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

Key Project Information

GS ID (s) of Project (s)	GS 1078
Title of the project (s) covered by monitoring report	Aqua Clara Water Filtration Program in Kenya
Version number of the PDD/VPA-DD (s) applicable to this monitoring report	Version 24
Version number of the monitoring report	Version 04
Completion date of the monitoring report	25/08/2022
Date of project design certification	26/12/2013
Date of Last Annual Report	N/A
Monitoring period number	8th monitoring period
Duration of this monitoring period	19/02/2021 to 27/12/2021
Project Representative	Aqua Clara International
Host Country	The Republic of Kenya
Activity Requirements applied	☒ Community Services Activities ☐ Renewable Energy Activities ☐ Land Use and Forestry Activities/Risks & Capacities ☐ N/A
Methodology (ies) applied and version number	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

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

Table 1 - Sustainable Development Contributions Achieved

BSF

Sustainable Development Goals Targeted	SDG Impact	Amount Achieved	Units/ Products
SDG 13: climate action	Emission reductions	13,613	VERs
	Number of workshops, seminars organized, and trainings	11trainings (165 people trained)	People
SDG 3: Ensure healthy lives and promote well-being for all at all ages	Perceived change in air quality	95% reduction in smoke levels, 95% reduced coughing and 88% reduction in itchy eyes.	Percentage
	Reduction in water borne diseases.	100% reduction	Percentage
	Number of filters sold	2,952	Filters
SDG 6: Ensure availability and sustainable management of water and sanitation for all	The volume of water consumed.	7/l/p/d	Liters
	Number of workshops, seminars organized, and trainings	11 trainings (165 people trained)	People
SDG 8: Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all	Income generation	confidential, employment records submitted	Ksh.
	Number of people employed	61	People
	Change in number of jobs and positions for women or change in income and asset distributions by region, ethnicity, religion, and socio-economic groups	37 women, and 31 youths	People
SDG 9: Build resilient infrastructure, promote inclusive and sustainable	number of people trained on water filtration	165	People

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HHFF

Sustainable Development Goals Targeted	SDG Impact	Amount Achieved	Units/ Products
SDG 13: climate action	Emission reductions	9,072	VERs
	Number of workshops, seminars organized, and trainings	11 trainings (165 people trained)	People
SDG 3: Ensure healthy lives and promote well-being for all at all ages	Perceived change in air quality	92% reduction in smoke levels, 93% reduction in coughing and 89% reduction in itchy eyes.	Percentage
	Reduction in water borne diseases.	100% reduction	Percentage
	Number of filters sold	2,212	Filters
SDG 6: Ensure availability and sustainable management of water and sanitation for all	Volume of water consumed. Number of workshops, seminars organized, and trainings	7/l/p/d 11trainings (165 people trained)	Liters People
SDG 8: Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all	Income generation	confidential, employment records submitted	Ksh.
	Number of people employed	61	People
	Change in number of jobs and positions for women or change in income and asset distributions by region, ethnicity, religion, and socio-economic groups	37 women, and 31 youths	People
SDG 9: Build resilient infrastructure, promote inclusive and sustainable	number of people trained on water filtration	165 People	

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IHFF

Sustainable Development Goals Targeted	SDG Impact	Amount Achieved	Units/ Products
SDG 13: climate action	Emission reductions	1,313	VERs
	Number of workshops, seminars organized, and trainings	11 trainings (165 people trained)	People
SDG 3: Ensure healthy lives and promote well-being for all at all ages	Perceived change in air quality	93% reduction in smoke levels 92% reduction in coughing, and 50% reduction in itchy eyes.	Percentage
	Reduction in water borne diseases.	100% reduction	Percentage
	Number of filters sold	141	Filters
SDG 6: Ensure availability and sustainable management of water and sanitation for all	Volume of water consumed.	2.33/l/p/d	Liters
	Number of workshops, seminars organized, and trainings	11 trainings (165 people trained)	People
SDG 8: Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all	Income generation	confidential, employment records submitted	Ksh.
	Number of people employed	61	People
	Change in number of jobs and positions for women or change in income and asset distributions by region, ethnicity, religion, and socio-economic groups	37 women, and 31 youths	People
SDG 9: Build resilient infrastructure, promote inclusive and sustainable	number of people trained on water filtration	165	

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Table 2 – Product Vintages

BSF

		Amount Achieved		
Start Dates	**End Dates**	**VERs**	**…**	**…**
19/02/2021	27/12/2021	13,613		

HHFF

		Amount Achieved		
Start Dates	**End Dates**	**VERs**	**…**	**…**
19/02/2021	27/12/2021	9,072		

IHFF

		Amount Achieved		
Start Dates	**End Dates**	**VERs**	**…**	**…**
19/02/2021	27/12/2021	1,313		

SECTION A. DESCRIPTION OF PROJECT

A.1. General description of project

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The Aqua Clara Water Filtration Program in Kenya (the 'Project Activity') seeks to introduce Aqua Clara International's (ACI) flagship products to the market in Kenya: the ACI BioSand Filter (BSF) and the Point-of-use Hollow Fiber Filters (HFF). These

ACI water purifiers (the project technologies) displace the use of firewood fuel traditionally used to boil water for consumption and in the project scenario, offer an affordable, long-term solution for end users who typically consume raw water from turbid sources. The Project Activity seeks to introduce approximately 7,424 BSF purifiers with a capacity to purify an average of up to 60 litres per day, 1,842 household Hollow Fiber Filters with a capacity of up to 15-100 litres per day (which can also be used in institutions) and 425 institutional/commercial-use HFF units with a production capacity of 100–400 litres of water per day throughout the 10-year crediting period in rural and peri-urban Kenya. However, these capacities can be scaled up, with proper maintenance and use of the filter. Proper maintenance of the filters in this Project Activity is ensured through the PP's visit to the households as a follow-up initiative to check on the household utilization of the water filters.

The project technologies offer an affordable, clean, efficient and easy-to-use alternative for water purification within the rural area that the Project Activity seeks to operate in. In addition, the Project Activity will actively reduce CO2 emissions and diminish the associated risks of Indoor Air Pollution.

As of 18/02/2021, the PP had installed a total of 3,215 Bio Sand filters (BSF)2,212; Household Hollow Fibre Filters (HHFF)and 192 Institutional Hollow (IHFF) in the project boundary. However, after a clean-up activity done in 2021, 263 Biosand filters sold to institutions were removed from the TSR hence the total number of BSF filters remaining is now 2,952. Also, for IHFF filters, any institution with more than 1 filter, the extra filter had to be removed from the total sales records reducing the filter sales from 192 to 141 filters. The project implementer requested that we do not include any of the 263 BSF filters sold to institutions due to monitoring constraints. As a result, no Ers has been claimed from the 263 filters since they were not included in the Total sales records.

Technology	Total sales by 2021	Filters removed	No. of filters after adjustment
BSF	3,215	263	2,952
IHFF	192	51	141

a) Relevant Dates of Project Activity

- Start date of Project Activity i.e., it is the date on which distribution of water filter under the Project Activity began – 26/06/2009

-Annual BSF Filter sales since start date of the project:

03/09/2009 -02/09/2010: 186filters
03/09/2010-02/09/2011: 498 filters
03/09/2011-02/09/2012: 600 filters
03/09/2012-02/09/2013: 801 filters
03/09/2013-02/09/2014: 411 filters
03/09/2014-02/09/2015: 175 filters
03/09/2015-02/09/2016: 145 filters
03/09/2016-02/09/2017:86 filters
03/09/2017-02/09/2018: 37 filters
03/09/2018-18/02/2019: 13 filters
Total: 2,952 filters

Annual HHFF sales since start date of the project:
01/11/2013-31/10/2014: 95 filters
01/11/2014-31/10/2015: 194 filters
01/11/2015-31/10/2016: 366 filters
01/11/2016-31/10/2017: 287 filters
01/11/2017-31/10/2018: 510 filters
01/11/2018-31/10/2019:555 filters
01/11/2019-18/02/2020: 205 filters
Total:2,212

Annual IHFF sales since start date of the project:
19/06/2014-18/06/2015: 18 filters
19/06/2015-18/06/2016: 5 filters 19/06/2016-18/06/2017: 15 filters
19/06/2017-18/06/2018: 17 filters
19/06/2018-18/06/2019: 48 filters
19/06/2019-18/02/2020: 38 filters
Total: 141

The PD undertook a major exercise during 2019/2020 verification period to clean up the TSR and reconcile with the information in the sales receipts. Following this, some filters which were found to be totally abandoned were removed from the TSR. End-users who were found to have been skipped from the TSR during data entry were added as summarized below:

Technology	End-users removed from TSR	Added to TSR	New sales
BSF	761	751	33
HHFF	44	65	599
IHFF	26	2	102

Project registration date: 26/12/2013
Project Design Change date: 16/06/2016
Project transitioning to Gold Standard for Global Goals: 09/07/2018
Start Date of Monitoring Survey 12/04/2021
VVB remote verification 08/07/2021 – 09/07/2021

Further, in 2021, PP opted to remove all the 263 BSFs sold in institutions from the TSR as they did not wish to monitor them due to the fact that most of them had already been abandoned and institutions were moving towards the use of hollow fiber filters instead. Also, all institutions with more than one filter were deleted to ensure that there is only one filter per institution. The TSR for institution filters was thus reduced to 141 filters as compared to the last verification where we had 192 filters.

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 (between 19/02/2021 and 27/12/2021) is 23,997 tCO_2e for all the project technologies.

A.2. Location of project

>>
Host country: The Republic of Kenya

The Project Activity targets to operate within 23 counties within the terrestrial limits of the Republic of Kenya listed below.

Table 1: 23 counties within the Republic of Kenya which represent the Project boundary.

County	Coordinates	County	Coordinates	County	Coordinates	County	Coordinates
Nandi	-00.1666670,35.1500000	**Bomet**	-00.8000000,35.2333000	**Kericho**	-000.3666667 35.3000000,	**Busia**	-000.4333333 34.1500000,
Uasin Gishu	-00.5166670,35.2833000	**Homa Bay**	-00.6833330, 34.4500000	**Elgeyo Marakwet**	-000.9483333, 35.5086111	**Bungoma**	-000.5833333 34.5833333
Kisii	-00.6666670,034.7500000	**Migori**	-000.6666667 ,34.8333333	**Kakamega**	-000.2833333 34.7500000,	**Trans Nzoia**	-00.5833333, 34.58333330
Nyamira	-00.7500000,35.0000000	**Kisumu**	-000.2500000, 34.9167000	**Siaya**	-000.2833333, 34.7500000	**Machakos**	-001.5000000, 37.2500000,
Nakuru	-00.5000000,36.0000000	**Kirinyaga**	-000.500000, 37.2833333	**Nyeri**	-000.4166667 36.9500000,	**Nairobi**	-001.2833333, 36.8166667
Murang'a	-00.7500000, 37.1166667	**Embu**	- -000.533333, 37.4500000	**Makueni**	-001.8000000 37.6166667		

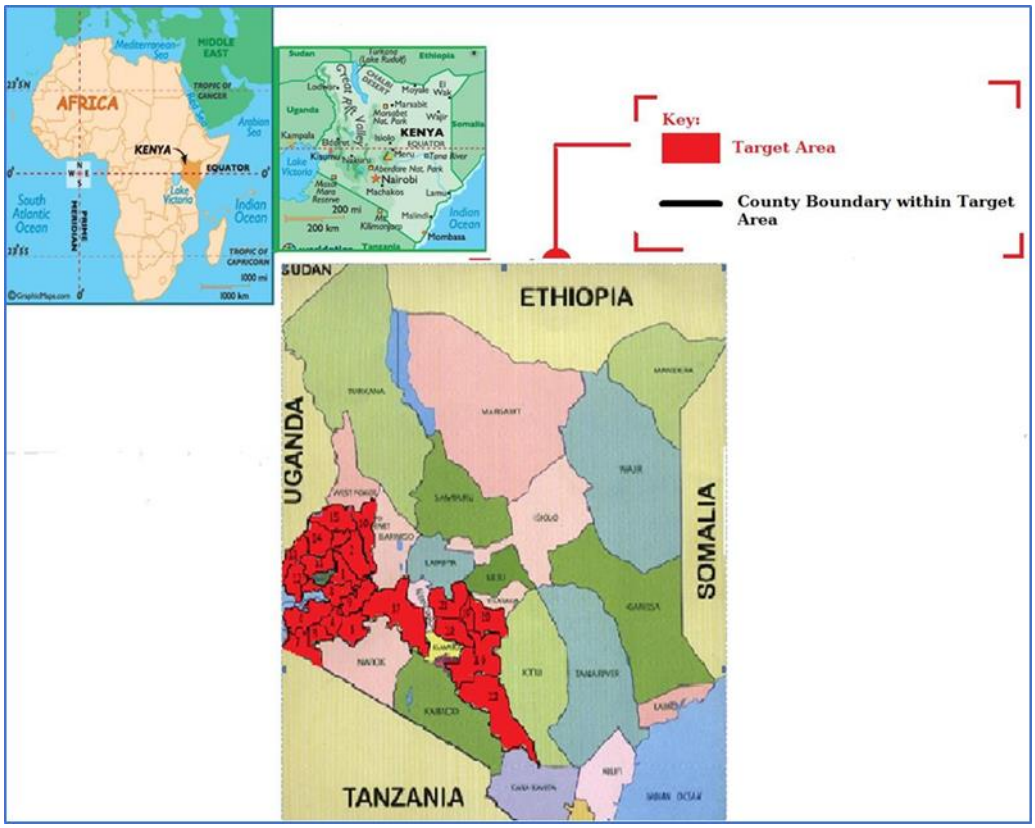

Figure 1: Kenya and the project boundary

A.3. Reference of applied methodology

>> The project is registered under the GS methodology: *Technologies and Practices to Displace Decentralized Thermal Energy Consumption,* 11/04/2011, version 1.0[2]

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

1. Gold Standard for the Global Goals[3]
2. Guidelines for carrying out usage surveys for projects implementing household water filtration technologies [4]

[2]https://www.goldstandard.org/articles/gold-standard-global-goals

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

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

A.4. Crediting period of project

The fixed 10-year crediting period started on 28/12/2011 and ending in 27/12/2021. This marks the eighth round of annual monitoring for this project which began on 19/02/2021 to 27/12/2021

SECTION B. IMPLEMENTATION OF PROJECT

B.1. Description of implemented project

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During this monitoring period, the project continued with filter maintenance and trainings following Covid-19 protocols where 11 trainings were done. 165 people were trained on Household Water Treatment and Safe Storage (HWTS) training. Additionally, during the survey exercise, trainings were conducted for the end users who had been selected on the sample frame and there was emphasis laid on the importance of proper use of the filter and the need to continue maintaining hygiene and observing Covid-19 rules to minimize the spread.

Additionally, there were various maintenance and repairs done. Just to mention a few, they included replacement of the hollow-fiber membrane, replacement of the container, replacing broken taps among others. Some of the repairs done led to some of the filters not being operational for a few days. A total of 8 BSF filters underwent minor repairs which did not result to any downtime. There were 118 repairs done for the HHFF, of which only 11 filters had repairs which led to loss of operation days. A total of 25 operation days were lost. Additionally, 7 IHFF were repaired out of which 2 of the filters resulted to a total downtime of 5 days when they were not in operation. Emission reductions for the total number of days the filters were not operational have been calculated and deducted from the total VERs claimed.

To date, there is a total of 2,952 BSF installed for domestic use. All the 263 BSF filters previously installed for institutional use were deleted from the TSR. 2,212 HHFF units have been installed for domestic use and 141 institutional hollow fiber filters used in the institutions. Any institution where more than 1 filter was installed was deleted to ensure that our records only read 1 filter per institution. This is what resulted to the TSR for IHFF reducing from 192 filters to 141 filters. Filters have been distributed in 17 counties namely Kisii, Nyamira, Uasin Gishu, Nandi, Bomet, Kericho, Nairobi, Nakuru, Kisumu, Siaya, Migori, Homa Bay, Trans Nzoia, Machakos, Murang'a, Kakamega and Elgeyo Marakwet. At the time of installation of these project technologies, households are issued with receipts and each filter is assigned a unique identification number to avoid double counting. The PP then keeps record of all sales which are then accumulated as the Total Sales Record for each technology type.

Description of the Hydraid BioSand Water Filter

The Project Technology

1. Bio Sand Filter (BSF)

Several point-of-use water purification technologies are available in Kenya including boiling, chlorination, solar disinfection (using sunlight), flocculent-disinfectants and filtration. The average efficiency of a BSF is 95- 99% elimination of microbial contaminants. However, this figure varies based on the design and operating properties. Maintenance of the ACI BSF is relatively simple, as it only requires that the consumer cleans the filter once or twice a year depending on the turbidity of the water. Highly turbid sources of water tend to clog the filter hence reducing the flow rate. However, the user can increase the flow rate by simply adding 10 litres of water to the BSF unit, swirling the top 4-6 cm of sand up into the water with a stick, taking all sediments into suspension, pausing to allow sand grains to settle out and then scooping and dumping the dirty water out. This simple procedure will guarantee the consumer continued filtration throughout the lifespan of the BSF unit of 10 years. The first maintenance check is done by the installer of the BSF unit, who has received training from ACI, followed by a demonstration of the maintenance.

Figure 1: Image of a BSF

2. The ACI Hollow Fiber membrane

The ACI Hollow Fiber membrane filter is based upon hollow-fiber membrane technology, which, for decades, has been used in medical, water, food, and industrial applications for high-precision ultra-filtration. Improved manufacturing processes now make the technology economic for humanitarian projects. Hollow micro-tubes are created of polysulphone plastic. The walls of the tubes are permeated with tiny holes not greater than 0.1 microns in diameter. Water enters the filter elements on the outside of the tubes. Since bacteria are larger than 0.1 micron, they cannot flow through the holes in the tubes. Only water can get through the holes. Bacteria and debris are left on the outside of the tubes. Pure water is collected as it flows on through the filter elements. The filters are easily and quickly back flushed using a syringe to wash away the impurities that collect in the filter elements. The filtration process is completely mechanical.

No biological or chemical processes are involved. These filters are designed to be used in both in domestic set ups (households, apartments, etc.) and institutions such as schools and restaurants. The filters were designed and engineered by Aqua Clara in their laboratories at the Bioeconomic Institute of Michigan State University, in Holland, Michigan, USA.

Specifications and performance

- Nominal flow rate of standard model: first litre out of a full 5-gallon filter in 60seconds.
- Scalability: Half-litre-per-minute for small households
- Installation: 1-hour training in hygiene and maintenance; then pick up and carry home.
- Weight: <2.2 kilograms
- Start-up: no start-up process required; filter can be used immediately.
- Pause time: no pause time is required between fill-ups.
- Portability: full portability without disrupting filter processes

Figure 1: Cross Section of Hollow Fiber Membrane Filter

B.1.1. Forward Action Requests

>> c) FARs raised from the last verification.

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Summary of Forward Action Requests (FARs):

FAR # 1: The PP shall monitor the times of water filtration and amount of filled water per day to cross-check with the total water demand from households.

As per the registered PDD this is a biennially monitored parameter hence this FAR was responded to during the last period where water consumption field tests was carried out and all the results were submitted to the GS. Further, the PP already responded to this FAR during the previous period and therefore wishes to maintain the monitoring frequency for this parameter as there are also financial and resource constraints associated with monitoring this parameter annually. Further, GS approved the results submitted during the last verification period. PP therefore requests that this FAR not be carried over to annual monitoring.

FAR # 2: The PP shall submit the phone questionnaires and shall not ask about the operation status of the filter prior to usage survey site visit to avoid the bias of not visiting the non-users. The pre-survey result shall also be submitted.

Phone questionnaire used has been submitted as a support document. Responses received during the call were recorded in tab phone call responses for each filter technology excel sheet TSR and sample frame ref(for BSF filter- *confidential BSF TSR and sample frame 2021-2022 tab phone call responses column N), for HHFF (confidential HHF TSR and sample frame 2021-2022 Final tab phone call response*

column S) and for IHFF confidential IHF TSR and Sample Frame 2020-2021 tab phone call responses column Q. During the call, the operation status of the filter was not asked to avoid bias.

FAR # 3: The PP shall monitor the average number of filters in the households and discount in the ER calculation if the households use more than one unit.

PP monitored the number of households and institutions with more than one filter and discounted in the ER calculation if the household or institution had more than one unit. During the surveys exercise, it was determined that 11 BSF households had more than one filter, only 8 HHFF had more than one filter and none of the institutions had more than one filter since the duplicated filters were all deleted. To avoid over issuance of carbon credits, any end-user with more than 1 filter had the Ers discounted ref (*confidential GS 1078 Combined MSS and Ers calculations sheet 2021 2022 tab Consolidated Ers tab 2021).*

B.2. Post-Design Certification changes

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

>>

No deviations

B.2.2. Corrections

>> There were no corrections made. Changes to start date of crediting period

>> No changes have been applied on the crediting period

B.2.3. Permanent changes from the Design Certified monitoring plan, applied methodology or applied standardized baseline

>>

The PP has made 2 permanent changes to the registered monitoring plan:

1. Cj Factor fixed ex-ante.

The Cj factor that was previously a monitored parameter and is now fixed ex-ante. This is in compliance with the registration review FAR that stated:

"The PP shall conduct a post registration baseline survey/water boiling tests prior to 2nd issuance considering in a representative way the target population in the project boundary and considering households prior to adopting the project technology".

The PP conducted the baseline testing were conducted between 13th to 28th July 2015 and approved in December 2016 in accordance with the Gold Standard methodology. The Household Cj factor is 18%, fixed ex-ante. This CJ was first used during the 2016 monitoring period.

2. Biennial Monitoring of the Water Consumption per filter end user per day:
The registered PDD refers to the frequency of conducting the WCFT as annually. The PP would like to amend this frequency to every other year (biennially). The methodology employed for this project, i.e., 'Technologies and Practices to Displace Decentralized Thermal Energy Consumption - 11/04/2011' states:

'For each or of the baseline scenario and project scenario the BFT and PFT is updated every two years, respectively',

At registration, the PP had chosen a conservative approach of annually monitoring this parameter. However, the PP got approval from the Gold Standard to conduct this as per the methodological threshold of once in every 2 years. The permanent deviation was approved by the GS on 16/09/2016.

Project transitioning to Gold Standard for Global Goals on 09/07/2018. As a result, there were some changes in the monitored parameters. This includes, inclusion of SDGs, Monitoring the number of people employed by the project and follow up and reporting on grievances raised and recorded on the logbook during the monitoring period.

B.2.4. Changes to project design of approved project

>> The Project Design now includes the inclusion of institutions to the project boundary. This design change was validated and approved by the Gold Standard Foundation- TAC on 16/06/2016.

SECTION C. DESCRIPTION OF MONITORING SYSTEM APPLIED BY THE PROJECT

1. >> **Monitoring Procedure**

A total sales record and a project database was maintained continuously and stored on an electronic database maintained by both ClimateCare and Aqua Clara International for the BSF, HHFF and IHFF.

a) Total Sales Record

An accurate and complete sales record has been maintained by the project proponent and backed up electronically by the ClimateCare, the carbon asset development consultant. A Total Sales Record provided as a support document, records 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

This has been developed from the total sales record.

1. **On-going Monitoring Studies**

The monitoring exercise was a combination of the Usage Survey, Monitoring Survey, and the Water quality testing.

a) Monitoring Survey- Completed annually, beginning 1 year after project registration. The project participant has conducted the annual monitoring surveys which were used to investigate annual changes in the project scenario. Physical surveys were conducted while observing covid-19 protocols. The monitoring period covers the duration from 19/02/2021 to

27/12/2021. The monitoring surveys were conducted between 10/02/2022 to 17/03/2022. Below is a summary of sample size selection;

BSF

Table 2: Sampling and Interview Summary for BSF

Age	09/10	10/11	11/12	12/13	13/14	14/15	15/16	16/17	17/18	18/19	Total
Total Population	186	498	600	801	411	175	145	86	37	13	2,952
Samples selected	33	33	33	33	33	33	33	33	33	13	310
Samples required under the meth	30	30	30	30	30	30	30	30	30	30	300
Households interviewed	33	33	33	33	33	33	33	33	33	13	310

For the last vintage, there were only 13 households, and these were all included in the sample frame.

HHFF

Table 3: Sampling and Interview Summary for HHFF

Age	13/14	14/15	15/16	16/17	17/18	18/19	19/20	Total
Total Population	95	194	366	287	510	555	205	2,212
Sample size	33	33	33	33	33	33	33	231
Samples required under the meth	30	30	30	30	30	30	30	210
Households interviewed	33	33	33	33	33	33	33	231

IHFF

Table 4: Sampling and Interview Summary for IHFF

Age	14/15	15/16	16/17	17/18	18/19	19/20	Total
Total Population	18	5	15	17	48	3840	141
Sample size	18	5	15	17	33	32	120
Samples required under the meth	30	30	30	30	30	30	180
Households interviewed	18	5	15	17	33	32	120

All the vintages apart from 18/19 and 19/20 for IHFF had less than 30 households and these were all interviewed during the surveys. This is because there were low filter sales for all the other years.

For water consumption field test, the PP applied the 90/30 precision in calculating the sample size required. As demonstrated in section D.4 of this report, only 8 surveys were needed. However, PP applied a bigger by running a sample using random sampling for 100 filters for each filter technology. These results were then summarized and used to determine the water quality for the entire population. The sample selected for each filter technology is saved under the tab 'water quality testing'.

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 10/02/2022- 17/03/2022. Results are as follows;

	Users (%)	**Non-Users (%)**
BSF	83.23%	16.77%
HHFF	87.45%	12.55%
IHFF	96.67%	3.33%

c) Project Field Test Update- This is completed every other year. The project technology has not had any material changes so far and given the fact that it is a zero-energy technology, the PFT has focused primarily on usage 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 3M Petrifilm plate. 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. 90/30 confidence level/precision required for this parameter was achieved on the surveys conducted. Detailed analysis on the sampling criteria and results from the qualitative criteria used to determine the quality of treated water is provided in Section D.3 of this Monitoring report. PP also included qualitative questions on the survey questionnaire to further investigate water quality. Results were as follows;

BSF

Water Quality Summary (Water samples were only collected at 100 households with functional filters).

	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	258	100%			Users
	Total	258	100%			
Level of satisfaction	Highly satisfied	257	100%		257 out of 258 households were highly satisfied with the use of the filter	100% Usage
	Moderately satisfied	1	0%		There are 1 out of 258 households were moderately satisfied with the use of the filter	
	Not satisfied	0	0%			Non-Users
	Total	258	100%			
Hygiene practices	Yes	258	100%		All 258 households were practising hygiene practices	Users
	No	0	0%			Non-Users
	Total	258	100%			
Presence or absence of E.Coli	Present	0	0%		0 households had 0.Ecoli in their water	Non-User
	Absent	100	100%		0 households had 0.Ecoli in their water	Users
	Total	100	100%			
Users/ non-users	Users	100.00%	This includes households who have not experienced any water borne diseases related to consumption of contaminated water. All households are highly satisfied and moderately satisfied thus considered as users. All households were practising hygiene practices.			
	Non-Users	0.0%	This includes households have experienced water borne diseases, households who reported not satisfied with the filter and households who do not practice hygiene practices			

HHFF

Water samples were collected for 100 households with functional filters for the qualitative questions.						
	Parameter	**Results**	**Percentage of samples**		**Explanation of results**	**Analysis**
Incidence of water borne diseases	Yes	0	0%		There were no water borne diseases reported	Non-Users
	No	202	100%		There were no water borne diseases reported	Users
	Total	202	100%			
Level of satisfaction	Highly satisfied	194	96%		There are 194 out of 202 households who are highly satisfied with the use of the filter	100% Usage
	Moderately satisfied	8	4%		There are 8 out of 202 households who are moderately satisfied with the use of the filter	
	Not satisfied	0	0%		No household reported as to Not being satisfied	Non-Users
	Total	202	100%			
Hygiene practices	Yes	202	100%		All 214 households were practising proper hygiene	Users
	No	0	0%			Non-Users
	Total	202	100%			
Presence or absence of E.Coli	Present	0	0%		There was 0 E.Coli in filtered water	Non-User
	Absent	100	100%		There was 0 E.Coli in filtered water	User

	Total	100	100%			
Users/ non-users	Users	100.00 %	This includes households who have not experienced any water borne diseases related to consumption of contaminated water. All households are highly satisfied and moderately satisfied thus considered as users. All households were practising hygiene practices.			
	Non-Users	0.0%	This includes households have experienced water borne diseases, households who reported not satisfied with the filter and households who do not practice hygiene practices			

IHFF

Water Quality Summary (Water samples were only collected at 100 institutions with functional filters)

	Parameter	Results	Percentage of samples		Explanation of results
Incidence of water borne diseases	Yes	0	0%		No incidences of water borne diseases reported
	No	117	100%		No incidences of water borne diseases reported
	Total	117	100%		
Level of satisfaction	Highly satisfied	115	98%		98% of institutions were highly satisfied hence considerd users
	Moderately satisfied	2	2%		2% of institutions were highly satisfied hence considered users
	Not satisfied	0	0%		
	Total	117	100%		
Hygiene practices	Yes	117	100%		All institutions were practising hygiene practices

	No	0	0%		
	Total	117	100%		
Presence or absence of E.Coli	Present	0	0%		All institutions had 0 E.Coli in filtered water
	Absent	100	100%		All institutions had 0 E.Coli in filtered water
	Total	100	100%		
Users/ non-users	Users	100.00%	This includes households who have not experienced any water borne diseases related to consumption of contaminated water. All households who are highly satisfied and moderately satisfied thus considered as users. All households were practising hygiene practices.		
	Non-Users	0.0%	This includes households have experienced water borne diseases, households who reported not satisfied with the filter and households who do not practice hygiene practices		

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.

i) 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.

Fuel wood is gathered and consumed locally. Therefore, an increase in supply of wood in one locality (due to filtration) will not increase supply in another location. Total

Kenyan demand for fuel wood remains well above supply[5], therefore the gradual increase of fuel wood supplies due to diminished consumption in the target area will not warrant a reduction in prices so as to increase supply. Kenya has a wood supply potential of 31.4 million m^3 against a national demand of 41.7 million m^3 hence a current deficit of 10.3 million m^3. The supply for firewood and charcoal stands at 13,654,022m^3 and 7,358,717m^3 while demand stands at 18,702,748$m^3$and 16,325,810m^3 respectively [6]. Forecasts for a 20-year period indicate a 20.0% increase in supply and 21.6% increase in demand by the year 2032 which signifies a gradually increasing deficit. 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 is gathered and consumed locally. As per the baseline survey, most of the households/ institutions use firewood and charcoal to boil water. Since the demand for firewood and charcoal is very high in Kenya as explained in question (I) it is very unlikely that the firewood/ charcoal saved after introduction of the project will cause the non-project users to switch from lower emitting energy to using fossil fuels.

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.

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5 Gender and equity in bio energy Access and Delivery in Kenya: http://practicalaction.org/page/docs/consulting/pisces/gender-and-equity-in-bioenergy-kenya.pdf

[6]http://www.kenyaforestservice.org/documents/redd/Analysis%20of%20Demand%20and%20Supply%20of%20Wood%20Products%20in%20Kenya.pdf

An estimation of 7,424 BSF filters,1,842 Household ACI Hollow Fiber membrane filters and 425 Institutional/commercial-use HFF units respectively are projected to be sold/ installed within the crediting period and a baseline fuel consumption of 4.11 tonnes of fuel wood per household (in the BSF and Household HFF units project scenario) and 0.00013056 tonnes of fuel wood in institutions. The population of the country is increasing hence the demand of NRB in households and institutions will continue to increase. Additionally, people are becoming aware on the importance of consuming safe water hence there is a possibility of increased boiling practices hence the project will not alter the countries NRB significantly.

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.

In the project area, evening temperatures are 18^{o}c and people do not use any space heating. Therefore, there is no loss of space heating for not filtering water, so there is no leakage as people do not light fires anyway.

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 technology involves distribution of zero energy water treatment units hence even if households who in the baseline were using treatment chemicals opt to use the filter, there is no risk of emissions.

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) 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. Below are the results:

BSF

Project Survey Analysis

Fuel used in the baseline	wood	297	95.8%
	Charcoal	13	4.2%
	Gas	0	0.0%
	Total	310	100.0%
Water Purification in the baseline	Boiling	277	89.4%
	Treatment Chemicals	8	2.6%
	None/ Raw Water	25	8.1%
	Total	310	100.0%
Supressed Demand	Would Have Boiled	18	72.0%
	Would Have Used Treatment Chemicals	7	28.0%
	Total	25	100.0%
water sources	Piped water	9	2.9%
	Local Spring, River or Lake	255	82.3%
	Private or Community Well	44	14.2%
	Artificial Lagoon or Catchment Basin	1	0.3%
	Purchase	0	0.0%
	Rain water harvested in tanks	1	0.3%
	Total	310	100.0%
Barriers to Water Purification	Too Expensive	3	12.0%
	Lack of awareness	19	76.0%
	Distance to cover to purify water was too great	1	4.0%
	Not satisfied with available purification methods	2	8.0%
	Total	25	100.0%
CJ Factor	24		9.1%

HHFF

Project Survey Analysis

Fuel used in the baseline	wood	202	87.4%
	Charcoal	13	5.6%
	Gas	16	6.9%
	Total	231	100.0%
Water Purification in the baseline	Boiling	201	87.0%
	Treatment Chemicals	13	5.6%

	None/ Raw Water	15	6.5%
	Filtered rainwater	1	
	Manual filtration	1	
	Total	231	99.1%
Suppressed Demand	Would Have Boiled	13	180.0%
	Would Have Used Treatment Chemicals	2	13.3%
	Total	15	193.3%
water sources	Piped water	6	2.6%
	Local Spring, River or Lake	142	61.5%
	Private or Community Well	79	34.2%
	Artificial Lagoon or Catchment Basin	4	1.7%
	Purchase	0	0.0%
	Rain water harvested in tanks	0	0.0%
	Total	231	100.0%
Barriers to Water Purification	Too Expensive	2	13.3%
	Lack of awareness	5	33.3%
	Distance to cover to purify water was too great	1	6.7%
	Not satisfied with available purification methods	5	33.3%
	Water was provided by Kisumu Water and Sanitation Company	2	13.3%
	Total	15	100.0%
CJ Factor	21		8.0%

IHFF

Project Survey Analysis

Fuel used in the baseline	wood	107	89.2%
	Charcoal	5	4.2%
	Gas	8	6.7%
	Electricity	0	0.0%
	Total	120	100.0%
Water Purification in the baseline	Boiling	67	55.8%
	Treatment Chemicals	16	13.3%
	None/ Raw Water	37	30.8%
	Total	120	100.0%
Suppressed Demand	Would Have Boiled	8	22.2%
	Would Have Used Treatment Chemicals	27	75.0%

	Other (Filter)	1	2.8%
	Total	36	100.0%
water sources	Piped water	13	10.8%
	Local Spring, River or Lake	75	62.5%
	Private or Community Well	25	20.8%
	Artificial Lagoon or Catchment Basin	2	1.7%
	Purchase (Supermarket)	2	1.7%
	Rain water harvested in tanks	2	1.7%
	Borehole	1	
	Total	120	99.2%
Barriers to Water Purification	Too Expensive	12	33.3%
	Lack of awareness	10	27.8%
	Distance to cover to purify water was too great	1	2.8%
	Not satisfied with available purification methods	12	33.3%
	Other (Use spring water)	1	2.8%
	Total	36	100.0%
CJ Factor	58		22.0%

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 period were collected during 2020/2021 period. 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.

PP used a calibrated 8 litre bucket 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 standardized 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 7l/p/d for BSF, 7l/p/d for HHFF and 2.33l/p/d for IHFF.

Households and institutions 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 or institutions surveyed indicated that they boil additional raw water. Parameter $Q_{p,raw,boil}$ was therefore found to be 0 litres per person per day.

The PP also sought to find out households and institutions that boil water that has been filtered via the Hydraid water filter. From the findings, there were no households or institutions 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 and institutions. This helped in the determination of Np, y. The PP found that there was an average of 5.59 p/d for BSF, 4.55p/d HHFF and 65 IHFF. 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:	**$EF_{b,fuel,CO2}$**
Unit	tCO2/TJ
Description	CO2 emission factor of the wood fuel
Source of data	2006 IPCC Default emission factors
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

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	**$EF_{b,\ fuel,CH4}$**
Unit	tCH_4/TJ
Description	CH_4 emission factor of the wood fuel
Source of data	2006 IPCC Default emission factors
Value(s) applied	0.3
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	Table 2.5 of the '2006 IPCC Default emission factors' which shows 300kg/TJ: https://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_2_Ch2_Stationary_Combustion.pdf This value is then converted to t/Tj by dividing by 1000. i.e. 300/1000 = 0.3t/Tj.

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	**$EF_{b,fuel,N2O}$**
Unit	t N_2O /TJ
Description	N_2O 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 N_2O emission factor of the wood fuel
Additional comment	N/A

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:	**C_j**
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)	18% - Households 76% - Institutions and commercial facilities
Choice of data or measurement methods and procedures	Baseline surveys carried out in project boundary showed that out of 144 households interviewed, 26 households had access to safe drinking water without boiling. That is, 12 households used treatment chemicals, 5 households would have used treatment chemicals if it wasn't for suppressed demand, while the other 9 households used either rain or piped water. The Cj factor was determined based on the methodological requirements by dividing the 26 households by the total in the sample frame. The same process was applied to the institutions/commercial facilities C_j value except that the number of sample units with access to safe water was 47 out of the total (62 sample units).
Purpose of data	To determine the portion of users of the project technology who in the baseline were already consuming safe water without boiling it.
Additional comments	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	$W_{b,y}$
Unit	Tonnes/litre
Description	Quantity of fuel in tonnes required to treat 1 litre of water using technologies representative of baseline scenario b
Source of data	GS default
Value(s) applied	Households – 0.0004 Institutions/commercial facilities – 0.0004
Choice of data or Measurement methods and procedures	Gold Standard default values for the amount of wood used.
Purpose of data	To estimate the quantity of fuel in tonnes required to treat 1 litre of water using technologies representative of baseline scenario b
Additional comment	During baseline surveys, values obtained were 0.00054960 for households and 0.00054458 for institutions. These values have now been capped to 0.0004tons as per GS guidelines.

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	NCV_b
Unit	TJ/tonne
Description	Net calorific value of wood fuel used in the baseline
Source of data	IPCC default value
Value(s) applied	0.015
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	To determine the calorific value of wood fuel used in the baseline
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	GWP
Unit	Fraction
Description	Global Warming Potential of CH_4
Source of data	APPLICABILITY OF GLOBAL WARMING POTENTIAL FOR GOLD STANDARD FOR THE GLOBAL GOALS PROJECTS[7]:
Value(s) applied	28[8] (Value used after 01/01/2021)
Choice of data or Measurement methods and procedures	IPCC Third Assessment Report: Climate Change 2001. IPCC fifth Assessment Report (AR5)
Purpose of data	To determine the Global Warming Potential of CH_4
Additional comment	Value for the period beyond 2021 updated as per GS Rule Update dated 03/06/2021

[7],[8],[8] Applicability of Global warming potential for Gold Standard for the Global Goals Projects – Gold Standard for the Global Goals

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	GWP
Unit	Fraction
Description	Global Warming Potential of N_2O
Source of data	APPLICABILITY OF GLOBAL WARMING POTENTIAL FOR GOLD STANDARD FOR THE GLOBAL GOALS PROJECTS[9]:
Value(s) applied	265[10](Value used after 01/01/2021)
Choice of data or Measurement methods and procedures	IPCC Third Assessment Report: Climate Change 2001. IPCC Fifth Assessment Report: (AR5)
Purpose of data	To determine the Global Warming Potential of N2O
Additional comment	Value for the period beyond 2021 updated as per GS Rule Update dated 03/06/2021

[9] https://globalgoals.goldstandard.org/ru-2020-applicability-of-global-warming-potential-for-gold-standard-for-the-global-goals-projects/

D.2. Data and parameters monitored

Relevant SDG Indicator	**SDG 3: Good health and wellbeing.** **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:	**$U_{p,y}$**
Unit:	Percentage
Description:	Usage rate in project scenario p during year y. This data will be used to account for end users which discontinue use of the filters from the monitored sample frame and thereafter be extrapolated across the total sales record.
Measured/Calculated /Default:	Calculated
Source of data:	GS1078 Combined Monitoring survey summary, tabs BSF, HHFF and IHFF Usage Survey
Value(s) of monitored parameter:	BSF – 83.23 HHFF- 87.45% IHFF – 96.67%
Monitoring equipment:	Monitoring Survey
Measuring/Reading/ Recording frequency:	Annually
Calculation method (if applicable):	The PP has provided excel based calculations that demonstrate the calculation of the usage parameter.
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:	A minimum of 30 surveys has been used to determine minimum required sample size as required by the methodology.

Relevant SDG Indicator	**SDG 3: Good health and wellbeing.** **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:	**$N_{p,y}$**
Unit:	Person.days
Description:	Number of persons consuming water supplied by project scenario p through year y
Measured/ Calculated/Default:	Calculated
Source of data:	GS1078 Combined Monitoring survey summary, tabs BSF, HHFF and IHFF Inputs
Value(s) of monitored parameter:	BSF – 1,752 HHFF – 1,425 IHFF –Calculated individually for each institution. Calculations have been provided on the ERs sheet '*confidential GS 1078 Combined MSS and ERs calculations sheet 2021 2022'* tab BE_Person_day_IHFF
Monitoring equipment:	Open ended question from the Monitoring surveys
Measuring/Reading/ Recording frequency:	Biennially
Calculation method (if applicable):	Households and institutions were asked the number of people living in their household and institutions for that day in the three consecutive days during the water consumption field test. An average of this number was then calculated, and an average of the total obtained. The figure was multiplied by 365 days in a year to obtain the figure for BSF and HHFF and by specific number of days a filter in in operation for IHFF.
QA/QC procedures:	The number of people living in a household and institution for the three consecutive days during the water consumption field test was obtained to capture the differences in the household and institution number of people throughout the year.
Purpose of data:	To calculate the number of persons consuming water supplied by project scenario p through year y.
Additional comment:	This is a biennially monitored parameter hence these results were for 2020/2021 period.

Relevant SDG Indicator/Safeguarding Principle	**SDG 3: Good health and well-being.** **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	**Number of filters sold.**
Unit	Number of filters
Description	Number of filters sold as per the Total Sales Records (TSR)
Source of data	Total Sales Records for BSF, HHFF and IHFF
Value(s) applied	BSF:2,952 HHFF:2,212 IHFF: 141
Measurement methods and procedures	Records kept electronically by the PP.
Monitoring frequency	Annual
QA/QC procedures	Continuous updates of the TSR to ensure that filter sales are updated.
Purpose of data	Calculating emission reductions.
Additional comment	None

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:	Percentage
Description:	Quality of filtered water
Measured/Calculated /Default:	N/A
Source of data:	GS1078 Combined Monitoring survey summary, tabs BSF, HHFF and IHFF Water Quality
Value(s) of monitored parameter:	BSF: 100% HHFF:100% IHFF: 100%
Monitoring equipment:	Field Laboratory Tests
Measuring/ Reading/Recording frequency:	Annually
Calculation method (if applicable):	N/A
QA/QC procedures:	The water test results are compared against values provided from the product specifications
Purpose of data:	Sustainable development Monitoring; Methodological Requirement.
Additional comment:	The water quality assessment was done and included a qualitative and quantitative criterion for Water Quality which covered the following aspects: • 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. • Level of E. coli in filtered water. The water quality testing values obtained were 100%for all the filter technologies. The methodological requirement is that the 90/30 confidence/precision should be used to determine the minimum required sample size. This has been achieved as the water quality assessment was undertaken for all the end-users with functional water filters.

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:	GS1078 Combined Monitoring survey summary, tabs Qp,yBSF, Qp,y HHFF and Qp,y IHFF Inputs
Value(s) of monitored parameter:	BSF – 7l/p/d HHFF – 7l/p/d IHFF – 2.33l/p/d
Monitoring equipment:	Calibrated Buckets for measuring water
Measuring/ Reading/Recording frequency:	Biennially, 3 consecutive days of the monitoring exercise with exception of holidays and weekends
Calculation method (if applicable):	The Water Consumption Field Test results were collected for three consecutive days in each household included in the sample frame. An average of this was then obtained. The figure was then divided by the average number of people in the household.
QA/QC procedures:	The enumerators were provided with calibrated buckets to ensure they took accurate measurements during the WCFT protocol. To ensure accuracy, the enumerators were advised to read calibrated units less of topmost numbers which could be easily read.
Purpose of data:	Calculation of emissions reductions
Additional comment:	The sampling requirement is that the 90/30 confidence/precision shall be used to determine the minimum required sample size. As demonstrated, PP only needed a minimum sample of 8 households but chose a bigger sample of 33 households for BSF and HHFF and a sample of 20 for IHFF to ensure representativeness for all vintage years. Since this is a biennially monitored parameter, these results are for 2020/2021 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:	**$Q_{p,cleanboil,y}$**
Unit:	Litres per person per day
Description:	Quantity of safe (treated, or from safe supply) water boiled in the project scenario p, after installation of project technology
Measured/Calculated / Default:	Calculated
Source of data:	GS1078 Combined Monitoring survey summary, tabs Qp,y BSF, Qp,y HHFF and Qp,y IHFF Inputs
Value(s) of monitored parameter:	BSF - 0 HHFF – 0 IHFF – 0
Monitoring equipment:	Monitoring surveys
Measuring/Reading/Recording frequency:	Biennially
Calculation method (if applicable):	The amount of filtered water boiled was obtained for the three consecutive days during the water consumption field test before the water was poured into the boiling pot. An average of this amount was then obtained and divided by the average number of people in the household.
QA/QC procedures:	The enumerators were trained how to accurately measure this parameter using calibrated buckets. The households were advised not to boil the water before the enumerators measured it.
Purpose of data:	Calculation of project emissions.
Additional comment:	The sampling requirement is that the 90/30 confidence/precision shall be used to determine the minimum required sample size. No household or institution was boiling filtered water. This is a biennially monitored parameter, hence the results reported are for 2020/2021 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:	**$Q_{p,rawboil,y}$**
Unit:	Litres per person per day
Description:	Quantity of raw water boiled in the project scenario p per person per day
Measured/Calculated / Default:	Calculated
Source of data:	GS1078 Combined Monitoring survey summary, tabs $Q_{p,y}$ BSF, $Q_{p,y}$ HHFF and $Q_{p,y}$ IHFF Inputs
Value(s) of monitored parameter:	BSF- 0 HHFF – 0 IHFF - 0
Monitoring equipment:	3-day measurement using calibrated measuring buckets
Measuring/ Reading/Recording frequency:	Biennially
Calculation method (if applicable):	The amount of raw water boiled was obtained for the three consecutive days during the water consumption field test before the water was poured into the boiling pot. An average of this amount was then obtained and divided by the average number of people in the household. (There were no households/ institutions boiling water in the project scenario)
QA/QC procedures:	The enumerators were trained how to accurately measure this parameter using calibrated buckets. The households were advised not to boil the water before the enumerators measured it.
Purpose of data:	Calculation of baseline and project emissions.
Additional comment:	The sampling requirement is that the 90/30 confidence/precision shall be used to determine the minimum required sample size. No household or institution was boiling raw water to supplement the already filtered water. This is a biennially monitored parameter, hence the results reported are for 2020/2021 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:	**Volume of safe water consumed in the project scenario**
Unit:	Litres consumed 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:	GS1078 Combined Monitoring survey summary, tabs $Q_{p,y}$ BSF, $Q_{p,y}$ HHFF and $Q_{p,y}$ IHFF Inputs
Value(s) of monitored parameter:	BSF –7 l/p/d HHFF –7 l/p/d IHFF –2.33 l/p/d
Monitoring equipment:	Calibrated Buckets for measuring water
Measuring/ Reading/Recording frequency:	Biennially, 3 consecutive days of the monitoring exercise with exception of holidays and weekends
Calculation method (if applicable):	The Water Consumption Field Test results were collected for three consecutive days in each household included in the sample frame. An average of this was then obtained. The figure was then divided by the average number of people in the household.
QA/QC procedures:	The enumerators were provided with calibrated buckets to ensure they took accurate measurements during the WCFT protocol. To ensure accuracy, the enumerators were advised to read calibrated units less of topmost numbers which could be easily read.
Purpose of data:	Calculation of emissions reductions
Additional comment:	The sampling requirement is that the 90/30 confidence/precision shall be used to determine the minimum required sample size. This is a biennially monitored parameter, hence the results reported are for 2020/2021 period.

Gold Standard Sustainable Development Indicators

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:	**Reduction in water borne diseases such as skin rash, diarrhoea, foot sores, parasites, eye problems and other water borne diseases.**
Unit:	Percentage
Description:	Number of persons who have experienced a decrease of water borne diseases such as skin rash, diarrhoea, foot sores, parasites, eye problems and other water borne diseases since using the filter
Measured/Calculated / Default:	N/A
Source of data:	GS1078 Combined Monitoring survey summary, tabs BSF, HHFF and IHFF Sustainable Development
Value(s) of monitored parameter:	BSF: 100% HHFF: 100% IHFF: 100%
Monitoring equipment:	Open ended questionnaires to ascertain real and perceived improvements in household health and reduction of water borne diseases.
Measuring/ Reading/ Recording frequency:	Annually
Calculation method (if applicable):	N/A
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's Sustainable Development Monitoring
Additional comment:	Surveys were conducted for all households and institutions with functional water filters. A minimum of 30 surveys per vintage year has been used to determine minimum required sample size. This has been achieved as the sustainable development assessment was undertaken for all the end-users with functional water filters. The samples were as follows: BSF-258, HHFF-202 and IHFF-118.

Relevant SDG Indicator	Volume of safe water consumed in the project scenario **SDG 3: Good health and well-being.** **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:	**Air Quality**
Unit:	Percentage
Description:	Measurement of user perceptions between the baseline and project scenario: smoke levels, incidence of coughing, incidence of respiratory illness, and incidence of itchy eyes.
Measured/Calculated /Default:	Measured
Source of data:	GS1078 Combined Monitoring survey summary, tabs BSF, HHFF and IHFF Sustainable Development
value(s) of monitored parameter:	BSF Reduced Smoke levels in the House: Yes = 95 No = 0% No Change = 5% Reduced Incidents of Coughing: Yes = 95% No Change = 0% Reduced incidences of Itchy Eyes: Yes = 88% No Change = 12%
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 monitoring survey questions related to air quality were fashioned in an unbiased manner so as not to influence the feedback from the respondents in any way.
Purpose of data:	Gold Standard's sustainable development monitoring
Additional comment:	A minimum of 30 surveys per vintage year has been used to determine minimum required sample size. This has been achieved as the sustainable development assessment was undertaken for all the end-users with functional water filters. The samples were as follows: BSF-258, HHFF-202 and IHFF-118.

Relevant SDG Indicator	**SDG 3: Good health and well-being. 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:	**Air Quality**
Unit:	Percentage
Description:	Measurement of user perceptions between the baseline and project scenario: smoke levels, incidence of coughing, incidence of respiratory illness, and incidence of itchy eyes.
Measured/Calculated /Default:	Measured
Source of data:	GS1078 Combined Monitoring survey summary, tabs BSF, HHFF and IHFF Sustainable Development
value(s) of monitored parameter:	HHFF Reduced Smoke levels in the House Yes = 92% No = 0% No Change = 8% Reduced Incidents of Coughing: Yes = 93% No = 0% No Change = 7% Reduced incidences of Itchy Eyes: Yes = 89% No = 1% No Change = 10%
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 monitoring survey questions related to air quality were fashioned in an unbiased manner so as not to influence the feedback from the respondents in any way.
Purpose of data:	Gold Standard's sustainable development monitoring
Additional comment:	Surveys were conducted for all households with functional water filters. A minimum of 30 surveys per vintage year has been used to determine minimum required sample size. This has been achieved as the sustainable development assessment was undertaken for all the end-users with functional water filters. The samples were as follows: BSF-258, HHFF-202 and IHFF-118.

Relevant SDG Indicator	**SDG 3: Good health and well-being.** **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:	**Air Quality**
Unit:	Percentage
Description:	Measurement of user perceptions between the baseline and project scenario: smoke levels, incidence of coughing, incidence of respiratory illness, and incidence of itchy eyes.
Measured/Calculated /Default:	Measured
Source of data:	GS1078 Combined Monitoring survey summary, tabs BSF, HHFF and IHFF Sustainable Development
value(s) of monitored parameter:	IHFF Reduced Smoke levels in the House: Yes = 93% No Change = 7% Reduced Incidents of Coughing: Yes = 92% No = 8% Reduced incidences of Itchy Eyes: Yes = 50% No Change = 50%
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 monitoring survey questions related to air quality were fashioned in an unbiased manner so as not to influence the feedback from the respondents in any way.
Purpose of data:	Gold Standard's sustainable development monitoring
Additional comment:	Surveys were conducted for all households with functional water filters. A minimum of 30 surveys per vintage year has been used to determine minimum required sample size. This has been achieved as the sustainable development assessment was undertaken for all the end-users with functional water filters. The samples were as follows: BSF-258, HHFF-202 and IHFF-118.

Relevant SDG Indicator	**SDG 6: Clean water and Sanitation** **Target 6b: Support and strengthen the participation of local communities in improving water and sanitation management**
Data / Parameter:	**Number of people attending training/ workshops on maintenance of the water filters, water hygiene and sanitation management.**
Unit:	Number
Description:	This parameter will be collected to demonstrate that the project provides training and workshops on filter assembly, installation, use and maintenance
Measured/Calculated /Default:	N/A
Source of data:	GS 1078 Training records
Value(s) of monitored parameter:	• There were 11 trainings conducted on '**Household Water Treatment and Safe Storage (HWTS) training''** where a total of 380 people were trained. **(*Ref GS 1078 training records summary*)**
Monitoring equipment:	Training records
Measuring/ Reading/Recording frequency:	Annually
Calculation method (if applicable):	N/A
QA/Procedures:	Accurate and up to date records on trainings held by the project are kept by the project participant.
Purpose of data:	Gold Standard's Sustainable Development Monitoring
Additional comment:	An additional training was held in preparation for the monitoring survey exercise. The training was conducted by Sally Gakii ClimateCare, with the Aqua Clara team leader for the monitoring exercise, Josephine Orare and Risper Mose and 11 enumerators. The training was held on 9th and 10th Feb 2022 at Aqua Clara Kenya offices.

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:	Number of people employed by the project
Measured/ Calculated / Default:	Measured
Source of data:	GS 1078 Employment Records
Value(s) of monitored parameter:	61 people were employed by the project. These included 19 permanent employees at Aqua Clara, 26 people who were employed in the filter distribution program and 16 as enumerators for the monitoring survey exercise. Both women and youth have been employed in this project as evidenced in the employment record and monitoring survey summary. For the sales agents, 6 were men and 20 women. Out of the 19 permanent ACI employees, 10 were men while 9 were women, 31 people in total are youths, defined in Kenya as persons under the age of 35 years.
Monitoring equipment:	Employment and wages 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's sustainable development monitoring
Additional comment:	The project has employed both men and women. From the employment records it is evident that all the employees are paid equally depending on equal value of work done as in the case of the where the sales agents get a pay of 500 depending on the sales channel for each filter sold. Additionally, enumerators who were part-time employees were paid ksh. 700 daily which is above the official Kenya's minimum wage while those employed as permanent employees are paid above Ksh. 13,572[11].

[11] http://kenyalaw.org/kl/fileadmin/pdfdownloads/LegalNotices/2019/LN2_2019.pdf

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:	**Employment wages of people employed by the project**
Unit:	Wages of the people employed by the project
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 1078 Employment Records Sales per sales agent Enumerator's employment record
Value(s) of monitored parameter:	26 people were employed in the filter distribution program. Each person was paid Ksh. 500 for each filter sold. The highest record of filters sold by the employees is 108 filters where the employee was paid Ksh. 54,000. While the lowest had sold receiving 6 filters and got Ksh. 3,000. There are also 19 permanent employees working with the project. The employment records have been submitted separately. Total income generated by all the employees have been submitted as confidential records
Monitoring equipment:	Employment and wages 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's sustainable development monitoring
Additional comment:	Employment records for both permanent and part time staff have been submitted as support documents.

Relevant SDG Indicator	**SDG9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation. Target: 9.4: By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities**
Data / Parameter:	**Number of people attending training/ workshops on filter installation and maintenance**
Unit:	Number of people
Description:	This parameter will be collected to demonstrate that the project provides training and workshops on filter assembly, installation, and use
Measured/Calculated /Default:	N/A
Source of data:	GS 1078 Training records
Value(s) of monitored parameter:	380
Monitoring equipment:	Training records
Measuring/ Reading/Recording frequency:	Annually
Calculation method (if applicable):	N/A
QA/QC procedures:	Accurate and up to date records on trainings held by the project are kept by the project participant.
Purpose of data:	Gold Standard's Sustainable Development Monitoring
Additional comment:	none

Relevant SDG Indicator	**SDG 13: Take urgent action to combat climate change and its impacts.** **Target 13.1: Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning.**
Data / Parameter:	**Number of workshops, seminars organized, and training-related opportunities held.**
Unit:	Number of workshops, seminars and trainings
Description:	This parameter will be collected to demonstrate that the project provides training and workshops on filter assembly, installation, and use
Measured/ Calculated / Default:	N/A
Source of data:	Training records
Value(s) of monitored parameter:	12 trainings and workshops
Monitoring equipment:	Training records
Measuring/ Reading/Recording frequency:	Annually
Calculation method (if applicable):	N/A
QA/QC procedures:	Accurate and up to date records on trainings held by the project are kept by the project participant.
Purpose of data:	Gold Standard's Sustainable Development Monitoring
Additional comment:	A total of 12 trainings were conducted. The trainings included 11 trainings on **Household Water Treatment and Safe Storage (HWTS) training** and 1 trainings done for monitoring survey between ClimateCare Aqua Clara team and 11 enumerators who conducted monitoring surveys.

Relevant SDG Indicator/Safeguarding Principle	**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	**$LE_{,p,y}$**
Unit	tCO_2e per year
Description	Leakage in project scenario p during year y
Source of data	Sources established by following Leakage emissions Section of the methodology
Value(s) applied	0
Measurement methods and procedures	In accordance with the methodology an assessment of all project scenarios which might result in leakage emissions has been conducted. This demonstrated, there are no potential leakage emission sources arising.
Monitoring frequency	Parameter to be monitored biennially.
QA/QC procedures	There are no perceived leakage risks for this project as explained in section E.3 of this Monitoring report.
Purpose of data	Calculation of Emissions Reductions.
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:	**$B_{b,y}$**
Unit:	Tons
Description:	Quantity of wood fuel consumed in baseline scenario b during the year y in tons
Measured/Calculated /Default:	Calculated
Source of data:	GS1078 Combined Monitoring survey summary, tabs BSF, HHFF and IHFF Inputs
Value(s) of monitored parameter:	BSF: 4.0215. HHFF: 3.2716 IHFF: 0.00022
Monitoring equipment:	N/A
Measuring/ Reading/ Recording frequency:	Annually
Calculation method (if applicable):	The parameter is a function of the Cj factor, $N_{p,y}$, $W_{b,y}$, Q_{py} an $Q_{p,raw\ boil}$ as shown in the equation below: $B_{by} = (1-C_j) * W_{b,y} * N_{p,y} * (Q_{py} + Q_{p,raw,boil})$
QA/QC procedures:	The variables were 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*, version 1.0"
Purpose of data:	Calculation of Baseline emissions.
Additional comment:	N/A

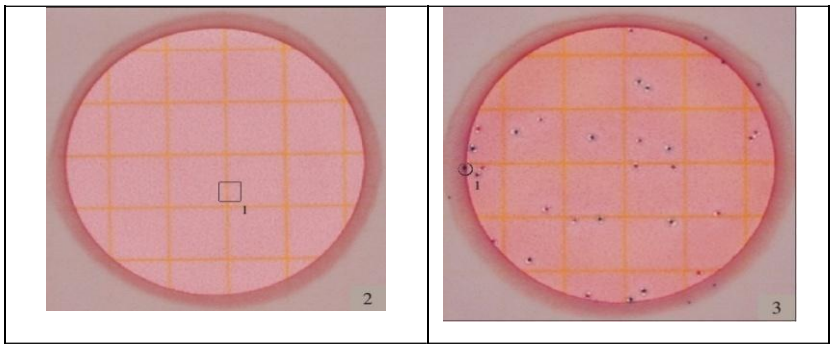
Water quality testing procedure

Water quality tests were done together with the monitoring surveys for the monitoring period between 19th February 2021 to 27th Dec 2021.

I. Water Quality Testing Approach

Water quality testing was conducted through the 3M Petrifilm instructions manual. The 3M Petrifilm plate contains Violet Red Bile (VRB) nutrients, a cold-water-soluble gelling agent, an indicator of glucuronidase activity, and an indicator that facilitates colony enumeration. Most E. coli (about 97%) produce beta- glucuronidase which produces a blue precipitate associated with the colony. The top film traps gas produced by the lactose fermenting coliforms and E. coli. About 95% of E. coli produce gas, indicated by blue to red-blue colonies associated with entrapped gas on the Petrifilm EC plate (within approximately one colony diameter). It is therefore

relatively easy to detect presence or absence of any population of the E. coli during water quality testing.



No growth = 0 **E. coli count = 13**

Figure 6: Presence and absence of E. coli in a sample of water using the 3M Petrifilm Plates.

3rd Party Endorsements

1. **CAWST9**

CAWST – Centre for Affordable Water and Sanitation Technology - a Canadian humanitarian not-for-profit organization that provides education, training and technical consulting in water and sanitation to organizations working with the poor in developing countries.

"The WHO Guidelines cover microbiological, chemical and physical qualities. However, it is stressed that microbiological quality is the most important since this is biggest cause of illness and death around the world. The water quality tests endorsed by CAWST are primarily simplistic in nature. Historically, conventional laboratories were mainly used to carry out water quality testing. Now there is a wide variety of good testing kits and products available in the commercial market that allows you to conduct water quality testing on your own without relying on a laboratory. A significant advantage of field analysis is that tests are carried out on fresh samples whose characteristics have not been contaminated or otherwise changed as a result of being stored and transported over long distances. In rural and remote communities, it is more convenient to carry out water testing on site. However, in practice, it is difficult to transport samples in a way that does not affect their bacteriological quality. Setting up a small laboratory to provide a clean and controlled environment is highly recommended.

Laboratory testing is preferred when carrying out technology verification and preparing water quality guidelines. UNICEF recommends that some complex chemicals such as antimony, barium, cadmium, mercury, molybdenum, selenium and uranium should be tested by a laboratory to achieve a reliable result. However, testing specifically for these chemicals is not usually a concern for the majority of HWTS projects".

3M Petri film is one of the kits recommended by CAWST.

Figure 7: 3M Petrifilm

There are two procedures for water testing using Petrifilm, but neither are approved international methods. The first procedure recommends the water be filtered through a cellulose acetate filter and the filter be placed on the Petrifilm. This would allow a 100 ml sample to be tested. The filter paper is not included. For this procedure, the gel needs to be prepared ahead of time adding a few extra hours on to the procedure time. If the water sample was really contaminated it could be a challenge to count all the bacteria colonies and the sample may have to be diluted. The second procedure (used by Robert Metcalf) tests a 1 ml sample by placing the sample directly on the Petrifilm. This procedure does not require that the gel be prepared ahead of time. The challenge with this procedure is that sample size is very small, and discrepancy is very likely. With any sample larger than 1 ml the water leaks off the film.

2. A practical method for rapid assessment of the bacterial quality of water[12]

In this statement, the UN recognises the need for safe drinking water in communities to avoid drinking disease-causing microbes, such as bacteria and viruses. It recognizes that a new generation of testing E. Coli has been introduced that can be performed in any setting with minimal training. The tests are being used in the most advanced water and food testing labs in developed countries, but they can also be used in remote villages.

The endorsed tests, which include the 3M plates are effective in detecting the presence of E. Coli which is a bacterium that indicates faecal contamination. Its presence in water indicates recent faecal contamination, and the possibility that microbes may also be in the water.

The endorsement explains how to use the Petrifilm test and the expected results.

The Petrifilm tests correlate with the relative risk of disease from drinking-water (WHO Guidelines for Drinking Water, 2nd Edition). The table below shows how this risk assessment is done.

Table 2: Risk assessment of water sources

Table 1: Risk assessment of water sources

Risk level	*E. coli*/sample	Colilert fluorescence	Petrifilm # Blue&gas
Low	< 1/10 ml	-	0
Moderate	1-10/10 ml	+	0
High	1-10/ml	+	1-10
Very High	>10/ml	+	>10

[12] http://mirror.unhabitat.org/pmss/getElectronicVersion.aspx?nr=3056&alt=1

If there are no blue colonies with gas bubbles on the Petrifilm, the risk of disease is low, if the Petrifilm remains clear, the risk is moderate and if between 1 and 10 blue colonies with gas appear on the Petrifilm, the risk is high. The E. Coli count Petrifilm is a reliable, sample ready medium system for enumerating E. Coli and Coliforms.

EColi Count Petrifilm contains:

- Violet, red bile nutrients, which include lactose. The bile salts and crystal violet in the medium inhibit gram positive bacteria.
- A cold water-soluble gelling agent.
- A glucuronidase indicator (BCIG, 5-bromo-4 chloro-3 indolyl-beta D Glucuronide) to identify E. Coli (the same enzyme which hydrolyzes MUG in the Coli rent test.
- A tetrazolium indicator which Gram negative bacteria reduce to a red color to enhance colony visualization.

All coliform indicator ferment lactose to produce gas bubbles. The bubbles are trapped around the coliform colony. This will distinguish coliform bacteria from other gram-negative bacteria which do not produce gas bubbles from lactose.

In addition, glucuronidase produced by most E. Coli, will hydrolyze the Glucuronide from BCIG. The BCI produces a blue colony allowing visual identification of E. Coli coliform colonies which are red with gas bubbles.

3. Testing Approach Appropriateness

The 3M Petrifilm water testing approach has an informative technology which produces productivity, consistency, easy to use and producing best results.

Benefits of 3M Petrifilm[13]

- 80 % productivity.
- Greater consistency
- Longer Shelf life

[13] http://vimeo.com/28951486

- 85% confirmed coliform result in 24 hours.
- Effective in coliform count

The 3m Plates perform similar to standard water testing requirements as found in

1) ISO 6222
2) ISO 9308

The U.S FDA Bacteriological Analytical Manual (BAM)
APHA Standard methods for the examination of Water and wastewater.

II. Water quality testing results

The PP has used the Kenya water regulations (2006) to determine the acceptable efficiency of the E. coli removal capacity of the filter technologies. The percentage removal of E. coli is given as 100%. From the water quality testing conducted,100% of the samples showed 100% E. coli removal, 100% of the HFF samples have water quality E. coli removal of 100%. All the filters that failed to meet the 100% E. coli removal standard have been deemed as non-users and stricken from the Emission reduction calculations. The PP has provided the water quality testing results in the monitoring survey data summary attached as an appendix to this monitoring report.

Below are examples of water quality test results from some households' water samples tested:

HFF Filter:

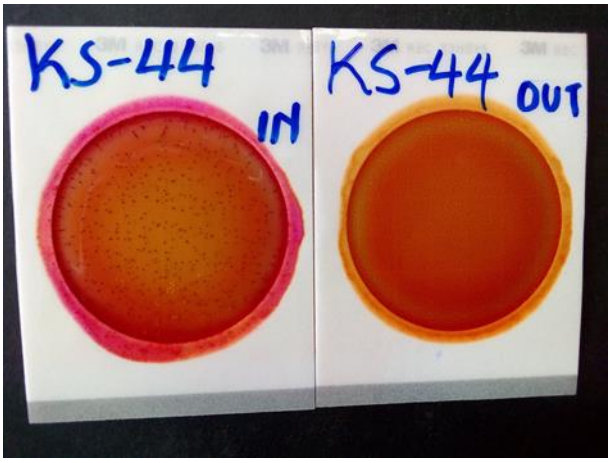


Figure 8: Sample showing presence and absence of E. coli for a HHFF user.

Household Name – Philip Kosgei
Filter Number - KS-44
Raw water quality (IN) – 6

Filtered water quality (OUT)– 0 cfu

BSF Filter:

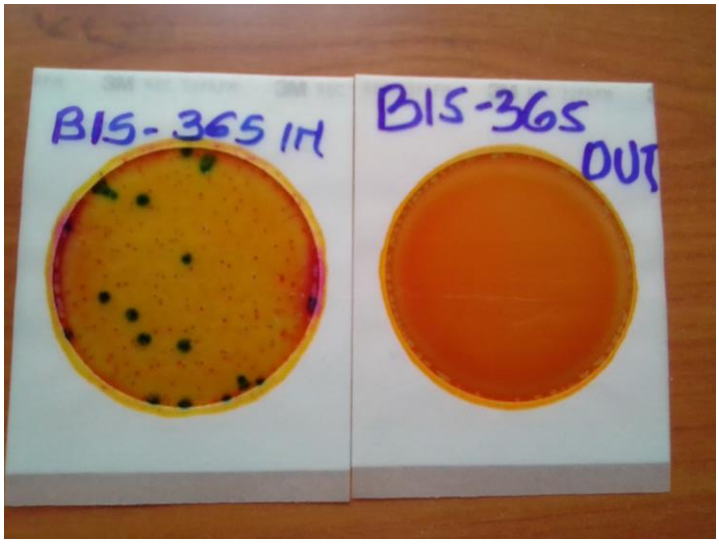


Figure 9: Diagram showing presence and absence of E. coli for a BSF user.

Household Name: Pastor mochama

Filter Number – B15 - 365

Raw water quality (IN) – 21cfu

Filtered water quality (OUT)– 0 cfu

IHFF Filter:

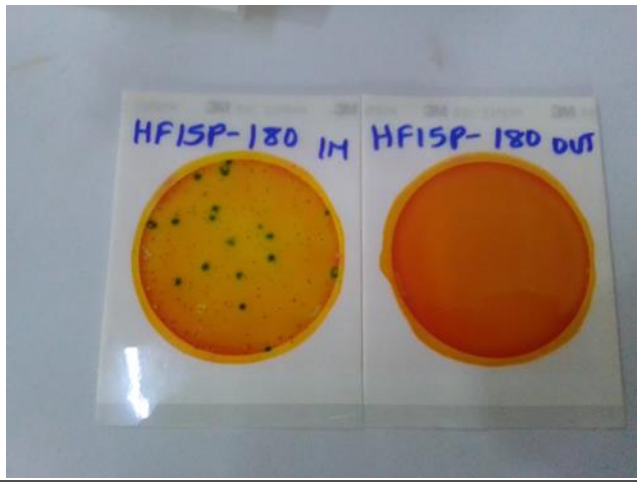


Figure 10: Diagram showing presence and absence of E. coli for IHFF user.

Household Name: Fr. Kaisser Secondary school

Filter Number – HF15P - 180

Raw water quality (IN) – 160

Filtered water quality (OUT)– 0 cfu

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

BSF

Data/Parameter	Value obtained in this monitoring period	Value obtained last monitoring period
$U_{p,y}$	83.23%	70.83%
$Q_{p,y}$ (biennially monitored capped as per WHO guidelines)	7	7
Quality of filtered water	100%	100%
$Q_{p,rawboil,y}$	0	0
$Q_{p,cleanboil,y}$	0	0
$N_{p,y}$	1,752	2,043
$B_{b,y}$	4.0215	4.6896
Number of People trained on water, hygiene, and sanitation management	380	85
Number of filters sold	2,952	3,215
Income generation	Total income Ksh. confidential, employment records provided	Total income confidential
Number of people employed	61	52
Air quality parameters	Reduction in occurrences of water borne diseases;100% Reduced Smoke levels in the House: • Yes: 95% • N/A: 0% • No change: 5% • No: 0% Reduced Incidents of Coughing: • Yes = 95% • No = 0% • No Change = 5% • N/A=0%	Reduction in occurrences of water borne diseases; 77% Reduced Smoke levels in the House: • Yes: 90% • N/A: 0% • No change:8 % • No: 2% Reduced Incidents of Coughing: • Yes = 93% • No = 0% • No Change = 7% • N/A=0%

	Reduced incidences of Itchy Eyes: • Yes = 88% • No = 0% • No Change = 12% • N/A=0%	Reduced incidences of Itchy Eyes: • Yes = 77% • No = 0% • No Change = 23% • N/A=0%

HHFF

Data/Parameter	Value obtained in this monitoring period	Value obtained last monitoring period
$U_{p,y}$	87.45%	92.64%
Qp,y (biennially monitored capped as per WHO guidelines)	7	7
Quality of filtered water	100%	98.6%
$Q_{p,rawboil,y}$	0	0
$Q_{p,cleanboil,y}$	0	0
$N_{p,y}$	1,425	1,662
$B_{b,y}$	3.2716	3.8158
Number of People trained on water, hygiene and sanitation management	380	85
Number of filters sold	2,212	2,212
Income generation	Total income confidential, employment records provided	Total income confidential, employment records provided
Number of people employed	61	52
Air quality parameters	Reduction in occurrences of water borne diseases; 92% Reduced Smoke levels in the House: • Yes: 92% • N/A: 0% • No change: 8% • No: 0%	Reduction in occurrences of water borne diseases; 87% Reduced Smoke levels in the House: • Yes: 92% • N/A: 0% • No change: 7% • No: 1%

	Reduced Incidents of Coughing: • Yes = 92% • No = 0% • No Change = 8% • N/A=0% Reduced incidences of Itchy Eyes: • Yes = 89% • No = 1% • No Change = 10% • N/A=0%	Reduced Incidents of Coughing: • Yes = 88% • No = 1% • No Change = 11 • N/A=0% Reduced incidences of Itchy Eyes: • Yes = 87 • No = 1% • No Change = 12% • N/A=0%

IHFF

Data/Parameter	Value obtained in this monitoring period	Value obtained last monitoring period
$U_{p,y}$	96.67%	90.55%
$Q_{p,y}$ (biennially monitored capped as per WHO guidelines)	2.33	2.33
Quality of filtered water	100%	100%
$Q_{p,rawboil,y}$	0	0
$Q_{p,cleanboil,y}$	0	0
$N_{p,y}$	106	65.05%
$B_{b,y}$	0.00022	0.000022
Number of People trained on water, hygiene and sanitation management	380	85
Number of filters sold	141	192
Income generation	Total income Confidential, employment records provided	Total income Confidential, employment records provided
Number of people employed	61 (24 men and 37 women)	52 (34 men 18 women)
Air quality parameters	Reduction in occurrences of water borne diseases; 100%	Reduction in occurrences of water borne diseases;100%

	Reduced Smoke levels in the House: • Yes: 93% • N/A: 0% • No change: 7% • No: 0% Reduced Incidents of Coughing: • Yes = 92% • No = 8% • No Change = 0% • N/A=0% Reduced incidences of Itchy Eyes: • Yes = 50% • No = 0% • No Change = 50% • N/A=0%	Reduced Smoke levels in the House: • Yes: 76% • N/A: 0% • No change: 24% • No: 0% Reduced Incidents of Coughing: • Yes = 76% • No = 0% • No Change = 24% • N/A=0% Reduced incidences of Itchy Eyes: • Yes = 79% • No = 0% • No Change = 21% • N/A=0%

D.4. Implementation of sampling plan

Systematic sampling method was used to determine the random test subjects from the total sales record.

Determination of the Sample size

A total of 310 households for the BSF, 231 HHFF and 120 IHFF were initially randomly selected for this monitoring period.

The following method was used to determine the sampling units.

1. A list of the geographical regions in the total sales record and the total number of filters sold in these regions was determined.
2. Cumulative sum of all the BSF filters HHFF filters, and IHFF filters sold was 2,952 BSF Filters and 2,212 HHFF and 141 IHFF.
3. The total number of filters sold in the respective age groups was then divided by the sample size chosen for that particular age group for BSF and HHFF. This result determined the Sample Interval.

4. A random number was determined between 1 and the Sample Interval was which gave the Random Start.

5. Sample units were then determined as

a) SU1=RS

b) SU2=RS+SI

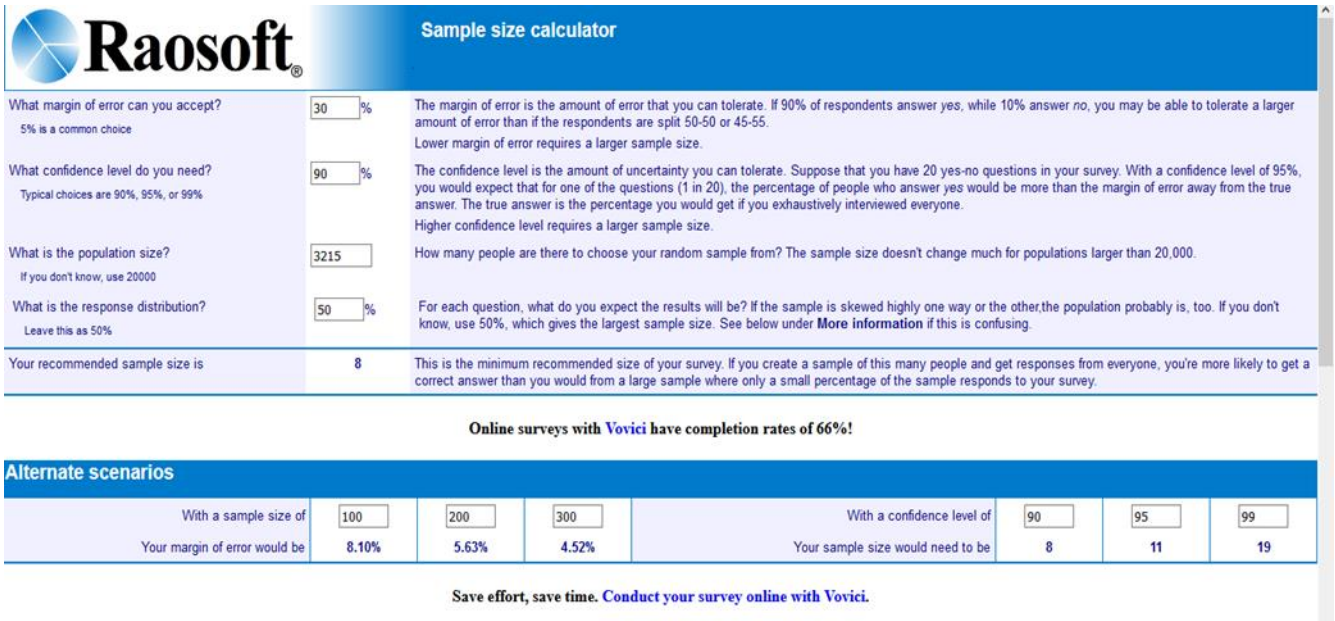
c) SUN=RS+(n-1) SI

6. The identified sample units were then identified with corresponding household in the Total Sales Record which provided the name of the household and the details of the location of the household.

7. For WCFT exercise, PP followed 90/30 precision as per the methodology for sample selection. Only 8 surveys were needed however PP did a larger sample where for BSF PP had **33** households, for HHFF **33** households and for IHFF, **22** institutions. Below is calculation of sample size selection for WCFT. To ensure that all vintage years were represented on the sample frame for the WCFT exercise, PP selected the first few households on the sample frame for each vintage year.

BSF Technology

The sample required to meet the 90/30 confidence level was 8. However, PP undertook water quality testing survey for all the 258 households sampled with functional BSF filters and 33 surveys for WCFT**.**



Raosoft®

Sample size calculator

What margin of error can you accept? 5% is a common choice	30 %	The margin of error is the amount of error that you can tolerate. If 90% of respondents answer *yes*, while 10% answer *no*, you may be able to tolerate a larger amount of error than if the respondents are split 50-50 or 45-55. Lower margin of error requires a larger sample size.
What confidence level do you need? Typical choices are 90%, 95%, or 99%	90 %	The confidence level is the amount of uncertainty you can tolerate. Suppose that you have 20 yes-no questions in your survey. With a confidence level of 95%, you would expect that for one of the questions (1 in 20), the percentage of people who answer *yes* would be more than the margin of error away from the true answer. The true answer is the percentage you would get if you exhaustively interviewed everyone. Higher confidence level requires a larger sample size.
What is the population size? If you don't know, use 20000	3215	How many people are there to choose your random sample from? The sample size doesn't change much for populations larger than 20,000.
What is the response distribution? Leave this as 50%	50 %	For each question, what do you expect the results will be? If the sample is skewed highly one way or the other,the population probably is, too. If you don't know, use 50%, which gives the largest sample size. See below under **More information** if this is confusing.
Your recommended sample size is	8	This is the minimum recommended size of your survey. If you create a sample of this many people and get responses from everyone, you're more likely to get a correct answer than you would from a large sample where only a small percentage of the sample responds to your survey.

Online surveys with Vovici have completion rates of 66%!

Alternate scenarios

With a sample size of	100	200	300	With a confidence level of	90	95	99
Your margin of error would be	8.10%	5.63%	4.52%	Your sample size would need to be	8	11	19

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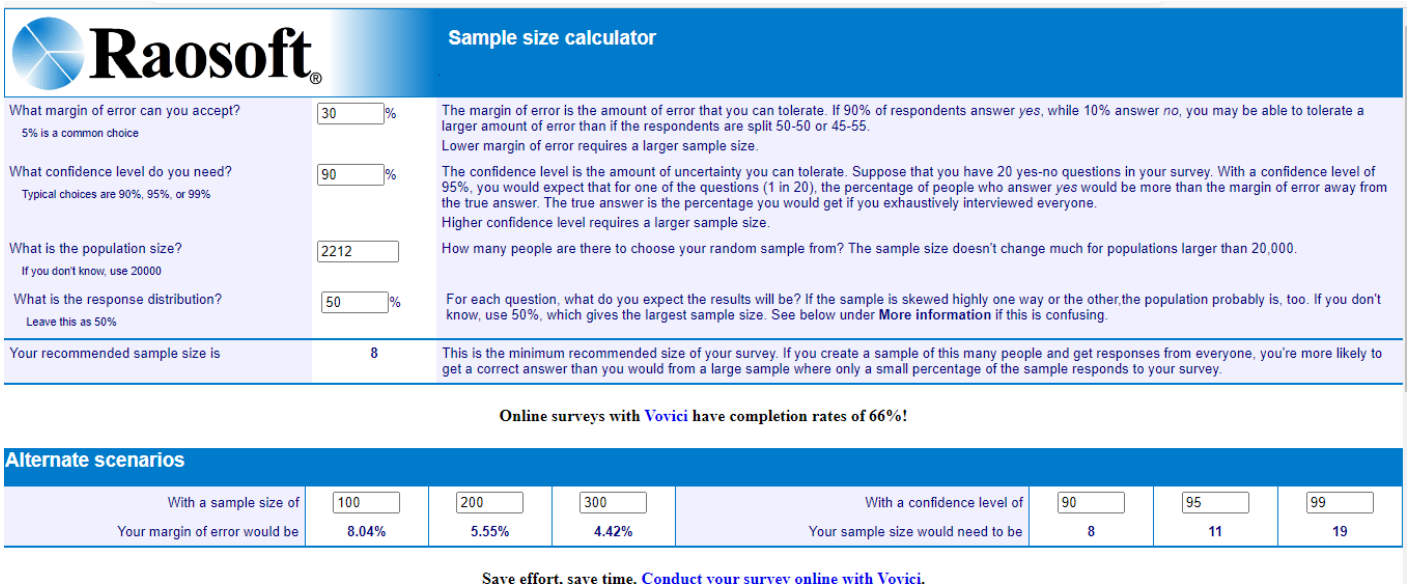
HHFF technology

The sample required to meet the 90/30 confidence level was 8. However, PP undertook water quality testing survey for all the 202 households sampled with functional HHFF filters and 33 surveys for WCFT.



Raosoft®

Sample size calculator

What margin of error can you accept? 5% is a common choice	30 %	The margin of error is the amount of error that you can tolerate. If 90% of respondents answer *yes*, while 10% answer *no*, you may be able to tolerate a larger amount of error than if the respondents are split 50-50 or 45-55. Lower margin of error requires a larger sample size.
What confidence level do you need? Typical choices are 90%, 95%, or 99%	90 %	The confidence level is the amount of uncertainty you can tolerate. Suppose that you have 20 yes-no questions in your survey. With a confidence level of 95%, you would expect that for one of the questions (1 in 20), the percentage of people who answer *yes* would be more than the margin of error away from the true answer. The true answer is the percentage you would get if you exhaustively interviewed everyone. Higher confidence level requires a larger sample size.
What is the population size? If you don't know, use 20000	2212	How many people are there to choose your random sample from? The sample size doesn't change much for populations larger than 20,000.
What is the response distribution? Leave this as 50%	50 %	For each question, what do you expect the results will be? If the sample is skewed highly one way or the other,the population probably is, too. If you don't know, use 50%, which gives the largest sample size. See below under **More information** if this is confusing.
Your recommended sample size is	8	This is the minimum recommended size of your survey. If you create a sample of this many people and get responses from everyone, you're more likely to get a correct answer than you would from a large sample where only a small percentage of the sample responds to your survey.

Online surveys with Vovici have completion rates of 66%!

Alternate scenarios

With a sample size of	100	200	300	With a confidence level of	90	95	99
Your margin of error would be	8.04%	5.55%	4.42%	Your sample size would need to be	8	11	19

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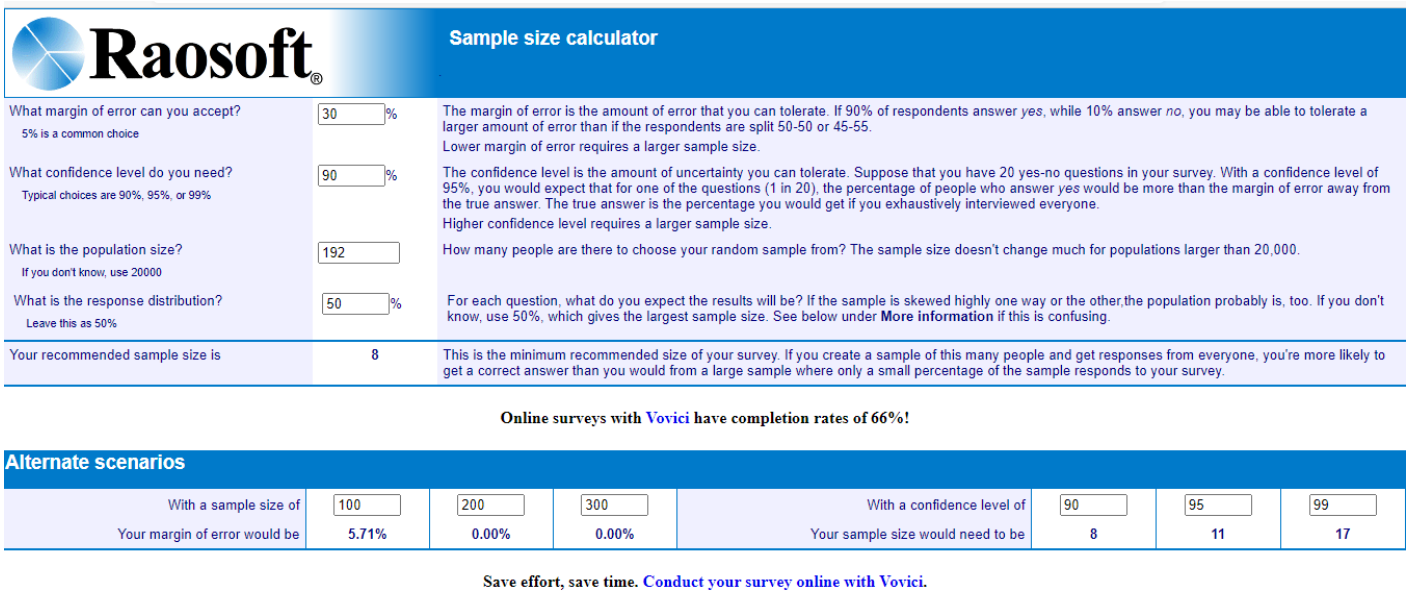
IHFF technology

The sample required to meet the 90/30 confidence level was 8. However, PP undertook water quality testing survey for all the 118 institutions sampled with functional IHFF filters.



Raosoft®

Sample size calculator

What margin of error can you accept? 5% is a common choice	30 %	The margin of error is the amount of error that you can tolerate. If 90% of respondents answer *yes*, while 10% answer *no*, you may be able to tolerate a larger amount of error than if the respondents are split 50-50 or 45-55. Lower margin of error requires a larger sample size.
What confidence level do you need? Typical choices are 90%, 95%, or 99%	90 %	The confidence level is the amount of uncertainty you can tolerate. Suppose that you have 20 yes-no questions in your survey. With a confidence level of 95%, you would expect that for one of the questions (1 in 20), the percentage of people who answer *yes* would be more than the margin of error away from the true answer. The true answer is the percentage you would get if you exhaustively interviewed everyone. Higher confidence level requires a larger sample size.
What is the population size? If you don't know, use 20000	192	How many people are there to choose your random sample from? The sample size doesn't change much for populations larger than 20,000.
What is the response distribution? Leave this as 50%	50 %	For each question, what do you expect the results will be? If the sample is skewed highly one way or the other,the population probably is, too. If you don't know, use 50%, which gives the largest sample size. See below under **More information** if this is confusing.
Your recommended sample size is	8	This is the minimum recommended size of your survey. If you create a sample of this many people and get responses from everyone, you're more likely to get a correct answer than you would from a large sample where only a small percentage of the sample responds to your survey.

Online surveys with Vovici have completion rates of 66%!

Alternate scenarios

With a sample size of	100	200	300	With a confidence level of	90	95	99
Your margin of error would be	5.71%	0.00%	0.00%	Your sample size would need to be	8	11	17

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There were replacements done after the initial calls to the households. The reasons for replacements was that some households were not willing to be visited during the pandemic, some phone numbers were switched off hence could not reach the households, some households were not answering the phone and in some incidences, the households said that they do not want to be called about the exercise.

For replacements, the PP ran a slightly larger sample that the number of replacements needed per vintage year to ensure that the required number was achieved. The project implementer then would call and once the desired number is attained, then they would move to the next vintage year. This ensured that random sampling was applied for BSF, 70 replacements were made, HHFF 63 replacements were made while for IHFF no replacements were made.

For BSF, the sample used for Usage Survey is 310 for water quality test analysis, a sample of 100 was randomly selected from the larger sample of 310 samples *(ref BSF TSR and sample frame 2021–2022-tab water quality sample frame)*. For HHFF the sample used for usage survey was 231 whereas the sample for water quality was 100 households randomly selected from the larger sample of 231 *(ref HHF TSR and sample frame 2021-2022 Final tab water quality)*. For IHFF samples used for usage survey was 120 whereas those used for water quality analysis was 100 samples randomly selected *(ref IHF TSR and Sample Frame 2020–2021-tab water quality testing).*

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 with 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. Project's 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: BSF technology

Parameter	Value applied	Remarks

Usage rate ($U_{p,y}$)	0%	No persons were using the project technology in the baseline scenario
Number of people. days consuming water supplied by project scenario p through year y($N_{j,y}$)	0	No persons were using the project technology in the baseline scenario
Reduced incidence in water borne diseases	High incidence of water borne diseases: 0% reduction	No persons were using the project technology in the baseline scenario
Reduced smoke levels	High smoke level in the households: 0% reduction	No persons were using the project technology in the baseline scenario
Reduced incidences of coughing.	High Incidences of coughing: 0% reduction	No persons were using the project technology in the baseline scenario
Reduced incidences of itchy eyes	High incidence of itchy eyes: 0% reduction	No persons were using the project technology in the baseline scenario

SDG 3: HHFF technology

Parameter	Value applied	Remarks
Usage rate ($U_{p,y}$)	0%	No persons were using the project technology in the baseline scenario
Number of people. days consuming water supplied by project scenario p through year y($N_{j,y}$)	0	No persons were using the project technology in the baseline scenario
Reduced incidence in water borne diseases	High incidence of water borne diseases: 0% reduction	No persons were using the project technology in the baseline scenario
Reduced smoke levels	High smoke level in the households: 0% reduction	No persons were using the project technology in the baseline scenario
Reduced incidences of coughing.	High Incidences of coughing: 0% reduction	No persons were using the project technology in the baseline scenario

Reduced incidences of itchy eyes	High incidence of itchy eyes: 0% reduction	No persons were using the project technology in the baseline scenario

SDG 3: IHFF technology

Parameter	Value applied	Remark
Usage rate ($U_{p,y}$)	0%	No persons were using the project technology in the baseline scenario
Number of people. days consuming water supplied by project scenario p through year y($N_{j,y}$)	0	No persons were using the project technology in the baseline scenario
Reduced incidence in water borne diseases	High incidence of water borne diseases: 0% reduction	No persons were using the project technology in the baseline scenario
Reduced smoke levels	High smoke level in the households: 0% reduction	No persons were using the project technology in the baseline scenario
Reduced incidences of coughing.	High Incidences of coughing: 0% reduction	No persons were using the project technology in the baseline scenario
Reduced incidences of itchy eyes	High incidence of itchy eyes: 0% reduction	No persons were using the project technology in the baseline scenario

SDG 6: BSF technology

Parameter	Value applied	Remarks
$Q_{P,y}$	0 l/p/d	No clean and safe water was being supplied by the project in the baseline scenario.
$Q_{P,raw\ boil}$	0l/p/d	No clean and safe water was being supplied by the project in the baseline scenario.

$Q_{P,clean\ boil}$	0l/p/d	No clean and safe water was being supplied by the project in the baseline scenario.
Volume of clean water consumed.	0l/p/d	No clean and safe water was being supplied by the project in the baseline scenario.
Quality of treated water	0%	No clean and safe water was being supplied by the project in the baseline scenario.
Number of people attending workshops, seminars or trainings on water, hygiene and sanitation management	0	No trainings or workshops were being organised by the project in the baseline scenario.

SDG 6: HHFF technology

Parameter	Value applied	Remark
$Q_{P,y}$	0l/p/d	No clean and safe water was being supplied by the project in the baseline scenario.
$Q_{P,raw\ boil}$	0l/p/d	No clean and safe water was being supplied by the project in the baseline scenario.
$Q_{P,clean\ boil}$	0l/p/d	No clean and safe water was being supplied by the project in the baseline scenario.
Volume of clean water consumed.	0l/p/d	No clean and safe water was being supplied by the project in the baseline scenario.
Quality of treated water	0%	No clean and safe water was being supplied by the project in the baseline scenario.
Number of people attending workshops, seminars or trainings on water, hygiene and sanitation management	0	No trainings or workshops were being organised by the project in the baseline scenario.

SDG 3: IHFF technology

Parameter	Value applied	Remark
$Q_{P,y}$	0l/p/d	No clean and safe water was being supplied by the project in the baseline scenario.
$Q_{P,raw\ boil}$	0l/p/d	No clean and safe water was being supplied by the project in the baseline scenario.
$Q_{P,clean\ boil}$	0l/p/d	No clean and safe water was being supplied by the project in the baseline scenario.
Volume of clean water consumed	0l/p/d	No clean and safe water was being supplied by the project in the baseline scenario.
Quality of treated water	0%	No clean and safe water was being supplied by the project in the baseline scenario.
Number of people attending workshops, seminars or trainings on water, hygiene, and sanitation management	0	No trainings or workshops were being organised by the project in the baseline scenario.

SDG 8: BSF, HHFF and IHFF technologies

Parameter	Value applied	Remark
Number of persons employed by the project.	0	No persons were employed by the project in the baseline scenario
Change in number of jobs and positions for women or change in income and asset distributions by region, ethnicity, religion, and socioeconomic groups	0	No persons were employed by the project in the baseline scenario
Employment wages of people employed by the project	0	No persons were employed by the project in the baseline scenario

SDG 9: BSF, HHFF and IHFF technologies

Parameter	Value applied	Remark
Number of people trained on filters installation and maintenance	0	No persons were being trained by the project in the baseline scenario

SDG 13: BSF technology

Parameter	Value applied	Remark
Number of filters sold	0	No filters had been distributed by the project in the baseline
Number of workshops, seminars organized, and training-related opportunities held.	0	No persons were being trained by the project in the baseline scenario
$B_{b,y}$	4.0215	
Total baseline emissions	**17,179 tCO_2e**	

SDG 13: HHFF technology

Parameter	Value applied	Remark
Number of filters sold	0	No filters had been distributed by the project in the baseline
Number of workshops, seminars organized, and training-related opportunities held	0	No persons were being trained by the project in the baseline scenario
$B_{b,y}$	3.2715	
Total baseline emissions	**10,379 tCO_2e**	

SDG 13: IHFF technology

Parameter	Value applied	Remark
Number of filters sold.	0	No filters had been distributed by the project in the baseline
Number of workshops, seminars organized, and training-related opportunities held	0	No persons were being trained by the project in the baseline scenario
$B_{b,y}$	0.00022368	
Total baseline emissions	**1,358 tCO_2e**	

BASELINE EMISSIONS CALCULATIONS

Baseline Emissions are calculated as follows:

$$BE_{b,y} = B_{b,y} * ((f_{NRB,b,y} * EF_{b,fuel,CO2}) + EF_{b,fuel,nonCO2}) * NCV_{b\ fuel}$$

In accordance with 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 1st January 2013) will be calculated using the revised GWPs. Projects emission reductions accrued before 1st January 2013 will use the former GWP values[14].

Quantity of fuel consumed in baseline scenario b during year y, in tons ($B_{b,y}$)

[14] http://www.goldstandard.org/wp-content/uploads/2011/09/Global-Warming-Potentials-for-Gold-Standard- Project-Activities-2013.pdf

BSF, HHFF and IHFF Filters:

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

Where:

Parameter	Description	Value applied BSF	Value applied HHFF	Value applied IHFF
$N_{p,y}$	Number of people consuming water supplied by project scenario p through year y	1,752	1,662	106
C_j	Expressed as a percentage, this is the portion of users of the project technology j who in the baseline are already consuming safe water without boiling it	18%	18%	76%
$B_{b,y}$	Quantity of fuel consumed in baseline scenario b during the year y in tons.	4.6896	3.8150	0.00022
$Q_{p,y}$	Quantity of safe water in litres consumed in the project scenario p and supplied by project technology per person per day.	7 l/p/d	7 l/p/d	2.33 l/p/d
$Qp_{, raw,boil,y}$	Quantity of raw water boiled in the project scenario p per person per day.	0 l/p/d	0 l/p/d	0 l/p/d

$W_{b,y}$	Quantity of fuel in tons required to treat 1 litre of water using technologies representative of baseline scenario b during project year y, as per Baseline Water Boiling Test.	0.0004	0.0004	0.0004
$f_{NRB,b.y}$	Fraction of non-renewable biomass	0.92	0.92	0.92
$EF_{b,\ fuel,\ co2}$	CO2 emission factor of the wood fuel	112	112	112
$EF_{b,\ fuel,\ CH4}$	CH4 emission factor of the wood fuel	GWP after 01/01/2021 = 8.4(0.3*28)	GWP after 01/01/2021 = 8.4(0.3*28)	GWP after 01/01/2021 = 8.4(0.3*28)
$EF_{b,\ fuel,\ N2O}$	N2O emission factor of the wood fuel	GWP after 01/01/2021 = 1.06 (0.004*265)	GWP after 01/01/2021 = 1.06 (0.004*265)	GWP after 01/01/2021 = 1.06 (0.004*265)
$NCV_{b,\ fuel}$	Net calorific value of the fuel that is substituted or reduced	0.015	0.015	0.015
$BE_{,by}$	**Baseline emissions**	**17,179 tCO_2e**	**10,379 tCO_2e**	**1,358 tCO_2e**

Combined Summary of Baseline emissions in the monitoring period by both BSF, HHFF and IHFF

Table 6: summary of baseline emissions in the monitoring period

Period	BSF Total Baseline Emissions (tCO2e)	HHFF Total Baseline Emissions (tCO2e)	IHFF total Baseline Emissions (tCO2e)	Combined Totals (tCO2e)
19/02/2021-27/12/2021	17,179	10,379	1,358	28,916

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

>> **SDG 3: BSF technology**

Parameter	Value applied	Source of data
Usage rate ($U_{p,y}$)	83.23%	GS 1078 Combined MSS and ERs calculations sheet, tab BSF Usage survey
Number of people. days consuming water supplied by project scenario p through year y($N_{p,y}$)	1,752	GS 1078 Combined MSS and ERs calculations sheet, tab BSF Inputs
Reduced incidence in water borne diseases	100%	GS 1078 Combined MSS and ERs calculations sheet, tab BSF Sustainable development
Reduced smoke levels	95%	GS 1078 Combined MSS and ERs calculations sheet, tab BSF Sustainable development
Reduced incidences of coughing.	95%	GS 1078 Combined MSS and ERs calculations sheet, tab BSF Sustainable development
Reduced incidences of itchy eyes	88%	GS 1078 Combined MSS and ERs calculations sheet, tab BSF Sustainable development

SDG 3: HHFF technology

Parameter	Value applied	Source of data
Usage rate ($U_{p,y}$)	87.45%	GS 1078 Combined MSS and ERs calculations sheet, tab HHFF Usage survey

Number of people. days consuming water supplied by project scenario p through year y($N_{p,y}$)	1,425	GS 1078 Combined MSS and ERs calculations sheet, tab HHFF Inputs
Reduced incidence in water borne diseases	93%	GS 1078 Combined MSS and ERs calculations sheet, tab HHFF sustainable development
Reduced smoke levels	92%	GS 1078 Combined MSS and ERs calculations sheet, tab HHFF sustainable development
Reduced incidences of coughing.	93%	GS 1078 Combined MSS and ERs calculations sheet, tab HHFF sustainable development
Reduced incidences of itchy eyes	89%	GS 1078 Combined MSS and ERs calculations sheet, tab HHFF sustainable development

SDG 3: IHFF technology

Parameter	Value applied	Source of data
Usage rate ($U_{p,y}$)	96.67%	GS 1078 Combined MSS and ERs calculations sheet , tab IHFF Usage survey
Number of people. days consuming water supplied by project scenario p through year y($N_{p,y}$)	106	GS 1078 Combined MSS and ERs calculations sheet, tab IHFF ER calculations IHFF
Reduced incidence in water borne diseases	100%	GS 1078 Combined MSS and ERs calculations sheet, tab IHFF Sustainable development
Reduced smoke levels	93%	GS 1078 Combined MSS and ERs calculations sheet, tab IHFF Sustainable development
Reduced incidences of coughing.	92%	GS 1078 Combined MSS and ERs calculations sheet, tab IHFF Sustainable development
Reduced incidences of itchy eyes	50%	GS 1078 Combined MSS and ERs calculations sheet, tab IHFF Sustainable development

SDG 6: BSF technology

Parameter	Value applied	Source of data
QP,y	7 l/p/d	GS 1078 Combined MSS and ERs calculations sheet, tab BSF Q,py
$QP_{,raw\ boil}$	0 l/p/d	GS 1078 Combined MSS and ERs calculations sheet, tab BSF Qp,y
$QP_{,clean\ boil}$	0 l/p/d	GS 1078 Combined MSS and ERs calculations sheet, tab BSF Qp,y inputs
Volume of clean water consumed.	7 l/p/d	GS 1078 Combined MSS and ERs calculations sheet, tab BSF Q,py
Quality of treated water	100%	GS 1078 Combined MSS and ERs calculations sheet, tab Water Quality Analysis
Number of people attending workshops, seminars or trainings on	380	GS 1078 Training records

water, hygiene, and sanitation management		

SDG 6: HHFF technology

Parameter	Value applied	Source of data
QP,y	7 l/p/d	GS 1078 Combined MSS and ERs calculations sheet, tab Qp,y HHFF
$QP_{,raw\ boil}$	0 l/p/d	GS 1078 Combined MSS and ERs calculations sheet, tab Qp,y HHFF
$QP_{,clean\ boil}$	0 l/p/d	GS 1078 Combined MSS and ERs calculations sheet, tab Qp,y HHFF
Volume of clean water consumed.	7 l/p/d	GS 1078 Combined MSS and ERs calculations sheet, tab Qp,y HHFF
Quality of treated water	100%	GS 1078 Combined MSS and ERs calculations sheet, tab water quality HHFF
Number of people attending workshops, seminars or trainings on water, hygiene, and sanitation management	380	GS 1078 Training records

SDG 6: IHFF technology

Parameter	Value applied	Source of data
QP,y	2.33 l/p/d	GS 1078 Combined MSS and ERs calculations sheet, tab Qp,y IHFF
$QP_{,raw\ boil}$	0 l/p/d	GS 1078 Combined MSS and ERs calculations sheet, tab Qp,y IHFF
$QP_{,clean\ boil}$	0 l/p/d	GS 1078 Combined MSS and ERs calculations sheet, tab Qp,y IHFF
Quality of treated water	100%	GS 1078 Combined MSS and ERs calculations sheet, tab water quality analysis IHFF
Number of people attending workshops, seminars or trainings on	380	GS 1078 Training records

water, hygiene, and sanitation management		

SDG 8: BSF, HHFF and IHFF technologies

Parameter	Value applied	Source of data
Number of persons employed by the project.	61	GS 1078 Employment records
Change in number of jobs and positions for women or change in income and asset. distributions by region, ethnicity, religion, and socioeconomic groups	37 women and 31 youths	GS 1078 Employment records
Employment wages of people employed by the project.	Confidential, employment records provided	GS 1078 Employment records

SDG 9: BSF, HHFF and IHFF technologies

Parameter	Value applied	Source of data
Number of people trained on filters installation and maintenance	380	GS 1078 Training summary

SDG 13: BSF technology

Parameter	Value applied	Source of data
Number of filters sold.	2,952	BSF TSR and Sample frame 2021-2022, tab TSR
Number of workshops, seminars organized, and training related. opportunities held.	12 (11 trainings conducted on Household Water Treatment and Safe Storage (HWTS) training + 1 training on conducting monitoring surveys.	GS 1078 Training records
$B_{p,y}$	0 tonnes	GS 1078 Combined MSS and ERs calculations sheet, tab BSF 2021

Total project emissions	0 tCO_2e	GS 1078 Combined MSS and ERs calculations sheet 2021

SDG 13: HHFF technology

Parameter	Value applied	Source of data
Number of filters sold	**2,212**	HHFF TSR and Sample frame 2021, tab TSR
Number of workshops, seminars organized, and training-related opportunities held	**12 (11 trainings conducted on Household Water Treatment and Safe Storage (HWTS) training + 1 training on conducting monitoring surveys.**	GS 1078 Training records
$B_{p,y}$	0 tonnes	GS 1078 Combined MSS and ERs calculations sheet 2021
Total project emissions	0 tCO_2e	GS 1078 Combined MSS and ERs calculations sheet, tab HHFF 2021

SDG 13: IHFF technology

Parameter	Value applied	Source of data
Number of filters sold.	**141**	IHFF TSR and Sample frame 2021, tab TSR
Number of workshops, seminars organized, and training-related opportunities held.	**12 (11 trainings conducted on Household Water Treatment and Safe Storage (HWTS) training + 1 training on conducting monitoring surveys.**	GS 1078 Training records
$B_{p,y}$	0 tonnes	GS 1078 Combined MSS and ERs calculations sheet, tab IHFF 2021

Total project emissions	**0**	GS 1078 Combined MSS and ERs calculations sheet 2021

PROJECT EMISSIONS CALCULATIONS

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)

BSF technology

Parameter	Description	Value applied
$N_{p,y}$	Number of person. days consuming water supplied by project scenario p through year y	1,752
C_j	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	18%
$Qp_{,rawboil,y}$	Quantity of raw water boiled in the project scenario p per person per day	0 l/p/d
$Qp_{,cleanboil,y}$	Quantity of safe water boiled in the project scenario p per person per day	0l/p/d
$W_{p,y}$	Quantity of wood fuel or fossil fuel in tons required to treat 1 litre of water using technologies representative of the project scenario p during project year y	0.0004tonnes
$B_{p,y}$	Quantity of fuel consumed in project scenario p during the year y in tons	= (1-0.18) *2043* 0.0004*(0+0) =**0 tonnes**

HHFF technology

Parameter	Description	Value applied
$N_{p, y}$	Number of people. days consuming water supplied by project scenario p through year y	1,425
C_j	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	18%
$Qp_{, rawboil, y}$	Quantity of raw water boiled in the project scenario p per person per day	0 l/p/d
$Qp_{, cleanboil,y}$	Quantity of safe water boiled in the project scenario p per person per day.	0 l/p/d
$W_{p,y}$	Quantity of wood fuel or fossil fuel in tons required to treat 1 litre of water using technologies representative of the project scenario p during project year y	0.0004 tonnes
$B_{p, y}$	Quantity of fuel consumed in project scenario p during the year y in tons	= (1-0.18) *1,662* 0.0004*(0+0) **=0 tonnes**

IHFF technology

Parameter	Description	Value applied
$N_{p, y}$	Number of people. days consuming water supplied by project scenario p through year y	106
C_j	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	76%
$Qp_{, rawboil, y}$	Quantity of raw water boiled in the project scenario p per person per day	0 l/p/d
$Qp_{, cleanboil,y}$	Quantity of safe water boiled in the project scenario p per person per day	0 l/p/d
$W_{p,y}$	Quantity of wood fuel or fossil fuel in tons required to treat 1 litre of water using technologies representative of the project scenario p during project year y	0.0004tonnes

$B_{p,\ y}$	Quantity of fuel consumed in project scenario p during the year y in tons	= (1-0.76) *106*0.0004*(0+0) **=0 tonnes**

Calculation of Project Emissions

$PE_{,y} = B_{p,y}* ((f_{NRB,b,y}*EF_{b,fuel,CO2}) + (EF_{b,fuel,CH4} + EF_{b,fuel,N2O}) * NCV_{b,fuel}$

BSF technology

Parameter	Description	Value applied
$f_{NRB,\ b,y}$	Fraction of biomass used in year y for project scenario b that can be established as non-renewable biomass.	0.92
$EF_{b,\ fuel,\ CO2}$	CO2 emission factor of the wood fuel	112
$EF_{b,\ fuel,\ CH4}$	CH4 emission factor of the wood fuel	GWP = 8.4(0.3*28)
$EF_{b,\ fuel,\ N2O}$	N_2O emission factor of the wood fuel	GWP = 1.06 (0.004*265)
$NCV_{b,\ fuel}$	Net calorific value of the fuel that is substituted or reduced	0.015
$B_{p,y}$	Quantity of fuel consumed in project scenario p during the year y in tons	0
PEy	Project emissions	**0 tCO_2e**

HHFF technology

Parameter	Description	Value applied
$f_{NRB, b,y}$	Fraction of biomass used in year y for project scenario b that can be established as non-renewable biomass.	0.92
$EF_{b, fuel, CO2}$	CO2 emission factor of the wood fuel	112
$EF_{b, fuel, CH4}$	CH4 emission factor of the wood fuel	GWP = 8.4 (0.3*28)
$EF_{b, fuel, N2O}$	N_2O emission factor of the wood fuel	GWP = 1.06 (0.004*265
$NCV_{b, fuel}$	Net calorific value of the fuel that is substituted or reduced	0.015
$B_{p,y}$	Quantity of fuel consumed in project scenario p during the year y in tons	0
PEy	Project emissions	**0 tCO_2e**

IHFF technology

Parameter	Description	Value applied
$f_{NRB, b,y}$	Fraction of biomass used in year y for project scenario b that can be established as non-renewable biomass.	0.92
$EF_{b, fuel, CO2}$	CO2 emission factor of the wood fuel	112
$EF_{b, fuel, CH4}$	CH4 emission factor of the wood fuel	GWP = 8.4(0.3*28)
$EF_{b, fuel, N2O}$	N_2O emission factor of the wood fuel	GWP = 1.06 (0.004*265
$NCV_{b, fuel}$	Net calorific value of the fuel that is substituted or reduced	0.015
$B_{p,y}$	Quantity of fuel consumed in project scenario p during the year y in tons	0
PEy	Project emissions	**0 tCO_2e**

Combined Summary of Project emissions in the monitoring period by both BSF, HHFF and IHFF

Period	BSF Total Project Emissions (tCO_2e)	HHFF total project Emissions (tCO_2e)	IHFF total project Emission (tCO_2e)	Combined Totals
19/02/2021-27/12/2021	0	0	0	0

Calculation of leakage

As demonstrated in section E.3 of this monitoring report, there is no leakage identified during this monitoring period for all the 3 filter technologies.

GHG Emission Reductions calculations

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.

BSF technology

Emission Reductions 2021 per filter
(6.786- 0) * 83.23%) *100% - 0 = 5.647tCO_2e.This figure was then divided by 365 days in a year to get the emission reductions per day i.e., 0.01543tCO_2e.

HHFF technology

Emission Reductions 2021 per filter
(5.521 0) * 87.88%) *100% - 0 = 4.8276 tCO_2e This figure was then divided by 365 days in a year to get the emission reductions per day i.e. 0.0131 tCO2e.

IHFF technology

Emission Reductions 2021 per filter
Emissions Reductions have been calculated individually for operation days of each filter installed. Stepwise calculations have been done on GS 1078 Combined MSS and ERs calculations sheet excel sheet.

.

Summary of ERs accrued in this monitoring period:

BSF technology

Table 8: Summary of ERs

Table 8: Summary of ER for BSF, HHFF and IHFF

Period	BSF Total Project Emissions (tCO2e)	HHFF total project Emissions (tCO2e)	IHFF total project Emission (tCO2e)	Combined Totals
19/02/2021-27/12/2021	13,613	9,072	1,313	23,997

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.

Fuel wood is gathered and consumed locally. Therefore, an increase in supply of wood in one locality (due to filtration) will not increase supply in another location. Total

Kenyan demand for fuel wood remains well above supply[15], therefore the gradual increase of fuel wood supplies due to diminished consumption in the target area will not warrant a reduction in prices so as to increase supply. Kenya has a wood supply potential of 31.4 million m^3 against a national demand of 41.7 million m^3 hence a current deficit of 10.3 million m^3. The supply for firewood and charcoal stands at 13,654,022m^3 and 7,358,717m^3 while demand stands at 18,702,748$m^3$and 16,325,810m^3 respectively [16]. Forecasts for a 20-year period indicate a 20.0% increase in supply and 21.6% increase in demand by the year 2032 which signifies a gradually increasing deficit. 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.

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 is gathered and consumed locally. As per the baseline survey, most of the households/ institutions use firewood and charcoal to boil water. Since the demand for firewood and charcoal is very high in Kenya as explained in question (I) it is very unlikely that the firewood/ charcoal saved after introduction of the project will cause the non-project users to switch from lower emitting energy to using fossil fuels.

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.
An estimation of 7,424 BSF filters,1,842 Household ACI Hollow Fiber membrane filters and 425 Institutional/commercial-use HFF units respectively are projected to be sold/ installed within the crediting period and a baseline fuel consumption of 4.11 tonnes of

15 Gender and equity in bio energy Access and Delivery in Kenya: http://practicalaction.org/page/docs/consulting/pisces/gender-and-equity-in-bioenergy-kenya.pdf

[16]http://www.kenyaforestservice.org/documents/redd/Analysis%20of%20Demand%20and%20Supply%20of%20Wood%20Products%20in%20Kenya.pdf

fuel wood per household (in the BSF and Household HFF units project scenario) and 0.00013056 tonnes of fuel wood in institutions. The population of the country is increasing hence the demand of NRB in households and institutions will continue to increase. Additionally, people are becoming aware on the importance of consuming safe water hence there is a possibility of increased boiling practices hence the project will not alter the countries NRB significantly.

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.
The project only displaces the practice of boiling water and households can still use the baseline stoves for cooking. Therefore, there is no loss of space heating because of filtering water as the households get to retain the baseline stoves for cooking. Hence, there is no leakage as end-users do not light fires for space heating.
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 technology involves distribution of zero energy water treatment units hence even if households who in the baseline were using treatment chemicals opt to use the filter, there is no risk of emissions.
As demonstrated above, there is no perceived leakage for the project hence Leakage = 0

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

BSF technology

Table 12: Summary for ex-post values each SDG for BSF filter

SDG	SDG Impact	Baseline estimate	Project estimate	Net benefit
SDG 3	**Good Health**	• Usage: 0% • Np,y :0	• Usage: 83.23% • Np,y: 1,752	• Usage:83.23% • Np,y: 1,752

	and well being	• Reduced incidence in water borne diseases: high incidence: 0% reduction. • Reduced smoke levels: High smoke levels, 0% reduction. • Reduced incidences of coughing: high incidences of coughing, 0% reduction. • Reduced incidences of itchy eyes:0%	• Reduced incidence in water borne diseases: 100% • Reduced smoke levels: 95% • Reduced incidences of coughing: 95% • Reduced incidences of itchy eyes:88%	• Reduced incidence in water borne diseases: 100% • Reduced smoke levels: 95% • Reduced incidences of coughing: 95% • Reduced incidences of itchy eyes:88%
SDG 6	**Clean water and sanitation**	• QP,y: 0 • $QP_{,raw\ boil}$: 0 • $QP_{,clean\ boil}$: 0 • Quality of treated water: 0% • Volume of safe water consumed: 0l/p/d • Number of people attending workshops, seminars or trainings on water, hygiene, and sanitation management: 0	• Qp,y: 7l/p/d • $QP_{,\ raw\ boil}$ 0 • $QP_{,clean\ boil}$ 0 • Quality of treated water: 100% • Volume of safe water consumed: 7l/p/d • Number of people attending workshops, seminars or trainings on water, hygiene, and sanitation management: 380 people were trained on	• Qp,y: 7l/p/d • $QP_{,\ raw\ boil}$ 0 • $QP_{,clean\ boil}$: 0 • Quality of treated water: 100% • Volume of safe water consumed: 7l/p/d • Number of people attending workshops, seminars or trainings on water, hygiene, and sanitation management):

			Household Water Treatment and Safe Storage (HWTS) training (ref: GS 1078 Training records summary)	380 people were trained on **Household Water Treatment and Safe Storage (HWTS) training (ref: GS 1078 Training records summary)**
SDG 8	**Decent work and economic growth**	• Number of persons employed by the project: 0 • Change in number of jobs and positions for women or change in income and asset distributions by region, ethnicity, religion, and socioeconomic groups : 0 • Employment wages of people employed by the project: 0	• Number of persons employed by the project: 61 • Change in number of jobs and positions for women or change in income and asset distributions by region, ethnicity, religion, and socioeconomic groups: 37 women and 31 youths • Employment wages of people employed by the project: 26 people were employed in the filter distribution program. Total income generated is	• Number of persons employed by the project: 61 • Change in number of jobs and positions for women or change in income and asset distributions by region, ethnicity, religion, and socioeconomic groups: 37 women and 31 youths • Employment wages of people employed by the project: 26 people were

			provided on '*confidential Employee Records summary-2021-22'*	employed in the filter distribution program. Total income generated is provided on '*confidential Employee Records summary-2021-22'*
SDG 9	**Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation Target**	• Number of people trained on filters installation and maintenance: 0	• Number of people trained on filters installation and maintenance: 380 people were trained on **Household Water Treatment and Safe Storage (HWTS) training (ref: GS 1078 Training records summary)**	• Number of people trained on filters installation and maintenance:380 people were trained on **Household Water Treatment and Safe Storage (HWTS) training (ref: GS 1078 Training records summary)**
SDG 13	**Take urgent action to combat climate change and its impacts**	• Number of filters sold: 0. • Number of workshops, seminars organized, and trainings (on	• Number of filters sold: 2,952. • Number of workshops, seminars organized, and trainings (on installation,	• Number of filters sold: 2,952. • Number of workshops, seminars organized, and trainings (on

		installation, water and sanitation management and maintenance of the water filters): 0 • $B_{b,y}$: 0	water and sanitation management and maintenance of the water filters): 11 • $B_{b,y}$: 4.0215	installation, water and sanitation management and maintenance of the water filters): 11 • $B_{b,y}$: 4.0215
Total emission reductions	**Total emission reductions**	• **17,179tCO₂e**	• 19/02/2021 – 27/12/2021 = 0 tCO_2e • **Total: 0 tCO_2e**	• **Total: 13,613 tCO_2e**

HHFF technology

Table 13: Summary for ex-post values each SDG for HHFF filter

SDG	SDG Impact	Baseline Estimate	Project Estimate	Net Benefit
SDG 3	**Good Health and well being**	• Usage: 0% • Np,y :0 • Reduced incidence in water borne diseases: high incidence,0% reduction. • Reduced smoke levels: High smoke levels, 0% reduction. • Reduced incidences of coughing: high incidences of coughing, 0% reduction. • Reduced incidences of itchy eyes: 0%	• Usage: 87.45% • $N_{p,y}$: 1,425 • Reduced incidence of water borne diseases: 93% • Reduced smoke levels: 92% • Reduced incidences of coughing: 93% • Reduced incidences of itchy eyes:89 %	• Usage: 87.45% • $N_{p,y}$: 1,425 • Reduced incidence of water borne diseases: 93% • Reduced smoke levels: 92% • Reduced incidences of coughing: 93% • Reduced incidences of itchy eyes:89%
SDG 6	**Clean water and sanitation**	• QP,y: 0 • $QP_{,raw\ boil}$:0l/p/d • $QP_{,clean\ boil}$: 0l/p/d • Quality of treated water: 0%	• Qp,y: 7l/p/d • $QP_{,\ raw\ boil}$:0l/p/d • $QP_{,clean\ boil}$: 0l/pd • Quality of treated water: 100%	• Qp,y: 7l/p/d • $QP_{,\ raw\ boil}$:0l/p/d • $QP_{,clean\ boil:}$ 0l/p/d • Quality of treated water: 100% • Volume of safe water

		• Volume of safe water consumed: 0l/p/d • Number of people attending workshops, seminars or trainings on water, hygiene, and sanitation management: 0	• Volume of safe water consumed: 7l/p/d • Number of people attending workshops, seminars or trainings on water, hygiene, and sanitation managemen t: 380	consumed: 7l/p/d • Number of people attending workshops, seminars or trainings on water, hygiene, and sanitation management:38 0
SDG 8	**Decent work and economic growth**	• Number of persons employed by the project: 0 • Change in number of jobs and positions for women or change in income and asset distributions by region, ethnicity, religion, and socioeconomic groups: 0 • Employment wages of people	• Number of persons employed by the project: 61 • Change in number of jobs and positions for women or change in income and asset distributions by region, ethnicity, religion, and socioeconomic groups: 37 women and 31 youths employed. • Employment wages of people employed by	• Number of persons employed by the project:61 • Change in number of jobs and positions for women or change in income and asset distributions by region, ethnicity, religion, and socioeconomic groups: 37 women and 31 youths employed.

		employed by the project: 0	the project: These are confidential provided on employment records	• Employment wages of people employed by the project: These are confidential provided on employment records
SDG 9	**Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation Target**	• Number of people trained on filters installation and maintenance: 0	• 380 people were trained on **Household Water Treatment and Safe Storage (HWTS) training (ref: GS 1078 Training records summary)**	• 380 people were trained on **Household Water Treatment and Safe Storage (HWTS) training (ref: GS 1078 Training records summary)**
SDG 13	**Take urgent action to combat climate change and its impacts**	• Number of filters sold: 0 • Number of workshops, seminars organized, and trainings (on installation, water and sanitation management and maintenance of the water filters): 0 • $B_{b,y}$: 0	• Number of filters sold: 2,212 • Number of workshops, seminars organized, and trainings (on installation, water and sanitation management and maintenance of the water filters): 11 trainings were conducted on	• Number of filters sold: 2,212 • Number of workshops, seminars organized, and trainings (on installation, water and sanitation management and maintenance of the water filters): 11 trainings were conducted on **Household Water Treatment and Safe Storage (HWTS) training (ref: GS 1078**

			Household Water Treatment and Safe Storage (HWTS) training (ref: GS 1078 Training records summary) • $B_{b,y}$: 3.2716	**Training records summary)** • $B_{b,y}$: 3.2716
Total emission reductions	**Total emission reductions**	• **10,379 tCO_2e**	• **0 tCO_2e**	• **9,072 tCO_2e**

IHFF technology

Table 14: Summary for ex-post values each SDG for IHFF filter

SDG	SDG Impact	Baseline Estimate	Project Estimate	Net Benefit
SDG 3	Good Health and well being	• Usage: 0% • Np,y :0 • Reduced incidence in water borne diseases: high incidence,0% reduction • Reduced smoke levels: High smoke levels, 0% reduction. • Reduced incidences of	• Usage: 96.67% • Np,y: 106 • Reduced incidence of water borne diseases: 100% • Reduced smoke levels: 93% • Reduced incidences of coughing: 92%	• Usage: 96.67% • Np,y: 106 • Reduced incidence of water borne diseases: 100% • Reduced smoke levels: 93% • Reduced incidences of coughing: 92%

		coughing: high incidences of coughing, 0% reduction. • Reduced incidences of itchy eyes: 0%	• Reduced incidences of itchy eyes:50 %	• Reduced incidences of itchy eyes:50%
SDG 6	Clean water and sanitation	• QP,y: 0 • $Q_{P,raw\ boil}$:0l/p/d • $Q_{P,clean\ boil}$: 0l/p/d • Quality of treated water: 0% • Volume of safe water consumed: 0l/p/d • Number of people attending workshops, seminars or trainings on water, hygiene and sanitation management: 0	• Qp,y: 2.33l/p/d • $Q_{P,\ raw\ boil}$:0l/p/d • $Q_{P,clean\ boil}$: 0l/pd • Quality of treated water: 100% • Volume of safe water consumed: 2.33l/p/d • Number of people attending workshops, seminars or trainings on water, hygiene and sanitation management: 380 people were trained on Household Water	• Qp,y: 2.33l/p/d • $Q_{P,\ raw\ boil}$:0l/p/d • $Q_{P,clean\ boil}$: 0l/p/d • Quality of treated water: 100% • Volume of safe water consumed: 2.33l/p/d • Number of people attending workshops, seminars or trainings on water, hygiene and sanitation management: 380 people were trined on Household Water Treatment and Safe Storage (HWTS) training (ref: GS 1078 Training records summary)

			Treatment and Safe Storage (HWTS) training (ref: GS 1078 Training records summary)	
SDG 8	Decent work and economic growth	• Number of persons employed by the project: 0 • Change in number of jobs and positions for women or change in income and asset distributions by region, ethnicity, religion, and socioeconomic groups: 0 • Employment wages of people employed by the project: 0	• Number of persons employed by the project: 61 • Change in number of jobs and positions for women or change in income and asset distributions by region, ethnicity, religion, and socioeconomic groups: 37 women and 31 youths employed. • Employment wages of people employed by the project: confidential, employment records provided as a support document ref	• Number of persons employed by the project: 61 • Change in number of jobs and positions for women or change in income and asset distributions by region, ethnicity, religion, and socioeconomic groups: 37 women and 31 youths employed. • Employment wages of people employed by the project confidential, employment records

			'confidential Employee Records summary-2021-22'.	provided as a support document ref *'confidential Employee Records summary-2021-22'..*
SDG 9	Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation Target	• Number of people trained on filters installation and maintenance: 0	• 380 people were trained on Household Water Treatment and Safe Storage (HWTS) training (ref: GS 1078 Training records summary)	• 380 people were trained on Household Water Treatment and Safe Storage (HWTS) training (ref: GS 1078 Training records summary)
SDG 13	Take urgent action to combat climate change and its impacts	• Number of filters sold: 0 • Number of workshops, seminars organized, and trainings (on installation, water and sanitation management and maintenance of the water filters): 0 • Bb,y: 0	• Number of filters sold: 2,212 • Number of workshops, seminars organized, and trainings (on installation, water and sanitation management and maintenance of the water filters): 11 trainings were conducted on people were trained on	• Number of filters sold: 2,212 • Number of workshops, seminars organized, and trainings (on installation, water and sanitation management and maintenance of the water filters):11trainings were conducted on people were trained on Household Water Treatment and Safe Storage (HWTS) training (ref: GS 1078 Training records summary)

			Household Water Treatment and Safe Storage (HWTS) training (ref: GS 1078 Training records summary • $B_{b,y}$: 0.00022	• $B_{b,y}$: 0.00022
Total emission reductions	Total emission reductions	• 1,358 tCO_2e	• 0 tCO_2e	• 1,313 tCO_2e

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

Table 15: Comparison of actual value of outcomes with estimates in approved PDD for BSF

SDG	Values estimated in ex ante calculation of approved PDD for this monitoring period	Actual values17 achieved during this monitoring period
SDG 3	• Usage: 80% • $N_{p,y}$:1,825 • Reduced incidence in water borne diseases: N/A • Reduced smoke levels: N/A • Reduced incidences of coughing: N/A • Reduced incidences of itchy eyes: N/A	• Usage: 83.23% • $N_{p,y}$: 1,752 • Reduced incidence of water borne diseases: 77% • Reduced smoke levels: 90% • Reduced incidences of coughing: 100% • Reduced incidences of itchy eyes:88%
SDG 6	• QP,y: 5l/p/d • QP,raw boil :0l/p/d • QP,clean boil :0 l/p/d • Quality of treated water: 100% • Volume of safe water consumed: 5 l/p/d • Number of people attending workshops, seminars or trainings on water, hygiene and sanitation management: N/A	• Qp,y: 7l/p/d • QP, raw boil 0 l/p/d • QP,clean boil 0 l/p/d • Quality of treated water: 100% • Volume of safe water consumed: 7l/p/d • Number of people attending workshops, seminars or trainings on water, hygiene and sanitation management:380
SDG 8	• Number of persons employed by the project: N/A • Change in number of jobs and positions for women or change in income and asset distributions by region, ethnicity, religion, and socioeconomic groups: N/A • Employment wages of people employed by the project: N/A	• Number of persons employed by the project: 61 • Change in number of jobs and positions for women or change in income and asset distributions by region, ethnicity, religion, and socioeconomic groups: 37 women and 31 youths employed • Employment wages of people employed by the project: 26 people were employed in the filter distribution program. Total income: confidential, provided as support document.
SDG 9	• Number of people trained on filters installation and maintenance: 0	• 380 people were trained on Household Water Treatment and Safe Storage (HWTS)
SDG 13:	• Number of filters sold: 7,424 • Number of workshops, seminars organized, and trainings (on installation, water and sanitation management and	• Number of filters sold: 2,952 • Number of workshops, seminars organized, and trainings (on installation, water and sanitation management and maintenance of the water filters): 11 trainings conducted on Household Water

	maintenance of the water filters): N/A • $B_{,by}$: 4.115375	Treatment and Safe Storage (HWTS) training • $B_{,by}$: 4.0215
Total emission reductions	30,635 tCO_2e	13,613 tCO_2e

HHFF

Table 16: Comparison of actual value of outcomes with estimates in approved PDD for HHFF

SDG	Values estimated in ex ante calculation of approved PDD for this monitoring period	Actual values[18] achieved during this monitoring period
SDG 3	• Usage: 80% • $N_{p,y}$:1,825 • Reduced incidence in water borne diseases: N/A • Reduced smoke levels: N/A • Reduced incidences of coughing: N/A • Reduced incidences of itchy eyes: N/A	• Usage: 87.45% • $N_{p,y}$: 1,425• Reduced incidence of water borne diseases: 100% • Reduced smoke levels: 93% • Reduced incidences of coughing: 92% • Reduced incidences of itchy eyes:50%
SDG 6	• $Q_{p,y}$: 5l/p/d • $Q_{p,raw\ boil}$:0l/p/d • $Q_{p,clean\ boil}$:0 l/p/d • Quality of treated water: 100% • Volume of safe water consumed: 5 l/p/d • Number of people attending workshops, seminars or trainings on water, hygiene and sanitation management: N/A	• $Q_{p,y}$: 7 l/p/d • $Q_{p,raw\ boil}$ 0 l/p/d • $Q_{p,clean}$ boil 0 l/p/d • Quality of treated water: 98.6% • Volume of safe water consumed: 7 l/p/d • Number of people attending workshops, seminars or

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

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

		trainings on water, hygiene and sanitation management:380
SDG 8	• Number of persons employed by the project: N/A • Change in number of jobs and positions for women or change in income and asset distributions by region, ethnicity, religion, and socioeconomic groups: N/A • Employment wages of people employed by the project: N/A	• Number of persons employed by the project: 61 • Change in number of jobs and positions for women or change in income and asset distributions by region, ethnicity, religion, and socioeconomic groups: 37 women and 31 youths employed • Employment wages of people employed by the project: 26 people were employed in the filter distribution program. Total income generated: confidential, provided as a support document.
SDG 9	• Number of people trained on filters installation and maintenance: 0	• 380 people were trained on Household Water Treatment and Safe Storage (HWTS) training
SDG 13:	• Number of filters sold: 1,612 • Number of workshops, seminars organized, and trainings (on installation, water and sanitation management and maintenance of the water filters): N/A • $B_{,by}$: 4.115375	• Number of filters sold: 2,212 • Number of workshops, seminars organized, and trainings (on installation, water and sanitation management and maintenance of the water filters): 11 trainings conducted on Household Water Treatment and Safe Storage (HWTS) • $B_{,by}$: 3.2716
Total emission reductions	6,966tCO_2e	= 9,072 tCO_2e

IHFF Technology

Table 17: Comparison of actual value of outcomes with estimates in approved PDD for IHFF

SDG	Values estimated in ex ante calculation of approved PDD for this monitoring period	Actual values[19] achieved during this monitoring period
SDG 3	• Usage: 80% • $N_{p,y}$:N/A • Reduced incidences of water borne diseases: N/A • Reduced smoke levels: N/A • Reduced incidences of coughing: N/A • Reduced incidences of itchy eyes: N/A	• Usage: 96.67% • $N_{p,y}$: calculated individually for each institution • Reduced incidences of water borne diseases: 100% • Reduced smoke levels: 93% • Reduced incidences of coughing: 92% • Reduced incidences of itchy eyes:50%
SDG 6	• $Q_{p,y}$: 1 l/p/d • $Q_{p,raw\ boil}$: 0 l/p/d • $Q_{P,\ clean\ boil}$: 0 l/p/d • Quality of treated water: 100% • Volume of safe water consumed: 1 l/p/d • Number of people attending workshops, seminars or trainings on water, hygiene and sanitation management: N/A	• $Q_{p,y}$: 2.33 l/p/d • $Q_{P,\ raw\ boil}$: 0 l/p/d • $Q_{P,clean\ boil}$: 0 l/p/d • Quality of treated water: 100% • Volume of safe water consumed: 2.33 l/p/d • Number of people attending workshops, seminars or trainings on water, hygiene and sanitation management 380 people were trained on Household Water Treatment and Safe Storage (HWTS) training
SDG 8	• Number of persons employed by the project: N/A	• Number of persons employed by the project: 61

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

	• Change in number of jobs and positions for women or Change in income and asset distributions by region, ethnicity, religion, and socioeconomic groups: N/A • Employment wages of people employed by the project: N/A	• Change in number of jobs and positions for women or Change in income and asset distributions by region, ethnicity, religion, and socioeconomic groups: 37 women and 31 youths employed • Employment wages of people employed by the project: 26 people were employed in the filter distribution program. Total income: confidential, provided as a support document.
SDG 9	• Number of people trained on filters installation and maintenance: 0	• 340 people were trained Household Water Treatment and Safe Storage (HWTS) training
SDG 13:	• Number of filters sold: 367 • Number of workshops, seminars organized, and trainings (on installation, water and sanitation management and maintenance of the water filters): N/A • $B_{b,y}$: 0.00013056	• Number of filters sold: 141 • Number of workshops, seminars organized, and trainings (on installation, water and sanitation management and maintenance of the water filters): 11 trainings were conducted on Household Water Treatment and Safe Storage (HWTS) • $B_{b,y}$: 0.00022
Total emission reductions	4,209 tCO_2e	1,313 tCO_2e

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 in numbers is that during the baseline estimated ex-ante estimates, the project had done actual baseline water boiling tests following all GS guidelines and GS approval at validation and achieved $W_{i,y}$ of 0.000549, however due to GS new rule to cap $W_{i,y}$, PP has

capped $W_{i,y}$ at 400g, that has made the huge difference in the estimated ERs and the actual ERs achieved during this period. Also, during the baseline estimate, parameter $Q_{p,y}$ was capped at 7.5 l/p/d as per WHO guidelines whereas during this monitoring period, the same parameter was capped at 7l/p/d as per the current WHO guidelines. Finally, during the baseline estimates, number of filter sales were estimated as 6,824 for BSF, however, the actual number of filter sales to date is 2,952. These three 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

>> Summary of SDG impacts which have increased;

BSF

SDG	Baseline	Actual values achieved	Remarks for the increase
SDG 3	$U_{p,y}$: 80%	$U_{p,y}$: 83.23%	This were conservative estimates during validation, actual values are higher
SDG 6	$Q_{p,y}$: 5 l/p/d	$Q_{p,y}$: 7 l/p/d	This were conservative estimates during validation, actual values are higher

HHFF

SDG	Baseline	Actual values achieved	Remarks for the increase
SDG 3	$U_{p,y}$: 80%	$U_{p,y}$: 87.45%	This were conservative estimates during validation, actual values are higher
SDG 6	$Q_{p,y}$: 5 l/p/d	$Q_{p,y}$: 7 l/p/d	This were conservative estimates during validation, actual values are higher
SDG 13	No. of filter sales: 1,612 ERs: 8,241 tCO_2e	No. of filter sales: 2,212 ERs: 9,072 tCO_2e	The was a better uptake of the filters than the project developer had predicted. More ERs achieved due to higher usage rate, more water being consumed and more filter sales than predicted

IHFF

SDG	Baseline	Actual values achieved	Remarks for the increase
SDG 3	$U_{p,y}$: 80%	$U_{p,y}$: 96.67%	This were conservative estimates during validation, actual values are higher

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., 24 men and 37 women. • Both men and women are involved in trainings training records have been provided as support documents

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.

>>

During this monitoring, a logbook was placed at the project developers (Aqua Clara) office where filter owners could file their grievances in relation to the project. The filter owners also have the office contacts and those of the installing CDE, in case any information or assistance is needed. Grievances were recorded using the prescribed

format. In this period, a total of 90 grievances were recorded, and all of them were adequately resolved. These issues revolved around the operation and maintenance of the filters and the necessary support was given. There were no other grievances raised from other platforms apart from those included in the logbook as outlined below:

Aqua Clara Water Filtration Program in Kenya – Logbook2021-2021
Contact Person: Monitoring and Evaluation Officer
Person's name: Josephine Mokeira Orare
Office/ telephone number: (Rigoma) Kisii Office, +254716406687
Cell phone number: +254724784897
Email address:orarejosephine@yahoo.com

Stakeholders have also been provided with the Gold Standard contact which they can use to reach the standard in case of any issues or comments. The email provided for this purpose is info@goldstandard.org
Below is a summary of the comments received, a detailed logbook has been provided as a support document.

No.	Date of complaint (MM/DD/YY)	Customer Name	Location	Customer Contact	Product Number	Product description	Complaint details	Action required from the project implementer	Response from the project implementer	Name of the person who will handle the issue	Was the issue resolved?	Date the issue was resolved (MM/DD/YY)	DAYS FILTER WAS NON-FUNCTIONAL	What steps should be considered to avoid repeat of the problem	Person receiving complaint	Assigned to
1	1-Mar-2021	James Birundu	Magombo	727410091	BSF	Biosand filter	Leakage from spout	Sealing with silicant	Sealing with silicant	Peter	Yes	03/03/2021	0	Avoid tampering w	Risper	Peter
2	1-Mar-2021	Sabina Otiso	Kenyerere	712715552	HF15P-329	Household hollow fibre fi	Blockage	Replacement from old model(elbow	Replacement of membrane	Dominic	Yes	03/03/2021	2	Backwashing after	Betty	Dominic/Risper
3	2-Mar-2021	Rev. Nehemiah	Sirate	728203771	B17-06	Biosand filter	Leakage along spout	Sealed the leakage	Sealing with silicant	Peter	Yes	03/03/2021	0	Keep the filter saf	Peter	Peter
4	7-Mar-2021	Mary Kiriago	Nyansiongo	727415222	BSF	Biosand filter	leaking along spout	Sealing with silicant	Sealing with silicant	Peter	Yes	03/08/2021	0	Avoid tampering w	Jane	Jane
5	9-Mar-2021	Hyline Mato	Mogusii	713826925	HF15P-3795	Household hollow fibre fi	Breakage of both containers	Replacement of containers	Replacement of containers	Jane	Yes	03/11/2021	2	Keep filter in a saf	Josephine	Jane
6	25-Mar-2021	Lokusero secondary school	Laikipia	726232394	HF60-0022	Institutional filter	Leakage from bottom container	Advise on tightening of the membra	Advise on tightening the membrane during f	Daniel	Yes	03/25/2021	0	Tightening the me	Risper	Daniel
7	25-Mar-2021	Rose Omosa	Keroka	710906926	HF15P-4209	Household hollow fibre fi	Breakage of bottom container	Replacement of bottom container	Replacement of bottom container	Josephine	Yes	03/25/2021	0	Handle the filter w	Josephine	Josephine
8	26-Mar-2021	Beatrice Kerubo	Mokomoni	719667167	HF15P-5148	Household hollow fibre fi	Reduced flow rate	Advise on backwashing after every fi	Advise on backwashing after every filtration	Risper	Yes	03/26/2021	0	Backwash after ev	Risper	Risper
9	1-Apr-2021	Hellen Sirunei	Gesima	705352854	BSF	Biosand filter	Leakage along spout	Sealing with silicant	Sealing with silicant	Peter	Yes	04/06/2021	0	Avoid tampering w	Peter	Peter
10	2-Apr-2021	Callen Menge	Nyamira Towr	734641024	B15-0295	Biosand filter	leakage from the spout	Sealing with silicant	Sealing with silicant	Peter	Yes	04/05/2021	0	Avoid tampering w	Peter	Peter
11	5-Apr-2021	Mellen Monda	Gesima	783002193	BSF	Biosand filter	Leakage along spout	Sealing with silicant	Sealing with silicant	Peter	Yes	06/04/2021	0	Contact the office	Peter	Peter
12	30-Apr-2021	Mary Ondara through Sarah M	Nyamarambe	727881250	HF15P-939	Household hollow fibre fi	Brekage of top container	Replacement of the container	Replacement of containers	Risper	Yes	05/03/2021	3	Handle the top cor	Douglas	Risper
13	4-May-2021	Vincent Juma	Boronyi	725112897	HF15P-1235	Household hollow fibre fi	Breakage of bottom container	Replacement of the container	Replacement of containers	Josephine	Yes	05/04/2021	0	Keep the filter in a	Josephine	Josephine
14	12-May-2021	Getenga Mixed Secondary school		724540698	HF10P-96	Household hollow fibre fi	Damaged tap	Replacement of tap	Replacement of tap	Risper	Yes	05/13/2021	1	Handle the tap wit	Risper	Risper
15	12-May-2021	Eronge Adventist Primary	Eronge	792017213	HF100-256	Institutional filter	Blockage of membrane	Membrane maintenance	Membrane maintenance	Risper	Yes	05/15/2021	3	Backwash Ater eve	Veronicah	Risper
16	19-May-2021	Lwala community	Rongo	726075371	HF15	household hollow fibre fi	broken jar	Replacement of jar	Replacement of jar	Benson	Yes	05/19/2021	0	To handle filters w	Benson	Benson
17	19-May-2021	Nicholas Rono	Sotik	726709620	HF15P-5224	household hollow fibre fi	Breakage of bottom bucket	Replacement of bottom bucket	Replacement of bottom container	Veronicah	Yes	05/22/2021	3	Handle the filter w	Veronicah	Veronicah
18	19-May-2021	Daisy Cherotich Misoi	Sotik	723204283	HF15P-5182	household hollow fibre fi	Leakage from top container	Advise customer on the need for tigh	Advise customer on the need for tightening	Veronicah	Yes	05/19/2021	0	Proper filter assen	Veronicah	Veronicah
19	20-May-2021	Brian Kaitowett	Bomet	724139508	HF15P-4963	Household hollow fibre fi	Reduced flow rate	Advise on backwashing after every fi	Advise on backwashing after every filtration	Isaac	Yes	05/20/2021	0	Backwash after ev	Isaac	Isaac
20	20-May-2021	Richard Siele	Bomet	720138655	HF15P-4957	Household hollow fibre fi	Reduced flow rate	Advise on backwashing after every fi	Advise on backwashing after every filtration	Isaac	Yes	05/20/2021	0	Backwash after ev	Isaac	Isaac
21	23-May-2021	Brilliant primary school	Keroka	721621306	HF15P-6271;	household hollow fibre fi	Leaking taps	Advise on tighten the taps	Advise on tighten the taps	Dominic	Yes	05/25/2021	0	Tighten taps to avo	Irene	Dominic
22	25-May-2021	Maritim Geofrey	Sotik	720609179	HF15P-2771	Household hollow fibre fi	Reduced flow rate	Advise on backwashing after every fi	Advise on backwashing after every filtration	Annastacia	Yes	05/25/2021	0	Backwashing after	Annastacia	Annastacia
23	25-May-2021	Albina Maritim		721117569	HF15P-3634	Household hollow fibre fi	Leakage from top container	Advise the client to tighten membra	Advise the client to tighten membrane durin	Isaac	Yes	05/25/2021	0	Proper filter assen	Isaac	Isaac
24	26-May-2021	Damaris Bochere	Endemu	723009762	HF15P-5141	household hollow fibre fi	Leakage from top container	Advise the client to tighten membra	Advise the client to tighten membrane durin	Dominic	Yes	05/26/2021	0	CWPs to train custo	Irene	Dominic
25	26-May-2021	Sela Gilisho	Laikipia	700572650	HF15P-6629	household hollow fibre fi	Leakage from top container	Advise the client to tighten membra	Advise the client to tighten membrane durin	Veronicah	Yes	05/26/2021	0	Proper filter assen	veronicah	Veronicah
26	26-May-2021	Mwongori primary	Mwongori	711424744/7	HF60-0003	Institutional filter	Leakage from tap	Advise to tighten the tap	Advise to tighten tap	Annastacia	Yes	05/26/2021	0	Ensure tap is tighte	Annastacia	Annastacia
27	28-May-2021	Bethany Church	Chebole	703209069	HF15P-3860	household hollow fibre fi	Cracked containers	Replacement of containers	Replacement of containers	Dominic	Yes	05/30/2021	0	Keep filter in a saf	Rose	Dominic
28	31-May-2021	Marcella Ongero	Kisii	726135314	HF15P-1075	household hollow fibre fi	Breakage of filter jar	Replacment of jar	Replacement of jar	Risper	Yes	05/31/2021	0	Replacement of ja	Isaac	Risper
29	2-Jun-2021	Emily Oonga	Gesima	717474054	HF15P-885	Household hollow fibre fi	breakage of filter jar	replacement of the jar	Replacement of jar	Isaac	Yes	03/06/2021	0	Careful handling o	Isaac	Veronica
30	7-Jun-2021	Christine Moraa		700038167	HF15P-3033	Household hollow fibre fi	Breakage of the top lid	Replace the lid	Replacement of lid	Veronicah	yes	06/11/2021	0	handle the filter ca	Veronicah	Veronicah
31	7-Jun-2021	Richard Moiche	Mosobeti	720639196	HF15P-3032	Household hollow fibre fi	Breakage of the lid	Replace the lid	Replacement of the lid	Veronicah	Yes	06/11/2021	0	Handle the filter c	Veronicah	Veronicah
32	8-Jun-2021	Marble Mwole	Nyamira	711604271	HF15P-4603	Household hollow fibre fi	Breakage of the syringe	replace the syringe	Replace the syringe	Veronicah	Yes	06/11/2021	0	Put syringe in a saf	Veronicah	Veronicah
33	8-Jun-2021	Esther Yamef	Chebonyo	700610156	HF15P-6864	Household hollow fibre fi	Leakage from top container	Training on proper filter assembling/	Advise on tightening membrane during filte	Dominic	Yes	06/08/2021	0	Tighten membrane	Rose	Dominic
34	8-Jun-2021	Edward	Chepilat	723782273	HF15P-3173	Household hollow fibre fi	Breakage of the jar	Replace the jar	Replace jar	Veronicah	Yes	06/11/2021	0	handle the jar care	Veronicah	Veronicah
35	9-Jun-2021	Ernest Moseti	Mwongori	739700403	HF15P-4581	household hollow fibre fi	Breakage of containers	Replacement of containers	Replacement of containers	Risper	Yes	06/09/2021	0	Handle filter with	Annastacia	Risper
36	9-Jun-2021	James Nyakundi	Rigoma Marke	711287363	HF15P-	household hollow fibre fi	Loss of syringe	Replacement of syringe	Replacement of syringe	Risper	Yes	06/09/2021	0	Keep the syringe i	Risper	Risper
37	9-Jun-2021	Fred mose	kisii	721983246	HF15P-2566	Household hollow fibre fi	Breakage of the tap	Replace the tap	Replacement of tap	Veronicah	Yes	06/11/2021	0	Do not apply exces	Veronicah	Veronicah
38	10-Jun-2021	Zachary Momanyi	Nyamira	724602225	HF15P-2672	Household hollow fibre fi	Slow flow rate	Backwash after every filtration	Advise on backwashing after every filtration	Veronicah	Yes	06/11/2021	0	Backwash after ev	Veronicah	Veronicah
39	14-Jun-2021	Caren N Obwoge	Nyamira	718324558	HF15P-2680	Household hollow fibre fi	Slow flow rate	Backwash after every filtration	Advise on backwashing after every filtration	Veronicah	Yes	06/15/2021	0	Use the syringe to	Veronicah	Veronicah
40	14-Jun-2021	Racheal M Ochiri	Nyamira	727889073	HF15P-2272	Household hollow fibre fi	Slow flow rate	Backwash after every filtration	Advise on backwashing after every filtration	Veronicah	Yes	06/15/2021	0	Use the syringe to	Veronicah	Veronicah
41	14-Jun-2021	Geoffrey Ogembo	kisii	723381773	HF15P-2282	Household hollow fibre fi	Slow flow rate	Backwash after every filtration	Advise on backwashing after every filtration	Veronicah	Yes	06/15/2021	0	Use the syringe to	Veronicah	Veronicah
42	14-Jun-2021	Hyline O twoma	Nyamira	700848317	HF15P-2273	Household hollow fibre fi	Slow flow rate	Backwash after every filtration	Advise on backwashing after every filtration	Veronicah	Yes	06/15/2021	0	Use the syringe to	Veronicah	Veronicah
43	14-Jun-2021	Jackiline Onchango	Nyamira	727889073	HF15P-2277	Household hollow fibre fi	Slow flow rate	Backwash after every filtration	Advise on backwashing after every filtration	Veronicah	Yes	06/15/2021	0	Use the syringe to	Veronicah	Veronicah
44	14-Jun-2021	Jenes Nyangarora	Nyamira	727402575	HF15P-1143	Household hollow fibre fi	Slow flow rate	Backwash after every filtration	Advise on backwashing after every filtration	Veronicah	Yes	06/15/2021	0	Use the syringe to	Veronicah	Veronicah
45	23-Jun-2021	Maiyani Sairowa	Laikipia	712701714	HF15P-5340	Household hollow fibre fi	Slow flow rate	Backwash after every filtration	Advise on backwashing after every filtration	Veronicah	Yes	06/24/2021	0	Use the syringe to	Veronicah	Veronicah
46	24-Jun-2021	Cetampin Maiyani	Laikipia	726406979	HF15P-5430	Household hollow fibre fi	Slow flow rate	Backwash after every filtration	Advise on backwashing after every filtration	Veronicah	Yes	06/24/2021	0	Use the syringe to	Veronicah	Veronicah
47	24-Jun-2021	Ntururu Maiyani	Laikipia	729361175	HF15P-5480	Household hollow fibre fi	Slow flow rate	Backwash after every filtration	Advise on backwashing after every filtration	Veronicah	Yes	06/24/2021	0	Use the syringe to	Veronicah	Veronicah
48	25-Jun-2021	Rudia Nyangau	Mecheo	722247235	HF15P-6227	Household hollow fibre fi	Leakage from top container	Advise on tightening membrane duri	Advise on tightening membrane during filte	Dominic	Yes	06/25/2021	0	Advise on tighteni	Irene	Dominic
49	7-Jul-2021	Debora Gesare	Nyamira	707465064	HF15P-6705	Household hollow fibre fi	slow rate	Backwash after every filtration	Advise on backwashing after every filtration	Isaac	Yes	09/07/2021	0	Backwashing after	Isaac	Isaac
50	8-Jul-2021	Kapletendo Secondary School	Bomet	724758555	HF10P-209	Household hollow fibre fi	Slow flow rate	Backwash after every filtration	Advise on backwashing after every filtration	Annastacia	Yes	07/08/2021	0	Backwashing after	Annastacia	Annastacia
51	8-Jul-2021	Priscah Tuiyot-Chelek Primary	Bomet	725235218	HF15P-5533	Household hollow fibre fi	Slow flow rate	Backwash after every filtration	Advise on backwashing after every filtration	Annastacia	Yes	07/08/2021	0	Backwashing after	Annastacia	Annastacia
52	12-Jul-2021	Nancy Mariba	Kisii	707646310	HF15P-4290	Household hollow fibre fi	Unable to assemble filter correctly	Share filter assembling video	Share assembing video/Refer to manual	Isaac	Yes	07/12/2021	0	Refer to manual or	Isaac	Isaac
53	13-Jul-2021	Sarah Hassan	Nairobi	714796100	HF10P-215	Household hollow fibre fi	Membrane blockage/breakage of botom contai	Replacement of the various parts	Replacement of the various filter parts	Risper	Yes	07/15/2021	2	Handle filter with	Risper	Risper
54	13-Jul-2021	Angeline Mugutu	Nyamira	702063051	HF15P-4316	Household hollow fibre fi	Unable to assemble filter correctly	Share filter assembling video	Share assembing video/Refer to manual	Isaac	Yes	07/16/2021	0	Regular follow ups	Isaac	Isaac
55	15-Jul-2021	Edinah Chebet Ngeno	Sotik	740925600	HF15P-5157	Household hollow fibre fi	Slow flow rate	Backwash after every filtration	Advise on backwashing after every filtration	Annastacia	Yes	07/15/2021	0	Backwash regularl	Annastacia	Annastacia
56	16-Jul-2021	Paul Limo	Uasin Gishu	722936668	HF15P-6897	Household hollow fibre fi	Leakage from the tap	Tighten the tap	Advise on tightening of tap	Veronicah	Yes	07/16/2021	0	Avoid opening of t	Veronicah	Veronicah
57	19-Jul-2021	Pacmac Bosibori Atandi	Kisii	716451017	HF15P-1542	Household hollow fibre fi	Slow flow rate	Backwash after every filtration	Advise on backwashing after every filtration	Annastacia	Yes	07/19/2021	0	Backwash after ev	Annastacia	Annastacia
58	19-Jul-2021	Alice Thomas Oira	Kisii	708162384	HF15P-1572	Household hollow fibre fi	Slow flow rate	Backwash after every filtration	Advise on backwashing after every filtration	Annastacia	Yes	07/19/2021	0	Backwash regularl	Annastacia	Annastacia
59	27-Jul-2021	Hesbon Mosoti/Janet kemunto	Kisii	0721499221/0	HF15P-1065	Household hollow fibre fi	Breakage on storage container and tap	Handle the filter with care	Replacement of storage container and tap	Veronicah	Yes	07/27/2021	0	Handle the filter w	Veronicah	Veronicah
60	11-Aug-2021	Joseph Nyakundi	East Kitutu-Ri	723933036	BSF	Biosand filter	Leakage along spout	Sealing with silicant	Sealing with silicant	Peter	Yes	08/12/2021	0	Sealing with silicar	Peter M	Peter M
61	13-Aug-2021	Robinson Koros	Sotik	715982419	HF15P-5161	Household hollow fibre fi	Leakage from top container	Advise and share video on proper ass	Advise and share video on proper assemblin	Veronicah	Yes	08/13/2021	0	Tighten membrane	veronicah	Veronicah
62	16-Aug-2021	Phemines Emali	Transzoia	728815307	HF15P-8451	Household hollow fibre fi	Reduced flow rate	Advise on backwashing after every fi	Advise on backwashing after every filtration	Isaac	Yes	08/16/2021	0	Backwash membra	Isaac	Isaac
63	16-Aug-2021	Ebby Wanyala	Kakamega	740927764	HF15P-8478	Household hollow fibre fi	Reduced flow rate	Advise on backwashing after every fi	Advise on backwashing after every filtration	Isaac	Yes	08/16/2021	0	Backwash membra	Isaac	Isaac
64	16-Aug-2021	Rodah Ondieki	Borabu	701063503	HF15P-5019	Household hollow fibre fi	Reduced flow rate	Advise on backwashing after every fi	Advise on backwashing after every filtration	Isaac	Yes	08/16/2021	0	Backwash membra	Isaac	Isaac
65	17-Aug-2021	Judy Moruri	Nyamira	743873557	HF15P-4322	Household hollow fibre fi	Reduced flow rate	Advise on backwashing after every fi	Advise on backwashing after every filtration	Annastacia	Yes	08/17/2021	0	Backwash membra	Annastacia	Annastacia
66	18-Aug-2021	Jaspher Nyamweya	Borabu	703747479	HF15P-5151	Household hollow fibre fi	Reduced flow rate	Advise on backwashing after every fi	Advise on backwashing after every filtration	Veronicah	Yes	08/17/2021	0	Backwash the mer	Veronicah	Veronicah
67	24-Aug-2021	Druscilla Kerubo	Nyamira	727534939	HF15P-8549	Household hollow fibre fi	Slow flow rate	Advise on backwashing after every fi	Advise on backwashing after every filtration	Isaac	Yes	08/24/2021	0	Backwash membra	Isaac	Isaac
68	24-Aug-2021	Caren Ombega	Nyamira	717391980	HF15P-4306	Household hollow fibre fi	Reduced flow rate	Advise on backwashing after every fi	Advise on backwashing after every filtration	Annastacia	Yes	08/24/2021	0	Backwash membra	Annastacia	Annastacia
69	25-Aug-2021	Mari Tarus	Uasin Gishu	722666661	HF15P-8259	Household hollow fibre fi	Leakage from top container	Advise to tighten membrane during f	Advise to tighten membrane during filter ass	Veronicah	Yes	08/25/2021	0	Tighten membrane	Veronicah	Veronicah
70	25-Aug-2021	Kizito Makoye	Nyamira	722910041	HF15P-5218	Household hollow fibre fi	Reduced flow rate	Advise on backwashing after every fi	Advise on backwashing after every filtration	Veronicah	Yes	08/25/2021	0	Backwashing after	Veronicah	Veronicah
71	25-Aug-2021	Peninnah Kwamboka	Nyamira	724576814	HF15P-5133	Household hollow fibre fi	Leakage from top container and reduced flow ra	Advise on tightening membrane duri	Advise on tightening membrane during filte	Veronicah	Yes	08/25/2021	0	Tighten membrane	Veronicah	Veronicah
72	25-Aug-2021	Peterson Nyamweya	Nyamira	714093084	HF15P-5137	Household hollow fibre fi	Reduced flow rate	Advise on backwashing after every fi	Advise on backwashing after every filtration	Veronicah	Yes	08/25/2021	0	Backwashing after	Veronicah	Veronicah
73	26-Aug-2021	Madam Lydiah	Borabu	714714110	HF15P-2971	Household hollow fibre fi	Slow flow rate	Advise on backwashing after every fi	Advise on backwashing after every filtration	Annastacia	Yes	08/26/2021	0	Backwash membra	Annastacia	Annastacia
74	26-Aug-2021	Christine Obaga	Nyamira	725255209	HF15P-6391	Household hollow fibre fi	Leakage from top container	Advise on tightening membrane duri	Advise on tightening membrane during filte	Veronicah	Yes	08/26/2021	0	Tighten membrane	Veronicah	Veronicah
75	26-Aug-2021	Sarah Nyakundi	Nyamira	768103350	HF15P-6397	Household hollow fibre fi	slow flow rate	Advise to backwash after every filtra	Advise to backwash after every filtration	Veronicah	Yes	08/26/2021	0	Backwashing after	Veronicah	Veronicah
76	31-Aug-2021	Moses Maroa	Migori	728729395	HF15P-3299	Household hollow fibre fi	Slow flow rate	Advise on backwashing after every fi	Advise on backwashing after every filtration	Veronicah	Yes	08/31/2021	0	Advise on backwas	Veronicah	Veronicah
77	31-Aug-2021	Irine Ochando	Narok	705203639	HF15P-3783	Household hollow fibre fi	Slow flow rate	Advise on backwashing after every fi	Advise on backwashing after every filtration	Veronicah	Yes	08/31/2021	0	Backwash after ev	Veronicah	Veronicah
78	22-Sep-2021	Leah Nyambura	Mwongori	723804176	HF15P-4585	Household hollow fibre fi	Slow flow rate	Advise on Backwashing after every fi	Advise on Backwashing after every filtration	Veronicah	yes	09/22/2021	0	Use the syringe to	Veronicah	Veronicah
79	23-Sep-2021	Nyakongo Secondary	Nyarongo	723458636	HF15P-8485	Household hollow fibre fi	Unable to backwash despite using syringe to ba	Share video on backwashing/send AC	Advise on backwashing of the filter/Replace	Veronicah	Yes	09/25/2021	2	Follow instruction	Risper	Veronicah
80	23-Sep-2021	Francis Saitabau	Chumvi	720621705	HF15P-5838	Household hollow fibre fi	Slow flow rate	Advise on Backwashing after every fi	Advise on Backwashing after every filtration	Veronicah	Yes	09/23/2021	0	Use the syringe to	Veronicah	Veronicah
81	23-Sep-2021	Oloikirisiai school	Chumvi	720621705	HF60-0028	Institutional filter	Leakage from top container	Advise on tightening membrane duri	Advise on tightening membrane during filte	Veronicah	Yes	09/23/2021	0	Proper filter assen	Veronicah	Veronicah
82	23-Sep-2021	Ernest Moseti	Mwongori	728045843	HF15P-5843	Household hollow fibre fi	Slow flow rate	Advise on Backwashing after every fi	Advise on Backwashing after every filtration	Veronicah	Yes	09/23/2021	0	Use the syringe to	Veronicah	Veronicah
83	23-Sep-2021	Nico Ojwang Motuka	Borabu	791401168	HF15P-3812	Household hollow fibre fi	Slow flow rate	Advise on Backwashing after every fi	Advise on Backwashing after every filtration	Veronicah	Yes	09/23/2021	0	Use the syringe to	Veronicah	Veronicah
84	28-Sep-2021	Saina Lepacan	Chumvi	732632705	HF15P-6036	Household hollow fibre fi	Leakage from the tap	Advise on tightening the tap	Advise on tightening the tap	Veronicah	Yes	09/28/2021	0	Tighten tap	Veronicah	Veronicah
85	29-Sep-2021	Truphena Mokaya	Nyankoba	725435704	HF15P-5331	Household hollow fibre fi	Leakage from the tap	Advise on tightening the tap	Advise on tightening the tap	Veronicah	Yes	09/29/2021	0	Tighten tap	Veronicah	Veronicah
86	30-Sep-2021	Joseph Chepkwony	sotik	726008136	HF15P-5268	Household hollow fibre fi	Reduced flow rate	Advise on backwashing after every fi	Advise on backwashing after every filtration	Risper	Yes	09/30/2021	0	Backwash after ev	Risper	Risper
87	4-Oct-2021	Leonard Rono	Sotik	728509499	HF15P-6307	Household hollow fibre fi	Slow flow rate	Advise on Backwashing after every fi	Advise on Backwashing after every filtration	Veronicah	Yes	10/04/2021	0	Use the syringe to	Veronicah	Veronicah
88	4-Oct-2021	Naom Chepngetich Rono	Sotik	0707870516/0	HF15P-5132	Household hollow fibre fi	Slow flow rate	Advise on Backwashing after every fi	Advise on Backwashing after every filtration	Veronicah	Yes	10/04/2021	0	Use the syringe to	Veronicah	Veronicah
89	18-Oct-2021	Lumumba Onyiego	Mwembe-Kisi	723321222	HF15P-4933	Household hollow fibre fi	breakage of lids/Blockage of membrane	Replacement of lids and membrane	Replacement of lids and membrane	Risper	Yes	10/19/2021	1	Backwash after ev	Risper	Risper
90	18-Oct-2021	Fr. Kaisser	Ekerenyo	723534341		Household hollow fibre fi	Reduced flow rate/ need training on backwashi	Replacement of membrane and send	Train staff in institution on backwashing	Dominic	Yes	11/19/2021	0	Backwashing as pe	Risper	Joyce
91	19-Oct-2021	Nancy Kiplangat	kaplelach	726834541	HF15P-8386	Household hollow fiber	Slow flow rate	Backwash after every filtration	Advise on backwashing after every filtration	kevin	Yes	10/19/2021	0	Backwashing after	kevin	kevin
92	19-Oct-2021	Grace chepkener	kapngetuny	724722186	HF15P-8254	Household hollow fiber	Slow flow rate	Backwash after every filtration	Advise on backwashing after every filtration	kevin	Yes	10/24/2021	0	Backwashing after	kevin	kevin
93	19-Oct-2021	Naomy chelangat	Kimugul	725159320	HF15P-8564	Household hollow fiber	Damaged tap	Replacement of tap	Replacement of tap	kevin	Yes	10/10/2021	0	Handle tap with ca	kevin	kevin
94	19-Oct-2021	Henry Nyabuto	Mekenene	714350056	HF15P-5149	Household Hollow Fibre F	Leakage from top container	Advise on tightening membrane duri	Advise on tightening membrane during filte	Joshua	Yes	10/19/2021	0	Tighten membrane	Joshua	Joshua
95	21-Oct-2021	Irene Achayo	Rongo	721538134	HF15P-8225	Household Hollow Fibre F	Leakage from the tap	Tighten the tap	Tighten the tap	Joshua	Yes	10/22/2021	0	Tighten the tap	Joshua	Joshua
96	21-Oct-2021	Rose Obunga	Kameji	700161983	HF15P-8157	Household Hollow Fibre F	Leakage from the tap	Tighten the tap	Tighten the tap	Joshua	Yes	10/22/2021	0	Tighten the tap	Joshua	Joshua
97	21-Oct-2021	Jane Gatimo	Lanet Umoja	704454650	HF15P-6455	Household Hollow Fibre F	Reduced flow rate	Backwash after every filtration	Advise on backwashing after every filtration	Joshua	Yes	10/22/2021	0	Backwash after ev	Joshua	Joshua
98	22-Oct-2021	BeriDorine Nyakundi	Esaka	725593734	HF15P-6492	Household Hollow Fibre F	Reduced flow rate	Advise on Backwashing after every fi	Advise on Backwashing after every filtration	Joshua	Yes	10/22/2021	0	Backwash after ev	Joshua	Joshua
99	22-Oct-2021	Koibarak Primary School	Kipkorgot	723508794	HF15P-8459	Household Hollow Fibre F	Loss of syringe/ Reduced flow rate	Replace Syringe to facilitate backwas	Replacement of syringe/Advise on backwash	Joshua	Yes	10/23/2021	0	Backwash after ev	Joshua	Joshua
100	22-Oct-2021	Talai Academy	Lamaoh	703277067	HF60-0096	Instituitonal Hollow Fibre	Reduced flow rate	Advise on Backwashing after every fi	Advise on Backwashing after every filtration	Joshua	Yes	10/22/2021	0	Backwash after ev	Joshua	Joshua
101	22-Oct-2021	Judith Okongo	Kemera	726347136	HF10P-408	Household hollow fibre fi	Leakage from top container as a result of crack/	Recall to the office	Replacement of top container/advise on bac	Risper	Yes	10/25/2021	3	Backwash after ev	Risper	Risper
102	22-Oct-2021	Nemora Mixed Boarding	Nyankoba	721496145	HF60-0095	Instituitonal Hollow Fibre	Reduced flow rate/Malfunctional tap	Advise on backwashing after every fi	Advise on proper backwashing/replacement	Risper	Yes	10/25/2021	2	Backwash after ev	Risper	Risper
103	22-Oct-2021	Elizabeth Kitheka	Kivumbi	704943891	HF15P-8677	Household Hollow Fibre F	Reduced flow rate	Advise on backwashing after every fi	Advise on backwashing after every filtration	Joshua	Yes	10/24/2021	0	Backwash after ev	Joshua	Joshua
104	25-Oct-2021	Britney Achieng	Mogori Towns	792324120	HF15P-8151	Household Hollow Fibre F	Cannot reassemble filter	Share video on filter assembling/refe	Share video on filter assembling/refer to ma	Joshua	Yes	10/25/2021	0	Refer to manual or	Joshua	Joshua
105	26-Oct-2021	Huston Nanda Okweba	Wekhomo	718342966	HF15P-5851	Household Hollow Fibre F	Cannot reassemble filter	Share video on filter assembling/refe	Share video on filter assembling/refer to ma	Joshua	Yes	10/26/2021	0	Refer to manual or	Joshua	Joshua
106	26-Oct-2021	Douglas Bhoke Mwita	Nyabikanye	792241729	HF15P-4827	Household Hollow Fibre F	Reduced flow rate	Advise on backwashing after every fi	Advise on backwashing after every filtration	Joshua	Yes	11/05/2021	0	Advise on backwas	Joshua	Joshua
107	26-Oct-2021	Talai Academy	Lamaoh	703277067	HF60-0096	Instituitonal Hollow Fibre	Reduced flow rate	Advise on backwashing after every fi	Advise on backwashing after every filtration	Joshua	Yes	11/26/2021	0	Advise on backwas	Joshua	Joshua
108	26-Oct-2021	Makena Kamasia	Murua	795597444	HF15P-3978	Household Hollow Fibre F	Reduced flow rate	Advise on backwashing after every fi	Advise on backwashing after every filtration	Joshua	yes	11/01/2021	0	Backwash after ev	Joshua	Joshua
109	27-Oct-2021	John Nyauci	Ndarunguro	717063124	HF15P-4034	Household Hollow Fibre F	Reduced flow rate	Advise on backwashing after every fi	Advise on backwashing after every filtration	Joshua	Yes	10/30/2021	0	Backwash after ev	Joshua	Joshua
110	27-Oct-2021	Susan Salaon	Ndarunguro	710586968	HF15P-3956	Household Hollow Fibre F	Leakage from the top container	Advise to tignten membrane during f	Advise to tignten membrane during filter ass	Joshua	Yes	10/27/2021	0	Tighten membrane	Joshua	Joshua
111	27-Oct-2021	Samperi Morijo	Olchurai	726500646	HF15P-3991	Household Hollow Fibre F	Reduced flow rate	Advise on Backwashing after every fi	Advise on Backwashing after every filtration	Joshua	Yes	10/27/2021	0	Advise on Backwas	Joshua	Joshua
112	27-Oct-2021	Nyabokarange Mixed Seconda	Kuria West	726099107	HF15P-8993	Household Hollow Fibre F	Leakage From the Tap	Tighten the tap/Replace Washers	Tightening the tap/ Washers Replaced	Joshua	Yes	10/31/2021	4	Ensure tap is tighte	Joshua	Joshua
113	27-Oct-2021	Sirwaine Legei	Leparwa	726795889	HF15P-8717	Household Hollow Fibre F	Reduced flow rate	backwash after every filtration. Allov	Advise to backwash after every filtration	Joshua	Yes	11/28/2021	0	Allow turbid wate	Joshua	Joshua
114	28-Oct-2021	Masiah Kasoo	Ngarendare	725524476	HF15P-8410	Household Hollow Fibre F	Reduced flow rate	backwash after every filtration. Allow turbid water to settle before filtration		Joshua	Yes	11/30/2021	0	Allow turbid wate	Joshua	Joshua
115	29-Oct-2021	Caroline Awino Nyadinda	Moren	712814295	HF15P-6855	Household Hollow Fibre F	reduced flow rate	Backwash after every filtration	Advise on backwashing after every filtration	Joshua	Yes	11/29/2021	0	Backwash after ev	Joshua	Joshua
116	2-Nov-2021	Virginia Wangari	Njoro	797047653	HF15P-8884	Household Hollow Fibre F	reduced flow rate	Backwash after every filtration	Advise on backwashing after every filtration	Joshua	Yes	11/05/2021	0	Backwash after ev	Joshua	Joshua
117	9-Nov-2021	Luice Murugi	Libagi South	725078596	HF15P-8880	Household Hollow Fibre F	Reduced flow rate	Share video on backwashing/Advise	Share video on backwashing	Joshua	Yes	11/15/2021	0	Refer to video or n	Joshua	Joshua
118	16-Nov-2021	Jane Isendi	Kware	700885225	HF15P-8873	Household Hollow Fibre F	Loose jar	Replacement of jar	Avoid tightening of the jar	Joshua	Yes	11/17/2021	0	Avoid tightening ja	Joshua	Joshua
119	22-Nov-2021	John Mitiko	mabera	712930208	HF15P-3290	Household hollow fiber	Leakage and filter manifold cant be disassembl	tighten during assembling and hold u	Follow the instruction manual/Instruction vi	kevin	Yes	11/23/2021	0	Refer to assemblir	kevin	kevin
120	29-Nov-2021	Nick Koech	Chepkibir	711402806/73	HF15P-8303	Household hollow fiber	Reduced flow rate	Backwash after every filtration	Backwash after every filtration	kevin	Yes	12/03/2021	0	Backwash after ev	kevin	kevin
121	30-Nov-2021	Mary Bonareri	Nyabiosi	717852100	HF15P-5105	Household hollow fiber	leakage from tap	tighten the backnut and the tap	Advised on proper assembling of the filter b	kevin	Yes	12/03/2021	0	Ensure tap is tighte	kevin	Kevin
122	30-Nov-2021	Alphiner Chelangat	Kapkelei	700388842	HF15P-6246	Household hollow fiber	leakage from tap	tighten the backnut and the tap	Advised on proper assembling of the filter b	Kevin	Yes	11/30/2021	0	Ensure tap is tighte	Kevin	Kevin
123	30-Nov-2021	Alice Bonareri Magara	Ekerubo	728578778	HF15P-6338	Household hollow fiber	Reduced flow rate	Backwash after every filtration	Advised on backwashing after every filtratio	kevin	Yes	12/03/2021	0	Backwash after ev	Kevin	Kevin
124	30-Nov-2021	Emmy Korir	Kapcheptebe	710410070	HF15P-4075	household hollow fiber	Reduced flow rate	Backwash after every filtration	Advised on backwashing after every filtratio	Kevin	Yes	12/03/2021	0	Backwash after ev	Kevin	Kevin
125	30-Nov-2021	Mrs. Barnabas Lilian Morogo	strobag	723708082	HF15P-8633	household hollow fiber	Reduced flow rate	Backwash after every filtration	Advised on backwashing after every filtratio	Kevin	Yes	12/01/2021	0	Backwash after ev	Kevin	Kevin
126	30-Nov-2021	Mary Cherop	Kaplelach	722977240	HF15P-8255	household hollow fiber	Reduced flow rate	Backwash after every filtration	Advised on backwashing after every filtratio	Kevin	Yes	12/01/2021	0	Backwash after ev	Kevin	Kevin
127	30-Nov-2021	Andai Evaline	Borabu	717976697	HF15P-8920	Household hollow fibre fi	Some particles in the storage container	Wash the storage container with soa	Advised client to wash the storage container	Veronicah	Yes	12/01/2021	0	Wash the storage c	Veronicah	Veronicah
128	30-Nov-2021	Chebangang dispensary	Chebangang	723452594	HF15P-8271	Household hollow fibre fi	Not sure of the disassembling process of the fil	Share video on filter assembling/refe	Shared video on filter assembling/refer clier	Veronicah	Yes	12/01/2021	0	Refer to assemblir	Veronicah	Veronicah
129	30-Nov-2021	St James Gionsaria	Gionsaria	721451981	HF15P-8784	Household hollow fibre fi	Reduced flow rate	Advise on backwashing after every fi	Advise on backwashing after every filtration	Veronicah	Yes	12/01/2021	0	Backwash after ev	Veronicah	Leonidah
130	30-Nov-2021	Kapset secondary school	Kapset	723754574	HF15P-8839	Household hollow fibre fi	Reduced flow rate	Advise on backwashing after every fi	Advise on backwashing after every filtration	Veronicah	Yes	11/30/2021	0	Backwash after ev	Veronicah	Veronicah
131	30-Nov-2021	Geoffrey Shirao	Kisii townshir	733499724	HF15P-6691	Household hollow fibre fi	Broken syringe	Replacement of the syringe	Replacement of syringe	Risper	Yes	01/11/2021	0	Put the syringe in a	Veronicah	Veronicah
132	6-Dec-2021	Erick Matoke	Suneka/Riana	720002962	B14-0083	Biosand filter	Leakage along spout	Sealing with silicant	Sealing with silicant	Peter	Yes	12/08/2021	0	Minimize filter mo	Risper	Peter Moindi
133	15-Dec-2021	Joan Barongo	Kineni	724612136	HF15P-8797	Household hollow fibre fi	Foul smell	Membrane maintenance	Membrane maintenance	Risper	Yes	12/16/2021	2	Avoid washing top	Daniel	Risper

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