Gold standard for the global goals
Monitoring report

June 2017, version 1

Title of the project	GS1247 VPA 159 Improved Kitchen Regimes Manica Province Safe Water (Mozambique) (GS7132) GS1247 VPA 160 Improved Kitchen Regimes Manica Province Safe Water (Mozambique) (GS7133) GS1247 VPA 161 Improved Kitchen Regimes Manica Province Safe Water (Mozambique) (GS7134) GS1247 VPA 162 Improved Kitchen Regimes Manica Province Safe Water (Mozambique) (GS7135) GS1247 VPA 163 Improved Kitchen Regimes Manica Province Safe Water (Mozambique) (GS7136) GS1247 VPA 198 Improved Kitchen Regimes Manica Province Safe Water (Mozambique) (GS7470) GS1247 VPA 199 Improved Kitchen Regimes Manica Province Safe Water (Mozambique) (GS7471) GS1247 VPA 200 Improved Kitchen Regimes Manica Province Safe Water (Mozambique) (GS7472) GS1247 VPA 201 Improved Kitchen Regimes Manica Province Safe Water (Mozambique) (GS7473) GS1247 VPA 202 Improved Kitchen Regimes Manica Province Safe Water (Mozambique) (GS7474)
Gold Standard project id	VPA 159 GS 7132 VPA 160 GS 7133 VPA 161 GS 7134 VPA 162 GS 7135 VPA 163 GS 7136 VPA 198 GS 7470 VPA 199 GS 7471 VPA 200 GS 7472 VPA 201 GS 7473 VPA 202 GS 7474
Version number of the monitoring report	Version 10
Completion date of the monitoring report	16/03/2021
Date of project design certification	VPA 159-163, 198-202: 04/12/2019
Start date of crediting period	VPA 159 GS 7132: 19/06/2019 VPA 160 GS 7133: 01/10/2019 VPA 161 GS 7134: 15/05/2019 VPA 162 GS 7135: 10/04/2019 VPA 163 GS 7136: 29/08/2019 VPA 198 GS 7470: 31/05/2019 VPA 199 GS 7471: 31/05/2019 VPA 200 GS 7472: 14/06/2019 VPA 201 GS 7473: 10/09/2019 VPA 202 GS 7474: 18/09/2019
Duration of this monitoring period	VPA 159 GS 7132: 19/06/2019 to 30/06/2020 VPA 160 GS 7133: 01/10/2019 to 30/06/2020 VPA 161 GS 7134: 15/05/2019 to 30/06/2020 VPA 162 GS 7135: 10/04/2019 to 30/06/2020 VPA 163 GS 7136: 29/08/2019 to 30/06/2020 VPA 198 GS 7470: 31/05/2019 to 30/06/2020 VPA 199 GS 7471: 31/05/2019 to 30/06/2020 VPA 200 GS 7472: 14/06/2019 to 30/06/2020 VPA 201 GS 7473: 10/09/2019 to 30/06/2020 VPA 202 GS 7474: 18/09/2019 to 30/06/2020
Duration of previous monitoring period	N/A

Project representative(s)	Emma Donnachie
Host Country	Mozambique
Certification pathway (activity certification/impact certification)	Impact Certification
SDG Contributions targeted (as per approved PDD)	SDG3: Good Health and Wellbeing SDG5: Gender Equality SDG6: Clean Water and Sanitation SDG13: Climate Action
Gold Standard statement/product certification sought (GSVER/ADALYs/RECs etc.)	GSVER
Selected methodology(ies)	TPDDTEC v.1
Estimated amount of annual average certified SDG impact (as per approved PDD)	GS 7132: 1 – SDG 3: 2,260 additional people consuming safe water 2 - SDG 5: 0.5 hours / 14% hours per household per trip saved on water and firewood collection time 3 - SDG 6: 3,125 additional people gain access to safe water 4 – SDG 13: 10,000 tCO2e GS 7133: 1 – SDG 3: 2,260 additional people consuming safe water 2 - SDG 5: 0.5 hours / 14% hours per household per trip saved on water and firewood collection time 3 - SDG 6: 3,125 additional people gain access to safe water 4 – SDG 13: 10,000 tCO2e GS 7134: 1 – SDG 3: 2,260 additional people consuming safe water 2 - SDG 5: 0.5 hours / 14% hours per household per trip saved on water and firewood collection time 3 - SDG 6: 3,125 additional people gain access to safe water 4 – SDG 13: 10,000 tCO2e GS 7135: 1 – SDG 3: 2,260 additional people consuming safe water 2 - SDG 5: 0.5 hours / 14% hours per household per trip saved on water and firewood collection time 3 - SDG 6: 3,125 additional people gain access to safe water 4 – SDG 13: 10,000 tCO2e GS 7136: 1 – SDG 3: 2,260 additional people consuming safe water 2 - SDG 5: 0.5 hours / 14% hours per household per trip saved on water and firewood collection time 3 - SDG 6: 3,125 additional people gain access to safe water 4 – SDG 13: 10,000 tCO2e GS7470: 1 – SDG 3: 2,260 additional people consuming safe water 2 - SDG 5: 0.5 hours / 14% hours per household per trip saved on water and firewood collection time 3 - SDG 6: 3,125 additional people gain access to safe water 4 – SDG 13: 10,000 tCO2e GS7471: 1 – SDG 3: 2,260 additional people consuming safe water 2 - SDG 5: 0.5 hours / 14% hours per household per trip saved on water and firewood collection time 3 - SDG 6: 3,125 additional people gain access to safe water 4 – SDG 13: 10,000 tCO2e GS7473: 1 – SDG 3: 2,260 additional people consuming safe water

	2 - SDG 5: 0.5 hours / 14% hours per household per trip saved on water and firewood collection time 3 - SDG 6: 3,125 additional people gain access to safe water 4 – SDG 13: 10,000 tCO2e GS7474: 1 – SDG 3: 2,260 additional people consuming safe water 2 - SDG 5: 0.5 hours / 14% hours per household per trip saved on water and firewood collection time 3 - SDG 6: 3,125 additional people gain access to safe water 4 – SDG 13: 10,000 tCO2e
Total amount of certified SDG impact (as per approved methodology) achieved in this monitoring period	**GS 7132:** 1 – SDG 3: 1,930 additional people consuming safe water 2 - SDG 5: 1.41 hours / 38% hours per household per trip saved on water and firewood collection time 3 - SDG 6: 2,672 additional people gain access to safe water 4 – SDG 13: 2,920 tCO2e **GS 7133**: 1- SDG 3: 1,928 additional people consuming safe water 2 - SDG 5: 1.41 hours / 38% hours per household per trip saved on water and firewood collection time 3 - SDG 6: 2,669 additional people gain access to safe water 4- SDG 13: 2,632 tCO2e **GS 7134:** 1- SDG 3: 1,864 additional people consuming safe water 2 - SDG 5: 1.41 hours / 38% hours per household per trip saved on water and firewood collection time 3 - SDG 6: 2,580 additional people gain access to safe water 4- SDG 13: 3,740 tCO2e **GS 7135:** 1- SDG 3: 1,874 additional people consuming safe water 2 - SDG 5: 1.41 hours / 38% hours per household per trip saved on water and firewood collection time 3 - SDG 6: 2,595 additional people gain access to safe water 4- SDG 13: 4,032 tCO2 **GS 7136:** 1- SDG 3: 1,604 additional people consuming safe water 2 - SDG 5: 1.41 hours / 38% hours per household per trip saved on water and firewood collection time 3 - SDG 6: 2,222 additional people gain access to safe water 4- SDG 13: 2,443 tCO2e **GS7470:** 1- SDG 3: 1,728 additional people consuming safe water 2 - SDG 5: 1.41 hours / 38% hours per household per trip saved on water and firewood collection time 3 - SDG 6: 2,393 additional people gain access to safe water 4- SDG 13: 2,854 tCO2e **GS7471:** 1- SDG 3: 1,919 additional people consuming safe water 2 - SDG 5: 1.41 hours / 38% hours per household per trip saved on water and firewood collection time 3 - SDG 6: 2,657 additional people gain access to safe water 4- SDG 13: 3,416 tCO2e **GS7472:** 1- SDG 3: 1,678 additional people consuming safe water 2 - SDG 5: 1.41 hours / 38% hours per household per trip saved on water and firewood collection time 3 - SDG 6: 2,602 additional people gain access to safe water 4- SDG 13: 2,982 tCO2e

	GS7473: 1- SDG 3: 1,580 additional people consuming safe water 2 - SDG 5: 1.41 hours / 38% hours per household per trip saved on water and firewood collection time 3 - SDG 6: 2,188 additional people gain access to safe water 4- SDG 13: 2,433 tCO2e **GS7474:** 1- SDG 3: 1,907 additional people consuming safe water 2 - SDG 5: 1.41 hours / 38% hours per household per trip saved on water and firewood collection time 3 - SDG 6: 2,640 additional people gain access to safe water 4- SDG 13: 2,795 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.)

The Micro-Scale VPA Manica Province Safe Water project is eligible under the Gold Standard methodology Technologies and Practices to Displace Decentralized Thermal Energy Consumption Version 1.0. The project will support the provision of safe water using borehole technology to hundreds of households within Manica Province, Mozambique. By providing safe water, the project will ensure that households consume less firewood during the process of water purification and as a result there shall be a reduction of carbon dioxide emissions from the combustion process.

Manica Province is a largely rural province where 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 clean water desired by households.

Many existing boreholes were established by community groups or community based organizations (CBOs) and have fallen into disrepair because maintenance programmes have been poorly managed, or proven too expensive. CO2balance will be working in partnership with British NGO, Village Water, that operate in Manica Province. CO2balance and Village Water will work with a local NGO and communities in Manica Province to identify communities in need of a safe water source, where boreholes will be installed; and identify broken down boreholes which will be rehabilitated, so that communities have reliable access to clean, safe water. The capacity of communities to maintain their boreholes will also be supported through the project to ensure that the water keeps flowing. The boreholes included under the project will be powered entirely by emission-free technologies such as hand or solar-powered pumps. The depth of the boreholes will be limited to 100m or less.

CO2balance and Village Water rehabilitated the boreholes and deliver the maintenance programme for all the boreholes included in the project activity to ensure that the quality of the water delivered by the boreholes is fit for human consumption for the entire length of the project, which will be a minimum of five years.

This project will be developed under the Gold Standard carbon credit body, which in addition to checking that the carbon credits from this project are real, also measures local social, environmental and economic impact.

In total 79 boreholes were rehabilitated as part of this project between 09/04/2019 and 09/11/2019. The type of pump used for all boreholes rehabilitated is Afridev. The date, location and number of people served by each borehole are given in the table below, which forms the project database:

GS ID	Borehole ID	Village	Latitude	Longitude	Rehabilitation Date	No. HHs	No. People
GS7132	CHI00037	Piloto	-19.09237	33.45235	04/07/2019	37	362
	CHI00035	Tembwe	-19.09674	33.45179	18/06/2019	43	379
	CHI00104	7 de Abril Gondola	-19.08440	33.65195	06/11/2019	70	389
	CHI00088	Bela Vista	-19.07361	33.64040	28/10/2019	49	395
	CHI00077	Canhonda	-19.14404	33.60716	31/08/2019	68	397
	CHI00080	Eduardo Mondlane	-19.08385	33.64104	05/11/2019	73	396

CHI00112	Nhamudima	-19.06856	33.65429	08/11/2019	79	378
CHI00089	Bengo	-19.0748	33.61197	31/10/2019	58	297
					Total	**2993**

GS ID	Borehole ID	Village	Latitude	Longitude	Rehabilitation Date	No. HHs	No. People
GS7133	CHI00096	Josina Machel Gondola	-19.07487	33.64281	28/10/2019	43	399
	CHI01320	Kaboi	-19.09485	33.65920	31/10/2019	59	370
	CHI00091	Lorena	-19.08017	33.63955	31/10/2019	44	342
	CHI00086	Mazicuera	-19.06846	33.64551	06/11/2019	93	400
	CHI00087	Muarewa	-19.12447	33.66368	25/10/2019	49	314
	CHI00081	Mucessua	-19.09820	33.65368	04/11/2019	63	400
	CHI00079	Muda	-19.09620	33.63219	31/10/2019	51	389
	CHI00042	Nhanvudza	-19.12872	33.55352	30/09/2019	54	375
						Total	**2989**

GS ID	Borehole ID	Village	Latitude	Longitude	Rehabilitation Date	No. HHs	No. People
GS7134	SUS01087	Madudu	-19.96708	33.28041	14/05/2019	93	395
	SUS00023	Magaro	-19.99864	33.34983	13/08/2019	93	377
	SUS01091	Maquawaio	-19.81408	33.31582	15/05/2019	55	400
	SUS01086	Maquina	-19.89499	33.32814	16/05/2019	93	354
	SUS00009	Matongua	-19.78916	33.35101	13/08/2019	89	383
	SUS00008	Mucombe School	-19.96610	33.42887	01/08/2019	72	314
	SUS01094	Sanguene School	-19.78273	33.37957	15/05/2019	89	359
	CHI00045	1 de Junho	-19.15235	33.49361	29/08/2019	41	308
						Total	**2890**

GS ID	Borehole ID	Village	Latitude	Longitude	Rehabilitation Date	No. HHs	No. People
GS7135	SUS01093	Zinguena School	-19.75378	33.43212	15/05/2019	76	400
	CHI00014	1 de Maio	-19.13857	33.49353	30/05/2019	93	384
	CHI00018	7 de Abril	-19.13181	33.48763	07/06/2019	43	400
	SUS01090	Sanguene	-19.80505	33.35534	13/05/2019	83	282
	CHI00011	Agostinho Neto-A	-19.05764	33.44803	28/05/2019	68	367
	CHI00012	Agostinho Neto-B	-19.05821	33.45269	09/04/2019	65	398
	CHI00013	Francisco Manyanga	-19.13316	33.49320	29/05/2019	93	292
	CHI00033	Venceremos	-19.10029	33.56519	30/08/2019	93	383
						Total	**2906**

GS ID	Borehole ID	Village	Latitude	Longitude	Rehabilitation Date	No. HHs	No. People
GS7136	CHI00044	Nhaware	-19.10658	33.56184	28/08/2019	52	239
	CHI00060	Nhazvicandua	-19.16176	33.58943	02/09/2019	41	227
	CHI00046	Noia	-19.09442	33.54620	30/08/2019	39	213

	CHI00069	Tique - Tique 1	-19.19661	33.64714	13/09/2019	60	398
	CHI00061	Tique Tique Mutongoro	-19.17309	33.64537	11/09/2019	46	252
	CHI00076	25 de Junho Gondola	-19.09015	33.65378	14/10/2019	44	385
	CHI00075	Ingomai	-19.19928	33.61838	07/10/2019	93	400
	CHI00085	Mussatua	-19.07690	33.66292	25/10/2019	51	374
						Total	**2488**

GS ID	Borehole ID	Village	Latitude	Longitude	Rehabilitation Date	No. HHs	No. People
GS740	CHI00015	Agostinho Neto C	-19.06293	33.45356	31/05/2019	40	200
	CHI00070	Bandasse	-18.94938	33.65519	03/10/2019	37	365
	CHI00055	Dewe Thaimo	-19.07087	33.57418	18/09/2019	38	220
	CHI00048	Ganhira 2	-19.04268	33.61429	12/09/2019	45	375
	CHI00057	Joia	-19.11312	33.60173	12/09/2019	39	400
	CHI00078	Madzimatchena	-18.87143	33.79787	05/10/2019	52	400
	CHI00021	7 de Septembro	-19.10175	33.48210	30/05/2019	93	341
	CHI00111	Samora Machel	-19.09515	33.65109	08/11/2019	49	379
						Total	**2680**

GS ID	Borehole ID	Village	Latitude	Longitude	Rehabilitation Date	No. HHs	No. People
GS7471	CHI00110	Chiguma	-19.08573	33.64915	07/11/2019	45	343
	CHI00020	Josina Machel	-19.11065	33.48895	31/05/2019	43	384
	CHI00022	Nhauriri	-19.12497	33.51149	30/05/2019	67	400
	CHI00019	Stanha	-19.19635	33.49797	31/05/2019	83	397
	CHI00034	Bairro 5	-19.13065	33.47536	07/09/2019	41	324
	CHI00038	Boque	-19.02842	33.55170	10/09/2019	49	392
	CHI00049	Chipfinha	-19.05964	33.54753	03/09/2019	38	338
	CHI00084	Pipeline	-19.08598	33.65787	06/11/2019	68	398
						Total	**2976**

GS ID	Borehole ID	Village	Latitude	Longitude	Rehabilitation Date	No. HHs	No. People
GS7472	CHI00068	25 de Setembro Cafumpe	-19.16650	33.53528	30/09/2019	93	389
	CHI00036	Chissui Rupongue	-19.20639	33.41531	17/06/2019	56	400
	CHI00058	Choco	-19.00328	33.57215	21/09/2019	67	310
	CHI00067	Cuzuana	-19.10456	33.56854	28/08/2019	42	399
	CHI00051	Matole	-19.07813	33.52862	02/09/2019	24	127
	CHI00039	Mudzingadzi	-19.12433	33.49071	13/06/2019	49	400
	CHI00041	Muedziwagara	-19.27214	33.63377	31/08/2019	50	252
	CHI00047	Maguiguana	-19.15154	33.57014	31/08/2019	59	325
						Total	**2602**

GS ID	Borehole ID	Village	Latitude	Longitude	Rehabilitation Date	No. HHs	No. People
GS7473	CHI00040	Mandore	-19.31628	33.62574	09/09/2019	37	392
	CHI00074	Mucorodzi	-18.94132	33.74749	30/09/2019	62	399
	CHI00052	Dewe	-19.06896	33.58206	17/09/2019	34	264
	CHI00050	Mudododo	-19.20521	33.67286	23/09/2019	32	390
	CHI00062	Muteme	-18.93991	33.77539	05/10/2019	68	400
	CHI00073	Mutocoma	-19.23120	33.62382	11/10/2019	52	369
	CHI00056	Nhambandua	-19.17515	33.61004	23/09/2019	34	236
						Total	**2450**

GS ID	Borehole ID	Village	Latitude	Longitude	Rehabilitation Date	No. HHs	No. People
GS7474	CHI00053	Nhatsanga	-18.98586	33.60566	20/09/2019	36	369
	CHI00043	Mudima	-19.02680	33.65944	26/09/2019	93	400
	CHI00082	Nhachoco	-19.10467	33.66599	23/10/2019	51	382
	CHI00059	Sarilhe	-19.05027	33.57682	17/09/2019	40	392
	CHI00113	Nhamuenga	-19.10273	33.64898	09/11/2019	43	310
	CHI00097	Paco	-19.04602	33.67706	01/11/2019	42	356
	CHI00092	Panga-Panga	-19.07745	33.65385	28/10/2019	62	348
	CHI00072	Hombwa	-19.15211	33.41388	14/10/2019	73	400
						Total	**2957**

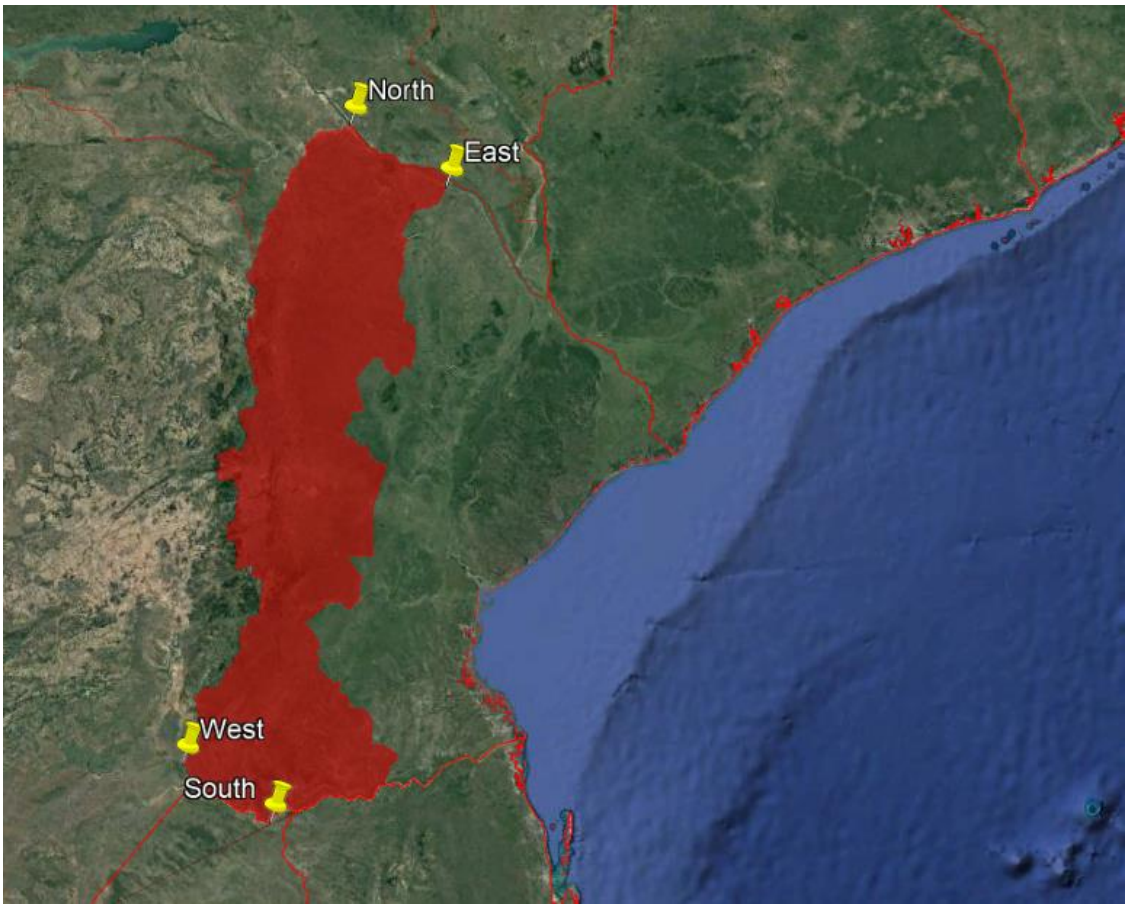
The date of rehabilitation was confirmed by a Repair Confirmation Form which was signed by the mechanic carrying out the repair along with a village administrator from the local community. The date of rehabilitation was used as the start date of operation and crediting for each borehole; we have conservatively assumed that the first day of crediting is not counted.

The 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 totaled to give the total number of project technology days for this monitoring period.

A.2. Location of project

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

Below are details of the physical location to allow unique identification of the project. The Manica Province is marked in red on the Google Earth image. The target area and the fuel collection area are defined as being contained within the 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.


North
East
West
South

Project Area Coordinates		
	Latitude	Longitude
North	16°23'7.12"S	33°47'4.90"E
South	21°35'9.51"S	33° 4'3.46"E
East	16°51'59.19"S	34°32'5.72"E
West	21° 8'12.18"S	32°22'0.32"E

A.3. Reference of applied methodology

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

This project utilises the Gold Standard Methodology 'Technologies and Practices to Displace Decentralized Thermal Energy Consumption V.1'.

A.4. Crediting period of project

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

The date of rehabilitation was used as the start date of operation. It was conservatively assumed that the first day of crediting is not counted and the crediting period begins the following day after the borehole is rehabilitated. The length of the crediting period is 5 years as per the approved PDD.

The start dates for the projects crediting periods are as follows:

GS 7132: 19/06/2019
GS 7133: 01/10/2019
GS 7134: 15/05/2019
GS 7135: 10/04/2019
GS 7136: 29/08/2019
GS 7470: 31/05/2019
GS 7471: 31/05/2019
GS 7472: 14/06/2019
GS 7473: 10/09/2019
GS 7474: 18/09/2019

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.)*

CO2balance and Village Water have rehabilitated 79 boreholes as part of these VPAs. The boreholes are in working order but a few of them went through some technical problems and didn't produce safe water while they were not functional; the non-functional days have been discounted from the ERs.

Village Water (CO2balance in-country project partner) are the main contact for all water point committees which exist for every borehole. If there are any problems with borehole functionality, the water resource committee will contact Village Water to inform them:

- For major repairs, Community Water committee reports the problem to the local partner, who contacts the technicians; the technicians visit the site and conduct a technical assessment and repairs if possible, if they need extra materials they arrange for a time to revisit and carry out the maintenance. When the cause of the pump malfunction is a major problem and a technician is needed, the maintenance forms are signed by the technician, by a member of the Water Committee and by a representative of the project.
- If the break-down is minor, the community looks after the repair themselves: a local pump minder will assess the problem and get the parts. The costs are covered with the fees paid by the members of the community. The community informs the local partner stating the problem, the non-functional days and the details of the repairs done, and should report the work and cost In the log-books. When the cause of breakdown is minor and the community enacts the repair, the form is signed by a representative of the project as the community usually informs our local partner of the problem and parts repaired via phone.

Village Water inform CO2balance when the borehole is not functional. The non-functional days are then discounted in the PTDs and the ERs are not accredited for those days.

MP1 (2019/2020)						
BH ID	Village	VPA	First Day non functional	Last day non-functional	Tot days non-functional	Works Completed
SUS01094	Sanguene School	161	20/12/2019	25/02/2020	68	1 PVC Pipe, 1 PVC glue
CHI00012	Agostinho Neto B	162	06/11/2019	11/11/2019	6	1 Cylinder, 1 Pvc pipe, 1 rod, Bush bearing, 1/2L glue
CHI00013	Francisco Manyanga	162	12/12/2019	21/01/2020	41	1 rod, 1 U seal, 5 rod centralizers
CHI00013	Francisco Manyanga	162	20/06/2020	30/06/2020	11	Full bush bearing, 10 rod centralizers, 1 U seal
CHI00014	1 de Maio	162	12/12/2019	18/01/2020	38	1 cup seal
CHI00014	1 de Maio	162	03/06/2020	05/06/2020	3	1 U seal, 10 rod centralizers, 1 full bush bearing
CHI00035	Tembwe	159	07/12/2019	18/01/2020	43	1 Cylinder, 1 PVC pipe.
CHI00052	Dewe	201	04/06/2020	05/06/2020	2	9 rod centralizers, Full bush bearing, plunger rode complete
CHI00057	Joia	198	05/06/2020	08/06/2020	4	1 Cylinder, 1 PVC pipe, Full bush bearing, 1 PVC glue, 9 rod centralizers, 5 joinders
CHI00060	Nhavzicandua	163	06/12/2019	20/01/2020	46	1 Cilynder, 2 PVC pipes, 1 rod, bush bearing, 10 rod centralizers
CHI00061	Tique- Tique-Mutongoro	163	07/11/2019	09/11/2019	3	U Seal, bush bearing
CHI00072	Hombwa	202	03/12/2019	18/01/2020	47	1 Cilynder, 1 PVC pipes, 1 PVC glue, 1 rode
CHI00073	Mutocoma	201	25/11/2019	27/11/2019	3	U seal, bush bearing, 3 rod centralizers.
CHI00075	Ingomai	163	20/05/2020	23/05/2020	4	Fixed broken pipe
CHI00078	Madzimatchena	198	03/06/2020	05/06/2020	3	1 Cilynder, 1 rode, 3 PVC pipes, 14 rode centralizers
CHI00080	Eduardo Mondlane	159	12/12/2019	21/01/2020	41	1 U seal, 1 rod.
CHI00046	Noia	163	25/06/2020	30/06/2020	6	1 full bush bearing, 1 cylinder, 14 rod centralizers, 1 foot valve, 1

						Nylon rope, 1 PVC glue, 1 rod, 3 PVC pipes
CHI00085	Mussatua	163	10/06/2020	30/06/2020	21	Full bush bearing, 1 piston
CHI00033	Venceremos	162	06/06/2020	08/06/2020	3	1 Cylinder, 7 joinders, Full bush bearing, 12 rod centralizers , 1 Nylon rope, 2 PVC glue, 2 PVC pipes, 2 M12 Screw

All boreholes undergo annual water quality testing to ensure the water is safe for human consumption as per Mozambique national water standards.

Village water in-country team does periodic follow-ups to make sure the project runs as planned and the boreholes are in good working order. Furthermore, the grievance expression process books are placed at all water points so users of the boreholes can leave comments and feedbacks.

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.)

N/A

B.2.2. Corrections

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

N/A

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.)

N/A

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.)

N/A

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.)

N/A

SECTION C. Description of monitoring system applied by the project

>>

All surveys are administered by trained CO2balance staff and in country partner NGO, Village Water, that employs local staff 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 Project and Usage Survey are deployed via mobile devices, where all the answers are securely stored online. The results of the surveys are then downloaded and collated in Excel spreadsheets and stored on a central server in an electronic format.

The Water Consumption Field Test (WCFT) survey is carried out on paper and all the original copies are retained in the office and are scanned upon request of the UK team. The results of the surveys are collated in Excel spreadsheets and stored on a central server in an electronic format. These are then sent to the UK head office for data analysis. The documentation procedure that CO2balance has devised ensures a minimum chance of original data being lost and data entry error.

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
- 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 installation record will be backed up electronically, with original documentation being stored in the appropriate office for the respective VPAs.

The project database will be derived from the Installation Record, with project technologies differentiated by different project scenarios (if required).

All data collected in relation to the project will be held in the local office and/or on the Project Database for the entire life cycle of the project and a period of 2 years afterwards. The data may be archived during the project in order to maintain clarity and security

Ongoing Monitoring Studies

The following ongoing monitoring studies were conducted; the results are given in the parameter boxes tables in Section D.2.

- **Water Consumption Field Test (WCFT):** The WCFT is used to determine 3 key parameters: Qp,y – quantity of safe water in litres supplied in the project scenario using the clean water supply

technology; Qp,rawboil,y – quantity of raw or unsafe water that is still boiled after installation of the water supply technology; Qp,cleanboil,y – quantity of safe water boiled in the project scenario after installation of the water supply technology. WCFT is completed biennially, prior to first verification and then every other year subsequently. The measurement method used is similar to the 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 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 co2balance UK Ltd.

- **Water Quality Test (WQT)***:* The quality of the treated water will be assessed to ensure that it is fit for human consumption. It is assessed in accordance with Mozambique national standards. The parameters used to assess the water quality will be in line with Mozambique standards for potable water and all parameters will be shown to be within levels considered acceptable for domestic human consumption.

- **Usage Survey:** Usage Survey is used to determine the Up,y (usage rate in the project scenario p through year y) parameter. As all boreholes will be installed within 1 year of the start of the crediting period and are expected to last the lifetime of the project, minimum samples of 30 for different aged technologies will not be necessary. The annual usage survey is conducted using a minimum sample size of 100

- **Project Survey** – Conducted annually to survey end users currently using project technologies to explore changes in project scenario over time. The annual project survey is conducted using a minimum sample size of 100. Data collected during the project surveys explores the following characteristics:

    - General information **–** Name, address, telephone number etc
    - Household socio-demographic information
    - Water use and purification characteristics
    - Sources and availability of fuel
    - Time use and time saved information
    - Hygiene and Sanitation practices In the Household

  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 –** 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. As solar purification devices are not used, 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 the majority of 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 (defined as Manica Province).

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.

Therefore, a value of 0 is applied for leakage.

- **Project Technology Days (Np,y)-** Number of persons consuming water supplied by project scenario p through year y. Sum of the total number of people using each borehole in the project multiplied by the number of days crediting each borehole earns in this monitoring period. The total number of households using each borehole will be determined through information supplied by our NGO partner. Using this method, the total number of people using each borehole will be known and hence a figure for person days can be calculated. All monitoring tasks will be selected at random

- **fNRB Assessment**: below is described the method used to develop the fraction of non-renewable biomass (fNRB) for Mozambique in line with the Annex 1 section A.1.3 of the TPDDTEC v.1**.** The source of data is the Global Forest Resources Assessment Reports for the years 2015[1] and 2020[2] from FAO.

As the Carbon Living biomass related to forest shows a decrease from 2015 to 2020, the following condition is observed: (a) Survey results, national or local statistics, studies, maps or other sources of

1 http://www.fao.org/forest-resources-assessment/past-assessments/fra-2015/country-reports/en/

2 http://www.fao.org/forest-resources-assessment/fra-2020/country-reports/en/

information such as remote sensing data show that carbon stocks are depleting in the project area thus the approach described in the Annex 1 section A.1.3 of the TPDDTEC v.1 is applicable.

a. *fNRB = NRB / (NRB + DRB)*
   86% = 100,152,498/ (100,152,498+ 16,262,285)

where:
fNRB = Fraction of non-renewable biomass in the country (%)
NRB = Quantity of non-renewable biomass in the country (t/yr)
DRB = Demonstrably Quantity of renewable biomass in the country (t/yr). The approach satisfies the following condition regarding DRB:

Condition 1 - The woody biomass is originating from land areas that are forests where:
(a) The land area remains a forest; and
(b) Sustainable management practices are undertaken on these land areas to ensure, in particular, that the level of carbon stocks on these land areas does not systematically decrease over time (carbon stocks may temporarily decrease due to harvesting); and
(c) Any national or regional forestry and nature conservation regulations are complied with.

b. *NRB = R - DRB*
   100,152,498= 116,414,783 - 16,262,285

And

c. *R = MAI + ΔF*
   116,414,783= 85,759,936 + 30,654,847

And

d. *MAI = F * GR*[3]
   *85,759,936 = 36,743,760 * 2.33*

Where:
R = Total annual biomass removals in the country (t/yr)
MAI = Mean Annual Increment of biomass growth (t/yr)
ΔF = Annual change in living forest biomass (t/yr)
F = Extent of forest (ha)
GR = Annual Growth rate of biomass (t/ha-yr)

e. *DRB = PA * GR*
   *16,262,285 = 6,967,560 * 2.33*

Where:
PA = Protected Area Extent of Forest (ha)

SECTION D. Data and parameters

[3] Country-specific growth rate calculated as a weighted average based on FAO reporting on distribution of total forest area by ecological zone and IPCC above-ground biomass growth rates for different ecological zones.

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

Relevant SDG Indicator	SDG 13 (Climate Action)
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, EFDB Emission Factor Database. Accessible: https://www.ipcc-nggip.iges.or.jp/EFDB/main.php
Value(s) applied)	112
Choice of data or measurement methods and procedures	Deemed valid by Methodology.
Purpose of data	Calculation of baseline emissions.
Additional comments	-

Relevant SDG Indicator	SDG 13 (Climate Action)
Data/parameter:	$EF_{b,non\ co2}$
Unit	tCO_2e/TJ
Description	Non-CO_2 (CH_4 and N_2O) emission factor arising from use of wood fuel in baseline scenario
Source of data	IPCC Default emissions factor, EFDB Emission Factor Database. Accessible: https://www.ipcc-nggip.iges.or.jp/EFDB/main.php
Value(s) applied)	8.692
Choice of data or measurement methods and procedures	Deemed valid by Methodology

Gas	Default Emissions factor (kg_gas/TJ_{NCV})	GWP of gas	Default Emissions factor (kg_CO_2e/TJ_{NCV})	Default Emissions factor (t_CO_2e/TJ_{NCV})
CH_4	300	25	7,500	7.5000
N_2O	4	298	1,192	1.1920
			Total	**8.692**

Purpose of data	Calculation of emission reductions.
Additional comments	-

Relevant SDG Indicator	SDG 13 (Climate Action)
Data/parameter:	$EF_{p,co2}$
Unit	tCO_2/TJ
Description	CO_2 emission factor arising from use of wood fuel in project scenario
Source of data	IPCC Default emissions factor, EFDB Emission Factor Database. Accessible: https://www.ipcc-nggip.iges.or.jp/EFDB/main.php

Value(s) applied)	112
Choice of data or measurement methods and procedures	Deemed valid by Methodology.
Purpose of data	Calculation of emission reductions.
Additional comments	-

Relevant SDG Indicator	SDG 13 (Climate Action)
Data/parameter:	$EF_{p,non\ co2}$
Unit	tCO2e/TJ
Description	Non-CO2 (CH4 and N2O) emission factor arising from use of wood fuel in project scenario
Source of data	IPCC Default emissions factor, EFDB Emission Factor Database. Accessible: https://www.ipcc-nggip.iges.or.jp/EFDB/main.php
Value(s) applied)	8.692
Choice of data or measurement methods and procedures	Deemed valid by Methodology

Gas	Default Emissions factor (kg_gas/TJ_{NCV})	GWP of gas	Default Emissions factor (kg_CO_2e/TJ_{NCV})	Default Emissions factor (t_CO_2e/TJ_{NCV})
CH_4	300	25	7,500	7.5000
N_2O	4	298	1,192	1.1920
			Total	**8.692**

Purpose of data	Calculation of emission reductions.
Additional comments	-

Relevant SDG Indicator	SDG 13 (Climate Action)
Data/parameter:	NCV_b
Unit	TJ/ton
Description	Net calorific value of the wood fuel used in the baseline
Source of data	IPCC Default emissions factor, EFDB Emission Factor Database. Accessible: https://www.ipcc-nggip.iges.or.jp/EFDB/main.php
Value(s) applied)	0.0156
Choice of data or measurement methods and procedures	Deemed valid by Methodology.
Purpose of data	Calculation of emission reductions.
Additional comments	-

Relevant SDG Indicator	SDG 13 (Climate Action)
Data/parameter:	NCV_p
Unit	TJ/ton
Description	Net calorific value of the wood fuel used in the project
Source of data	IPCC Default emissions factor, EFDB Emission Factor Database. Accessible: https://www.ipcc-nggip.iges.or.jp/EFDB/main.php
Value(s) applied)	0.0156
Choice of data or measurement methods and procedures	Deemed valid by Methodology.
Purpose of data	Calculation of emission reductions.
Additional comments	-

Relevant SDG Indicator	SDG 13 (Climate Action), SDG 6 (Clean Water and Sanitation)
Data/parameter:	$W_{b,y}$ (capped at 0.0004)
Unit	T/litre
Description	Quantity of wood fuel that is used to treat 1 litre of water in the baseline scenario b during year y
Source of data	Baseline Water Boiling Test
Value(s) applied)	0.00097
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*, Standard For Sampling And Surveys For CDM Project Activities and Programme of Activities* 4 CDM-EB50-A30-STAN Version 08.0
Purpose of data	Calculation of emission reductions.
Additional comments	BWBT conducted between 03/12/2018-07/12/2018

Relevant SDG Indicator	SDG 13 (Climate Action), SDG 6 (Clean Water and Sanitation)
Data/parameter:	$W_{p,y}$
Unit	T/litre
Description	Quantity of wood 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)	0.00097 (capped at 0.0004)
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*, Standard For Sampling And Surveys For CDM Project Activities and Programme of Activities* 4 CDM-EB50-A30-STAN Version 08.0

Purpose of data	Calculation of emission reductions.
Additional comments	BWBT conducted between 03/12/2018-07/12/2018

Relevant SDG Indicator	SDG 13 (Climate Action), SDG 6 (Safe Water and Sanitation)
Data/parameter:	C_j
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 Survey
Value(s) applied)	0.79%
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. Deemed valid by Methodology.
Purpose of data	Calculation of emission reductions
Additional comments	-

Relevant SDG Indicator	SDG 13 (Climate Action)
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 Survey. Credible literature, studies, survey, reports, relevant to the project target area
Value(s) applied)	14.29%
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 outlined in annex 2. A fixed suppressed demand baseline has been opted for, however, in the event the project surveys show a substantial change in fuel use characteristics, a new baseline shall be conducted.
Purpose of data	Calculation of emission reductions.
Additional comments	-

Relevant SDG Indicator	SDG 5 (Gender Equality)
Data/parameter:	$T_{b,y}$
Unit	Hours
Description	Time spent collecting water and firewood per household per trip prior to project
Source of data	Baseline survey

Value(s) applied)	3.67
Choice of data or measurement methods and procedures	Measured by question in the baseline survey.
Purpose of data	Calculating time saved collecting water by project.
Additional comments	-

D.2. Data and parameters monitored

Relevant SDG Indicator	SDG 13 (Climate Action)
Data/parameter:	$fNRB_{,i,y}$
Unit	Fractional non-renewability
Description	Non-renewability status of woody biomass fuel in scenario i during year y
Source of data	The data used for the assessment are obtained from the "Global Forest Resources Assessment Reports" for the years 2015 and 2020 from FAO. http://www.fao.org/forest-resources-assessment/past-assessments/fra-2015/country-reports/en/ http://www.fao.org/forest-resources-assessment/fra-2020/country-reports/en/
Value(s) applied)	0.86
Choice of data or measurement methods and procedures	The fNRB assessment has been done in line with Annex 1 section A.1.3 of the TPDDTEC v.1. both condition 1 (p.31) and a (p.31) are satisfied.
Purpose of data	Calculation of emission reductions.
Additional comments	-

Relevant SDG Indicator	SDG 13 (Climate Action), SDG 6 (Safe Water and Sanitation)
Data/parameter:	$N_{p,y}$
Unit	Project Technology Days
Description	Number of persons consuming water supplied by project scenario p through year y
Measured/calculated/default	95% functionality cap applied to days crediting above this figure; and as per Treatment Capacity.
Source of data	Borehole Project Database

Value(s) of monitored parameter	GS 7132: 776,968 GS 7133: 700,181 GS 7134: 994,905 GS 7135: 1,072,501 GS 7136: 650,279 GS 7470: 759,408 GS 7471: 908,736 GS 7472: 793,602 GS 7473: 647,223 GS 7474: 743,717
Monitoring equipment	Project Database
Measuring/reading/recording frequency:	Annual
Calculation method (if applicable):	Sum of the total number of people using each borehole in the project multiplied by the number of days crediting each borehole earns in a given monitoring period. A 95% functionality cap is implemented on all BHs claiming functionality above this figure to be conservative. Where below 95% functionality is present, the true value is used to calculate the Project Technology Days. PTDs are also further capped as a result of the Treatment Capacity approach.
QA/QC procedures:	N/A
Purpose of data:	Calculation of emission reductions.
Additional comments:	-

Relevant SDG Indicator	SDG 13 (Climate Action), SDG 6 (Safe Water and Sanitation), SDG 3 (Good Health and Well-Being)
Data/parameter:	$U_{p,y}$
Unit	Percentage
Description	Usage rate in project scenario p through year y
Measured/calculated/default	N/A
Source of data	Usage Survey
Value(s) of monitored parameter	90% (cap)
Monitoring equipment	Usage Survey
Measuring/reading/recording frequency:	Annual
Calculation method (if applicable):	The usage survey has been carried out by trained local staff 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 CO2balance UK Ltd.
QA/QC procedures:	N/A
Purpose of data:	Calculation of usage.
Additional comments:	-

Relevant SDG Indicator	SDG 13 (Climate Action), SDG 6 (Safe Water and Sanitation)
Data/parameter:	$Q_{p,y}$
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	capped at 7.5
Source of data	Water Consumption Field Test (WCFT)
Value(s) of monitored parameter	8.53 (capped at 7.5)
Monitoring equipment	WCFT Survey
Measuring/reading/recording frequency:	Completed every two years
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. Volume is capped at 7,5 litres per person per day as per the methodology. The WCFT will be carried out by trained local staff 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 CO2balance UK Ltd.
QA/QC procedures:	N/A
Purpose of data:	Calculation of emission reductions.
Additional comments:	WCFT conducted between18/03/2020-31/03/2020

Relevant SDG Indicator	SDG 13 (Climate Action), SDG 6 (Safe Water and Sanitation)
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	N/A
Source of data	Water Consumption Field Test (WCFT)
Value(s) of monitored parameter	0
Monitoring equipment	WCFT Survey
Measuring/reading/recording frequency:	Completed every two years
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 trained local staff 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 CO2balance UK Ltd.
QA/QC procedures:	N/A
Purpose of data:	Calculation of emission reductions.
Additional comments:	WCFT conducted between 18/03/2020-31/03/2020

Relevant SDG Indicator	SDG 13 (Climate Action)
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	N/A
Source of data	Water Consumption Field Test (WCFT)
Value(s) of monitored parameter	0
Monitoring equipment	WCFT Survey
Measuring/reading/recording frequency:	Completed every two years
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 trained local staff 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 CO2balance UK Ltd.
QA/QC procedures:	N/A
Purpose of data:	Calculation of emission reductions.
Additional comments:	WCFT conducted between 18/03/2020-31/03/2020

Relevant SDG Indicator	SDG 6 (Safe Water and Sanitation)
Data/parameter:	Quality of Treated Water
Unit	Parameters as per national standards
Description	Performance of the treatment technology
Measured/calculated/default	N/A
Source of data	Laboratory Tests
Value(s) of monitored parameter	Pass
Monitoring equipment	Laboratory equipment
Measuring/reading/recording frequency:	Annual
Calculation method (if applicable):	The District Service for Planning and Infrastructure/ Serviço Distrital de Planeamento e Infra-estrutura (SDPI) has certified each water supply is in line with national standards.
QA/QC procedures:	N/A
Purpose of data:	To test water quality for safety of human consumption.
Additional comments:	-

Relevant SDG Indicator	SDG 13 (Climate Action)
Data/parameter:	$LE_{p,y}$
Unit	tCO2e per year
Description	Leakage in project scenario p during year y
Measured/calculated/default	0
Source of data	Baseline and Monitoring surveys
Value(s) of monitored parameter	0
Monitoring equipment	Desk based research
Measuring/reading/recording frequency:	Completed every two years
Calculation method (if applicable):	Assessed every two years using baseline and monitoring surveys.
QA/QC procedures:	N/A
Purpose of data:	Calculation of leakage.
Additional comments:	-

Relevant SDG Indicator	SDG 5 (Gender Equality)
Data/parameter:	$TP_{,y}$
Unit	hours
Description	Project time spent collecting water and firewood per household per trip (hours)
Measured/calculated/default	0
Source of data	Project Survey
Value(s) of monitored parameter	2.26
Monitoring equipment	Project Survey
Measuring/reading/recording frequency:	Annual
Calculation method (if applicable):	Assessed every year using Project Survey
QA/QC procedures:	N/A
Purpose of data:	Calculation of SDG 5
Additional comments:	-

Relevant SDG Indicator	SDG 6 (Clean Water and Sanitation), SDG 3 (Good Health and Well-Being)
Data/parameter:	P,y
Unit	Number of people
Description	Number of persons having access to a safe water point in the project activity
Measured/calculated/default	0

Source of data	Project Database
Value(s) of monitored parameter	GS 7132: 2993 GS 7133: 2989 GS 7134: 2890 GS 7135: 2906 GS 7136: 2488 GS 7470: 2680 GS 7471: 2976 GS 7472: 2602 GS 7473: 2450 GS 7474: 2957
Monitoring equipment	Project Database/Household list
Measuring/reading/recording frequency:	Annual
Calculation method (if applicable):	Assessed every year using Project Survey, Usage Survey and Household list
QA/QC procedures:	N/A
Purpose of data:	Calculation of SDG 6 and SDG 3
Additional comments:	-

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.)*

In accordance with the Gold Standard methodology "Technologies and Practices to Displace Decentralized Thermal Energy Consumption" (TPDDTEC), survey samples are randomly selected from the user record using a random sample group (RSG). A random number generator ranks the unique serial numbers of the boreholes in the project, generating the RSG which satisfies 90/30 precision. Each user in the RSG is assigned a unique random number from which survey participants are selected in accordance with the minimum sample size and confidence requirement for each survey. The RSG and survey participants are reselected for every monitoring period to ensure the selection remains random.

In this Monitoring Period, the minimum recommended sample size of the RSG to meet 90/30 precision was 7 boreholes. The individual participants surveyed from the RSG are selected at random from the project database using the same random number generator process, in accordance with the minimum sample size requirement for each survey.

Cross Sampling

The project proponent has elected to cross-sample borehole technologies across all its homogenous VPAs located within the project area (VPAs 159-163 and 198-202). Homogenous VPAs are defined as those that share a common baseline. The samples for the survey listed below are randomly selected from the borehole information databases in line with the minimum sample size requirements as defined by the methodology. Cross sampling will be applied to the following surveys;

- Project Surveys- Completed annually,
- Usage Surveys- Completed annually,
- Water Consumption Field Tests- Completed every two years.

Surveys were conducted through use of a Random Sample Group (RSG) in accordance with 90/30 precision. The individual participants surveyed from the RSG were selected at random from the project database, in accordance with the methodology's minimum sample size requirement for each survey, as detailed in Section D.3.1, D.3.2, and D.3.3 below.

D.3.1 Water Consumption Field Test

The Water Consumption Field Test was carried out on a randomly selected sample of 40 households from the project database in Manica province. This complies with the recommended minimum sample size of 30 in the Gold Standard requirements. Furthermore, the sample confidence interval is within 10% of the mean.

The test was carried out over a period of four days (1 day preparation and 3 days measurement) following a similar method as the Kitchen Performance Test, and all tests were conducted between 18/03/2020 – 31/03/2020. The total litres of water consumed each day was measured and divided by the number of people consuming water in that day – this measurement was repeated over 3 consecutive days and an overall average per household was calculated. The results showed that on average 8.53 litres of non boiled clean water used only for drinking, hand washing and food preparation (capped at 7.5l) and 0 litres of boiled clean water is consumed per person per day.

The total amount of water credited for in this monitoring period is equal to the average amount of clean non-boiled water consumed per person per day (7.5l), minus the average amount of boiled clean water consumed per person per day (0).

D.3.2 Usage Survey

The usage survey establishes the proportion of beneficiaries that use the boreholes, a key parameter in the emission reduction calculations. As all the boreholes were installed within 1 year of the start of the crediting period and are expected to last the lifetime of the project, minimum samples of 30 for different aged technologies are not necessary. Therefore, the annual usage survey has been conducted using a minimum sample size of 100.

The usage surveys in this monitoring period were carried out by field staff between the 18/03/2020 – 01/04/2020 in Manica province. The households that participated in the survey were randomly selected from the borehole user lists. The results confirmed that 99% of the respondents and their family members use the boreholes that were rehabilitated by the project.

D.3.3 Project Survey

Project surveys were conducted between 18/03/2020 – 01/04/2020 on 109 randomly selected households from across the VPAs in Manica Province, to explore changes in the project scenario demographics, water use and purification practices etc) over time.

Data collected during the project surveys includes the following:

- General information - Name, address, telephone number etc.
- Household socio-demographic information.
- Water use and purification characteristics.
- Sources and availability of fuel.
- Time use and time saved information
- Hygiene and Sanitation practices in the households

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.)*

Details of equations and indicators used to estimate baseline values for SDG outcomes are explained below.

SDG 3 (Good Health and Wellbeing):

The outcome for SDG 3 is quantified as the additional number of persons consuming safe water in the project activity compared to the baseline scenario (P_{safe}). The percentage of users who were already consuming safe water in the baseline without boiling it (C_j) is determined through the baseline survey and deducted. Additionally, the percentage of users who consumed safe water by boiling it in the baseline ($P_{b,\ boil}$) is deducted. The baseline indicators are detailed in Section D.1 and are as follows:

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.
$P_{b,\ boil}$	Percentage of persons boiling water for purification in the baseline scenario.

SDG 5 (Gender Equality):

The average % decrease per household in time spent gathering water and firewood ($T_{b,y}$) will be taken as a proxy contribution towards the SDG target. The baseline parameter for time spent collecting water and firewood per household per day is monitored in the baseline project survey. The baseline indicators are detailed in Section D.1 and are as follows:

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

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. The percentage of users who were already consuming safe water in the baseline without boiling it (C_j) was determined through the baseline survey. The baseline indicators are detailed in Section D.1 and are as follows:

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. The baseline indicators are detailed in Section D.1 and are as follows:

Baseline Emissions:

$$BE_{b,y} = B_{b,y} * \left(\left(fNRB_y * EF_{b,fuel,co2} \right) + EF_{b,fuel,nonco2} \right) * NCV_{b,fuel}$$

Where:

$$B_{p,y} = (1 - C_j) * N_{j,y} * W_{i,y} * (Q_{j,y} + Q_{j,rawboil,y}) \quad (11)$$

Where:

$N_{j,y}$	Number of person.days consuming water supplied by project scenario p through year y[47]
C_j	Expressed as a percentage, this is the portion of users of the project technology j who in the baseline were already consuming safe water without boiling it
$B_{b,y}$	Quantity of fuel consumed in baseline scenario b during the year y in tons
$Q_{p,y}$	Quantity of safe water in litres consumed in the project scenario p and supplied by project technology per person per day
$Q_{p,rawboil,y}$	Quantity of raw water boiled in the project scenario p per person per day
$W_{b,y}$	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.

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.)*

Details of equations used to calculate project value for SDG outcomes appear below. Calculation is provided in the corresponding Emission Reductions calculations in the 'SDG Calculations' Sheet and shown in section E.3.

Outcomes for SDG 3 (Good Health and Wellbeing):

The VPAs are premised on generating Emission Reductions by ensuring that water point users have safe water, thereby removing the need for them to burn non-renewable biomass in order to boil water to purify it. Emission reductions are also claimed through the principle of suppressed demand, meaning that some users lacked the resources, time or information necessary to purify their water prior to the project. Therefore, the users for whom ERs are claimed through suppressed demand were forced to use unsafe water for drinking, food preparation and basic personal hygiene prior to the project.

This usage of unsafe water can be taken as a proxy cause of Disability Adjusted Life Years (DALYs) in Mozambique, as using unsafe water is deemed a significant cause of illness and death in the country.

The outcome for SDG 3 is quantified as the additional number of persons consuming safe water in the project activity compared to the baseline scenario (P_{safe}). Calculations are as follows:

$$P_{safe} = P_y * (1 - C_j) * (1 - P_{b,boil})$$

Where:

P_{safe}	Number of additional persons consuming 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.

$P_{b, boil}$ Percentage of persons boiling water for purification in the baseline scenario.

Outcomes for SDG 5 (Gender Equality):

The overall percentage reduction in time spent collecting water and firewood by the project activity is calculated as follows:

$$TR_y = (T_{b,y} - T_{p,y}) / T_{b,y}$$

Where:

TR_y Total reduction time spent collecting water and firewood for project activity in year y (%)

$T_{b,y}$ Baseline time spent collecting water and firewood per household per trip (hours)

$T_{p,y}$ Project time spent collecting water and firewood per household per trip (hours)

Outcomes for 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. Calculations are as follows:

$$P_{access} = P_y * (1 - C_j) * U_{p,y}$$

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.

$U_{p,y}$ Usage rate in project scenario p during year y

Outcomes for SDG 13 (Climate Action):

CO2e emission reductions are the indicator to demonstrate that the project has raised capacity for effective climate change-related planning and management contributing to SDG 13. The overall reduction in CO2 emission reductions is calculated as follows:

$$ERy = ((BEb,y - PEp,y) * Up,y - LEp,y)*(1-Xboil)$$

Where:

$$BE_{b,y} = B_{b,y} * \left(\left(fNRB_y * EF_{b,fuel,co2} \right) + EF_{b,fuel,nonco2} \right) * NCV_{b,fuel}$$

And:

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

Where

$$PE_{p,y} = B_{p,y} * \left(\left(fNRB_y * EF_{p,fuel,co2} \right) + EF_{p,fuel,nonco2} \right) * NCV_{p,fuel}$$

And:

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

Where:

$BE_{b,y}$	Baseline emissions in baseline scenario b per year y
$PE_{p,y}$	Project emissions in project scenario p per year y
$U_{p,y}$	Usage rate in project scenario p during year y
$LE_{p,y}$	Leakage in project scenario p during year y
X_{boil}	Expressed as a percentage, the portion of premises that in the absence of the project activity would have used non-GHG emitting technologies if they were available in the project boundary

The emissions reductions for the current monitoring period can be found in the corresponding Emission Reductions Calculations spreadsheet.

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

Detailed calculations are provided in the corresponding Emission Reductions Calculations in the 'SDG Calculations' Sheet.

GS 7132:

SDG	Calculation	Net Benefit
GS7132		
SDG 3	$P_{safe} = P_y * (1 - C_j) * (1 - P_{b,boil})$ $P_{safe} =$ 2993* (1 – 0.0079) * (1 – 0.35) = 1,930	1,930 additional people consuming safe water in the project activity.
SDG 5	$TR_y = (T_{b,y} - T_{p,y}) / T_{b,y}$ TRy= (3.67-2.26) / 3.67 = 38%	A 38% decrease in time spent collecting water and firewood
SDG 6	$P_{access} = P_y * (1 - C_j) * U_{p,y}$ P_{access} = 2993 * (1 - 0.0079) * 0.90 = 2,672	2,672additional people with access to safe water in the project activity.

Emission Reductions - 19/06/19 - 30/06/20

2019 Emission Reductions			
Emissions Reductions			
Baseline emissions per year	BEb,y	tCO2/y	1,304
Project emissions per year	PEp,y	tCO2/y	0
Usage rate	Up,y	fraction	90%
Leakage	LEp,y	tCO2/y	0
Emission Reductions	Ery	tCO2/y	1,174
Suppressed Demand Assessment			
Percentage of suppressed demand users			85.71%
Percentage of **non**-suppressed demand users	Xboil	Percentage	14.29%
Emission Reductions	**ERy**	**tCO2/y**	**1005**
Capped Emissions Reductions	**ERy**	**tCO2/y**	**1005**

2020 Emission Reductions			
Emissions Reductions			
Baseline emissions per year	BEb,y	tCO2/y	2,483
Project emissions per year	PEp,y	tCO2/y	0
Usage rate	Up,y	fraction	90%
Leakage	LEp,y	tCO2/y	0
Emission Reductions	Ery	tCO2/y	2,235
Suppressed Demand Assessment			
Percentage of suppressed demand users			85.71%
Percentage of **non**-suppressed demand users	Xboil	Percentage	14.29%
Emission Reductions	**Ery**	**tCO2/y**	**1916**
Capped Emissions Reductions	**Ery**	**tCO2/y**	**1915**

Total ERs for MP 1	
Emissions Reductions	
2019	**1005**
2020	**1915**
Emission Reductions claimed for MP 1	**2920**

GS 7133:

SDG	Calculation	Net Benefit
GS7133		
SDG 3	$P_{safe} = P_y * (1 - C_j) * (1 - P_{b,boil})$ $P_{safe} = 2989 * (1 - 0.0079) * (1 - 0.35) = 1,928$	1,928 additional people consuming safe water due to the project
SDG 5	$TR_y = (T_{b,y} - T_{p,y}) / T_{b,y}$ TRy= (3.67 – 2.26) / 3.67 = 38%	A 38% decrease in time spent collecting water and firewood
SDG 6	$P_{access} = P_y * (1 - C_j) * U_{p,y}$ $P_{access} =$ 2989* (1-0.0079) * 0.90 = 2,669	2,669 additional people with access to safe water due to the project

Emission Reductions - 01/10/19 - 30/06/20

2019 Emission Reductions			
Emissions Reductions			
Baseline emissions per year	BEb,y	tCO2/y	894
Project emissions per year	PEp,y	tCO2/y	0
Usage rate	Up,y	fraction	0.90
Leakage	LEp,y	tCO2/y	0
Emission Reductions	Ery	tCO2/y	805
Suppressed Demand Assessment			
Percentage of suppressed demand users			85.71%
Percentage of **non**-suppressed demand users	Xboil	Percentage	14.29%
Emission Reductions	**ERy**	**tCO2/y**	**689**
Capped ERs			
Capped Emission Reductions	**ERy**	**tCO2/y**	**689**

2020 Emission Reductions			
Emissions Reductions			
Baseline emissions per year	BEb,y	tCO2/y	2,520
Project emissions per year	PEp,y	tCO2/y	0

Usage rate	Up,y	fraction	0.90
Leakage	LEp,y	tCO2/y	0
Emission Reductions	Ery	tCO2/y	2,268
Suppressed Demand Assessment			
Percentage of suppressed demand users			85.71%
Percentage of **non**-suppressed demand users	Xboil	Percentage	14.29%
Emission Reductions	**Ery**	**tCO2/y**	**1943**
Capped ERs			
Capped Emission Reductions	**ERy**	**tCO2/y**	**1943**

Total ERs for MP1	
Emissions Reductions	
2019	689
2020	1,943
Emission Reductions claimed for MP1	**2632**

GS 7134:

SDG	Calculation	Net Benefit
GS7134		
SDG 3	$P_{safe} = P_y * (1 - C_j) * (1 - P_{b,boil})$ $P_{safe} =$ 2890 * (1 – 0.0079) * (1 – 0.35) = 1,864	1,864 additional people consuming safe water due to the project
SDG 5	$TR_y = (T_{b,y} - T_{p,y}) / T_{b,y}$ TRy= (3.67 – 2.26) / 3.67 = 38%	A 38% decrease in time spent collecting water and firewood
SDG 6	$P_{access} = P_y * (1 - C_j) * U_{p,y}$ $P_{access} =$ 2890 * (1-0.0079) * 0.90 = 2,580	2,580 additional people with access to safe water due to the project

Emission Reductions - 15/05/19 - 30/06/20

2019 Emission Reductions			
Emissions Reductions			
Baseline emissions per year	BEb,y	tCO2/y	2,497
Project emissions per year	PEp,y	tCO2/y	0
Usage rate	Up,y	fraction	0.90
Leakage	LEp,y	tCO2/y	0
Emission Reductions	Ery	tCO2/y	2,247
Suppressed Demand Assessment			
Percentage of suppressed demand users			85.71%
Percentage of **non**-suppressed demand users	Xboil	Percentage	14.29%

Emission Reductions	**ERy**	**tCO2/y**	**1925**
Capped ERs			
Capped Emission Reductions	**ERy**	**tCO2/y**	**1925**

2020 Emission Reductions			
Emissions Reductions			
Baseline emissions per year	BEb,y	tCO2/y	2354
Project emissions per year	PEp,y	tCO2/y	0
Usage rate	Up,y	fraction	0.90
Leakage	LEp,y	tCO2/y	0
Emission Reductions	Ery	tCO2/y	2119
Suppressed Demand Assessment			
Percentage of suppressed demand users			85.71%
Percentage of **non**-suppressed demand users	Xboil	Percentage	14.29%
Emission Reductions	**Ery**	**tCO2/y**	**1815**
Capped ERs			
Capped Emission Reductions	**ERy**	**tCO2/y**	**1815**

Total ERs for MP1	
Emissions Reductions	
2019	1,925
2020	1,815
Emission Reductions claimed for MP1	**3,740**

GS7135

SDG	Calculation	Net Benefit
GS7135		
SDG 3	$P_{safe} = P_y * (1 - C_j) * (1 - P_{b,boil})$ $P_{safe} =$ 2906 * (1 – 0.0079) * (1 – 0.35) = 1,874	1,874 additional people consuming safe water due to the project
SDG 5	$TR_y = (T_{b,y} - T_{p,y}) / T_{b,y}$ TRy= (3.67 – 2.26) / 3.67 = 38%	A 38% decrease in time spent collecting water and firewood
SDG 6	$P_{access} = P_y * (1 - C_j) * U_{p,y}$ $P_{access} =$ 2906 * (1-0.0079) * 0.90 = 2,595	2,595 additional people with access to safe water due to the project

Emission Reductions - 10/04/19 - 30/06/20

2019 Emission Reductions

Emissions Reductions			
Baseline emissions per year	BEb,y	tCO2/y	2,834
Project emissions per year	PEp,y	tCO2/y	0
Usage rate	Up,y	fraction	0.90
Leakage	LEp,y	tCO2/y	0
Emission Reductions	Ery	tCO2/y	2,551
Suppressed Demand Assessment			
Percentage of suppressed demand users			85.71%
Percentage of **non**-suppressed demand users	Xboil	Percentage	14.29%
Emission Reductions	**ERy**	**tCO2/y**	**2186**
Capped ERs			
Capped Emission Reductions	**ERy**	**tCO2/y**	**2186**

2020 Emission Reductions			
Emissions Reductions			
Baseline emissions per year	BEb,y	tCO2/y	2,393
Project emissions per year	PEp,y	tCO2/y	0
Usage rate	Up,y	fraction	0.90
Leakage	LEp,y	tCO2/y	0
Emission Reductions	Ery	tCO2/y	2,154
Suppressed Demand Assessment			
Percentage of suppressed demand users			85.71%
Percentage of **non**-suppressed demand users	Xboil	Percentage	14.29%
Emission Reductions	**Ery**	**tCO2/y**	**1846**
Capped ERs			
Capped Emission Reductions	**ERy**	**tCO2/y**	**1846**

Total ERs for MP1	
Emissions Reductions	
2019	2,186
2020	1,846
Emission Reductions claimed for MP1	**4,032**

GS7136

SDG	Calculation	Net Benefit
GS7136		
SDG 3	$P_{safe} = P_y * (1 - C_j) * (1 - P_{b,boil})$ $P_{safe} =$ 2488 * (1 – 0.0079) * (1 – 0.35) = 1,604	1,604 additional people consuming safe water due to the project
SDG 5	$TR_y = (T_{b,y} - T_{p,y}) / T_{b,y}$ TRy= (3.67 – 2.26) / 3.67 = 38%	A 38% decrease in time spent collecting water and firewood
SDG 6	$P_{access} = P_y * (1 - C_j) * U_{p,y}$ $P_{access} =$ 2,488 * (1-0.0079) * 0.90 = 2,222	2,222 additional people with access to safe water due to the project

Emission Reductions - 29/08/19 - 30/06/20

2019 Emission Reductions			
Emissions Reductions			
Baseline emissions per year	BEb,y	tCO2/y	1,107
Project emissions per year	PEp,y	tCO2/y	0
Usage rate	Up,y	fraction	0.90
Leakage	LEp,y	tCO2/y	0
Emission Reductions	Ery	tCO2/y	996
Suppressed Demand Assessment			
Percentage of suppressed demand users			85.71%
Percentage of **non**-suppressed demand users	Xboil	Percentage	14.29%
Emission Reductions	**ERy**	**tCO2/y**	**853**
Capped ERs			
Capped Emission Reductions	**ERy**	**tCO2/y**	**853**

2020 Emission Reductions			
Emissions Reductions			
Baseline emissions per year	BEb,y	tCO2/y	2,062
Project emissions per year	PEp,y	tCO2/y	0
Usage rate	Up,y	fraction	0.90
Leakage	LEp,y	tCO2/y	0
Emission Reductions	Ery	tCO2/y	1,856
Suppressed Demand Assessment			
Percentage of suppressed demand users			85.71%
Percentage of **non**-suppressed demand users	Xboil	Percentage	14.29%
Emission Reductions	**Ery**	**tCO2/y**	**1,590**
Capped ERs			
Capped Emission Reductions	**ERy**	**tCO2/y**	**1,590**

Total ERs for MP1	
Emissions Reductions	
2019	**853**
2020	**1590**
Emission Reductions claimed for MP1	**2443**

GS7470

SDG	Calculation	Net Benefit
GS7470		
SDG 3	$P_{safe} = P_y * (1 - C_j) * (1 - P_{b,boil})$ $P_{safe} =$ 2680* (1 – 0.0079) * (1 – 0.35) = 1728	1,728 additional people consuming safe water due to the project
SDG 5	$TR_y = (T_{b,y} - T_{p,y}) / T_{b,y}$ TRy= (3.67 – 2.26) / 3.67 = 38%	A 38% decrease in time spent collecting water and firewood
SDG 6	$P_{access} = P_y * (1 - C_j) * U_{p,y}$ $P_{access} =$ 2680 * (1-0.0079) * 0.90 = 2,393	2,393 additional people with access to safe water due to the project

Emission Reductions - 31/05/19 - 30/06/20

2019 Emission Reductions			
Emissions Reductions			
Baseline emissions per year	BEb,y	tCO2/y	1,443
Project emissions per year	PEp,y	tCO2/y	0
Usage rate	Up,y	fraction	0.90
Leakage	LEp,y	tCO2/y	0
Emission Reductions	Ery	tCO2/y	1,298
Suppressed Demand Assessment			
Percentage of suppressed demand users			85.71%
Percentage of **non**-suppressed demand users	Xboil	Percentage	14.29%
Emission Reductions	**ERy**	**tCO2/y**	**1113**
Capped ERs			
Capped Emission Reductions	**ERy**	**tCO2/y**	**1112**

2020 Emission Reductions			
Emissions Reductions			
Baseline emissions per year	BEb,y	tCO2/y	2,259
Project emissions per year	PEp,y	tCO2/y	0
Usage rate	Up,y	fraction	0.90
Leakage	LEp,y	tCO2/y	0

Emission Reductions	Ery	tCO2/y	2,033
Suppressed Demand Assessment			
Percentage of suppressed demand users			85.71%
Percentage of **non**-suppressed demand users	Xboil	Percentage	14.29%
Emission Reductions	**Ery**	**tCO2/y**	**1742**
Capped ERs			
Capped Emission Reductions	**ERy**	**tCO2/y**	**1742**

Total ERs for MP1	
Emissions Reductions	
2019	**1,112**
2020	**1,742**
Emission Reductions claimed for MP1	**2,854**

GS7471

SDG	Calculation	Net Benefit
GS7471		
SDG 3	$P_{safe} = P_y * (1 - C_j) * (1 - P_{b,boil})$ $P_{safe} =$ 2976 * (1 – 0.0079) * (1 – 0.35) = 1919	1,919 additional people consuming safe water due to the project
SDG 5	$TR_y = (T_{b,y} - T_{p,y}) / T_{b,y}$ TRy= (3.67 – 2.26) / 3.67 = 38%	A 38% decrease in time spent collecting water and firewood
SDG 6	$P_{access} = P_y * (1 - C_j) * U_{p,y}$ $P_{access} =$ 2976* (1-0.0079) * 0.90 = 2	2,657 additional people with access to safe water due to the project

Emission Reductions - 31/05/19 - 30/06/20

2019 Emission Reductions			
Emissions Reductions			
Baseline emissions per year	BEb,y	tCO2/y	1922
Project emissions per year	PEp,y	tCO2/y	0
Usage rate	Up,y	fraction	0.90
Leakage	LEp,y	tCO2/y	0
Emission Reductions	Ery	tCO2/y	1,729
Suppressed Demand Assessment			
Percentage of suppressed demand users			85.71%
Percentage of **non**-suppressed demand users	Xboil	Percentage	14.29%
Emission Reductions	**ERy**	**tCO2/y**	**1482**
Capped ERs			

Capped Emission Reductions	**ERy**	**tCO2/y**	**1482**

2020 Emission Reductions			
Emissions Reductions			
Baseline emissions per year	BEb,y	tCO2/y	2508
Project emissions per year	PEp,y	tCO2/y	0
Usage rate	Up,y	fraction	0.90
Leakage	LEp,y	tCO2/y	0
Emission Reductions	Ery	tCO2/y	2257
Suppressed Demand Assessment			
Percentage of suppressed demand users			85.71%
Percentage of **non**-suppressed demand users	Xboil	Percentage	14.29%
Emission Reductions	**Ery**	**tCO2/y**	**1934**
Capped ERs			
Capped Emission Reductions	**ERy**	**tCO2/y**	**1934**

Total ERs for MP1	
Emissions Reductions	
2019	**1,482**
2020	**1,934**
Emission Reductions claimed for MP1	**3,416**

GS7472

SDG	Calculation	Net Benefit
GS7472		
SDG 3	$P_{safe} = P_y * (1 - C_j) * (1 - P_{b,boil})$ $P_{safe} =$ 2602* (1 – 0.0079) * (1 – 0.35) = 1678	1,678 additional people consuming safe water due to the project
SDG 5	$TR_y = (T_{b,y} - T_{p,y}) / T_{b,y}$ TRy= (3.67 – 2.26) / 3.67 = 38%	A 38% decrease in time spent collecting water and firewood
SDG 6	$P_{access} = P_y * (1 - C_j) * U_{p,y}$ $P_{access} =$ 2602* (1-0.0079) * 0.90 = 2323	2,323 additional people with access to safe water due to the project

Emission Reductions - 14/06/19 - 30/06/20

2019 Emission Reductions			
Emissions Reductions			
Baseline emissions per year	BEb,y	tCO2/y	1,676
Project emissions per year	PEp,y	tCO2/y	0

Usage rate	Up,y	fraction	0.90
Leakage	LEp,y	tCO2/y	0
Emission Reductions	Ery	tCO2/y	1,508
Suppressed Demand Assessment			
Percentage of suppressed demand users			85.71%
Percentage of **non**-suppressed demand users	Xboil	Percentage	14.29%
Emission Reductions	**ERy**	**tCO2/y**	**1293**
Capped ERs			
Capped Emission Reductions	**ERy**	**tCO2/y**	**1292**

2020 Emission Reductions			
Emissions Reductions			
Baseline emissions per year	BEb,y	tCO2/y	2,192
Project emissions per year	PEp,y	tCO2/y	0
Usage rate	Up,y	fraction	0.90
Leakage	LEp,y	tCO2/y	0
Emission Reductions	Ery	tCO2/y	1,973
Suppressed Demand Assessment			
Percentage of suppressed demand users			85.71%
Percentage of **non**-suppressed demand users	Xboil	Percentage	14.29%
Emission Reductions	**Ery**	**tCO2/y**	**1690**
Capped ERs			
Capped Emission Reductions	**ERy**	**tCO2/y**	**1690**

Total ERs for MP1	
Emissions Reductions	
2019	**1,292**
2020	**1,690**
Emission Reductions claimed for MP1	**2,982**

GS7473

SDG	Calculation	Net Benefit
GS7473		
SDG 3	$P_{safe} = P_y * (1 - C_j) * (1 - P_{b,boil})$ $P_{safe} =$ 2450 * (1 – 0.0079) * (1 – 0.35) = 1580	1,580 additional people consuming safe water due to the project
SDG 5	$TR_y = (T_{b,y} - T_{p,y}) / T_{b,y}$ TRy= (3.67 – 2.26) / 3.67 = 38%	A 38% decrease in time spent collecting water and firewood
SDG 6	$P_{access} = P_y * (1 - C_j) * U_{p,y}$ $P_{access} =$ 2450 * (1-0.0079) * 0.90 = 2188	2,188 additional people with access to safe water due to the project

Emission Reductions - 10/09/19 - 30/06/20

2019 Emission Reductions			
Emissions Reductions			
Baseline emissions per year	BEb,y	tCO2/y	1,090
Project emissions per year	PEp,y	tCO2/y	0
Usage rate	Up,y	fraction	0.90
Leakage	LEp,y	tCO2/y	0
Emission Reductions	Ery	tCO2/y	981
Suppressed Demand Assessment			
Percentage of suppressed demand users			85.71%
Percentage of **non**-suppressed demand users	Xboil	Percentage	14.29%
Emission Reductions	**ERy**	**tCO2/y**	**841**
Capped ERs			
Capped Emission Reductions	**ERy**	**tCO2/y**	**841**

2020 Emission Reductions			
Emissions Reductions			
Baseline emissions per year	BEb,y	tCO2/y	2,064
Project emissions per year	PEp,y	tCO2/y	0
Usage rate	Up,y	fraction	0.90
Leakage	LEp,y	tCO2/y	0
Emission Reductions	Ery	tCO2/y	1858
Suppressed Demand Assessment			
Percentage of suppressed demand users			85.71%
Percentage of **non**-suppressed demand users	Xboil	Percentage	14.29%
Emission Reductions	**Ery**	**tCO2/y**	**1592**
Capped ERs			
Capped Emission Reductions	**ERy**	**tCO2/y**	**1592**

Total ERs for MP1	
Emissions Reductions	
2019	**841**
2020	**1,592**
Emission Reductions claimed for MP1	**2,433**

GS7474

SDG	Calculation	Net Benefit
GS7474		
SDG 3	$P_{safe} = P_y * (1 - C_j) * (1 - P_{b,boil})$ $P_{safe} =$ 2957* (1 – 0.0079) * (1 – 0.35) = 1907	1,907 additional people consuming safe water due to the project
SDG 5	$TR_y = (T_{b,y} - T_{p,y}) / T_{b,y}$ TRy= (3.67 – 2.26) / 3.67 = 38%	A 38% decrease in time spent collecting water and firewood
SDG 6	$P_{access} = P_y * (1 - C_j) * U_{p,y}$ $P_{access} =$ 2957 * (1-0.0079) * 0.90 = 2640	2,640 additional people with access to safe water due to the project

Emission Reductions - 18/09/19 - 30/06/20

2019 Emission Reductions			
Emissions Reductions			
Baseline emissions per year	BEb,y	tCO2/y	1,037
Project emissions per year	PEp,y	tCO2/y	0
Usage rate	Up,y	fraction	0.90
Leakage	LEp,y	tCO2/y	0
Emission Reductions	Ery	tCO2/y	933
Suppressed Demand Assessment			
Percentage of suppressed demand users			85.71%
Percentage of **non**-suppressed demand users	Xboil	Percentage	14.29%
Emission Reductions	**ERy**	**tCO2/y**	**799**
Capped ERs			
Capped Emission Reductions	**ERy**	**tCO2/y**	**799**

2020 Emission Reductions			
Emissions Reductions			
Baseline emissions per year	BEb,y	tCO2/y	2,588
Project emissions per year	PEp,y	tCO2/y	0
Usage rate	Up,y	fraction	0.90
Leakage	LEp,y	tCO2/y	0

Emission Reductions	Ery	tCO2/y	2,330
Suppressed Demand Assessment			
Percentage of suppressed demand users			85.71%
Percentage of **non**-suppressed demand users	Xboil	Percentage	14.29%
Emission Reductions	**Ery**	**tCO2/y**	**1996**
Capped ERs			
Capped Emission Reductions	**ERy**	**tCO2/y**	**1996**

Total ERs for MP1	
Emissions Reductions	
2019	**799**
2020	**1,996**
Emission Reductions claimed for MP1	**2,795**

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	People consuming safe water: GS 7132: 1063 GS 7133: 1061 GS 7134: 1026 GS 7135: 1032 GS 7136: 884 GS 7470: 952 GS 7471: 1057 GS 7472: 924 GS 7473: 870 GS 7474: 1050	People consuming safe water: GS 7132: 2993 GS 7133: 2989 GS 7134: 2890 GS 7135: 2906 GS 7136: 2488 GS 7470: 2680 GS 7471: 2976 GS 7472: 2602 GS 7473: 2450 GS 7474: 2957	Additional people consuming safe water: GS 7132: 1930 GS 7133: 1928 GS 7134: 1864 GS 7135: 1874 GS 7136: 1604 GS 7470: 1728 GS 7471: 1919 GS 7472: 1678 GS 7473: 1580 GS 7474: 1907
SDG 5	3.67 hours spent collecting water and firewood per household per trip	2.26 hours spent collecting water and firewood per household per trip	38% decrease in time spent collecting water and firewood
SDG 6	People with access to safe water: GS 7132: 321 GS 7133: 320 GS 7134:310 GS 7135: 311 GS 7136: 266 GS 7470: 287 GS 7471: 319 GS 7472: 279 GS 7473: 262 GS 7474: 317	People with access to safe water: GS 7132: 2993 GS 7133: 2989 GS 7134: 2890 GS 7135: 2906 GS 7136: 2488 GS 7470: 2680 GS 7471: 2976 GS 7472: 2602 GS 7473: 2450 GS 7474: 2957	Additional people with access to safe water:_ GS 7132: 2672 GS 7133: 2669 GS 7134: 2580 GS 7135: 2595 GS 7136: 2222 GS 7470: 2393 GS 7471: 2657 GS 7472: 2323 GS 7473: 2188 GS 7474: 2640
SDG 13	Baseline emission of: GS 7132: 4,342 tCO2e GS 7133: 3,715 tCO2e GS 7134: 5,307 tCO2e GS 7135: 6,230 tCO2e GS 7136: 3,432 tCO2e GS 7470: 4,298 tCO2e GS 7471: 5,119 tCO2e GS 7472: 4,573 tCO2e GS 7473: 3,644 tCO2e GS 7474: 3,925tCO2e	Project emission of: GS 7132: 0 tCO2e GS 7133: 0 tCO2e GS 7134: 0 tCO2e GS 7135: 0 tCO2e GS 7136: 0 tCO2e GS 7470: 0 tCO2e GS 7471: 0 tCO2e GS 7472: 0 tCO2e GS 7473: 0 tCO2e GS 7474: 0 tCO2e	Net benefit Emission Reductions of: GS 7132: 2,920 tCO2e GS 7133: 2,632 tCO2e GS 7134: 3,740 tCO2e GS 7135: 4,032 tCO2e GS 7136: 2,443 tCO2e GS 7470: 2,854 tCO2e GS 7471: 2,416 tCO2e GS 7472: 2,982 tCO2e GS 7473: 2,433 tCO2e GS 7474: 2,795 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	GS 7132: 2260 GS 7133: 2260 GS 7134: 2260 GS 7135: 2260 GS 7136: 2260 GS 7470: 2260 GS 7471: 2260 GS 7472: 2260 GS 7473: 2260 GS 7474: 2260 **Total: 22600**	GS 7132: 1930 GS 7133: 1928 GS 7134: 1864 GS 7135: 1874 GS 7136: 1604 GS 7470: 1728 GS 7471: 1919 GS 7472: 1678 GS 7473: 1580 GS 7474: 1907 **Total: 18,012**
SDG 5	At least 0.5 hours per trip per household time saved/ 18.7% reduction in time spent collecting water and firewood	Time spent collecting water and firewood has decreased during this monitoring period by 1.41 hours / 38%
SDG 6	GS 7132: 3125 GS 7133: 3125 GS 7134: 3125 GS 7135: 3125 GS 7136: 3125 GS 7470: 3125 GS 7471: 3125 GS 7472: 3125 GS 7473: 3125 GS 7474: 3125 **Total: 31250**	Additional people with access to safe water:_ GS 7132: 2993 GS 7133: 2669 GS 7134: 2580 GS 7135: 2595 GS 7136: 2222 GS 7470: 2393 GS 7471: 2657 GS 7472: 2323 GS 7473: 2188 GS 7474: 2640 **Total: 25,260**
SDG 13	Emission Reduction GS 7132: 10,000 tCO2e GS 7133: 10,000 tCO2e GS 7134: 10,000 tCO2e GS 7135: 10,000 tCO2e GS 7136: 10,000 tCO2e GS 7470: 10,000 tCO2e GS 7471: 10,000 tCO2e GS 7472: 10,000 tCO2e GS 7473: 10,000 tCO2e GS 7474: 10,000 tCO2e **Total: 100,000 tCO2e**	Emission Reductions: GS 7132: 2,920 tCO2e GS 7133: 2,632 tCO2e GS 7134: 3,740 tCO2e GS 7135: 4,032 tCO2e GS 7136: 2,443 tCO2e GS 7470: 2,854 tCO2e GS 7471: 3,416 tCO2e GS 7472: 2,982 tCO2e GS 7473: 2,433 tCO2e GS 7474: 2,795 tCO2e **Total: 30,247 tCO2e**

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

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SDG 3: Estimates exceeds actual value. Estimates were calculated before the VPAs had been bundled, so the actual user numbers for some VPAs are lower than estimated. Participants are now experiencing less illnesses associated with consuming unsafe water: 90.8% of the respondents declare to not suffer stomach related illnesses/water-bourne diseases and the remaining 9.2% experiences illnesses just once every few months, while in the baseline only 7% was reported to not suffer of stomach related illnesses/water-bourne diseases. This impacts positively towards SDG 3.

SDG 5: Actual values exceeds estimates values. Time spent collecting water and firewood reduced by 1.41 hours in the project. This presents a 38% reduction in time spent collecting water and firewood compared to the baseline and exceeds the ex-ante estimate of 0.5 hours time saving. The project presents a time saving for participants and impacts positively to SDG 5.

SDG 6: Estimates exceeds actual value. As per SDG 3 estimates were calculated before the VPAs had been bundled, so the actual user numbers for some VPAs are lower than estimated.. However, 100% of households collect their water from the boreholes rehabilitated as part of the project while in the baseline, all respondents collected water from unsafe sources such as river and open wells. As such, all project participants now have access to a reliable safe water source in the project contributing towards SDG 6.

SDG 13: Estimate exceeds actual value. Not all the boreholes in the VPAs were crediting for a full 12-month period and this impacted the total ERs and new caps were introduces (e.g Wby=0.4 Kg/L) To avoid exciding the 10,000 cap the ERs are calculated capping the PTDs. Although this does not meet the target of 10,000 tCO2e, the projects are still achieving a large number of emission reductions during this monitoring period which would not be possible without the project, contributing positively to SDG 13.

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 Stakeholder feedback or comments have been received during this monitoring period.

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

There was no previous monitoring period to this one.

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

N/A