Gold standard for the global goals
Monitoring report

Gold Standard® for the Global Goals

June 2017, version 1

Title of the project	GS1247 VPA 203 Sierra Leone Safe Water (GS7475) GS1247 VPA 204 Sierra Leone Safe Water (GS7476) GS1247 VPA 205 Sierra Leone Safe Water (GS7477) GS1247 VPA 206 Sierra Leone Safe Water (GS7478) GS1247 VPA 207 Sierra Leone Safe Water (GS7479) GS1247 VPA 208 Sierra Leone Safe Water (GS7480) GS1247 VPA 209 Sierra Leone Safe Water (GS7481) GS1247 VPA 210 Sierra Leone Safe Water (GS7482) GS1247 VPA 211 Sierra Leone Safe Water (GS7483) GS1247 VPA 212 Sierra Leone Safe Water (GS7484)
Gold Standard project id	GS7475-7484
Version number of the monitoring report	5
Completion date of the monitoring report	26/03/2021
Date of project design certification	24/02/2020
Start date of crediting period	GS7475: 19/05/2019 GS7476: 20/05/2019 GS7477: 13/06/2019 GS7478: 28/06/2019 GS7479: 29/07/2019 GS7480: 04/08/2019 GS7481: 14/11/2019 GS7482: 14/11/2019 GS7483: 23/01/2020 GS7484: 26/11/2019
Duration of this monitoring period	GS7475: 19/05/2019 to 31/08/2020 GS7476: 20/05/2019 to 31/08/2020 GS7477: 13/06/2019 to 31/08/2020 GS7478: 28/06/2019 to 31/08/2020 GS7479: 29/07/2019 to 31/08/2020 GS7480: 04/08/2019 to 31/08/2020 GS7481: 14/11/2019 to 31/08/2020 GS7482: 14/11/2019 to 31/08/2020 GS7483: 23/01/2020 to 31/08/2020 GS7484: 26/11/2019 to 31/08/2020
Duration of previous monitoring period	n/a
Project representative(s)	Oscar Lozada – co2balance
Host Country	Sierra Leone

Certification pathway (activity certification/impact certification)	Impact Certification
SDG Contributions targeted (as per approved PDD)	SDG 3 – Good Health and Wellbeing By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination. SDG 5 – Gender Equality Recognize and value unpaid care and domestic work through the provision of public services, infrastructure and social protection policies and the promotion of shared responsibility within the household and the family as nationally appropriate. SDG 6 – Clean Water and Sanitation By 2030, achieve universal and equitable access to safe and affordable drinking water for all. SDG 13 – Climate Action Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries and small island developing States, including focusing on women, youth and local and marginalized communities.
Gold Standard statement/product certification sought (GSVER/ADALYs/RECs etc.)	GSVER
Selected methodology(ies)	TPDDTEC v1
Estimated amount of annual average certified SDG impact (as per approved PDD)	SDG 3 – 66% reduction in incidences of stomach related illnesses or water-borne diseases (to all VPAs) SDG 5 – 40% reduction in time spent collecting water (to all VPAs) SDG 6 – 32,400 additional people gain access to safe water (3,240 per VPA) SDG 13 - 100,000 tCO2e per year. Breakdown: GS7475: 10,000 tCO2e GS7476: 10,000 tCO2e GS7477: 10,000 tCO2e GS7478: 10,000 tCO2e GS7479: 10,000 tCO2e GS7480: 10,000 tCO2e GS7481: 10,000 tCO2e GS7482: 10,000 tCO2e GS7483: 10,000 tCO2e GS7484: 10,000 tCO2e
Total amount of certified SDG impact (as per approved methodology) achieved in this monitoring period	SDG 3 - 64% reduction in incidences of stomach related illnesses or water-borne diseases (to all VPAs) SDG 5 – 28% reduction in time spent collecting water (to all VPAs) SDG 6 – 15,920 additional persons with access to safe water Breakdown:

	GS7475: 1,676 additional persons with access to safe water GS7476: 1,676 additional persons with access to safe water GS7477: 1,676 additional persons with access to safe water GS7478: 1,397 additional persons with access to safe water GS7479: 1,676 additional persons with access to safe water GS7480: 1,397 additional persons with access to safe water GS7481: 1,397 additional persons with access to safe water GS7482: 1,676 additional persons with access to safe water GS7483: 1,676 additional persons with access to safe water GS7484: 1,676 additional persons with access to safe water SDG 13 – 25,442 tCO2e Breakdown: GS 7475: 3,475 tCO2e GS 7476: 3,425 tCO2e GS 7477: 3,364 tCO2e GS 7478: 2,632 tCO2e GS 7479: 3,030 tCO2e GS 7480: 2,068 tCO2e GS 7481: 1,824 tCO2e GS 7482: 2,194 tCO2e GS 7483: 1,670 tCO2e GS 7484: 1,759 tCO2e

SECTION A. Description of project

A.1. Purpose and general description of project

>> (Provide a brief summary of the detailed description given in section B.1 including purpose of the project, brief description of the installed technology and equipment and relevant dates for the project (e.g. construction start/end, commissioning, continued operation periods, etc.)

CO2balance is implementing 10 micro-scale VPAs in Kono and Kenema Districts, Sierra Leone, under the Gold Standard methodology *Technologies and Practices to Displace Decentralized Thermal Energy Consumption*. The project activity involves rehabilitating non-functioning boreholes to provide villages with a source of safe water. This displaces the baseline method of water treatment, which involves boiling water using solid fuel. The project activity removes the need of households to rely on firewood and coal to boil water and therefore reduces CO2 emissions.

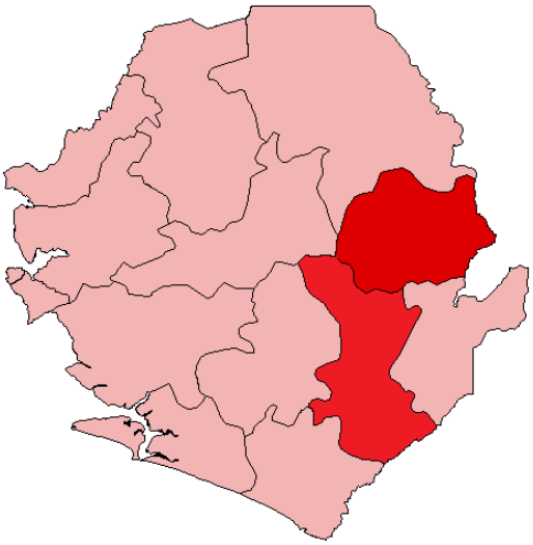
The 57 boreholes were rehabilitated between the 19th May 2019 to the 1st February 2020. The crediting periods for each VPA are given in section A.4 and have a lifetime of 7 years. This monitoring period covers 19/05/2019 - 31/08/2020 and as part of the requirements, all boreholes were checked on a monthly basis during the period. All boreholes can be confirmed as operational with only a few minor problems, that needed maintenance and or repairs. Common problems were low water discharge, disconnected rods and broken pump head, all which could be repaired without detriment to the water supply.

A.2. Location of project

>> (Provide host country, state/province, city/town details along with GPS co-ordinates.)

This project is located in Kenema and Kono Districts, in the Eastern Provinces of Sierra Leone. Below is the geographic reference to allow unique identification of the project boundary. The target area and the fuel collection area are defined as being contained within project boundary, with the outer limits of the project boundary being clearly defined below. As the majority of beneficiaries collect their wood fuel locally in close proximity to their homesteads, the wood fuel collection area and target area are considered the same.


Dakar
Senegal
Banjul
The Gambia
Bamako
Guinea-Bissau
Bissau
Ilha Bolama
North
Guinea
Conakry
West
East
Freetown
Sierra Leone
Côte d'Ivoire
South
Yamoussoukro
Liberia
Monrovia
Abidjan
Image Landsat / Copernicus
© 2018 Google
Data SIO, NOAA, U.S. Navy, NGA, GEBCO
US Dept of State Geographer
Google Earth



Project Area Coordinates		
	Latitude	Longitude
North	9°59'59.32"N	11°53'39.77"W
South	6°55'3.04"N	11°27'24.86"W
East	8°28'46.04"N	10°16'31.33"W
West	9° 1'51.84"N	13°18'10.96"W
Kono	8°45'N	11°00'W
Kenema	7°50'N	11°10'W

A.3. Reference of applied methodology

>>*(Indicate title and version number of the methodology.)*

The applied methodology is Technologies and Practices to Displace Decentralized Thermal Energy Consumption Version 1.0 (TPDDTEC).

A.4. Crediting period of project

>> (*Provide start date and length of the crediting period as given in approved PDD.)*

GS7475: 19/05/2019
GS7476: 20/05/2019
GS7477: 13/06/2019
GS7478: 28/06/2019
GS7479: 29/07/2019
GS7480: 04/08/2019
GS7481: 14/11/2019
GS7482: 14/11/2019
GS7483: 23/01/2020
GS7484: 26/11/2019

Each crediting period has a length of 7 years, as approved in the PDDs.

SECTION B. Implementation of project

B.1. Description of implemented project

>> (*Provide information on the implementation status of the project during this monitoring period. Specify any deviations / delays compared to information in approved project.)*

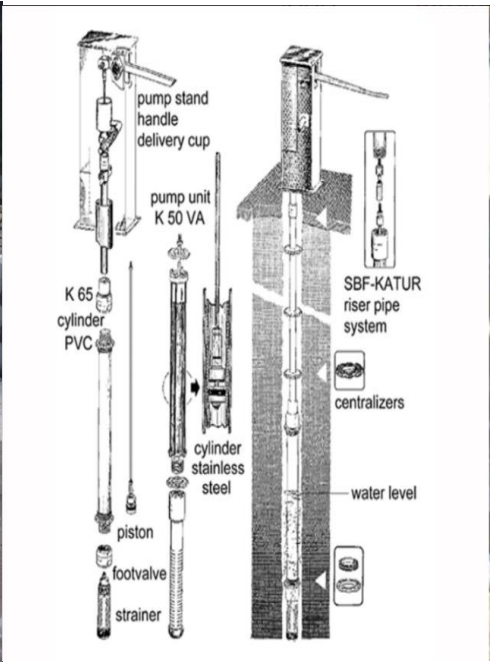
In partnership with Community Organization for Development and Empowerment – Sierra Leone (CODE-SL), CO2balance UK Ltd is implementing a number of Micro-Scale Voluntary Project Activities under PoA 1247 in the districts of Kono and Kenema which are eligible under the Gold Standard methodology *Technologies and Practices to Displace Decentralized Thermal Energy Consumption version 1*. Local people typically use wood fuel on inefficient three stone fires for cooking and water purification, which results in the release of greenhouse gas emissions from the combustion of wood. This can be avoided if a technology that does not require fuel (wood or fossil) supplies clean water desired by households.

Kono and Kenema are largely rural Districts in which local people typically use wood fuel on inefficient three-stone fires to purify their drinking, cleaning and washing water. This process results in the release of greenhouse gas emissions from the combustion of wood. This can be avoided if a technology that does not require fuel (wood or fossil), supplies the clean water desired by households. Many existing boreholes are owned by community groups and have fallen into disrepair because maintenance programmes have been poorly managed

or proven too expensive. In this project CO2balance UK Ltd, work with community groups and a local NGO partner, CODE-SL in these Districts, to identify broken down boreholes and renovate them so that they deliver clean, safe water and breakdowns are fixed rapidly.

The date of rehabilitation was confirmed by a Repair Confirmation Form, which was signed by the mechanic employed by the local NGO partner, carrying out the repair along with an elected representative of the community group owners of the borehole. The date of rehabilitation was used as the start date of operation and crediting for each borehole; we have conservatively assumed that the first day of crediting is not counted.

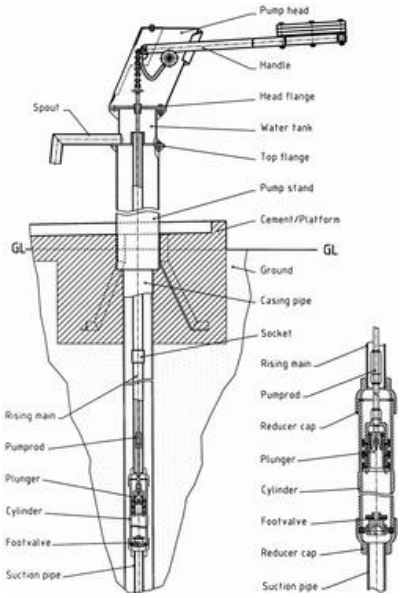
The boreholes included under the project are entirely human operated and fitted with hand pump Kardia-65, Kardia-2000 and India Mark 2 models. The depth of the boreholes are limited to 100m or less. The main differences between 65 and 2000 models are that the piston consists of 4 seals for Kardia 2000 and 5 for Kardia 65, the rubber seating differing between the two and the need for a reducer to tighten the screen pipe on K2000 while it is not necessary on K65.



Left image: Kardia-2000 pump in action from the project in Sierra Leone (Source: CO2balance)
Middle image: Kardia-65 pump in action from the project in Sierra Leone (Source: CO2balance)
Right image: specification of a Kardia pump (Source: Red Cross[1])

	Kardia 65/2000
Cylinder diameter (mm):	62
Maximum Stroke (mm):	125
Approx. discharge at about 75 watt input m3/h:	at 10 m head 1.4
	at 15 m head 1.1
	at 20 m head 0.9
	at 30 m head 0.7
Pumping lift (m):	10-50
Water consumption (lpcd):	15-20

[1] https://itemscatalogue.redcross.int/wash--5/water--29/hand-pumps--44/hand-pump-kardia--WPUHSURW03.aspx



Left image: India Mark 2 pump in action from the project in Sierra Leone (Source: CO2balance)
Right image: specification of a India Mark 2 pump (Source: Red Cross[2])

	India Mark 2
Cylinder diameter (mm):	63.5
Maximum Stroke (mm):	125
Approx. discharge (75 watt input):	at 50 m head: 0.55 m^3/hour,
	at 60 m head 0.45 m^3/hour,
	at 70 m head: 0.4 m^3/hour,
Pumping lift (m):	10-50
Water consumption (lpcd):	15-20

The number of days each borehole credited for in this monitoring period was multiplied by the number of people using the borehole to give the total number of project technology days for that borehole. The individual project technology days for each borehole were totalled to give the total number of project technology days for this monitoring period. In total 57 boreholes were rehabilitated. The following table details pertinent information for each borehole in the project and groups them by VPA:

Borehole ID	Borehole Name	Date of Rehab	Start of MP1	Pump model	Number of people using borehole	Mode of use
VPA 203 - GS7475						
Start date for VPA: 19/05/2019						
KON-01	Chief Compound water point	18/05/2019	19/05/2019	Kardia (K-2000)	548	Domestic
KON-02	Open Eye Water Point	18/05/2019	19/05/2019	Kardia (K-2000)	581	Domestic
KON-03	LCM School Field Borehole	18/05/2019	19/05/2019	Kardia (K-2000)	541	Domestic
KON-04	Yardu Road water point	19/05/2019	20/05/2019	Kardia (K-2000)	749	Domestic

[2] https://www.rural-water-supply.net/en/implementation/public-domain-handpumps/india-mark-ii

KON-07	Mokoroma Compound water point	07/06/2019	08/06/2019	Kardia (K-2000)	481	Domestic
KON-24	KDEC School water point	27/07/2019	28/07/2019	India Mark 2	599	Domestic
					3,499	
VPA 204 - GS7476						
Start date for VPA: 20/05/2019						
KON-10	Tamba Foah Compound water point	19/05/2019	20/05/2019	Kardia (K-2000)	696	Domestic
KON-11	Camp Road Water point	07/06/2019	08/06/2019	Kardia (K-2000)	427	Domestic
KON-12	Masingbe Road Water point	07/06/2019	08/06/2019	Kardia (K-65)	602	Domestic
KON-13	Yormandu Road Water point	08/06/2019	09/06/2019	Kardia (K-2000)	612	Domestic
KON-14	Sedibay Compound Borehole	22/06/2019	23/06/2019	Kardia (K-65)	668	Domestic
KON-15	Benduma Road Borehole	23/06/2019	24/06/2019	Kardia (K-2000)	485	Domestic
					3,490	
VPA 205 - GS 7477						
Start date for VPA: 13/06/2019						
KON-30	Kpetema Central Borehole	12/06/2019	13/06/2019	Kardia (K-2000)	753	Domestic
KON-09	Aiah Komba Compound water point	13/06/2019	14/06/2019	Kardia (K-2000)	612	Domestic
KEN-25	R.C School Compound Borehole	15/06/2019	16/06/2019	India Mark 2	679	Domestic
KON-31	UMC School Piema Road Water point	17/06/2019	18/06/2019	India Mark 2	495	Domestic
KON-17	Ndomaina Compound Water point	20/06/2019	21/06/2019	India Mark 2	619	Domestic
KON-18	Yawara Compound Borehole	27/06/2019	28/06/2019	Kardia (K-65)	439	Domestic
					3,597	
VPA 206 - GS 7478						
Start date for VPA: 28/06/2019						
KON-22	Pa Nyuma Gborie compound Borehole	27/06/2019	28/06/2019	Kardia (K-2000)	700	Domestic
KON-28	Pump Sation Borehole	28/06/2019	29/06/2019	Kardia (K-2000)	765	Domestic
KON-32	Sheku Koroma compound Borehole	24/07/2019	25/07/2019	Kardia (K-65)	683	Domestic
KON-21	Kurankor Compound Borehole	25/07/2019	26/07/2019	Kardia (K-65)	685	Domestic
KEN-14	Abu Marrah Compound Borehole	26/07/2019	27/07/2019	India Mark 2	627	Domestic
					3,460	
VPA 207 - GS7479						
Start date for VPA: 29/07/2019						
KON-23	KDEC School water point	28/07/2019	29/07/2019	India Mark 2	678	Domestic
KON-26	ABC Store water point	29/07/2019	30/07/2019	India Mark 2	702	Domestic

KON-20	Sahr Bobor Compound Borehole	30/07/2019	31/07/2019	Kardia (K-2000)	455	Domestic
KON-25	KDEC School water point	31/07/2019	01/08/2019	India Mark 2	700	Domestic
KEN-15	Chief Brima Foday Compound Borehole	01/08/2019	02/08/2019	India Mark 2	514	Domestic
KON-19	Sumaila Koroma Compound Borehole	02/08/2019	03/08/2019	Kardia (K-65)	426	Domestic
					3,475	
VPA 208 - GS7480						
Start date for VPA: 04/08/2019						
KON-29	Saiama Central Borehole	03/08/2019	04/08/2019	Kardia (K-65)	772	Domestic
KON-05	Mdm Ballay Komba Compound Borehole	04/08/2019	05/08/2019	Kardia (K-2000)	791	Domestic
KON-16	New Sembehun Road Borehole	27/11/2019	28/11/2019	Kardia (K-65)	831	Domestic
KEN-01	Moisala Borehole	22/11/2019	23/11/2019	India Mark 2	533	Domestic
KON-27	Johnny Compound Water Point	21/11/2019	22/11/2019	Kardia (K-2000)	543	Domestic
					3,470	
VPA 209 - GS7481						
Start date for VPA: 14/11/2019						
KEN-10	Central Mosque Borehole	18/11/2019	19/11/2019	India Mark 2	773	Domestic
KON-06	Masundu central Borehole	15/11/2019	16/11/2019	Kardia (K-65)	712	Domestic
KEN-13	One Mile Borehole	19/11/2019	20/11/2019	India Mark 2	703	Domestic
KEN-11	Jimmy section borehole	20/11/2019	21/11/2019	India Mark 2	643	Domestic
KON-08	Saardu Junction water point	13/11/2019	14/11/2019	Kardia (K-2000)	634	Domestic
					3,465	
VPA 210 - GS7482						
Start date for VPA: 14/11/2019						
KEN-12	Karkor Road Borehole	28/11/2019	29/11/2019	India Mark 2	597	Domestic
KEN-03	Ansumana Fofana Compound Borehole	14/11/2019	15/11/2019	India Mark 2	578	Domestic
KEN-04	Madam Cecilia Koroma Compound Borehole	13/11/2019	14/11/2019	India Mark 2	598	Domestic
KEN-07	Chief Compound Water Point	15/11/2019	16/11/2019	India Mark 2	587	Domestic
KEN-02	Samala Compound Borehole	14/11/2019	15/11/2019	India Mark 2	561	Domestic
KEN-08	Koromba 1 Section borehole	15/11/2019	16/11/2019	India Mark 2	558	Domestic
					3,479	
VPA 211 - GS7483						
Start date for VPA: 23/01/2019						
KEN-18	Temne Town Borehole	22/01/2020	23/01/2020	India Mark 2	665	Domestic
KEN-05	Abdul Bangura Compound Borehole	22/01/2020	23/01/2020	India Mark 2	549	Domestic
KEN-17	Koroma sei Compound Borehole	23/01/2020	24/01/2020	India Mark 2	529	Domestic
KEN-09	Kpanguwama Section Borehole	24/01/2020	25/01/2020	India Mark 2	676	Domestic

KEN-21	Kuwahun borehole	24/01/2020	25/01/2020	India Mark 2	856	Domestic
KEN-24	Kamboma section Borehole	27/01/2020	28/01/2020	India Mark 2	662	Domestic
					3,937	
VPA 212 - GS7484						
Start date for VPA: 26/11/2019						
KEN-16	Thomas Samai Compound Borehole	28/01/2020	29/01/2020	India Mark 2	528	Domestic
KEN-23	SLMB School compound Borehole	29/01/2020	30/01/2020	India Mark 2	569	Domestic
KEN-19	Quarter 2 borehole	30/01/2020	31/01/2020	India Mark 2	665	Domestic
KEN-22	Mayalar Borehole	31/01/2020	01/02/2020	India Mark 2	560	Domestic
KEN-20	Gassimu Harding compound Borehole	23/01/2020	24/01/2020	India Mark 2	555	Domestic
KEN-06	Nyagbebo Road Borehole	25/11/2019	26/11/2019	India Mark 2	760	Domestic
					3,637	

B.2. Post-registration changes

B.2.1. Temporary deviations from Certified Key Project Information, Project Design Document, Monitoring & Reporting Plan, applied methodology or applied standardized baseline

>> (Indicate whether any temporary deviations have been applied during this monitoring period. If applied, provide a description of the deviation(s). Include the reasons for the deviation(s), how it deviates from the monitoring plan, applied methodology(ies) and/or applied approaches, the duration for which the deviation(s) is(are) applicable and justification on the conservativeness of the approach. Also indicate if prior approval from GS-TAC have been sought on the deviation.)

No temporary deviations have been made during this monitoring period.

B.2.2. Corrections

>> (Indicate whether any corrections to project information or parameters fixed at validation have been applied.)

No corrections to project information or fixed parameters have been applied.

B.2.3. Changes to start date of crediting period

>> (Indicate whether any changes to the start date of the crediting period have been approved by Gold Standard that is relevant for this monitoring period.)

No changes have been made to the start date of the crediting period for this monitoring period.

B.2.4. Permanent changes from registered monitoring plan, applied methodology or applied standardized baseline

>> (Indicate whether any permanent changes from the approved monitoring plan, applied methodologies or applied approaches have been approved by GS-TAC that is relevant for this monitoring period.)

No permanent changes have been made for this monitoring period.

B.2.5. Changes to project design of approved project

>> (Indicate whether any changes to the design of the project have been approved by GS-TAC that is relevant for this monitoring period.)

No design changes have been made for this monitoring period.

SECTION C. Description of monitoring system applied by the project

>>

The Project monitors the contribution towards 4 SDG indicators:

SDG 3: By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination.

SDG 5: Recognize and value unpaid care and domestic work through the provision of public services, infrastructure and social protection policies and the promotion of shared responsibility within the household and the family as nationally appropriate.

SDG 6: By 2030, achieve universal and equitable access to safe and affordable drinking water for all.

SDG 13: Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries and small island developing States, including focusing on women, youth and local and marginalized communities

All surveys are administered by trained CO2balance staff and partner CODE-SL that are local to the area and conversant in the local dialects to ensure that the responses are consistent and not biased by any regional language barriers. Each participant is provided with a briefing on the purpose of the survey and is assured that no individual names are used in the analysis.

The results of the surveys are collated in excel spreadsheets and stored on a central server in an electronic format then is sent to the UK head office for data analysis. The documentation procedure devised ensures a minimum chance of original data being lost – all original copies of our project documentation are retained in the Kigali office and are available scanned upon request of the UK team.

In accordance with the Gold Standard methodology Technologies and Practices to Displace Decentralized Thermal Energy Consumption, the survey samples are randomly selected from the borehole user record. Each borehole user is assigned a unique random number which is then sorted in order from lowest to highest; the first nth HHs are selected for the survey. The size of the RSG is dependent on the methodological requirements and variance of the parameter being monitored to ensure the parameters measured satisfy 90/30 precision (90% confidence interval and 30% margin of error). The RSG is reselected for every monitoring period to ensure the selection remains random.

Below is a summary of the key information that has been collected and monitored as part of this project:

Borehole database

The borehole installation/rehabilitation record includes the following information:

- Date of installation/rehabilitation
- GPS location of the borehole
- Model of the borehole
- Quantity of boreholes installed
- The total number of people obtaining their water from each borehole
- Mode of use: commercial/domestic

The total number of households using each borehole has been determined through the lists supplied by the community group and district officials. CODE-SL further conducts studies to screen and determine the exact number of people the rehabilitated boreholes. Using this method, the total number of people using each borehole has been fixed and hence a figure for person days can be calculated.

Ongoing Monitoring Studies

The following ongoing monitoring studies were conducted; the results are given in the parameter boxes tables in Section 6.

- **Water consumption field test** (Equation parameters Qp,y and Qp,rawboil,y) – The WCFT was conducted during March 2020 and sampled 40 households.

- **Quality of the treated water** - Water quality tests were conducted on all boreholes in the project area following rehabilitation and all were within levels considered acceptable for domestic human consumption as per the WHO guidelines. Testing took place in November for boreholes in the Kono District and during January for those in the Kenema district.

- **Usage Survey** – This survey was conducted during February and March 2020 and sampled the minimum number of 100 households.

- **Project Survey** – This survey was conducted during March 2020 and sampled the minimum number of 100 households.

- **Leakage assessment -** Sources of leakage detailed within the methodology relevant to this project have been reviewed.

Individual participants were selected from the borehole user data base using the random sampling process outlined in the monitoring plan. Sample sizes are in line with the Gold Standard requirements.

Leakage Assessment

In line with the monitoring requirements, a leakage assessment is conducted biennially and has therefore been included in this report. The potential sources of leakage listed in the methodology have been investigated, and addressed below:

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.

In all cases the baseline technologies displaced are three stones; these have no market value and are not a product as such. There is nothing limiting the use of three stone cooking across the country (the technology is lowest rung on the energy ladder and the price is zero), which is why this cooking method is so widespread. In any case the primary purpose of these three rocks is for cooking so they will not be replaced/displaced in their entirety as a result of this project - which means they will not be reused outside the project boundary. This leakage source can therefore be discounted.

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.

There is no evidence to suggest significant (if any) use of renewable energy for purifying water in the project region as found in the Baseline Water Surveys. Renewable energy used for purifying water would likely be animal dung or crop residues which will be used due to ease of availability/proximity to the home rather than due to a shortage of wood fuel, therefore it is an independent factor. This leakage source can therefore be discounted.

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.

As most participants collect wood from within the project boundary, it is not expected that the NRB in other areas will be affected. There are currently no other CDM or VER projects in the project area.

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 space heating effect of boiling water for purification purposes will be minimal, as the predominant use of baseline technology is for cooking. Therefore, it is highly unlikely that another technology will be used for heating when users no longer boil water.

e) *By virtue of promotion and marketing of 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.*

This project is not marketing efficient technology; it is eliminating the need for a fuel-based technology to deliver pure water. Lower emission technology substitution within households is therefore not possible and this leakage source can therefore be discounted.

SECTION D. Data and parameters

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

(Copy this table for each piece of data and parameter)

Relevant SDG Indicator	**SDG 3 (Good Health and Wellbeing) 3.9:** By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination **3.9.1:** Mortality rate attributed to household and ambient air pollution. **3.9.2:** Mortality rate attributed to unsafe water, unsafe sanitation and lack of hygiene (exposure to unsafe Water, Sanitation and Hygiene for All (WASH) services
Data/parameter:	
Unit	Percentage
Description	Percentage of persons boiling water for purification in the baseline scenario
Source of data	Baseline study
Value(s) applied)	66%
Choice of data or measurement methods and procedures	-
Purpose of data	Calculating SDG 3 impact
Additional comments	

Relevant SDG Indicator	**SDG 5 (Gender Equality) 5.4:** Recognize and value unpaid care and domestic work through the provision of public services, infrastructure and social protection policies and the promotion of shared responsibility within the household and the family as nationally appropriate. **5.4.1:** Proportion of time spent on unpaid domestic and care work, by sex, age and location
Data/parameter:	Tb,y
Unit	Minutes
Description	Time spent collecting water in the baseline scenario
Source of data	Baseline Survey
Value(s) applied)	73.8

Choice of data or measurement methods and procedures	-
Purpose of data	Calculating SDG 5 impact
Additional comments	

Relevant SDG Indicator	**SDG 6 (Clean Water and Sanitation) 6.1** By 2030, achieve universal and equitable access to safe and affordable drinking water for all. **6.1.1:** Proportion of population using safely managed drinking water services **SDG 13 (Climate Action), 13B:** Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries and small island developing States, including focusing on women, youth and local and marginalized communities.
Data/parameter:	Xboil Non-Suppressed demand
Unit	Percentage
Description	Percentage of premises that in the absence of the project activity would have used non-GHG emitting technologies like chlorine treatment techniques (if available) in the project boundary,
Source of data	Baseline study. Credible literature, studies, survey, reports, relevant to the project target area
Value(s) applied)	5%
Choice of data or measurement methods and procedures	Suppressed demand will be determined through a set of questions in the project survey that establish the method households use to purify their water, if any, and how they would choose to purify if they were not subject to monetary and access barriers. This is in line with the Gold Standard principles of suppressed demand outline in annex 2. A fixed suppressed demand baseline has been opted for.
Purpose of data	Calculate ERs
Additional comments	

Relevant SDG Indicator	**SDG 6 (Clean Water and Sanitation) 6.1** By 2030, achieve universal and equitable access to safe and affordable drinking water for all. **6.1.1:** Proportion of population using safely managed drinking water services **SDG 13 (Climate Action), 13B:** Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries and small island developing States, including focusing on women, youth and local and marginalized communities.
Data/parameter:	C_i
Unit	Percentage
Description	Portion of users of project safe water supply who were already in baseline using a non- boiling safe water supply.
Source of data	Baseline study. Credible literature, studies, survey, reports, relevant to the project target area
Value(s) applied)	2%

Choice of data or measurement methods and procedures	The portion of safe water users is determined though the baseline project survey and refers to the number of users that already use safe water from water sources such as boreholes.
Purpose of data	Calculate ERs, SDG 3 & 6
Additional comments	

Relevant SDG Indicator	**SDG 13 (Climate Action), 13B:** Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries and small island developing States, including focusing on women, youth and local and marginalized communities.
Data/parameter:	$EF_{b,co2}$
Unit	tco_2/TJ
Description	co_2 emission factor arising from use of fuels in baseline scenario
Source of data	IPCC default value
Value(s) applied)	112
Choice of data or measurement methods and procedures	Deemed valid by Methodology
Purpose of data	Calculate ERs
Additional comments	

Relevant SDG Indicator	**SDG 13 (Climate Action), 13B:** Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries and small island developing States, including focusing on women, youth and local and marginalized communities.
Data/parameter:	$EF_{b,non\ co2}$
Unit	tco_2/TJ
Description	Non-co_2 emission factor arising from use of fuels in baseline scenario
Source of data	IPCC default value
Value(s) applied)	8.692
Choice of data or measurement methods and procedures	Deemed valid by Methodology
Purpose of data	Calculate ERs
Additional comments	

Relevant SDG Indicator	**SDG 13 (Climate Action), 13B:** Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries and small island developing States, including focusing on women, youth and local and marginalized communities.
Data/parameter:	NCV_b /NCV_p
Unit	TJ/ton
Description	Net calorific value of the fuels used in the project
Source of data	IPCC default value
Value(s) applied)	0.0156

Choice of data or measurement methods and procedures	Deemed valid by Methodology
Purpose of data	Calculate ERs
Additional comments	

Relevant SDG Indicator	**SDG 13 (Climate Action), 13B:** Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries and small island developing States, including focusing on women, youth and local and marginalized communities.
Data/parameter:	$f_{NRB,i,y}$
Unit	Fractional non-renewability
Description	Non-renewability status of woody biomass fuel in scenario i during year y
Source of data	CDM Default National Figure
Value(s) applied)	0.95
Choice of data or measurement methods and procedures	$f_{NRB,i,y}$
Purpose of data	Calculate ERs
Additional comments	

Relevant SDG Indicator	**SDG 13 (Climate Action), 13B:** Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries and small island developing States, including focusing on women, youth and local and marginalized communities.
Data/parameter:	$W_{b,y}$
Unit	T/litre
Description	Quantity of fuel that is used to treat 1 litre of water in the baseline scenario p during year y
Source of data	Baseline Water Boiling Test
Value(s) applied)	0.0004 (temporary cap)
Choice of data or measurement methods and procedures	The baseline water boiling test is used to determine the amount of wood used to purify 1 litre of water by boiling. This data is gathered according to: *Technologies and Practices to Displace Decentralized Thermal Energy Consumption* Version 1, *Draft General Guidelines On Sampling And Surveys*; EB37 Annex 27; and *Standard For Sampling And Surveys For CDM Project Activities and Programme of Activities* (Version 02); EB65 Annex 2
Purpose of data	Calculate ERs
Additional comments	

Relevant SDG Indicator	**SDG 13 (Climate Action), 13B:** Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries and small island developing States, including focusing on women, youth and local and marginalized communities.
Data/parameter:	$W_{p,y}$
Unit	T/litre

Description	Quantity of fuel that is used to treat 1 litre of water in the project scenario p during year y
Source of data	Baseline Water Boiling Test
Value(s) applied)	0.0004 (temporary cap)
Choice of data or measurement methods and procedures	The baseline water boiling test is used to determine the amount of wood used to purify 1 litre of water by boiling. This data is gathered according to: *Technologies and Practices to Displace Decentralized Thermal Energy Consumption* Version 1, *Draft General Guidelines On Sampling And Surveys*; EB37 Annex 27; and *Standard For Sampling And Surveys For CDM Project Activities and Programme of Activities* (Version 02); EB65 Annex 2
Purpose of data	Calculate ERs
Additional comments	

D.2. Data and parameters monitored

(Copy this table for each piece of data and parameter)

Relevant SDG Indicator	**SDG 5 (Gender Equality) 5.4:** Recognize and value unpaid care and domestic work through the provision of public services, infrastructure and social protection policies and the promotion of shared responsibility within the household and the family as nationally appropriate. **5.4.1:** Proportion of time spent on unpaid domestic and care work, by sex, age and location
Data / Parameter	Tp,y
Unit	Minutes
Description	Total time spent collecting water per household per day in project.
Measured/calculated/default	Measured
Source of data	Project Survey
Value(s) of monitored parameter	53.1 (All VPAs)
Monitoring equipment	Project Survey
Measuring/reading/recording frequency:	Annual
Calculation method (if applicable):	-
QA/QC procedures:	-
Purpose of data	Calculating time saved by project.
Additional comments:	

Relevant SDG Indicator	**SDG 5 (Gender Equality) 5.4:** Recognize and value unpaid care and domestic work through the provision of public services, infrastructure and social protection policies and the promotion of shared responsibility within the household and the family as nationally appropriate. **5.4.1:** Proportion of time spent on unpaid domestic and care work, by sex, age and location
Data / Parameter	TRy
Unit	Percentage
Description	Total reduction time spent collecting water for project activity in year y (%)
Measured/calculated/default	Measured
Source of data	Project Survey
Value(s) of monitored parameter	28% (All VPAs)
Monitoring equipment	-
Measuring/reading/recording frequency:	Annual
Calculation method (if applicable):	Calculate the average amount of time spent collecting water in the project scenario and compare to the pre-project scenario
QA/QC procedures:	-
Purpose of data	To quantify whether the project has contributed to a reduction in the amount of time spent collecting water compared to the pre-project scenario
Additional comments:	

Relevant SDG Indicator	**SDG 5 (Gender Equality) 5.4:** Recognize and value unpaid care and domestic work through the provision of public services, infrastructure and social protection policies and the promotion of shared responsibility within the household and the family as nationally appropriate. **5.4.1:** Proportion of time spent on unpaid domestic and care work, by sex, age and location
Data / Parameter	Usage of time saved on water collection
Unit	Percentage
Description	Uses of time saved which was previously spent on water collection
Measured/calculated/default	Measured
Source of data	Project Survey
Value(s) of monitored parameter	1. (Unpaid) Domestic work (includes cooking and caring for family members): 24% 2. Income generating activities: 32% 3. Religious activities: 1% 4. Social and leisure activities: 6% 5. Voluntary activities: 4% 6. Education and training: 33% 7. Other (Specify): 0%
Monitoring equipment	-

Measuring/reading/recording frequency:	Annual
Calculation method (if applicable):	Ask users how time saved on water collection in the project scenario, as opposed to the baseline scenario, is now being used.
QA/QC procedures:	-
Purpose of data	To quantify how time which was previously spent on water collection is now being used
Additional comments:	

Relevant SDG Indicator/Safeguarding Principle	**SDG 6 (Clean Water and Sanitation) 6.1** By 2030, achieve universal and equitable access to safe and affordable drinking water for all.
Data / Parameter	Py
Unit	Number
Description	Number of persons having access to safe water in the project activity
Measured/calculated/default	Calculated
Source of data	User lists, set at the time of the rehabilitation.
Value(s) of monitored parameter	GS 7475: 1,800 (based on a temporary cap on user numbers of 300 per borehole) GS 7476: 1,800 GS 7477: 1,800 GS 7478: 1,500 GS 7479: 1,800 GS 7480: 1,500 GS 7481: 1,500 GS 7482: 1,800 GS 7483: 1,800 GS 7484: 1,800 Total: 17,100
Monitoring equipment	User lists
Measuring/reading/recording frequency:	Recorded Continuously
Calculation method (if applicable):	-
QA/QC procedures:	-
Purpose of data:	Calculating access to safe water
Additional comments:	SDG 3: By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination SDG 6: By 2030, achieve universal and equitable access to safe and affordable drinking water for all

Relevant SDG Indicator/Safeguarding Principle	**SDG 6 (Clean Water and Sanitation) 6.1** By 2030, achieve universal and equitable access to safe and affordable drinking water for all.
Data / Parameter	P_{access}
Unit	Number
Description	Number of additional persons having access to safe water in the project activity compared to the baseline scenario.
Measured/calculated/default	Measured
Source of data	Household lists; Usage Survey
Value(s) of monitored parameter	GS7475: 1,676 GS7476: 1,676 GS7477: 1,676 GS7478: 1,397 GS7479: 1,676 GS7480: 1,397 GS7481: 1,397 GS7482: 1,676 GS7483: 1,676 GS7484: 1,676 Total: 15,290
Monitoring equipment	Household lists; Usage Survey
Measuring/reading/recording frequency:	Annual
Calculation method (if applicable):	See section E.
QA/QC procedures:	-
Purpose of data:	To calculate the additional number of persons having access to safe water in the project activity compared to the baseline scenario
Additional comments:	

Relevant SDG Indicator	**SDG 6 (Clean Water and Sanitation) 6.1** By 2030, achieve universal and equitable access to safe and affordable drinking water for all. **SDG 13 (Climate Action), 13B:** Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries and small island developing States, including focusing on women, youth and local and marginalized communities.
Data/parameter:	Quality of Treated Water
Unit	Parameters as per national standards
Description	Laboratory Tests
Measured/calculated/default	Measured
Source of data	Water quality tests
Value(s) of monitored parameter	Pass - The Kenema water quality laboratory, part of the ministry of water resources government department has certified each water supply in line with the WHO guidelines.

Monitoring equipment	-
Measuring/reading/recording frequency:	Annual
Calculation method (if applicable):	
QA/QC procedures:	
Purpose of data:	Ensure water is safe for human consumption without treatment using the project technology
Additional comments:	

Relevant SDG Indicator	**SDG 13 (Climate Action), 13B:** Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries and small island developing States, including focusing on women, youth and local and marginalized communities.
Data/parameter:	Np,y
Unit	Project Technology Days
Description	Number of persons consuming water supplied by project scenario p through year y
Measured/calculated/default	Measured
Source of data	Borehole Project Database
Value(s) of monitored parameter	GS7475: 810,600 GS7476: 798,900 GS7477: 784,500 GS7478: 613,800 GS7479: 706,800 GS7480: 482,400 GS7481: 425,400 GS7482: 511,800 GS7483: 389,400 GS7484: 410,400 Total: 5,934,000
Monitoring equipment	Borehole Project Database
Measuring/reading/recording frequency:	Annual
Calculation method (if applicable):	Borehole users * Total crediting days
QA/QC procedures:	-
Purpose of data:	Calculate ERs
Additional comments:	

Relevant SDG Indicator	**SDG 13 (Climate Action), 13B:** Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries and small island developing States, including focusing on women, youth and local and marginalized communities.
Data/parameter:	Up,y
Unit	Percentage

Description	Usage rate in project scenario p through year y
Measured/calculated/default	Measured
Source of data	Annual Usage Survey
Value(s) of monitored parameter	100%
Monitoring equipment	The usage survey has been carried out by staff trained by CO2balance and local in- country partner CODE-SL to meet the specific requirements of the methodology. All data presented in Excel is subject to checking and cross referencing of a sample of the raw data by the project developers
Measuring/reading/recording frequency:	Annual
Calculation method (if applicable):	-
QA/QC procedures:	-
Purpose of data:	Calculate ERs
Additional comments:	

Relevant SDG Indicator	**SDG 13 (Climate Action), 13B:** Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries and small island developing States, including focusing on women, youth and local and marginalized communities.
Data/parameter:	Qp,y
Unit	Litres per person per day
Description	Quantity of safe water supplied in the project scenario p during the year y using the zero or low emissions clean water supply technology
Measured/calculated/default	Measured
Source of data	Water Consumption Field Test (WCFT)
Value(s) of monitored parameter	7.5 (capped) 11.64 (uncapped) – this value has not been used during the calculations
Monitoring equipment	-
Measuring/reading/recording frequency:	Biennial
Calculation method (if applicable):	Method used similar to Kitchen Performance Test in which the volume of water consumed in each household is averaged over 3 days. The WCFT is carried out by staff trained by CO2balance and local in- country partner CODE-SL to meet the specific requirements of the methodology. All data presented in Excel is subject to checking and cross referencing of a sample of the raw data by the project developers.
QA/QC procedures:	-
Purpose of data:	Calculate ERs
Additional comments:	

Relevant SDG Indicator	**SDG 13 (Climate Action), 13B:** Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries and small island developing States, including focusing on women, youth and local and marginalized communities.
Data/parameter:	$Q_{p,cleanboil,y}$
Unit	Litres per person per day
Description	Quantity of safe water boiled in the project scenario p during the year y using the zero or low emissions clean water supply technology
Measured/calculated/default	Measured
Source of data	WCFT
Value(s) of monitored parameter	0
Monitoring equipment	-
Measuring/reading/recording frequency:	Biennial
Calculation method (if applicable):	Method used similar to Kitchen Performance Test in which the volume of water consumed in each household is averaged over 3 days. The WCFT has been carried out by staff trained by CO2balance and local in-country partner FAPDR to meet the specific requirements of the methodology. All data presented in excel is subject to checking and cross referencing of a sample of the raw data by project developers.
QA/QC procedures:	-
Purpose of data:	Calculate ERs
Additional comments:	

Relevant SDG Indicator	**SDG 13 (Climate Action), 13B:** Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries and small island developing States, including focusing on women, youth and local and marginalized communities.
Data/parameter:	$Q_{p,rawboil,y}$
Unit	Litres per person per day
Description	The raw of unsafe water that is still boiled after installation of the water treatment technology
Measured/calculated/default	Measured
Source of data	WCFT
Value(s) of monitored parameter	0
Monitoring equipment	-
Measuring/reading/recording frequency:	Annual
Calculation method (if applicable):	Method used similar to Kitchen Performance Test in which the volume of water consumed in each household is averaged over 3 days. The WCFT has been carried out by staff trained by CO2balance and local in-country partner FAPDR to meet the specific requirements of the methodology. All data presented in excel is subject to checking and cross referencing of a sample of the raw data by project developers.
QA/QC procedures:	

Purpose of data:	Calculate ERs
Additional comments:	

Relevant SDG Indicator	**SDG 13 (Climate Action), 13B:** Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries and small island developing States, including focusing on women, youth and local and marginalized communities.
Data/parameter:	LEp,y
Unit	tCO2e per year
Description	Leakage in project scenario p during year y
Measured/calculated/default	Measured
Source of data	Baseline and monitoring surveys
Value(s) of monitored parameter	0
Monitoring equipment	-
Measuring/reading/recording frequency:	Annual
Calculation method (if applicable):	-
QA/QC procedures:	-
Purpose of data:	Calculate ERs
Additional comments:	

Relevant SDG Indicator	**SDG 13 (Climate Action), 13B:** Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries and small island developing States, including focusing on women, youth and local and marginalized communities.
Data / Parameter	Failure Days,y
Unit	Number
Description	Number of days a particular borehole was non-functioning during year y
Source of data	Borehole visits, communications from WRC
Value(s) applied	7
Measurement methods and procedures	
Monitoring frequency	Ongoing
QA/QC procedures	-
Purpose of data	Calculating ERs
Additional comment	Re-functionality of boreholes will be evidenced by signed RCF

D.3. Implementation of sampling plan

>> *(If data and parameters monitored described in section D.2 above are determined by a sampling approach, provide a description on how project participants implemented the sampling plan and surveys for those data and parameters according to the approved PDD.)*

The project proponent has elected to cross-sample technologies across all its homogenous borehole VPAs located within Kono and Kenema districts. The samples for the surveys analysed below are randomly selected from the borehole information databases using the RSG procedure previously explained in line with the minimum sample size requirements as defined by the methodology, and cover VPA, borehole and household levels. The random sampling procedure is as follows. Following 90/30 precision, achieved using Raosoft Sample Size Calculator, it was found that 7 of the 57 boreholes in Kono and Kenema districts would need to be selected for inclusion in the surveys. 7 boreholes were selected by generating a random list of numbers on the Research Randomizer online resource. An aggregate list was then generated of the borehole users in the 7 boreholes, and these were ordered according to a new random list of numbers, again generated using Research Randomizer. The aggregate list was then reordered according to random number and the first 120 users selected for the Project Survey and Usage Survey (a selection of 100, with an extra 20 as buffer). The usage survey was conducted between 27/02/2020 and 05/03/2020. The project survey was conducted between 02/04/2020 – 03/04/2020. The first 40 of these users were selected for the WCFT, which was conducted on 09/03/2020.

The surveys have been conducted to ensure that they are within the end date of the respective monitoring periods for the VPAs.

SECTION E. Calculation of SDG outcomes

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

>> (*Provide details of equations and approaches used to calculate/estimate baseline values.*)

SDG 3 (Good Health and Wellbeing)

$I_{b,y}$ Percentage of incidences of stomach related illnesses or water-borne diseases prior to project activity (%)

To establish $I_{b,y}$, the Baseline Survey asks the following:

17	Do you or your family ever suffer from stomach related illnesses/water-borne diseases and how often does this occur?	1. Never
		2. Once every few months
		3. Once per month
		4. Several times per month
		5. Weekly
		6. Everyday

SDG 5 (Gender Equality)

By ensuring that there is a safe water source at the centre of communities, the projects reduce the *time poverty* of women, because the time burden of collecting water, which falls disproportionately on women, is reduced. As the safe water sources are located centrally within communities, closer to public institutions and villages, the distance travelled to collect water is reduced, reducing the time per trip spent collecting water. In addition, as the water sources is maintained, they provide a reliable water supply, ensuring that water needs for cooking, drinking, and food preparation can be met by one central water source, so the time spent collecting water is

minimised. The average % decrease per household in time spent collecting water is taken as a proxy contribution towards the SDG target.

$T_{b,y}$ Time spent collecting water per household per day prior to project (minutes)

SDG 6 (Clean Water and Sanitation)

The outcome for SDG 6 is quantified as the additional number of persons having access to safe water in the project activity compared to the baseline scenario (P_{access}). The number of persons using each borehole is determined in the sensitization process during the rehabilitation. The percentage of users who were already consuming safe water in the baseline without boiling it (C_j) is determined through the baseline survey.

C_j Expressed as a percentage, the portion of users of the project technology j who in the baseline were already consuming safe water without boiling it.

SDG 13 (Climate Action)

CO2 emission reductions are the indicator to demonstrate that the project has raised capacity for effective climate change-related planning and management. This outcome is measured using the emission reduction calculations.

Baseline Emissions

$$BEb,y = Bb,y * ((fNRB,b, y * EFb,fuel, CO2) + EFb,fuel, nonCO2) * NCVb fuel$$

Where:

$$Bb,y = Np,y * Pb,y$$

Where:

Np,y Project technology-days in the project database for project scenario p through year y

Pb,y Specific fuel consumption for an individual technology in baseline scenario b during year y converted to tons/day

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

>> (*Provide details of equations and approaches used to calculate/estimate project values.)*

SDG 3 (Good Health and Wellbeing)

$I_{p,y}$ Percentage of incidences of stomach related illnesses or water-borne diseases during project activity (%)

The project survey asks the following questions in order to establish $I_{p,y}$:

24	Do you or your family ever suffer from stomach related illnesses/water-borne diseases and how often does this occur?	1. Never
		2. Once every few months
		3. Once per month
		4. Several times per month
		5. Weekly
		6. Everyday

SDG 5

$T_{p,y}$ Time spent collecting water per household per day in project (minutes)

The project survey asks the following questions in order to establish $T_{p,y}$, $Trips_p$ and to show what use is made of the time used.

37	Who usually goes to this source to collect water for your household?	**1.** Male Adult	**2.** Female Adult
		3. Male Child	**4.** Female Child
38	How much time does a trip to and from the borehole take?	*Please specify*	
39	How many trips are made per day to the borehole?	*Please specify*	
40	Has the borehole project saved you time?	1. Yes	2. No (skip to question 44)
41	In which of these activities has the borehole project saved you the most time?	1. Less distance to walk to the water source	2. Less time waiting at the water source
		3. Less time spent boiling/purifying water	4. Less time spent collecting wood to boil water
		5. Other (Specify)	
42	How much time do you think the borehole project has saved you on average per day?	1. 0-30min	2. 31-60min
		3. 1-2hrs	4. 2-3hrs
		5. 3-4hrs	6. >4hrs
43	What do you do with the time saved from the project? *Select all that apply*	1. (Unpaid) Domestic work (*includes cooking and caring for family members*)	2. Income generating activities
		3. Religious activities	4. Social and leisure activities
		5. Voluntary activities	6. Education and training
		7. Other (Specify)	

SDG 6

P_y Number of persons having access to safe water in the project activity.

Xboil Percentage of premises that would have used other non-GHG emitting technologies like chlorine treatment techniques, if available, in the absence of the project activity.

SDG 13 (Climate Action)

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

Where:

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

Where:

$N_{p,y}$	Number of person.days consuming water supplied by project scenario p through year y
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
$B_{p,y}$	Quantity of fuel consumed in project scenario p during the year y in tons
$Q_{p,rawboil,y}$	Quantity of raw water boiled in the project scenario p per person per day
$Q_{p,cleanboil,y}$	Quantity of safe water boiled in the project scenario p per person per day
$W_{p,y}$	Quantity of wood fuel or fossil fuel in tons required to treat 1 litre of water using technologies representative of the project scenario p during project year y

E.3. Calculation of net benefits as difference of baseline and project values or direct calculation for each SDG outcome

>>

SDG 3 (Good Health and Wellbeing)

$IR_y = 64\% = (0.88-0.32)/0.88*100$
$IR_y = (I_{b,y} – I_{p,y})/ I_{b,y}*100$

Where:

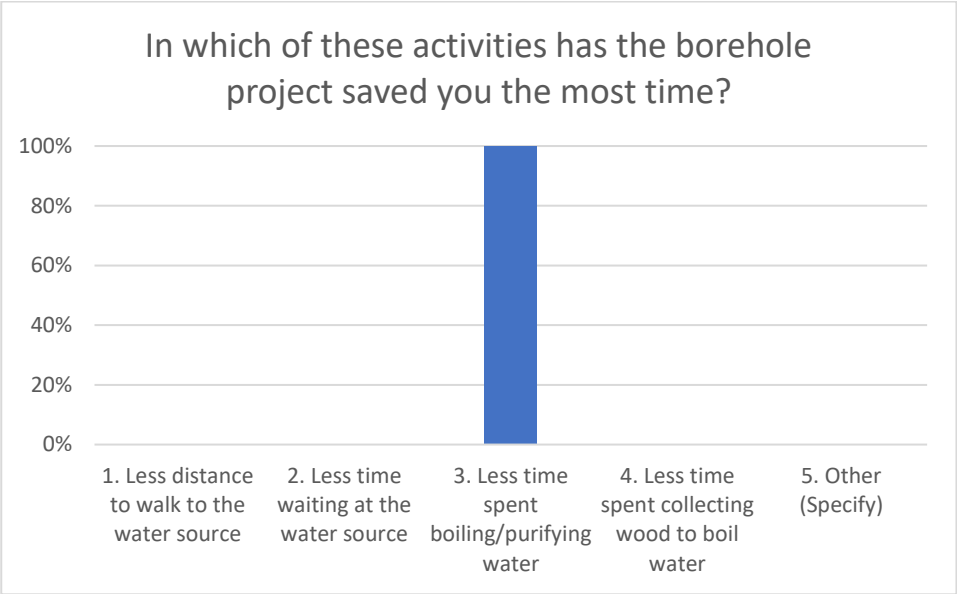
IR_y	Total reduction in incidences of stomach related illnesses or water-borne diseases in the project activity compared to the baseline scenario in year y (%)
$I_{p,y}$	Persons who suffer from stomach related illnesses/water-borne diseases in project (%)
$I_{b,y}$	Persons who suffer from stomach related illnesses/water-borne diseases prior to project (%)

SDG 5
$TR_y = 28\% = (73.8-53.1)/73.8 * 100$
$TR_y = (T_{b,y} - T_{p,y})/ T_{b,y} * 100$

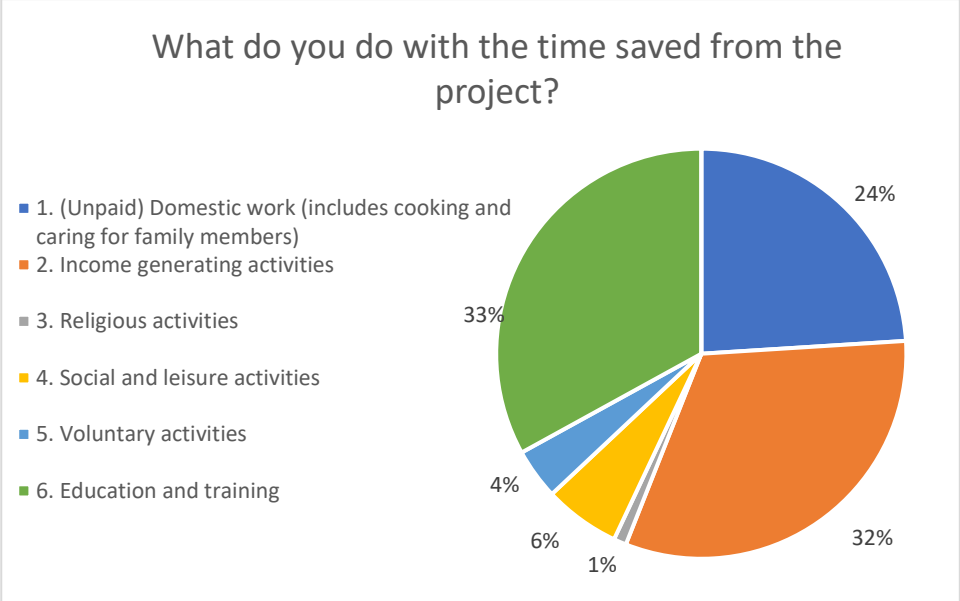
Where:

TR_y	Total reduction time spent collecting water for project activity in year y (%)
$T_{b,y}$	Time spent collecting water per household per day prior to project (minutes)
$T_{p,y}$	Time spent collecting water per household per day in project (minutes)

The project has saved households 20.7 minutes per day and for all households has reduced the distance needed to the water source (100%).



The 28% reduction in time spent collecting and treating water is used in the following ways:



SDG 6 (Clean Water and Sanitation)

$P_{access} = P_y * (1 - 0.02) * 1$

$Paccess = Py * (1 - Cj) * \text{Xboil}$

Where:

P_{access}	Number of additional persons having access to safe water in the project activity compared to the baseline scenario.
P_y	Number of persons having access to safe water in the project activity.
C_j	Expressed as a percentage, the portion of users of the project technology j who in the baseline were already consuming safe water without boiling it.
Xboil	Percentage of premises that would have used other non-GHG emitting technologies like chlorine treatment techniques, if available, in the absence of the project activity.

GS ID	P,access	P_y
GS 7475	1,676	1,800
GS 7476	1,676	1,800
GS 7477	1,676	1,800
GS 7478	1,397	1,500
GS 7479	1,676	1,800
GS 7480	1,397	1,500
GS 7481	1,397	1,500
GS 7482	1,676	1,800
GS 7483	1,676	1,800
GS 7484	1,676	1,800
Total	15,920	17,100

SDG 13 and emission reductions

In MP1 the project achieved a total capped ERs of 30,062 tCO2e. Below is a summary of the ERs by VPA:

GS ID	Uncapped ERs	Capped ERs Total
GS 7475	4,101	3,475
GS 7476	4,042	3,425
GS 7477	3,969	3,364
GS 7478	3,107	2,632
GS 7479	3,579	3,030
GS 7480	2,448	2,068
GS 7481	2,159	1,824
GS 7482	2,594	2,194
GS 7483	1,980	1,670
GS 7484	2,085	1,759
Total	30,062	30,062

GS 7475

Gold Standard

Total Emission Reductions for Monitoring Period 1 - 19/05/2019 - 31/08/2020

Baseline Fuel Use (Bby)			
Portion using safe water	Cj	fraction	2%
Person Days (CAPPED at 95%)	Njy		770,070
Fuel to treat 1 litre of water using baseline tech (CAPPED)	Wb,y	T/L	0.0004000
Quantity safe water litres consumed in project scenario supplied by project technology (CAPPED)	Qp,y	L/pd	7.5
Quantity of raw water boiled in addition to project technology water	Qp, raw, y	L/pd	0
Quantity fuel consumed in baseline scenario	Bb,y	T	2,264

Project Fuel Use (Pby)			
Portion of safe users	Cj	fraction	2%
Person Days (CAPPED at 95%)	Njy		770,070
Fuel required to treat 1 litre for water in project scenario (CAPPED)	Wp,y	T/L	0.0004000
Quantity of raw water boiled in addition to project tech water	Qp, raw, y	L/pd	0
Quantity of safe water boiled	Qp, cleanboil, y	L/pd	0.00
Quantity of fuel consumed in project scenario per HH	Bp,y	T	0

Constants			
NRB	NRB	Fraction	0.95000
Emissions factor fuel (co2)	EFb,fuel,co2	tCO2/TJ	112
Emissions factor fuel (non-co2)	EFb, fuel, non-co2	TCO2/TJ	8.692
Net calorific value of fuel	NCV,b,fuel	TJ/T	0.0156

Emissions Reductions			
Baseline emissions per year	BEb,y	tCO2/y	4,065
Project emissions per year	PEp,y	tCO2/y	0
Usage rate (CAPPED)	Up,y	fraction	0.9
Leakage	LEp,y	tCO2/y	0
Emission Reductions	Ery	tCO2/y	3,658

Suppressed Demand Assessment			
Percentage of suppressed demand users			95.00%
Percentage of **non**-suppressed demand users	Xboil	Percentage	5.00%
Emission Reductions	**ERy**	**tCO2/y**	**3,475**
Emission Reductions claimed	**ERy**	**tCO2/y**	**3,475**

Total Emission Reductions for Monitoring Period 1 - 19/05/2019 - 31/08/2020			
Baseline Fuel Use (Bby)			
Portion using safe water	Cj	fraction	2%
Person Days (CAPPED at 95%)	Njy		758,955
Fuel to treat 1 litre of water using baseline tech (CAPPED)	Wb,y	T/L	0.0004000
Quantity safe water litres consumed in project scenario supplied by project technology (CAPPED)	Qp,y	L/pd	7.5
Quantity of raw water boiled in addition to project technology water	Qp, raw, y	L/pd	0
Quantity fuel consumed in baseline scenario	Bb,y	T	2,231
Project Fuel Use (Pby)			
Portion of safe users	Cj	fraction	2%
Person Days (CAPPED at 95%)	Njy		758,955
Fuel required to treat 1 litre for water in project scenario (CAPPED)	Wp,y	T/L	0.0004000
Quantity of raw water boiled in addition to project tech water	Qp, raw, y	L/pd	0
Quantity of safe water boiled	Qp, cleanboil, y	L/pd	0.00
Quantity of fuel consumed in project scenario per HH	Bp,y	T	0
Constants			
NRB	NRB	Fraction	0.95000
Emissions factor fuel (co2)	EFb,fuel,co2	tCO2/TJ	112
Emissions factor fuel (non-co2)	EFb, fuel, non-co2	TCO2/TJ	8.692
Net calorific value of fuel	NCV,b,fuel	TJ/T	0.0156
Emissions Reductions			
Baseline emissions per year	BEb,y	tCO2/y	4,006
Project emissions per year	PEp,y	tCO2/y	0
Usage rate (CAPPED)	Up,y	fraction	0.9
Leakage	LEp,y	tCO2/y	0
Emission Reductions	Ery	tCO2/y	3,606
Suppressed Demand Assessment			
Percentage of suppressed demand users			95.00%
Percentage of **non**-suppressed demand users	Xboil	Percentage	5.00%
Emission Reductions	**ERy**	**tCO2/y**	**3,425**
Emission Reductions claimed	**ERy**	**tCO2/y**	**3,425**

Total Emission Reductions for Monitoring Period 1 - 19/05/2019 - 31/08/2020			
Baseline Fuel Use (Bby)			
Portion using safe water	Cj	fraction	2%
Person Days (CAPPED at 95%)	Njy		745,275
Fuel to treat 1 litre of water using baseline tech (CAPPED)	Wb,y	T/L	0.0004000
Quantity safe water litres consumed in project scenario supplied by project technology (CAPPED)	Qp,y	L/pd	7.5
Quantity of raw water boiled in addition to project technology water	Qp, raw, y	L/pd	0
Quantity fuel consumed in baseline scenario	Bb,y	T	2,191
Project Fuel Use (Pby)			
Portion of safe users	Cj	fraction	2%
Person Days (CAPPED at 95%)	Njy		745,275
Fuel required to treat 1 litre for water in project scenario (CAPPED)	Wp,y	T/L	0.0004000
Quantity of raw water boiled in addition to project tech water	Qp, raw, y	L/pd	0
Quantity of safe water boiled	Qp, cleanboil, y	L/pd	0.00
Quantity of fuel consumed in project scenario per HH	Bp,y	T	0
Constants			
NRB	NRB	Fraction	0.95000
Emissions factor fuel (co2)	EFb,fuel,co2	tCO2/TJ	112
Emissions factor fuel (non-co2)	EFb, fuel, non-co2	TCO2/TJ	8.692
Net calorific value of fuel	NCV,b,fuel	TJ/T	0.0156
Emissions Reductions			
Baseline emissions per year	BEb,y	tCO2/y	3,934
Project emissions per year	PEp,y	tCO2/y	0
Usage rate (CAPPED)	Up,y	fraction	0.9
Leakage	LEp,y	tCO2/y	0
Emission Reductions	Ery	tCO2/y	3,541
Suppressed Demand Assessment			
Percentage of suppressed demand users			95.00%
Percentage of **non**-suppressed demand users	Xboil	Percentage	5.00%
Emission Reductions	**ERy**	**tCO2/y**	**3,364**
Emission Reductions claimed	**ERy**	**tCO2/y**	**3,364**

Total Emission Reductions for Monitoring Period 1 - 19/05/2019 - 31/08/2020			
Baseline Fuel Use (Bby)			
Portion using safe water	Cj	fraction	2%
Person Days (CAPPED at 95%)	Njy		583,110
Fuel to treat 1 litre of water using baseline tech (CAPPED)	Wb,y	T/L	0.0004000
Quantity safe water litres consumed in project scenario supplied by project technology (CAPPED)	Qp,y	L/pd	7.5
Quantity of raw water boiled in addition to project technology water	Qp, raw, y	L/pd	0
Quantity fuel consumed in baseline scenario	Bb,y	T	1,714
Project Fuel Use (Pby)			
Portion of safe users	Cj	fraction	2%
Person Days (CAPPED at 95%)	Njy		583,110
Fuel required to treat 1 litre for water in project scenario (CAPPED)	Wp,y	T/L	0.0004000
Quantity of raw water boiled in addition to project tech water	Qp, raw, y	L/pd	0
Quantity of safe water boiled	Qp, cleanboil, y	L/pd	0.00
Quantity of fuel consumed in project scenario per HH	Bp,y	T	0
Constants			
NRB	NRB	Fraction	0.95000
Emissions factor fuel (co2)	EFb,fuel,co2	tCO2/TJ	112
Emissions factor fuel (non-co2)	EFb, fuel, non-co2	TCO2/TJ	8.692
Net calorific value of fuel	NCV,b,fuel	TJ/T	0.0156
Emissions Reductions			
Baseline emissions per year	BEb,y	tCO2/y	3,078
Project emissions per year	PEp,y	tCO2/y	0
Usage rate (CAPPED)	Up,y	fraction	0.9
Leakage	LEp,y	tCO2/y	0
Emission Reductions	Ery	tCO2/y	2,770
Suppressed Demand Assessment			
Percentage of suppressed demand users			95.00%
Percentage of **non**-suppressed demand users	Xboil	Percentage	5.00%
Emission Reductions	**ERy**	**tCO2/y**	**2,632**
Emission Reductions claimed	**ERy**	**tCO2/y**	**2,632**

Total Emission Reductions for Monitoring Period 1 - 19/05/2019 - 31/08/2020			
Baseline Fuel Use (Bby)			
Portion using safe water	Cj	fraction	2%
Person Days (CAPPED at 95%)	Njy		671,460
Fuel to treat 1 litre of water using baseline tech (CAPPED)	Wb,y	T/L	0.0004000
Quantity safe water litres consumed in project scenario supplied by project technology (CAPPED)	Qp,y	L/pd	7.5
Quantity of raw water boiled in addition to project technology water	Qp, raw, y	L/pd	0
Quantity fuel consumed in baseline scenario	Bb,y	T	1,974
Project Fuel Use (Pby)			
Portion of safe users	Cj	fraction	2%
Person Days (CAPPED at 95%)	Njy		671,460
Fuel required to treat 1 litre for water in project scenario (CAPPED)	Wp,y	T/L	0.0004000
Quantity of raw water boiled in addition to project tech water	Qp, raw, y	L/pd	0
Quantity of safe water boiled	Qp, cleanboil, y	L/pd	0.00
Quantity of fuel consumed in project scenario per HH	Bp,y	T	0
Constants			
NRB	NRB	Fraction	0.95000
Emissions factor fuel (co2)	EFb,fuel,co2	tCO2/TJ	112
Emissions factor fuel (non-co2)	EFb, fuel, non-co2	TCO2/TJ	8.692
Net calorific value of fuel	NCV,b,fuel	TJ/T	0.0156
Emissions Reductions			
Baseline emissions per year	BEb,y	tCO2/y	3,544
Project emissions per year	PEp,y	tCO2/y	0
Usage rate (CAPPED)	Up,y	fraction	0.9
Leakage	LEp,y	tCO2/y	0
Emission Reductions	Ery	tCO2/y	3,190
Suppressed Demand Assessment			
Percentage of suppressed demand users			95.00%
Percentage of **non**-suppressed demand users	Xboil	Percentage	5.00%
Emission Reductions	**ERy**	**tCO2/y**	**3,030**
Emission Reductions claimed	**ERy**	**tCO2/y**	**3,030**

Total Emission Reductions for Monitoring Period 1 - 19/05/2019 - 31/08/2020			
Baseline Fuel Use (Bby)			
Portion using safe water	Cj	fraction	2%
Person Days (CAPPED at 95%)	Njy		458,280
Fuel to treat 1 litre of water using baseline tech (CAPPED)	Wb,y	T/L	0.0004000
Quantity safe water litres consumed in project scenario supplied by project technology (CAPPED)	Qp,y	L/pd	7.5
Quantity of raw water boiled in addition to project technology water	Qp, raw, y	L/pd	0
Quantity fuel consumed in baseline scenario	Bb,y	T	1,347
Project Fuel Use (Pby)			
Portion of safe users	Cj	fraction	2%
Person Days (CAPPED at 95%)	Njy		458,280
Fuel required to treat 1 litre for water in project scenario (CAPPED)	Wp,y	T/L	0.0004000
Quantity of raw water boiled in addition to project tech water	Qp, raw, y	L/pd	0
Quantity of safe water boiled	Qp, cleanboil, y	L/pd	0.00
Quantity of fuel consumed in project scenario per HH	Bp,y	T	0
Constants			
NRB	NRB	Fraction	0.95000
Emissions factor fuel (co2)	EFb,fuel,co2	tCO2/TJ	112
Emissions factor fuel (non-co2)	EFb, fuel, non-co2	TCO2/TJ	8.692
Net calorific value of fuel	NCV,b,fuel	TJ/T	0.0156
Emissions Reductions			
Baseline emissions per year	BEb,y	tCO2/y	2,419
Project emissions per year	PEp,y	tCO2/y	0
Usage rate (CAPPED)	Up,y	fraction	0.9
Leakage	LEp,y	tCO2/y	0
Emission Reductions	Ery	tCO2/y	2,177
Suppressed Demand Assessment			
Percentage of suppressed demand users			95.00%
Percentage of **non**-suppressed demand users	Xboil	Percentage	5.00%
Emission Reductions	**ERy**	**tCO2/y**	**2,068**
Emission Reductions claimed	**ERy**	**tCO2/y**	**2,068**

Total Emission Reductions for Monitoring Period 1 - 19/05/2019 - 31/08/2020			
Baseline Fuel Use (Bby)			
Portion using safe water	Cj	fraction	2%
Person Days (CAPPED at 95%)	Njy		404,130
Fuel to treat 1 litre of water using baseline tech (CAPPED)	Wb,y	T/L	0.0004000
Quantity safe water litres consumed in project scenario supplied by project technology (CAPPED)	Qp,y	L/pd	7.5
Quantity of raw water boiled in addition to project technology water	Qp, raw, y	L/pd	0
Quantity fuel consumed in baseline scenario	Bb,y	T	1,188
Project Fuel Use (Pby)			
Portion of safe users	Cj	fraction	2%
Person Days (CAPPED at 95%)	Njy		404,130
Fuel required to treat 1 litre for water in project scenario (CAPPED)	Wp,y	T/L	0.0004000
Quantity of raw water boiled in addition to project tech water	Qp, raw, y	L/pd	0
Quantity of safe water boiled	Qp, cleanboil, y	L/pd	0.00
Quantity of fuel consumed in project scenario per HH	Bp,y	T	0
Constants			
NRB	NRB	Fraction	0.95000
Emissions factor fuel (co2)	EFb,fuel,co2	tCO2/TJ	112
Emissions factor fuel (non-co2)	EFb, fuel, non-co2	TCO2/TJ	8.692
Net calorific value of fuel	NCV,b,fuel	TJ/T	0.0156
Emissions Reductions			
Baseline emissions per year	BEb,y	tCO2/y	2,133
Project emissions per year	PEp,y	tCO2/y	0
Usage rate (CAPPED)	Up,y	fraction	0.9
Leakage	LEp,y	tCO2/y	0
Emission Reductions	Ery	tCO2/y	1,920
Suppressed Demand Assessment			
Percentage of suppressed demand users			95.00%
Percentage of **non**-suppressed demand users	Xboil	Percentage	5.00%
Emission Reductions	**ERy**	**tCO2/y**	**1,824**
Emission Reductions claimed	**ERy**	**tCO2/y**	**1,824**

Total Emission Reductions for Monitoring Period 1 - 19/05/2019 - 31/08/2020			
Baseline Fuel Use (Bby)			
Portion using safe water	Cj	fraction	2%
Person Days (CAPPED at 95%)	Njy		486,210
Fuel to treat 1 litre of water using baseline tech (CAPPED)	Wb,y	T/L	0.0004000
Quantity safe water litres consumed in project scenario supplied by project technology (CAPPED)	Qp,y	L/pd	7.5
Quantity of raw water boiled in addition to project technology water	Qp, raw, y	L/pd	0
Quantity fuel consumed in baseline scenario	Bb,y	T	1,429
Project Fuel Use (Pby)			
Portion of safe users	Cj	fraction	2%
Person Days (CAPPED at 95%)	Njy		486,210
Fuel required to treat 1 litre for water in project scenario (CAPPED)	Wp,y	T/L	0.0004000
Quantity of raw water boiled in addition to project tech water	Qp, raw, y	L/pd	0
Quantity of safe water boiled	Qp, cleanboil, y	L/pd	0.00
Quantity of fuel consumed in project scenario per HH	Bp,y	T	0
Constants			
NRB	NRB	Fraction	0.95000
Emissions factor fuel (co2)	EFb,fuel,co2	tCO2/TJ	112
Emissions factor fuel (non-co2)	EFb, fuel, non-co2	TCO2/TJ	8.692
Net calorific value of fuel	NCV,b,fuel	TJ/T	0.0156
Emissions Reductions			
Baseline emissions per year	BEb,y	tCO2/y	2,566
Project emissions per year	PEp,y	tCO2/y	0
Usage rate (CAPPED)	Up,y	fraction	0.9
Leakage	LEp,y	tCO2/y	0
Emission Reductions	Ery	tCO2/y	2,310
Suppressed Demand Assessment			
Percentage of suppressed demand users			95.00%
Percentage of **non**-suppressed demand users	Xboil	Percentage	5.00%
Emission Reductions	**ERy**	**tCO2/y**	**2,194**
Emission Reductions claimed	**ERy**	**tCO2/y**	**2,194**

Total Emission Reductions for Monitoring Period 1 - 19/05/2019 - 31/08/2020			
Baseline Fuel Use (Bby)			
Portion using safe water	Cj	fraction	2%
Person Days (CAPPED at 95%)	Njy		369,930
Fuel to treat 1 litre of water using baseline tech (CAPPED)	Wb,y	T/L	0.0004000
Quantity safe water litres consumed in project scenario supplied by project technology (CAPPED)	Qp,y	L/pd	7.5
Quantity of raw water boiled in addition to project technology water	Qp, raw, y	L/pd	0
Quantity fuel consumed in baseline scenario	Bb,y	T	1,088
Project Fuel Use (Pby)			
Portion of safe users	Cj	fraction	2%
Person Days (CAPPED at 95%)	Njy		369,930
Fuel required to treat 1 litre for water in project scenario (CAPPED)	Wp,y	T/L	0.0004000
Quantity of raw water boiled in addition to project tech water	Qp, raw, y	L/pd	0
Quantity of safe water boiled	Qp, cleanboil, y	L/pd	0.00
Quantity of fuel consumed in project scenario per HH	Bp,y	T	0
Constants			
NRB	NRB	Fraction	0.95000
Emissions factor fuel (co2)	EFb,fuel,co2	tCO2/TJ	112
Emissions factor fuel (non-co2)	EFb, fuel, non-co2	TCO2/TJ	8.692
Net calorific value of fuel	NCV,b,fuel	TJ/T	0.0156
Emissions Reductions			
Baseline emissions per year	BEb,y	tCO2/y	1,953
Project emissions per year	PEp,y	tCO2/y	0
Usage rate (CAPPED)	Up,y	fraction	0.9
Leakage	LEp,y	tCO2/y	0
Emission Reductions	Ery	tCO2/y	1,757
Suppressed Demand Assessment			
Percentage of suppressed demand users			95.00%
Percentage of **non**-suppressed demand users	Xboil	Percentage	5.00%
Emission Reductions	**ERy**	**tCO2/y**	**1,670**
Emission Reductions claimed	**ERy**	**tCO2/y**	**1,670**

Total Emission Reductions for Monitoring Period 1 - 19/05/2019 - 31/08/2020			
Baseline Fuel Use (Bby)			
Portion using safe water	Cj	fraction	2%
Person Days (CAPPED at 95%)	Njy		389,880
Fuel to treat 1 litre of water using baseline tech (CAPPED)	Wb,y	T/L	0.0004000
Quantity safe water litres consumed in project scenario supplied by project technology (CAPPED)	Qp,y	L/pd	7.5
Quantity of raw water boiled in addition to project technology water	Qp, raw, y	L/pd	0
Quantity fuel consumed in baseline scenario	Bb,y	T	1,146
Project Fuel Use (Pby)			
Portion of safe users	Cj	fraction	2%
Person Days (CAPPED at 95%)	Njy		389,880
Fuel required to treat 1 litre for water in project scenario (CAPPED)	Wp,y	T/L	0.0004000
Quantity of raw water boiled in addition to project tech water	Qp, raw, y	L/pd	0
Quantity of safe water boiled	Qp, cleanboil, y	L/pd	0.00
Quantity of fuel consumed in project scenario per HH	Bp,y	T	0
Constants			
NRB	NRB	Fraction	0.95000
Emissions factor fuel (co2)	EFb,fuel,co2	tCO2/TJ	112
Emissions factor fuel (non-co2)	EFb, fuel, non-co2	TCO2/TJ	8.692
Net calorific value of fuel	NCV,b,fuel	TJ/T	0.0156
Emissions Reductions			
Baseline emissions per year	BEb,y	tCO2/y	2,058
Project emissions per year	PEp,y	tCO2/y	0
Usage rate (CAPPED)	Up,y	fraction	0.9
Leakage	LEp,y	tCO2/y	0
Emission Reductions	Ery	tCO2/y	1,852
Suppressed Demand Assessment			
Percentage of suppressed demand users			95.00%
Percentage of **non**-suppressed demand users	Xboil	Percentage	5.00%
Emission Reductions	**ERy**	**tCO2/y**	**1,759**
Emission Reductions claimed	**ERy**	**tCO2/y**	**1,759**

E.4. Summary of ex-post values of each SDG outcome for the current monitoring period.

Item	Baseline estimate	Project estimate	Net benefit
SDG 3	88% of people suffer from stomach related illnesses/water-borne diseases (all VPAs)	32% people suffer from stomach related illnesses/water-borne diseases (all VPAs)	64% reduction in incidences of stomach related illnesses/water-borne diseases (all VPAs)
SDG 5	73.8 minutes collecting water (all VPAs)	53.1 minutes collecting water (all VPAs)	20.7 reduction in time spent collecting water (all VPAs)
SDG 6	People with access to safe water prior to project activity: GS 7475: 124 GS 7476: 124 GS 7477: 124 GS 7478: 103 GS 7479: 124 GS 7480: 103 GS 7481: 103 GS 7482: 124 GS 7483: 124 GS 7484: 124	People with access to safe water during project activity: GS 7475: 1,800 GS 7476: 1,800 GS 7477: 1,800 GS 7478: 1,500 GS 7479: 1,800 GS 7480: 1,500 GS 7481: 1,500 GS 7482: 1,800 GS 7483: 1,800 GS 7484: 1,800	Additional persons with access to safe water after project activity: GS 7475: 1,676 GS 7476: 1,676 GS 7477: 1,676 GS 7478: 1,397 GS 7479: 1,676 GS 7480: 1,397 GS 7481: 1,397 GS 7482: 1,676 GS 7483: 1,676 GS 7484: 1,676
SDG 13	Emitted prior to project activity: GS 7475: 3,475 tCO2e GS 7476: 3,425 tCO2e GS 7477: 3,364 tCO2e GS 7478: 2,632 tCO2e GS 7479: 3,030 tCO2e GS 7480: 2,068 tCO2e GS 7481: 1,824 tCO2e GS 7482: 2,194 tCO2e GS 7483: 1,670 tCO2e GS 7484: 1,759 tCO2e	Emitted after project activity: GS 7475: 0 tCO2e GS 7476: 0 tCO2e GS 7477: 0 tCO2e GS 7478: 0 tCO2e GS 7479: 0 tCO2e GS 7480: 0 tCO2e GS 7481: 0 tCO2e GS 7482: 0 tCO2e GS 7483: 0 tCO2e GS 7484: 0 tCO2e	Emissions reduced by: GS 7475: 3,475 tCO2e GS 7476: 3,425 tCO2e GS 7477: 3,364 tCO2e GS 7478: 2,632 tCO2e GS 7479: 3,030 tCO2e GS 7480: 2,068 tCO2e GS 7481: 1,824 tCO2e GS 7482: 2,194 tCO2e GS 7483: 1,670 tCO2e GS 7484: 1,759 tCO2e

E.5. Comparison of actual value of outcomes with estimates in approved PDD

Item	Values estimated in ex ante calculation of approved PDD	Actual values achieved during this monitoring period
SDG 3	66% reduction in incidences of stomach related illnesses or water-borne diseases	64% reduction in incidences of stomach related illnesses or water-borne diseases
SDG 5	40% reduction in time spent collecting water	28% reduction in time spent collecting water
SDG 6	GS7475: 3,240 GS7476: 3,240 GS7477: 3,240 GS7478: 3,240 GS7479: 3,240 GS7480: 3,240 GS7481: 3,240 GS7482: 3,240 GS7483: 3,240 GS7484: 3,240 **Total: 32,400**	GS 7475: 1,676 GS 7476: 1,676 GS 7477: 1,676 GS 7478: 1,397 GS 7479: 1,676 GS 7480: 1,397 GS 7481: 1,397 GS 7482: 1,676 GS 7483: 1,676 GS 7484: 1,676 **Total: 15,920**
SDG 13	**Ex-Ante Calculations in approved PDD (per year reductions):** GS7475: 10,000 GS7476: 10,000 GS7477: 10,000 GS7478: 10,000 GS7479: 10,000 GS7480: 10,000 GS7481: 10,000 GS7482: 10,000 GS7483: 10,000 GS7484: 10,000 **Total: 100,000** **Ex-ante calculations recalculated as per the length of MP1 for each VPA:** GS7475: 13,635 GS7476: 13,606 GS7477: 12,910 GS7478: 12,475 GS7479: 11,575 GS7480: 11,401 GS7481: 8,297 GS7482: 8,007 GS7483: 6,411 GS7484: 6,237 **Total: 104,554**	**Achieved ERs for MP1 (CAPPED):** GS 7475: 3,475 GS 7476: 3,425 GS 7477: 3,364 GS 7478: 2,632 GS 7479: 3,030 GS 7480: 2,068 GS 7481: 1,824 GS 7482: 2,194 GS 7483: 1,670 GS 7484: 1,759 **Total: 25,442**

E.6. Remarks on difference from estimated value in approved PDD

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SDG 3
The estimated value was very close to the actual value achieved during the monitoring period.

SDG 5

The estimated reduction in time spent collecting water for ex-ante calculations was based on similar projects in other countries. The actual figure of 28% is a little lower than expected but still a positive and significant result.

SDG 6

The number of people accessing safe water is significantly less per VPA than the values estimated in the PDD. This is due to the temporary cap of 300 users per borehole placed by the Gold Standard during the ongoing SWS grievance review. It is possible that, once the review is finalized, the final monitored outcome of SDG 6 may change.

SDG 13

All VPAs have fallen significantly short of the expected 10,000 ERs. This is due to the temporary cap of 0.0004T/L for the Wb,y/Wp,y value placed by the Gold Standard during the ongoing SWS grievance review. It is possible that, once the review is finalized, the final monitored outcome of SDG 13 may change.

SECTION F. Stakeholder inputs and legal disputes

F.1. List all inputs/grievances which have been received for the project during the monitoring period together with their respective answers/actions

No inputs or grievances were received during the monitoring period.

F.2. List all inputs/grievances from previous monitoring period where follow up action is to be verified in this monitoring period

No inputs or grievances were received during the previous monitoring period.

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

No legal contests or disputes arose during the monitoring period.