the filtration of water using the project technology. The parameter Qp,y has been determined to be 8.41 litres per person per day, which has been capped at 7litres per person per day as recommended by the WHO. This parameter is calculated biennially thus the results used are the same as the ones used in the last monitoring period.

Households that boil water to buffer their safe water supply were also considered. The raw water to be boiled was to be measured just as explained above, only in this case, the water would be measured prior to it being poured into the boiling pot. None of the households surveyed indicated that they boil additional raw water. Parameter Qp,raw,boil was therefore found to be 0 litres per person per day.

The PP also sought to find out households that boil water that has been filtered via the Hydraid water filter. From the findings, there were no households that reported to have this approach to water purification. Therefore, parameter Qp, clean, boil has been found to be 0 litres per person per day.

The WCFT recorded on a day-to-day basis - the number of people living in the household. This helped in the determination of Np,y. The PP found that there was an average of 6.3 people per person per day using water from the Hydraid water filters. The WCFT used questionnaires incorporated into the monitoring surveys to quantify the parameters listed above.

No tests were conducted over the weekends or on public holidays. This is a conservative approach chosen to eliminate the likelihood of recording abnormally high-water consumption behavior common to weekends (children out of school, no work for some, etc.) and/or public holidays.

SECTION D. DATA AND PARAMETERS

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

>>

Relevant SDG Indicator	**SDG 13: Climate Action** **Target 13.1: Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries**
Data/parameter:	**EFb,fuel,CO2**
Unit	tCO2/TJ
Description	CO2 emission factor of the wood fuel
Source of data	2006 IPCC Default emission factors[5]
Value(s) applied)	112
Choice of data or measurement methods and procedures	IPCC default values provide an accurate and conservative estimate of emissions reduction from various fuel sources.
Purpose of data	CO2 emission factor of the wood fuel
Additional comments	N/A

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

Relevant SDG Indicator	**SDG 13: Climate Action** **Target 13.1: Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries**
Data/parameter	**EFb, fuel, CH4**
Unit	tCO2/TJ
Description	CH4 emission factor of the wood fuel
Source of data	2006 IPCC Default emission factors
Value(s) applied	0.03
Choice of data or Measurement methods and procedures	IPCC default values provide an accurate and conservative estimate of emissions reduction from various fuel sources.
Purpose of data	Calculation of CH4 emission factor of the wood fuel
Additional comment	N/A

Relevant SDG Indicator	**SDG 13: Climate Action** **Target 13.1: Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries**
Data/parameter	**EFb, fuel,N2O**
Unit	tCO2/TJ
Description	CO2 emission factor of the wood fuel
Source of data	2006 IPCC Default emission factors
Value(s) applied	0.004
Choice of data or Measurement methods and procedures	IPCC default values provide an accurate and conservative estimate of emissions reduction from various fuel sources.
Purpose of data	Determining CO2 emission factor of the wood fuel
Additional comment	N/A

Relevant SDG Indicator	**SDG 13: Climate Action** **Target 13.1: Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries**
Data/parameter	**f NRB,j,**
Unit	Fraction
Description	Non-Renewable Biomass
Source of data	Literature Review UNFCC approved Values[6]
Value(s) applied	0.91
Choice of data or Measurement methods and procedures	Baseline Survey
Purpose of data	Non-Renewable Biomass
Additional comment	N/A

Relevant SDG Indicator	**SDG 13: Climate Action** **Target 13.1: Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries**
Data/parameter	**Bp**
Unit	Tonnes
Description	Quantity of fuel consumed in project scenario p during the year y in tonnes
Source of data	Baseline Survey
Value(s) applied	0
Choice of data or Measurement methods and procedures	Assumed 100% displacement of fuel wood used for boiling water to make it safe for drinking
Purpose of data	Determining Quantity of fuel consumed in project scenario p during the year y in tonnes
Additional comment	N/A

[6] https://cdm.unfccc.int/DNA/fNRB/index.html

Relevant SDG Indicator	**SDG 6: Clean Water and Sanitation** **Target 6.1 : By 2030, achieve universal and equitable access to safe and affordable drinking water for all**
Data/parameter:	**Cj**
Unit	**Percentage**
Description	Expressed as a percentage, this is the portion of users of the project technology j or who in the baseline were already consuming safe water without boiling it
Source of data	Baseline Survey
Value(s) applied)	0.7%
Choice of data or measurement methods and procedures	This value represents the percentage of the population within the project boundary that consumed clean water without boiling it in the baseline scenario.
Purpose of data	Calculation of baseline and project emissions
Additional comments	N/A

D.2. Data and parameters monitored

>>

Relevant SDG Indicator	SDG 3: Good health and well being Target 3.3: By 2030, end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, water-borne diseases and other communicable diseases
Data / Parameter:	Up, y
Unit:	Percentage
Description:	Usage rate in project scenario p during year y
Measured/ Calculated / Default:	Calculated
Source of data:	GS 3964 Monitoring Survey Summary Confidential 2020-2022, Tab: Usage Survey
Value(s) of monitored parameter:	100%
Monitoring equipment:	None
Measuring/ Reading/ Recording frequency:	Annually

Calculation method (if applicable):	The PP has provided excel based calculations that demonstrate the calculation of a single usage parameter. The PP determined the usage parameter by eliminating the non-users of the project technology from the sample frame and extrapolating to the entire Total sales record population.
QA/QC procedures:	The guidance questions in the usage survey section in the monitoring survey template clearly determined the operational and non-operational filters in the project scenario.
Purpose of data:	Calculations of total Emission reductions
Additional comment:	105 filters from the sampled households were found to be users of the project technology.

Relevant SDG Indicator	SDG 6: Clean water and sanitation Target 6.1: By 2030, achieve universal and equitable access to safe and affordable drinking water for all
Data / Parameter:	Q, p,y
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
Measured/Calculated Default:	Calculated
Source of data:	GS 3964 Monitoring Survey Summary Confidential 2020-2022, Tab; QP,y biennial 2019 2020 results.
Value(s) of monitored parameter:	7.0 litres per person per day (8.41)
Monitoring equipment:	Calibrated measuring containers
Measuring/ Reading/Recording frequency:	Biennially
Calculation method (if applicable):	This was done in accordance to the methodological guidance of the Water consumption field test. The PP conducted a 3-day assessment of water consumed from the filter. The PP only measured water that was to be used for cooking, drinking and personal hygiene as stipulated in the Gold Standard guidelines. The PP used a calibrated containers to measure the volume of water. The water is measured before pouring into the buckets that the households use on their daily routine. Water from the bucket is the poured into the filter to determine how much water the household would consume per day. The average volume over the 3-day period was used as the conservative estimate of water consumed from the filter per household per day

QA/QC procedures:	Enumerators went through training to ensure they conducted the WCFT in the most accurate way. They were also using calibrated measuring containers to determine how much water a household would use in a day from the Hydraid filter.
Purpose of data:	Calculation of baseline emissions
Additional comment:	This parameter is monitored biennially therefore the results used in this period are the same as the ones used in the last monitoring period. The Qp,y was calculated at 8.41 but the PP capped this at 7.0 as recommended by WHO.

Relevant SDG Indicator	SDG 6: Clean water and sanitation Target 6.1: By 2030, achieve universal and equitable access to safe and affordable drinking water for all
Data / Parameter:	Quality of Treated Water
Unit:	MPN/100ml
Description:	Quality of filtered water
Measured/Calculated / Default:	Measured
Source of data:	GS 3964 Monitoring Survey Summary Confidential 2020-2022, Tab; Water Quality Testing.
Value(s) of monitored parameter:	Presence of E.coli = 0% Absence of E.Coli = 100%
Monitoring equipment:	Aquagenx Field test kits
Measuring/ Reading/Recording frequency:	Annually

Calculation method (if applicable):	Using Aquagenx toolkit instructional manual for using the CBT. Of the samples collected, 105 (100%) had 0 Ecoli Therefore, the only water which was considered safe was water with less than 0cfu/100ml. Each kit contains 50 Aquagenx powder growth medium packs and 50 100-mL Stand-Up Whirl-Pak Thio-Bags. The lot number and expiry date are printed at the back of the packaging with the growth medium. For the kits used during the monitoring period, the Lot number was 00026 expiring on 14/06/2023 as shown in the image below. 
QA/QC procedures:	The monitoring team undergoes extensive training of how to use the Aquagenx CBT.
Purpose of data:	Gold Standards Sustainable Development monitoring.
Additional comment:	The Aquagenx field test kits have been used to determine quality of safe water.

Relevant SDG Indicator	SDG 6: Clean water and sanitation Target 6.1: By 2030, achieve universal and equitable access to safe and affordable drinking water for all
Data / Parameter:	$Q_{p,rawboil,y}$
Unit:	Litres per person per day
Description:	The raw or unsafe water that is still boiled after installation of the water treatment technology.
Measured/Calculated / Default:	Calculated
Source of data:	GS 3964 Monitoring Survey Summary Confidential 2020-2022, Tab; WCFT biennial 2019 2020 results, Column I
Value(s) of monitored parameter:	0
Monitoring equipment:	3-day measurement using calibrated measuring containers.

Measuring/ Reading/Recording frequency:	Biennially
Calculation method (if applicable):	This was done in accordance to the methodological guidance of the Water consumption field test. The PP has provided the protocol followed in this monitoring report. The PP conducted a 3-day assessment of any raw water boiled. None of the households reported that they boil any raw water.
QA/QC procedures:	Measurements of water were based on calibrated containers
Purpose of data:	Calculation of baseline and project emissions.
Additional comment:	This is a biennially monitored parameter therefore the results used in this period are the same as the ones used in the last monitoring period

Relevant SDG Indicator	SDG 6: Clean water and sanitation Target 6.1: By 2030, achieve universal and equitable access to safe and affordable drinking water for all
Data / Parameter:	Qp,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
Measured/Calculated /Default:	Calculated
Source of data:	GS 3964 Monitoring Survey Summary Confidential 2020-2022, Tab; WCFT biennial 2019 2020 results, Column H
Value(s) of monitored parameter:	0
Monitoring equipment:	Monitoring surveys
Measuring/Reading/ Recording frequency:	Biennially
Calculation method (if applicable):	The PP had a question in the WCFT survey form seeking to know if the households boiled any water from the Hydraid filter. No Household interviewed boiled water from the Hydraid filter, and as such, the parameter value is 0.
QA/QC procedures:	Measurements of water would have been based on calibrated containers
Purpose of data:	Calculation of project emissions.
Additional comment:	This is a biennially monitored parameter therefore the results used in this period are the same as the ones used in the last monitoring period.

Relevant SDG Indicator	SDG 3: Good health and well being Target 3.3: By 2030, end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, water-borne diseases and other communicable diseases.
Data / Parameter:	Nj, y
Unit:	Person.days
Description:	Number of persons consuming water supplied by project scenario p through year y
Measured/ Calculated / Default:	Calculated
Source of data:	GS 3964 Er Calculations 2020-2022
Value(s) of monitored parameter:	2,299
Monitoring equipment:	Open ended question from the Monitoring surveys
Measuring/Reading/ Recording frequency:	Biennially
Calculation method (if applicable):	The date of installation of the filter is ascertained from the Total Sales record this is used to quantify the number of days in the crediting period within which the filter has been in use. The monitoring survey determined the number of persons per household. The two variables are multiplied to get the person.days.
QA/QC procedures:	Clear question in the monitoring survey that sought to find out the number of persons per household.
Purpose of data:	Calculation of project emissions.
Additional comment:	This is a biennially monitored parameter therefore the results used in this period are the same as the ones used in the last monitoring period.

Relevant SDG Indicator	SDG 13: Climate Action Target 13.3: Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning.
Data / Parameter:	Bby
Unit:	Tonnes
Description:	Quantity of wood fuel consumed in baseline scenario b during the year y in tons
Measured/Calculated / Default:	Calculated
Source of data:	GS 3964 Er Calculations 2020-2022

Value(s) of monitored parameter:	6.31820385
Monitoring equipment:	N/A
Measuring/ Reading/ Recording frequency:	Annually
Calculation method (if applicable):	The parameter is a function of the Cj factor, Npy, Wib,y , Qpy an Qp raw boil as shown in the equation below: Bby= (1-Cj)*Wib,y*Np,y*(Qpy+Qpraw,boil)
QA/QC procedures:	The variables are based on accurate monitored data as well as data fixed ex-ante. Additionally, the formula used is derived from the GS approved methodology "Technologies and practices to Displace Decentralized Thermal Energy Consumption"
Purpose of data:	Calculation of Baseline emissions.
Additional comment:	N/A

Relevant SDG Indicator	SDG 6: Ensure availability and sustainable management of water and sanitation for all Target 6.b.1: Support and strengthen the participation of local communities in improving water and sanitation management
Data / Parameter:	Number of People trained on water, hygiene and sanitation management
Unit:	Numeric figure
Description:	Describes the total number of people trained by the project on water, hygiene and sanitation improvement during the monitoring period.
Measured/Calculated / Default:	Calculated
Source of data:	GS 3964 Participant Training List 06-24-2022 _1,2,3_Confidential
Value(s) of monitored parameter:	23
Monitoring equipment:	Participants List
Measuring/Reading/Recording frequency:	Annually
Calculation method (if applicable):	N/A

QA/QC procedures:	3 trainings on water, hygiene and sanitation improvement were conducted in this monitoring period. A total of 23 participants were trained on relevant topics on water, hygiene and filter use best practices. Participants lists and Training records have been provided as a support document. A refresher training was held through Skype between ClimateCare, Native Energy and the monitoring team. The agenda was to provide support to the team on how to undertake the monitoring survey and water testing.
Purpose of data:	Gold Standard sustainable development monitoring
Additional comment:	The PP has provided the training records and Participants training lists as supporting evidence.

Relevant SDG Indicator	Goal 13: Take urgent action to combat climate change and its impacts Target 13.3: Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning
Data / Parameter:	Number of filters sold
Unit:	Numeric figure
Description:	Change in Energy use as monitored by the number of water filters sold.
Measured/Calculated / Default:	Calculated
Source of data:	GS 3964 TSR and Sample Frame, Tab; TSR
Value(s) of monitored parameter:	726 filters
Monitoring equipment:	N/A
Measuring/Reading/ Recording frequency:	Annually
Calculation method (if applicable):	N/A
QA/QC procedures:	A sales record is maintained for all filters distributed under this project to ensure accuracy of the records; at the time of installation an interview was conducted within the household of the installation to collect user characteristics. This information was entered into a database shortly after the sale is made and the filter installed and is maintained by Native Energy.
Purpose of data:	Gold Standard sustainable development monitoring

Additional comment:	A TSR has been provided to the GS as supporting document.

Relevant SDG Indicator	SDG 8: Decent Work and Economic growth Target 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.
Data / Parameter:	Income Generation
Unit:	Income generated
Description:	To assess the Income generated by employees enrolled in the project activity.
Measured/Calculated / Default:	Calculated
Source of data:	GS 3964 Employment Records_NYDHEE_Confidential
Value(s) of monitored parameter:	A total of 7 employees worked for the project between year 2020 and 2022. Income earned by each employee has been included.
Monitoring equipment:	Employment Records
Measuring/Reading/ Recording frequency:	Annually
Calculation method (if applicable):	N/A
QA/QC procedures:	Employment Records are kept electronically and updated frequently to ensure they are up to date.
Purpose of data:	Gold Standard sustainable development monitoring
Additional comment:	5 men and 2 women were employed by the project during this monitoring periods.

Relevant SDG Indicator	SDG 8: Decent Work and Economic growth Target 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.
Data / Parameter:	Number of people employed by the project
Unit:	Number of people
Description:	This parameter will be collected to indicate the project provides decent work for all men and women.

Measured/Calculated / Default:	Calculated
Source of data:	GS 3964 Employment Records_NYDHEE_Confidential
Value(s) of monitored parameter:	A total of 7 employees worked for the project between year 2020 and 2022. This constitutes 5 men and 2 women. Out of the 7 employees, 1 woman is considered as a youth (employees under the age of 29 years).
Monitoring equipment:	N/A
Measuring/Reading/ Recording frequency:	Annually
Calculation method (if applicable):	N/A
QA/QC procedures:	The employment records shall be up to date and backed up electronically
Purpose of data:	Gold Standards sustainable development monitoring
Additional comment:	In India, a youth is defined as any person between 15 to 29 years.[7]

Relevant SDG Indicator	SDG 3: Good health and wellbeing. Target 3.9: By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination
Data / Parameter:	Reduced number of water borne diseases (Skin rash, diarrhea, foot sore and parasites) and Indoor Air Pollution related diseases/infections (itchy eyes, eye problems and incidence of coughing)
Unit:	Percentage
Description:	Measurement of user perceived change in air quality between the baseline and project scenario: smoke levels, incidence of coughing, incidence of respiratory illness, and incidence of itchy eyes and reduced exposure to water Borne diseases
Measured/Calculated / Default:	Measured
Source of data:	GS 3964 Monitoring Survey Summary Confidential 2020-2022, Tab; Sustainable Development

[7] https://www.youthpolicy.org/factsheets/country/india/

Value(s) of monitored parameter:	Improved Smoke levels in the House: • Improved: 74% • Decline: 12% • No change: 13% • N/A: 0% Improved Incidents of Coughing: • Improved = 68% • Decline = 11% • No Change = 21% • N/A=0% Reduced incidences of Itchy Eyes: • Yes = 37% • No = 15% • No Change = 48% • N/A=0% Occurrences of water borne diseases. • Yes = 0% • No = 100% • No Change = 0% • N/A=0%
Monitoring equipment:	Monitoring Survey questionnaire
Measuring/Reading/ Recording frequency:	Annually
Calculation method (if applicable):	The number of end users with the perceived outcome e.g. reduced levels of smoke was divided by the total units in the sample frame and multiplied by 100 to get the percentage.
QA/QC procedures:	The questionnaire is asked in an unbiased manner to ensure the respondents are not coerced into any answer by the interviewer
Purpose of data:	Gold Standard sustainable development monitoring
Additional comment:	N/A

Water quality testing procedure

Water quality testing was conducted by use of the Aquagenx Compartment Bag Test. The Compartment Bag Test is a detection-quantification test for E. coli, the WHO recommended faecal indicator, conducted in a compartmentalized plastic bag using a chromogenic culture medium. The plastic bag contains internal compartments of different volumes, analogous to using a series of bottles or tubes to culture bacteria. The concentration of bacteria in the sample is estimated from the combination of positive/negative compartments, giving a Most Probable Number (MPN) of E. coli per 100mL.

The approach involves 8 basic steps:

1. Sanitize work area with disinfectant cleaning solution, paper towels or wipes.

2. Collect 100 mL water sample with Whirl-Pak™ Thio-Bag™

- Label bag or attach barcode asset tag to Thio-Bag. White tablet in Whirl-Pak™ Thio-Bag™ is sodium thiosulfate, which neutralizes residual chlorine in sample. Do not remove.
- Wearing disposable, thin plastic gloves is recommended. If you don't have gloves, avoid touching inside of Thio-Bag with bare hands.
- Fill Thio-Bag to 100 mL fill mark. Record sample details.

3. Add Aquagenx® EC+TC growth medium to sample in Whirl-Pak™ Thio-Bag™

• Open growth medium packet with scissors and pour powder growth medium into Thio-Bag. Do not touch growth medium with bare fingers or hands. Growth medium should not be added to sample before you are ready to begin test procedure.

• Roll down Whirl-Pak seal and close Thio-Bag shut.

• Dissolve medium in sample. Gently swirl the bag until the medium is completely dissolved. You can squeeze any clumps of powder to help them dissolve more quickly.

4. Incubation Period and Temperatures

• During the incubation period, CBTs can develop an odour. To control odour, place CBTs in another sealed plastic bag or container during the incubation period.

• Ambient temperature incubation works at any temperatures between 25°- 44.5°C for detection of E. coli and/or total coliforms.

• Because the CBT works at variable temperatures, constant temperature control in an incubator is not required.

However, at cooler temperatures, constant temperature incubation is recommended, if available.

• Note: over 40°C, some total coliforms will be inhibited, and the results may not be accurate for total coliform analysis.

• For regulatory compliance purposes, samples must be incubated at 35-37°C for 20-24 hours to detect

E. coli and total coliforms.

• The CBT also can be used to detect thermotolerant (or faecal) coliforms instead of total coliforms, if the CBT samples are incubated at a temperature of 44.5oC (between 44-45oC) throughout an incubation period of 20-24 hours. Strict temperature control is required for this procedure.

Recommended Incubation Periods at Ambient Temperature Conditions:

- 35-37°C: Incubate 20 hours

- 31-34°C: Incubate 24-30 hours
- 25-30°C: Incubate 40-48 hours
- Below 25oC: Incubate in a portable incubator at 35-37°C for 24 hours or put in or near another heat source for up to 48 hours, depending on the temperature.
- Over 40°C: Some coliforms will be inhibited, and the results may not be accurate for total coliforms.

5. Score and record P/A test results

● E. coli:

o Yellow/yellow brown indicates negative (absence) for E. coli.

o Blue/blue green indicates positive (presence) for E. coli. These include:

▪ Any trace of blue/blsue-green, or just specks of blue/blue-green, or just blue/blue-green sediment at

bottom of Thio-Bag is considered positive.

The results obtained were as follows;

Absence of E.Coli	100 %
Presence of E.Coli	0 %
Total	**100%**

● Total Coliforms - shine UV light (365 nm) on Thio-Bag in a dark environment:

o Samples that fluoresce blue are positive for total coliforms. These include:

▪ Any samples that are yellow/yellow brown in colour that fluoresce blue under UV light.

▪ Any samples that are blue/blue green in colour are positive for E. coli and by definition are positive for total coliforms.

6. Decontaminate sample

• Add 4 mL of liquid bleach (NaOCl) or sufficient chlorine tablets (calcium hypochlorite or sodium dichloroisocyanurate)to Thio-Bag to provide about 200 milligrams of free chlorine.

• After 30 minutes, pour contents into a sink, toilet or hole in ground and safely dispose the empty Thio-Bag.

Water Quality Results

	Parameter	Results	**Percentage of samples**	**Explanation of results**	Analysis

Incidence of water borne diseases	Yes	0	0%	No household reported water borne diseases	Non-Users
	No	105	100%		Users
	Total	**105**	**100%**		
Level of satisfaction	Highly satisfied	43	41%	43 House households were Highly Satisfied, while 62 households were Moderately satisfied with the use of the filter thus 100% considered users.	100% Usage
	Moderately satisfied	62	59%		
	Not satisfied	0			Non-Users
	Total	105	100%		
Hygiene practices	Yes	105	100%	All households were practicing hygiene practices	Users
	No	0	0%		Non-Users
	Total	**105**	**100%**		
Presence or absence of E.Coli	Present	0	0%	No households had Ecoli in their filtered water hence considered as users	Non-User
	Absent	105	100%		Users
	Total	**105**	**100%**		
Users/ non-users	Users	105	100%	This includes households who have; not experienced any water borne diseases, those highly satisfied and moderately satisfied, those practising hygiene practices.	

	Non-Users	0	0%	This includes households who have; experienced water borne diseases, reported not satisfied with the filter and do not practice hygiene practices.
	Total	**105**	**100%**	

B) 3rd Party endorsements

The Aquagenx Compartment Bag Test provides convenience, simplicity, and portability characteristics.

This approach has received the following endorsements:

1. Comparative Study Poster Paper: Demographic and Health Survey, Peru 2011[8]
2. Comparative Study Poster Paper: Detection and Quantification of E. coli in Stored Household Rainwater Samples, Thailand 2011[9]
3. Journal of Microbiological Methods Paper: Evaluation of the Compartment Bag Test for the detection of Escherichia coli in Water[10]
4. Aquagenx CBT: Performance Evaluation Data[11]
5. Michigan State University Poster Paper: Microbial Quality and Safety of Well Water in Rural Nicaragua as determined by Low Cost Bacterial Test (CBT)[12]

C) Appropriateness of Testing Approach:

The CBT testing approach is considered appropriate as it:

1) Meets World Health Organization recommended sample size and indicator organism for water quality testing with 100 mL sample for E. coli[13]
2) Completes testing in a few simple steps
3) Generates easy-to-score, visual, colour change results
4) Works in-the-field and on-site in low resource and disaster settings
5) Works at variable temperatures
6) Enables ambient incubation between 25-44.5°C

[8] Household Microbial Water Quality Testing in a Peruvian Demographic and Health Survey: Evaluation of the Compartment Bag Test for Escherichia coli - PMC (nih.gov)
[9] Slide 1 (aquagenx.com)
[10] Evaluation of the compartment bag test for the detection of Escherichia coli in water - PubMed (nih.gov)
[11] Aquagenx-CBT-Performance-Evaluation-Data_optimized.pdf
[12] (PDF) Well water quality in rural Nicaragua using a low-cost bacterial test and microbial source tracking | Gerald Urquhart - Academia.edu
[13] 9241545038.pdf

7) Provides complete supplies and built-in decontamination

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

Data/Parameter	Value obtained in this monitoring period	Value obtained last monitoring period
Up,y	100%	99%
Qp,y (biennially monitored capped as per WHO guidelines)	7l (8.41l)	7l (8.41l)
Quality of filtered water	100%	90%
Qp,rawboil,y	0	0
Qp,cleanboil,y	0	0
Np,y	2,299	2,299
Bb,y	6.319578	5.91866
Number of People trained on water, hygiene and sanitation management	23	7
Number of filters sold	726	726
Income generation	INRs Please refer: *GS 3964 Employment records_NYDHEE_Confidential*	INRs Confidential
Number of people employed	7(5 men and 2women)	7(4 men and 3 women)
Air quality parameters	Reduction in occurrences of water borne diseases; 100% Reduced Smoke levels in the House: • Yes: 74% • N/A: 12% • No change: 13% • No: Reduced Incidents of Coughing: • Yes = 68% • No = 11% • No Change = 21%	Reduction in occurrences of water borne diseases;100% Reduced Smoke levels in the House: • Yes: 100% • N/A: 0% • No change: 0% • No: 0% Reduced Incidents of Coughing: • Yes = 87% • No = 0% • No Change = 13% • N/A=0%

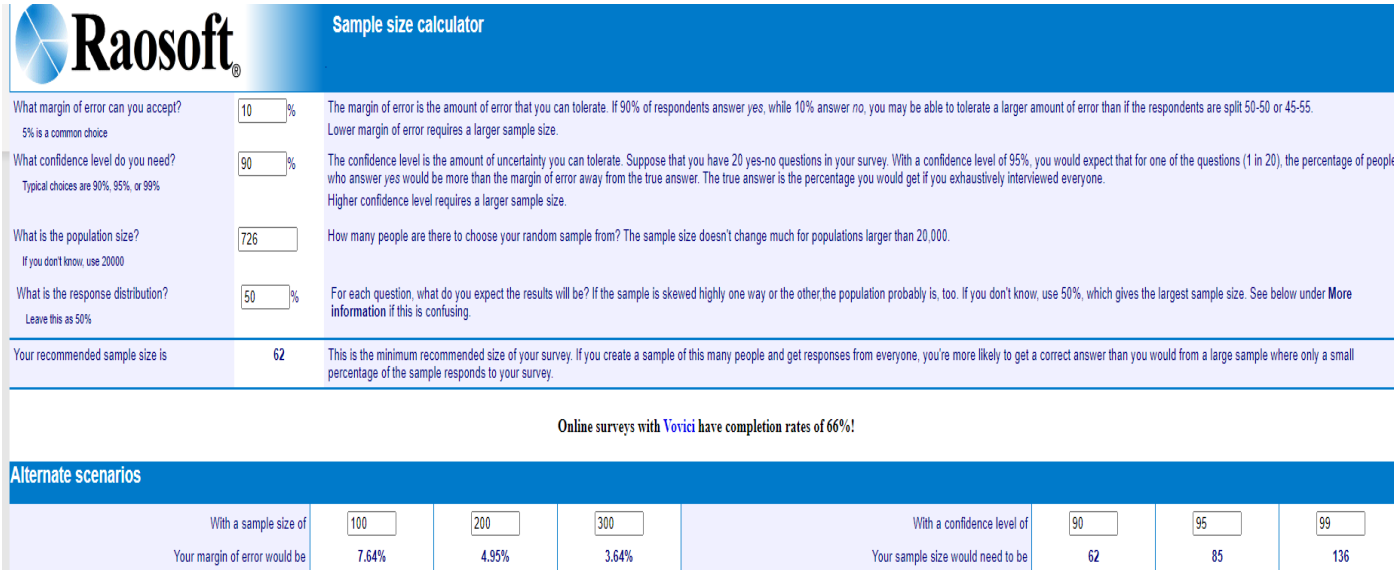
	• N/A=0% Reduced incidences of Itchy Eyes: • Yes = 37% • No = 15% • No Change = • N/A=	Reduced incidences of Itchy Eyes: • Yes = 94% • No = 0% • No Change = 6% • N/A=0%

D.4. Implementation of sampling plan

>> Simple Random sampling method was used to determine the random test subjects from the total sales record.

Determination of the Sample size

The 90/10 precision has been met in the selection of the sample frame as per the attached random sample size generator. The required sample size is 62 households however in order to meet the 90/10 precision and the 100 sample size as per the methodology a total of 105 households were selected in the sampling frame.



The following method was used to determine the sample units based on the registered VPA DD:

1. There was a list of all geographical regions (departments) in the total sales records and the number of filters sold was noted.

2. The cumulative sum of all the filters sold, which corresponds to the last number in this series is the total number of filters sold. A total of 726 filters have been sold to date in the project boundary.

3. A sample size of 105 has been determined for the VPA The steps followed are illustrated below:

1. The total number of filters shall then be divided by the sample size (105). The result shall be used to determine the Sample Interval.

2. At random a number between 1 and the Sample Interval (SI) shall be chosen this shall be held as the Random Start (RS) (calculated using the random number generator as per the attached image on the Sample frame spreadsheet)

3. Sample units (SU) shall be identified as follows:

a. SU1 = RS

b. SU2 = RS + SI

c. SU3 = RS + 2SI

d. Sun = RS + (n-1)SI

4. The sample units (SU) correspond to an identified household in the cumulative sales in the total sales record.

One household was not available at the time. Since the required sample size of 100 had been attained, there was no need for a replacement for that one household.

SECTION E. CALCULATION OF SDG IMPACTS

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

>> Baseline Emissions are calculated as follows:

In accordance to Gold Standard requirements on Global warming potentials for project activities, all monitoring, verifications and requests for issuance from Gold Standard Certified Emission Reductions (GS CERs) and GS VERs that fall within the second commitment period (from 01/01/2013) will be calculated using the revised GWPs. Projects emission reductions accrued before 01/01/2013 will use the former GWP values.

During this monitoring period, the PP has used the latest version of the GWP values as provided in the Gold standard rules.

SDG 3

The figures given are derived from the baseline estimations as estimated during the baseline surveys.

- Usage: 0% (there was no access to filters)
- Np,y : 0 derived from baseline survey (no persons were using the filter in the baseline scenario).
- Quality of treated water: 0% (in the baseline scenario, people had no access to filters hence this parameter is given as 0%)
- Number of filters sold: 0 (no filters had been sold in baseline scenario).
- Reduced number of water borne diseases (Skin rash, diarrhea, foot sore and parasites) and Indoor Air Pollution related diseases/infections (itchy eyes, eye problems and incidence of coughing): 0% (in the baseline scenario, people had no access to filters and hence reduced number of water borne diseases and IAP has been indicated as 0%)

SDG 6

The figures given are derived from the baseline estimations as calculated during the baseline surveys.

- Qp,y: 0 (there was no access to filters)
- Qp,raw boil: 0

- Qp,clean boil: 0
- Quality of treated water: 0% (in the baseline scenario, people had no access to filters)
- Number of people trained on water, hygiene and sanitation management): 0

SDG 8

- Number of persons employed by the project: 0 (no persons were employed by the project in the baseline scenario)
- Income generation from filter distribution: 0 (no income was being generated by the project in the baseline scenario before the implementation of the project)

SDG 13

Fuel used to Treat water (Parameter Bby)

Bb,y = (1 - Cj) * Nj,y * Wb,y * (Qj,y + Q j,rawboil,y)

Where:

Nj,y Number of person. days consuming water supplied by project scenario p through year y

Cj 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

Bb,y Quantity of fuel consumed in baseline scenario b during the year y in tonnes

Qp,y Quantity of safe water in litres consumed in the project scenario p and supplied by project technology per person per day

Qp, raw,boil,y Quantity of raw water boiled in the project scenario p per person per day

Wb,y Quantity of fuel in tonnes required to treat 1 litre of water using technologies representative of baseline scenario b during project year y, as per Baseline Water Boiling Test.

Since:

Nj,y= 2299

Cj= 0.007

Wby= 0.0003954 tonnes

Qp,y= 7.0

Qp, rawboil,y=0 litres

Qp, cleanboil,y= 0 litres

Bb, y is therefore calculated as:

(1-0.007)* 2299*0.0003954 *(7.0+0)

= 6.31820385 tonnes

Baseline Emissions in year 2020 per filter per year

BE = Bb, y*((FNRB*EFCO2) + (EFCH4+EFN20)*NCV

= 6.31820385 *((0.91*112) + (0.75+1.192) *0.015

= 9.843319 tCO2e per filter per year

Baseline Emissions in year 2021 per filter per year

BE = Bby * ((fNRB*EFCO2) + (EFCH4+EFN20) * NCV

= 6.31820385 *((0.91*112) + (0.84+1.06) *0.015

= 9.839338859tCO2e per filter per year

Baseline Emissions in year 2022 per filter per year

BE = Bby * ((fNRB*EFCO2) + (EFCH4+EFN20) * NCV

= 6.31820385 *((0.91*112) + (0.84+1.06) *0.015

= 9.839338859tCO2e per filter per year

Total baseline emissions 01/05/2020 – 30/04/2021

Period	**Total baseline emissions (tCO2e)**
01/05/2020 – 31/12/2020	4,796
01/01/2021 - 30/04/2021	2,348
Total	**7,144**

Total baseline emissions 01/05/2021 – 30/04/2022

Period	**Total baseline emissions (tCO2e)**
01/05/2021 – 31/12/2021	4,794
01/01/2022 - 30/04/2022	2,348
Total	**7,142**

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

>> **SDG 3**

The figures given are derived from the monitoring survey calculations.

- Usage: 100% (Please refer to calculations on the "GS 3964 Monitoring Survey Summary Confidential 2020-2022spreadsheet tab Usage Survey)

- Np,y: 2,299 (Please refer to calculations on the "GS 3964 Er Calculations 2020-2022 tab inputs

- Number of filters sold: 726 (please refer to GS 3964 TSR and Sample Frame spreadsheet, tab TSR)

- Decrease in Water borne diseases: Yes-100%, No-0% and No change-0% and N/A-0% (Please refer to calculations on the "GS 3964 Monitoring Survey Summary Confidential 2020-2022 Spreadsheet Tab Sustainable development)

- Smoke levels Improvement: Improved-74%, Decline-12% and No change-13% (Please refer to calculations on the "GS 3964 Monitoring Survey Summary Confidential 2020-2022 Spreadsheet Tab Sustainable development)

- Incidents of Coughing Improvement: Improved- 68%, Decline- 11%and No change-21% "GS 3964 Monitoring Survey Summary Confidential 2020-2022Spreadsheet Tab Sustainable development)

- Reduced incidences of itchy eyes: Yes-37%, No-15%, No change-48% and N/A-0%. (Please refer to calculations on the "GS 3964 Monitoring Survey Summary Confidential 2020-2022 Spreadsheet Tab Sustainable development)

SDG 6

- Qp,y: 7.0 (8.41) (GS 3964 Monitoring Survey Summary Confidential 2020-2022Spreadsheet Tab Qp,y 2019-2020 results)

- QP,raw boil: 0 (Please refer to calculations on the "GS 3964 Monitoring Survey Summary Confidential 2020-2022Spreadsheet Tab Qp,y 2019-2020 results))

- QP,clean boil: 0 (Please refer to calculations on the "(GS 3964 Monitoring Survey Summary Confidential 2020-2022Spreadsheet Tab Qp,y 2019-2020 results)
- Quality of treated water: 100% (Please refer to calculations on the "GS 3964 Monitoring Survey Summary Confidential 2020-2022 Spreadsheet Tab water quality tests)

- Number of people attending workshops, seminars organized, and trainings on water, hygiene and sanitation improvement: 23 (please refer to the GS 3964 Participant Training List 06-24-2022 _1,2,3_Confidential).

SDG 8

- Number of persons employed by the project: 7 (please refer to the GS 3964 Employment Records_NYDHEE_Confidential)

- Income generation from filter distribution: 7 people were employed in the filter distribution program. (please refer to the GS 3964 Employment Records_NYDHEE_Confidential).

SDG 13

- Number of people trained on filters installation and maintenance: 17 people underwent training during annual monitoring exercise (please refer to GS 3964 Summary Training Records_NYDHEE_Confidential).
- Project Emissions are calculated as follows:

$$PE_{p,y} = B_{p,y} * ((f_{NRB,p,y} * EF_{p,fuel,CO2}) + EF_{p,fuel,nonCO2}) * NCV_{p,fuel}$$

$$B_{p,y} = (1 - C_j) * N_{p,y} * W_{b,y} * (Q_{p,rawboil,y} + Q_{p,cleanboil,y})$$

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

Where:

Parameter	Description	Value applied
Np, y	Number of person. days consuming water supplied by project scenario p through year y	2299

Cj	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	0.007
Bp, y	Quantity of fuel consumed in project scenario p during the year y in tonnes	0
Qp, rawboil, y	Quantity of raw water boiled in the project scenario p per person per day	0
Qp, cleanboil,y	Quantity of safe water boiled in the project scenario p per person per day	0
Wb,y	Quantity of wood fuel or fossil fuel in tonnes required to treat 1 litre of water using technologies representative of the project scenario p during project year y	0.0003954

Therefore;

Bpy = (1-0.007)* 2299.5*0.0003954*(0+0)

= 0 tonnes

Project emissions year 2020 per filter

PEy =0*((0.91*112) *(0.75+1.192))*0.015

=0 tCO2e

Project emissions year 2021 per filter

PEy = 0*((0.91*112) +(0.84+1,06)) *0.015

= 0 tCO2e

Project emissions year 2021 per filter

PEy=0*((0.91*112)+(0.84+1.06))*0.015

= 0 tCO2e

Project emissions year 2022 per filter

PEy=0*((0.91*112)+(0.84+1.06))*0.015

= 0 tCO2e

Total project emissions

Period	**Total Project Emissions (tCO_2e)**
01/05/2020 to 31/12/2020	0
01/01/2021 to 30/04/2021	0
01/05/2021 to 31/12/2021	0
01/01/2022 to 30/04/2022	0
Total	**0**

Total Emission Reductions

Overall GHG were calculated as follows:

The overall GHG reductions are calculated as follows:

$$ER_y = (\sum BE_{b,y} - \sum PE_{p,y}) * U_{p,y} - \sum LE_{p,y} \quad (13)$$

Where:

$U_{p,y}$	Cumulative usage rate for technologies in project scenario p during year y, based on cumulative installation rate and drop off rate.

Usage Parameter = (105/105) *100 = 100%

The difference of the Baseline emissions and the project emissions is multiplied by the usage rate to get the Emission reductions per filter, as shown below:

Year 2020

= (9.843319327 -0) * 100%*100% - 0 = 9.843319327 tCO2e (This figure was then divided by 365 days in a year to get the emission reductions per day(0.026967998tCO2e).

Year 2021

= (9.839338859 -0) * 100%*100% - 0 = 9.839338859 tCO2e (This figure was then divided by 365 days in a year to get the emission reductions per day (0.026957093tCO2e).

Year 2022

= (9.839338859 -0) * 100%*100% - 0 = 9.839338859 tCO2e (This figure was then divided by 365 days in a year to get the emission reductions per day (0.026957093tCO2e).

Calculation of net benefits as difference of baseline and project values or direct calculation for each SDG outcome

The difference between Baseline emissions per filter per year and project emissions per filter per year.

Therefore the net benefit for this monitoring periods is:

Year	Baseline Emissions	Project Emissions	Net Benefit
2020	9.843319327	0	9.843319327
2021	9.839338859	0	9.839338859
2022	9.839338859	0	9.839338859

Total Emission Reductions 2020/2021

Period	**Total baseline emissions (tCO_2e)**	**Total Project Emissions (tCO_2e)**	**Leakage (tCO_2e)**	**Total Emissions (tCO_2e)**
01/05/2020 to 31/12/2020	4,796	0	0	4,796
01/01/2021 to 30/04/2021	2,348	0	0	2,348
Total	**7,144**	**0**	**0**	**7,144**

Total Emission Reductions 2021/2022

Period	**Total baseline emissions (tCO2e)**	**Total Project Emissions (tCO2e)**	**Leakage (tCO2e)**	**Total Emissions (tCO2e)**
01/05/2021 to 31/12/2021	4,794	0	0	4,794
01/01/2022 to 30/04/2022	2,348	0	0	2,348
Total	**7,142**	**0**	**0**	**7,142**

E.3. Calculation of leakage

The core of the methodology prescribes possible parameters that should be evaluated for leakage emissions.

a) The displaced baseline technologies are reused outside the project boundary in place of lower emitting technology or in a manner suggesting more usage than would have occurred in the absence of the project.

Traditional fuel wood consumption was mainly restricted to the domestic setting it is highly unlikely that fuel wood consumption in regions outside the target area would increase. The project activity seeks to displace the baseline practice of boiling water. Therefore, there is minimal risk of the baseline activity being practiced outside the project boundary.

b) The non-renewable biomass or fossil fuels saved under the project activity are used by non- project users who previously used lower emitting energy sources.

Fuel wood previously used was sourced or obtained individually and domestic fuel wood consumption is a function of market forces of demand and supply. There is no indication that the fuel wood consumption would increase amongst non-project users who previously relied on lower-emitting sources.

c) The project significantly impacts the NRB fraction within an area where other CDM or VER project activities account for NRB fraction in their baseline scenario.

This is a micro-scale VPA and thus has minimal aggregate effect on the total NRB fraction in respective countries in which the VPAs are to be implemented with regards to other CDM or VER project activities baseline scenario.

d) The project population compensates for loss of the space heating effect of inefficient technology by adopting some other form of heating or by retaining some use of inefficient technology.

Not applicable to the project activity.

e) By virtue of promotion and marketing of a new technology with high efficiency, the project stimulates substitution within households who

commonly used a technology with relatively lower emissions, in cases where such a trend is not eligible as an evolving baseline.

The Hydraid BioSand Water Filter are zero emitting energy technologies that provides an alternative to boiling water using fuel wood. Most of the households targeted boiled water using fuel wood in the baseline scenario. There is no envisioned scenario where these consumers will substitute fuel wood to a technology with lower emissions i.e even if households who in the baseline were using treatment chemicals opt to use the filter, there is no risk of emissions.

As demonstrated in the registered VPA DD as well as this monitoring report, there are no perceived leakage risks for this parameter. Therefore leakage during this monitoring period = 0

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

SDG	SDG Impact	Baseline estimate	Project estimate	Net benefit
13	**Take urgent action to combat climate change and its impacts**	• Access to water filters: 1,629 • Number of people trained on filter installation and maintenance: 0 • 1st May – 31st December 2019 =4,553 (6.1394tCO2e per filter per year) • Total Emissions 1st January to 30th April 2020 = 3,288.05(6.1394tCO2e per filter per year) •	• Access to water: Filters Sold: 726 • Number of people trained on filter installation and maintenance:23 • 1st May – 31st December 2020= 4,796(9.8433193) tCO2e per filter per year. **Total Emissions** • 1st January to 30th April 2021 2,348(9.839338859) tCO2e per filter per year • 1st May – 31st December 2021=	• Access to water filters Sold: 726 • Number of people trained on filter installation and maintenance: 23 • 1st May – 31st December 2020= 4,796 (9.8433193tCO2e per filter per year) • 1st January to 30th April 2021 = 2,348 • (9.839338859) tCO2e per filter per year)1st May – 31st December 2021=

			4,794(9.839338859) tCO2e per filter per year. Total Emissions • 1st January to 30th April 2022 2,348(9.839338859 tCO2e per filter per year	4,794 (9.839338859) tCO2e per filter per year) • 1st January to 30th April 2022 = 2,348 (9.839338859) tCO2e per filter per year
3	**Good health and wellbeing**	• Usage: 100% • Np,y :1,629 • Water borne diseases: N/A Perceived Change in air Quality • Reduced smoke levels: N/A • Reduced incidences of coughing: N/A • Reduced incidences of itchy eyes: N/A	Usage: 100% Np,y: 2,299 Reduction of Water borne diseases: 100% Perceived Change in Air Quality • Reduced smoke levels: 74% • Reduced incidences of coughing: 68% Reduced incidences of itchy eyes:37%	• Usage: 100% • Np,y: 2,299 • Reduction of Water borne diseases: 100% Perceived Change in Air Quality • Reduced smoke levels: 74% • Reduced incidences of coughing:68% Reduced incidences of itchy eyes: 37%
6	Clean water and sanitation	• QP,y: 7.5 • QP,raw boil 0 • QP, clean boil 0 • Quality of treated water: 100% • Number of people attending training on Hygiene water and sanitation: 0	• Qp,y: 7.0 (8.41) • QP, row boil 0 • QP, clean boil 0 • Quality of treated water: 100% • Number of people trained on water hygiene and sanitation management: 23	• Qp,y: 7.0 (8.41) • QP, row boil 0 • QP, clean boil 0 • Quality of treated water: 100% • Number of people trained on water hygiene and sanitation management: 23
8	Decent work and economic growth	• Number of jobs: 0 • Income generated: 0	• Number of jobs: 7 Income Generated: INRs Please *refer: GS 3964 Employment records_NYDHEE_Confidential*	• Number of jobs: 7 Income Generated: INRs Please refer: GS 3964 Employment

				records_NYDHEE_Confidential

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[14] achieved during this monitoring period
13	• Access to water filters: 1,629 • Number of people trained on filter installation and maintenance: 0 • Emission Reductions – 7,841 tCO_2e	• Access to water filters 726 Number of people trained on filter installation and maintenance: 28 Emission Reductions – 2020-2021 - **7,144 tCO_2e** 2021-2022 - **7,142 tCO_2e**
3	• Usage: 100% • Np,y :2,007 • Water borne diseases: N/A Perceived Change in air Quality • Reduced smoke levels: N/A • Reduced incidences of coughing: N/A • Reduced incidences of itchy eyes: N/A	• Usage: 100% • Np,y: 2,299 • Water borne diseases:100% Perceived Change in Air Quality • Reduced smoke levels: 74% • Reduced incidences of coughing: 68% Reduced incidences of itchy eyes: 37%
6	• QP,y: 7.5l • QP,raw boil 0 • QP,clean boil 0 • Quality of treated water: 100% Number of people trained on water, hygiene and sanitation management: 0	• Qp,y: 7.0l (8.41l) • QP, raw boil 0 • QP,clean boil 0 • Quality of treated water: 100% Number of people trained on water, hygiene and sanitation management: 23
8	• Number of jobs: 0 • Income generated: 0	• Number of jobs: 7

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

		• Income Generated: INRs Please refer: GS 3964 Employment records_NYDHEE_Confidential

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

>> The values estimated in the ex-ante calculations were higher than the actual values achieved during this monitoring period. The reason for this difference is the estimated number of filters during the baseline scenario was higher as compared to the current filter sales. The project implementor had estimated to have sold 1,629, by now, however, projects filters sold to date are 726. Also, during the baseline estimate, parameter Qp,y was capped at 5l/p/d an assumed conservative value applied during the validation period whereas during this monitoring period, the same parameter was capped at 7l/p/d as per the current WHO guidelines. These two parameters have contributed to the big difference in the estimated Ers and the actual Ers achieved.

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

>> The only SDG impact that has increased was the average number of persons per household which is under SDG 13. During the baseline estimates, the project developer had estimated that the average number of persons per household would be 5.5, however, during the project implementation, the average number of persons per household was 6.3 which is due to the increased number of individuals being served by the project technology including children and adults. Also as a result the number of person days consuming water supplied by project scenario p through year y was 2,007.5 which due to the value of 5.5 achieved during ex ante estimation. For the Monitoring period a higher value of 2299 has been achieved due to the high average number of persons per household.

SECTION F. SAFEGUARDS REPORTING

>> As per safeguarding assessment done in section D of the registered VPADD, below is a summary of all questions answered yes or potentially under section *'Assessment of relevance to the project (Yes/potentially/no)'* of safeguarding principles assessment and the parameter has been captured in section D2 above of the monitoring plan. Parameters indicated as *'no'* in that section have not been included in this section. Though there were no mitigation measures required for all the principles, PP has included parameter *'Gender equality and women rights'* as this parameter is relevant to the project and it will also be monitored throughout the project's crediting period.

Safeguarding Principle	**Relevant to the project**	**Implementation status**
Gender equality and women rights	Yes	Both men and women employed by the project i.e. 5 men and 2 women.

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.

>>**2020-2021 and 2021-2022**

Logbook 1

Native Energy Clean Water Programme South East Asia: NE_VPA 01_IND

Location: Jharkhand (India)

Contact Person: Umesh Kumar Verma

Position of the contact person: Cluster Coordinator

Office phone number: NA

Cell phone number: 9122759496

Email address:umeshje2013@gmail.com

Date of comment	Comment	Action required from local implementer	Response from project implementer	Name of the person who handled the issue	Was the issue resolved?	Date issue was resolved
01.07.2021	Flow rate less than 400 ml (filter no: 10002202)	Need to visit household to solve the case	Not needed	Menuel Lakra	yes	03.07.2021
06.07.2021	Flow rate less than400 ml (filter no: 10001323)	Need to visit household to solve the case	Not needed	Samiya Lakra	yes	08.07.2021
10.07.2021	Lid broken (filter no: 10001941)	Need to visit household to solve the case	Not needed	Samiya Lakra	yes	12.07.2021
14.07.2021	Flow rate less than 400 ml (filter no: 10002127)	Need to visit household to solve the case	Not needed	Menuel Lakra	yes	15.07.2021
18.07.2021	Flow rate less than 400 ml (filter no: 10001296)	Need to visit household to solve the case	Not needed	Umesh Kumar Verma	yes	20.07.2021

20.07.2021	Filter Outlet pipe broken (filter no: 10001530)	Need to visit household to solve the case	Not needed	Menuel Lakra	yes	21.07.2021
24.07.2021	Flow rate less than 400 ml (filter no: 10002224)	Need to visit household to solve the case	Not needed	Umesh Kumar Verma	yes	26.07.2021
01.08.2021	Flow rate less than 400 ml (filter no: 10002267)	Need to visit household to solve the case	Not needed	Samiya Lakra	yes	04.08.2021
06.08.2021	Flow rate less than 400 ml (filter no: 10002180)	Need to visit household to solve the case	Not needed	Samiya Lakra	yes	09.08.2021
10.08.2021	Outlet pipe broken (filter no: 10002181)	Need to visit household to solve the case	New Pipe provided	Samiya Lakra	yes	12.08.2021
13.08.2021	Flow rate less than 400 ml (filter no: 10002192)	Need to visit household to solve the case	Not needed	Menuel Lakra	yes	14.08.2021
16.08.2021	Lid broken (filter no: 10002272)	Need to visit household to solve the case	Not needed	Samiya Lakra	yes	18.08.2021
21.08.2021	Flow rate less than 400 ml (filter no: 10002186)	Need to visit household to solve the case	Not needed	Umesh Kumar Verma	yes	24.08.2021
27.08.2021	Flow rate less than 400 ml (filter no: 10002608)	Need to visit household to solve the case	Not needed	Menuel Lakra	yes	30.08.2021
01.09.2021	Flow rate less than 400 ml (filter no:	Need to visit household to solve the case	Not needed	Umesh Kumar Verma	yes	04.09.2021

	10001315)					
06.09.2021	Flow rate less than 400ml (filter no: 10001318)	Need to visit household to solve the case	Not needed	Samiya Lakra	yes	08.09.2021
13.09.2021	Outlet pipe broken (filter no: 10001528)	Need to visit household to solve the case	New Pipe provided	Menuel Lakra	yes	15.09.2021
17.09.2021	Flow rate less than 400 ml (filter no: 10002154)	Need to visit household to solve the case	Not needed	Menuel Lakra	yes	20.09.2021
21.09.2021	Flow rate less than 400 ml (filter no: 10002613)	Need to visit household to solve the case	Not needed	Umesh Kumar Verma	yes	22.09.2021
27.09.2021	Flow rate less than 400 ml (filter no: 10002103)	Need to visit household to solve the case	Not needed	Samiya Lakra	yes	30.09.2021
01.10.2021	Standing water level less than 4 cm (filter no: 10001381)	Need to visit household to solve the case	Not needed	Samiya Lakra	yes	05.10.2021
11.10.2021	Standing water level more than 6 cm (filter no: 10002151)	Need to visit household to solve the case	Not needed	Menuel Lakra	yes	18.10.2021
19.10.2021	Standing water level more than 6 cm (filter no: 10001736)	Need to visit household to solve the case	Not needed	Umesh Kumar Verma	yes	21.10.2021

22.10.2021	Standing water level less than 4 cm (filter no: 10002636)	Need to visit household to solve the case	Not needed	Samiya Lakra	yes	25.10.2021
26.10.2021	Crack in filter (filter no: 10002159)	Need to visit household to solve the case	Fixing materials provided	Samiya Lakra	yes	28.10.2021
01.11.2021	Standing water level less than 4 cm (filter no: 10001153)	Need to visit household to solve the case	Not needed	Menuel Lakra	yes	03.11.2021
05.11.2021	Flow rate less than 400 ml (filter no: 10000200)	Need to visit household to solve the case	Not needed	Menuel Lakra	yes	08.11.2021
09.11.2021	Filter cover broken (filter no: 10001934)	Need to visit household to solve the case	Not needed	Menuel Lakra	yes	11.11.2021
12.11.2021	Standing water level less than 4 cm (filter no: 10001337)	Need to visit household to solve the case	Not needed	Samiya Lakra	yes	15.11.2021
16.11.2021	Flow rate less than 400 ml (filter no: 10001336)	Need to visit household to solve the case	Not needed	Samiya Lakra	yes	18.11.2021
20.11.2021	Standing water level less than 4 cm (filter no: 10002222)	Need to visit household to solve the case	Not needed	Umesh Kumar Verma	yes	22.11.2021

24.11.2021	Flow rate less than 400 ml (filter no: 10002265)	Need to visit household to solve the case	Not needed	Umesh Kumar Verma	yes	27.11.2021
28.11.2021	Flow rate less than 400 ml (filter no: 10001696)	Need to visit household to solve the case	Not needed	Menuel Lakra	yes	30.11.2021
01.12.2021	Standing water level less than 4 cm (filter no: 10001339)	Need to visit household to solve the case	Not needed	Samiya Lakra	yes	03.12.2021
06.12.2021	Flow rate less than 400 ml (filter no: 10002582)	Need to visit household to solve the case	Not needed	Samiya Lakra	yes	08.12.2021
09.12.2021	Outlet pipe broken (filter no: 10001532)	Need to visit household to solve the case	Not needed	Menuel Lakra	yes	13.12.2021
14.12.2021	Crack in filter (filter no: 10001879)	Need to visit household to solve the case	Fixing materials provided	Samiya Lakra	yes	17.12.2021
20.12.2021	Standing water level less than 4 cm (filter no: 10001654)	Need to visit household to solve the case	Not needed	Menuel Lakra	yes	22.12.2021

Logbook 2

Native Energy Clean Water Programme South East Asia: NE_VPA 01_IND

Location: West Bengal

Contact Person: BijoyMondal

Position of the contact person: Cluster Coordinator

Office phone number: NA

Cell phone number: 9733988944

Email address:mondalbijoy11@gmail.com

Date of comment	Comment	Action required from local implementer	Response from project implementer	Name of the person who handled the issue	Was the issue resolved?	Date issue was resolved
02.07.2021	Flow rate less than 400 ml (filter no: 10001949)	Need to visit household to solve the case	Not needed	Bijay Mandal	yes	06.07.2021
10.07.2021	Flow rate less than400 ml (filter no: 10002838)	Need to visit household to solve the case	Not needed	Bijay Mandal	yes	14.07.2021
18.07.2021	Lid broken (filter no: 10009562)	Need to visit household to solve the case	Not needed	Bhola nath Halder	yes	22.07.2021
23.07.2021	Flow rate less than 400 ml (filter no: 10001936)	Need to visit household to solve the case	Not needed	Bijay Mandal	yes	30.07.2021
01.08.2021	Flow rate less than 400 ml (filter no: 10001796)	Need to visit household to solve the case	Not needed	Bhola nath Halder	yes	04.08.2021
05.08.2021	Filter Outlet pipe broken	Need to visit household to solve the case	Not needed	Bijay Mandal	yes	08.08.2021

	(filter no: 10002833)					
10.08.2021	Flow rate less than 400 ml (filter no: 10002869)	Need to visit household to solve the case	Not needed	Bhola nath Halder	yes	14.08.2021
15.08.2021	Flow rate less than 400 ml (filter no: 10002478)	Need to visit household to solve the case	Not needed	Bhola nath Halder	yes	19.08.2021
20.08.2021	Flow rate less than 400 ml (filter no: 10001798)	Need to visit household to solve the case	Not needed	Bijay Manda	yes	24.08.2021
25..08.2021	Outlet pipe broken (filter no: 10001722)	Need to visit household to solve the case	New Pipe provided	Gouri Rani Giri	yes	28.08.2021
28.08.2021	Flow rate less than 400 ml (filter no: 10002747)	Need to visit household to solve the case	Not needed	Bhola nath Halder	yes	01.09.2021
30.08.2021	Lid broken (filter no: 10009547)	Need to visit household to solve the case	Not needed	Gouri Rani Halder	yes	03.09.2021

31.08.2021	Flow rate less than 400 ml (filter no: 10002778)	Need to visit household to solve the case	Not needed	Bhola nath Halder	yes	05.09.2021
01.09.2021	Flow rate less than 400 ml (filter no: 10002482)	Need to visit household to solve the case	Not needed	Gourirani Halder	yes	06.09.2021
05.09.2021	Flow rate less than 400 ml (filter no: 10002889)	Need to visit household to solve the case	Not needed	Bhola nath Halder	yes	09.09.2021
O9.09.2021	Flow rate less than 400 ml (filter no: 10001763)	Need to visit household to solve the case	Not needed	Bhola nath Halder	yes	12.09.2021
13.09.2021	Outlet pipe broken (filter no: 10002570)	Need to visit household to solve the case	New Pipe provided	Bholanath Halder	yes	16.09.2021
17.09.2021	Flow rate less than 400 ml (filter no: 10002869)	Need to visit household to solve the case	Not needed	Bijay Mandal	yes	20.09.2021

21.09.2021	Flow rate less than 400 ml (filter no: 10001741)	Need to visit household to solve the case	Not needed	Gouri Rani. Giri	yes	24.09.2021
24.09.2021	Flow rate less than 400 ml (filter no: 10002139)	Need to visit household to solve the case	Not needed	Gouri Rani Giri	yes	28.09.2021
26.09.2021	Standing water level less than 4 cm (filter no: 10002199)	Need to visit household to solve the case	Not needed	Bijay Mandal	yes	30.09.2021
30.09.2021	Standing water level more than 6 cm (filter no: 10001361)	Need to visit household to solve the case	Not needed	Gourirani Giri	yes	01.10.2021
04.10.2021	Standing water level more than 6 cm (filter no: 10009543)	Need to visit household to solve the case	Not needed	Gourirani Giri	yes	08.10.2021
15.10.2021	Standing water level less than 4 cm (filter no: 10001701)	Need to visit household to solve the case	Not needed	Bholanath Halder	yes	19.10.2021

20.10.2021	Crack in filter (filter no: 10001867)	Need to visit household to solve the case	Fixing materials provided	Gourirani Giri	yes	24.10.2021
22.10.2021	Standing water level less than 4 cm (filter no: 10001683)	Need to visit household to solve the case	Not needed	Bholanath Halder	yes	26.10.2021
24.10.2021	Flow rate less than 400 ml (filter no: 10002479)	Need to visit household to solve the case	Not needed	Bijay Mandal	yes	28.10.2021
26.10.2021	Filter cover broken (filter no: 10001934)	Need to visit household to solve the case	Not needed	Bholanath Halder	yes	30.10.2021
31.10.2021	Standing water level less than 4 cm (filter no: 10001704)	Need to visit household to solve the case	Not needed	Bhola nath Halder	yes	02.11.2021
01.11.2021	Flow rate less than 400 ml (filter no: 10002473)	Need to visit household to solve the case	Not needed	Gourirani Giri	yes	04.11.2021
04.11.2021	Standing water level less than 4 cm (filter	Need to visit household to solve the case	Not needed	Gourirani Giri	yes	08.11.2021

	no: 10002849)					
08.11.2021	Flow rate less than 400 ml (filter no: 10002760)	Need to visit household to solve the case	Not needed	Gourirani Giri	yes	12.11.2021
12.11.2021	Flow rate less than 400 ml (filter no: 10000175)	Need to visit household to solve the case	Not needed	Bholanath Halder	yes	16.11.2021
14.11.2021	Standing water level less than 4 cm (filter no: 10001732)	Need to visit household to solve the case	Not needed	Bhola nath Halder	yes	18.11.2021
19.11.2021	Flow rate less than 400 ml (filter no: 10002571)	Need to visit household to solve the case	Not needed	Gourirani Giri	yes	21.11.2021
21.11.2021	Outlet pipe broken (filter no: 10001817)	Need to visit household to solve the case	Not needed	Bijay Mandal	yes	23.11.2021
24.11.2021	Crack in filter (filter no: 10002886)	Need to visit household to solve the case	Fixing materials provided	Bholanath Halder	yes	26.11.2021
25.11.2021	Standing water level less than 4	Need to visit household to solve the case	Not needed	Gouri Rani Giri	yes	28.11.2021

	cm (filter no: 10001710)					
27.11.2021	Flow rate less than 400 ml (filter no: 10001712)	Need to visit household to solve the case	Not needed	Gourirani Giri	yes	30.11.2021
28.11.2021	Flow rate less than 400 ml (filter no: 10001807)	Need to visit household to solve the case	Not needed	Bholanath Haldar	yes	01.12.2021
29.11.2021	Flow rate less than 400 ml (filer no; 10009586)	Need to visit household to solve the case	Not needed	Gourirani Giri	yes	03.12.2021
30.11.2021	Standing water level more than 6 cm (filter no: 10002532)	Need to visit household to solve the case	Not needed	Bijay Mandal	yes	05.12.2021
01.12.2021	Standing water level less than 4 cm (filter no: 10002858)	Need to visit household to solve the case	Not needed	Bholanath Haldar	yes	08.12.2021
02.12.2021	Crack in filter (filter no: 10002857)	Need to visit household to solve the case	Fixing materials provided	Gourirani Giri	yes	09.12.2021

03.12.2021	Standing water level more than 6 cm (filter no: 10009929)	Need to visit household to solve the case	Not needed	Bijay Mandal	yes	12.12.2021
10.12.2021	Crack in filter (filter no: 10002467)	Need to visit household to solve the case	Not needed	Bholanath Haldar	yes	15.12.2021
12.12.2021	Flow rate less than 400 ml (filter no: 10002832)	Need to visit household to solve the case	Not needed	Bijay Mandal	yes	18.12.2021
16.12.2021	Diffuser damaged (filter no: 10002477)	Need to visit household to solve the case	Not needed	Bijay Mandal	yes	19.12.2021
18.12.2021	Standing water level more than 6 cm (filter no: 10009891)	Need to visit household to solve the case	Not needed	Gourirani Giri	yes	21.12.2021
19.12.2021	Crack in filter (filter no: 10002853)	Need to visit household to solve the case	Fixing materials provided	Bholanath Haldar	yes	22.12.2021
20.12.2021	Diffuser damaged (filter no: 10002512)	Need to visit household to solve the case	Not needed	Bholanath Haldar	yes	23.12.2021

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

>> None

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

>>None

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