

MONITORING REPORT

PUBLICATION DATE 14.10.2020

VERSION v. 1.1

RELATED SUPPORT – TEMPLATE GUIDE Monitoring Report v. 1.1

This document contains the following Sections

Key Project Information

SECTION A - Description of project

SECTION B - Implementation of project

SECTION C - Description of monitoring system applied by the project

SECTION D - Data and parameters

SECTION E - Calculation of SDG Impacts

SECTION F - Safeguards Reporting

SECTION G - Stakeholder inputs and legal disputes

KEY PROJECT INFORMATION

Programme of Activity Information

GS ID of Programme	GS1247
Title of Programme	Improved Kitchen Regimes Multi-Country PoA (GS1247)
Version of POA-DD applicable to this monitoring report	Version 10
Name and GS ID of fully Validated CPA/VPAs (i.e. non compliance check)	VPA 45 - GS4422 VPA 46 - GS4423 VPA 47 - GS4518 VPA 48 - GS4519 VPA 54 - GS4797 VPA 55 - GS4798 VPA 84 - GS5244 VPA 85 - GS5245 VPA 134 - GS6235 VPA 135 - GS6236 VPA 136 - GS6237

Key Project Information

GS ID (s) of Project (s)	VPA 45 - GS4422 VPA 46 - GS4423 VPA 47 - GS4518 VPA 48 - GS4519 VPA 54 - GS4797 VPA 55 - GS4798 VPA 84 - GS5244 VPA 85 - GS5245 VPA 134 - GS6235 VPA 135 - GS6236 VPA 136 - GS6237
Title of the project (s) covered by monitoring report	GS1247 VPA 45 Eritrean District Boreholes (GS4422) GS1247 VPA 46 Eritrean District Boreholes (GS4423) GS1247 VPA 47 Eritrean District Boreholes (GS4518) GS1247 VPA 48 Eritrean District Boreholes (GS4519) GS1247 VPA 54 Eritrean District Boreholes (GS4797) GS1247 VPA 55 Eritrean District Boreholes (GS4798)

	GS1247 VPA 84 Zoba Maekel Community Boreholes (GS5244) GS1247 VPA 85 Zoba Maekel Community Boreholes (GS5245) GS1247 VPA 134 Zoba Maekel Community Boreholes (GS6235) GS1247 VPA 135 Zoba Maekel Community Boreholes (GS6236) GS1247 VPA 136 Zoba Maekel Community Boreholes (GS6237)
Version number of the PDD/VPA-DD (s) applicable to this monitoring report	GS4422: 1.6 GS4423: 1.6 GS4518: 1.6 GS4519: 1.7 GS4797: 1.5 GS4798: 1.5 GS5244: 1.2 GS5245: 1.2 GS6235: 4 GS6236: 4 GS6237: 1
Version number of the monitoring report	Version 4
Completion date of the monitoring report	02/07/2021
Date of project design certification	GS4422: 01/02/2016 GS4423: 01/02/2016 GS4518: 01/02/2016 GS4519: 01/02/2016 GS4797: 19/05/2016 GS4798: 19/05/2016 GS5244: 23/03/2017 GS5245: 23/03/2017 GS6235: 14/08/2019 GS6236: 14/08/2019 GS6237: 17/03/2020
Date of Last Annual Report	GS4422: 21/05/2020 GS4423: 21/05/2020

	GS4518: 21/05/2020 GS4519: 21/05/2020 GS4797: 21/05/2020 GS4798: 21/05/2020 GS5244: 21/05/2020 GS5245: 21/05/2020 GS6235: 12/05/2020 GS6236: 12/05/2020 GS6237: 12/05/2020
Monitoring period number	MP2, MP5, MP6
Duration of this monitoring period	GS4422: 01/02/20-31/01/21 (MP6) GS4423: 01/02/20-31/01/21 (MP6) GS4518: 01/02/20-31/01/21 (MP5) GS4519: 01/02/20-31/01/21 (MP5) GS4797: 01/02/20-31/01/21 (MP5) GS4798: 01/02/20-31/01/21 (MP5) GS5244: 01/02/20-31/01/21 (MP5) GS5245: 01/02/20-31/01/21 (MP5) GS6235: 01/02/19-31/01/21 (MP2) GS6236: 01/02/19-31/01/21 (MP2) GS6237: 01/02/19-31/01/21 (MP2)
Project Representatives	Thomas Devesa, CO2balance UK Ltd Matthew Pike, CO2balance UK Ltd
Host Country	Eritrea
Activity Requirements applied	☒ Community Services Activities ☐ Renewable Energy Activities ☐ Land Use and Forestry Activities/Risks & Capacities ☐ N/A
Methodology (ies) applied and version number	TPDDTEC v.1
Product Requirements applied	☒ GHG Emissions Reduction & Sequestration ☐ Renewable Energy Label ☐ N/A

Table 1 - Sustainable Development Contributions Achieved

Sustainable Development Goals Targeted	SDG Impact	Amount Achieved	Units/ Products
SDG 3 Good Health and Well-being	Variation in household smoke	90% decrease in household smoke (All VPAs)	Percentage
SDG 5 Gender Equality	Variation of time spent on firewood collection	0.34 hours per household per day increase in firewood collection time (All VPAS)	Hours
SDG 6 Clean Water and Sanitation	People gain access to safe water	Additional people gain access to safe water: GS4422: 1,620 GS4423: 1,620 GS4518: 1,462 GS4519: 1,575 GS4797: 1,515 GS4798: 1,432 GS5244: 1,509 GS5245: 1,551 GS6235: 1,350 GS6236: 1,336 GS6237: 1,080	Number of people
SDG 13 Climate Action	Emissions Reduction	SDG 13: tCO ₂ e/y per VPA VERs GS4422: 2,961 GS4423: 2,961 GS4518: 2,671 GS4519: 2,879 GS4797: 2,768 GS4798: 2,617 GS5244: 2,757 GS5245: 2,833 GS6235: 4,928 GS6236: 4,882 GS6237: 3,943	

Table 2 – Product Vintages

		Amount Achieved
Start Dates	End Dates	VERS
01/02/2020	31/12/2020	GS4422: 2715 GS4423: 2715 GS4518: 2449 GS4519: 2639 GS4797: 2538 GS4798: 2399 GS5244: 2528 GS5245: 2598 GS6235: 2468 GS6236: 2441 GS6237: 1975
01/01/2021	31/01/2021	GS4422: 246 GS4423: 246 GS4518: 222 GS4519: 240 GS4797: 230 GS4798: 218 GS5244: 229 GS5245: 235 GS6235: 205 GS6236: 210 GS6237: 164

SECTION A. DESCRIPTION OF PROJECT

A.1. General description of project

In Eritrea over 45% of the rural population do not have access to safe water and rely exclusively on unprotected wells, lakes and other open water sources that are highly susceptible to contamination. Annexed from Ethiopia in 1962, the country has experienced periodic conflict and continuing tensions in the region.

Armed conflict, mandatory military service and external migration, takes men away from their villages and means that many rural families are headed by women, often widows. Female headed households in Eritrea face several disadvantages and as a result they cultivate less land and have fewer assets. These women then bear the

burden of producing food as well as providing care for their families, including travelling to collect firewood and water.

Many existing boreholes in Eritrea have fallen into disrepair because maintenance programmes have been poorly managed or proven too expensive leaving people without access to clean water. CO2balance's project partner Vita has worked to identify broken down boreholes, renovate them and supply a maintenance programme to ensure that clean, safe water is delivered as a result of this project. The boreholes included under the project are entirely human operated and fitted with hand pump models that are commonly used in the area such as Afridev, U3 Modified and India Mark II pumps.

Zoba Maekel is a largely rural district in which many 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 which can be avoided if a technology that does not require fuel (wood or fossil) supplies clean water desired by households. By providing safe water this project ensures that households consume less firewood during the process of water purification and therefore reduce greenhouse gas emissions from the combustion process.

In total 62 boreholes were rehabilitated as part of this project between 16th December 2015 and 16th December 2017. The date, location and number of people served by each borehole are given in the table below, which forms the project database:

VPA	GS ID	Borehole ID	Village name	Date of rehab	Latitude	Longitude	No. of People
45	GS4422	ZMA 001	Arberegue	16/12/2015	15.40794	38.97808	598
45	GS4422	ZMA 007	Adiarada	28/12/2015	15.1918	38.9932	730
45	GS4422	ZMA 023	Zagir	26/01/2016	15.4823	38.899	1,018
45	GS4422	ZMA 028	Aditsenaf	13/02/2016	15.18859	38.91432	756
45	GS4422	ZMA 035	Dekipetros	01/03/2016	15.49443	38.8829	460
45	GS4422	ZMA 036	Gheremi	01/03/2016	15.47392	38.88923	1,018
46	GS4423	ZMA 004	Antsefet	18/12/2015	15.4219	38.99107	300
46	GS4423	ZMA 011	Embeyto	05/01/2016	15.21171	38.95908	1,018

46	GS4423	ZMA 034	Dekiseb	25/02/2016	15.53221	38.8813	986
46	GS4423	ZMA 037	Geshinashm	10/03/2016	15.52944	38.82362	673
46	GS4423	ZMA 041	Adi Hawesha	16/03/2016	15.23774	38.97018	1,018
46	GS4423	ZMA 043	Aditearishi	17/03/2016	15.4619	38.81767	522
47	GS4518	ZMA 005	Guritat	21/12/2015	15.5407	38.8429	810
47	GS4518	ZMA 008	Shinjibluk	29/12/2015	15.4005	38.8645	179
47	GS4518	ZMA 009	Wekiduba	30/12/2015	15.37819	38.8841	1,018
47	GS4518	ZMA 012	Defere	08/01/2016	15.52306	38.90312	245
47	GS4518	ZMA 015	Wekiduba	12/01/2016	15.3566	38.8734	1,018
47	GS4518	ZMA 029	Adiregit	16/02/2016	15.48424	38.90784	350
48	GS4519	ZMA 013	Tsaedaemba	11/01/2016	15.30587	38.8594	287
48	GS4519	ZMA 026	Adimngher	03/02/2016	15.2495	38.85032	660
48	GS4519	ZMA 032	Azen	19/02/2016	15.49605	38.90345	763
48	GS4519	ZMA 033	Azen	22/02/2016	15.50845	38.90264	1,018
48	GS4519	ZMA 040	Tseazega	15/03/2016	15.35642	38.8006	983
48	GS4519	ZMA 049	Tsaedaemba	10/10/2016	15.3083	38.86054	263
54	GS4797	ZMA 003	Aditeklay	17/12/2015	15.3108	38.76277	183
54	GS4797	ZMA 014	Adimussa	11/01/2016	15.30658	38.83623	360
54	GS4797	ZMA 025	Adimussa	02/02/2016	15.30673	38.83623	337
54	GS4797	ZMA 039	Embaderho	14/03/2016	15.4212	38.89523	1,018
54	GS4797	ZMA 044	Embaderho	21/03/2016	15.43856	38.89749	1,018
54	GS4797	ZMA 046	Beleza	24/03/2016	15.42948	38.92373	1,018
55	GS4798	ZMA 006	Adihamushte	24/12/2015	15.23855	38.8378	194
55	GS4798	ZMA 017	Tselot	15/01/2016	15.28902	38.95801	1,018
55	GS4798	ZMA 018	Tselot	15/01/2016	15.28702	38.95519	1,018
55	GS4798	ZMA 030	Adinegoda	18/02/2016	15.47879	38.9126	197
55	GS4798	ZMA 031	Adinegoda	18/02/2016	15.48504	38.90693	575
55	GS4798	ZMA 042	Zighib	16/03/2016	15.21631	38.99402	924
84	GS5244	ZMA 019/020	Afdeyu	21/01/2016	15.49839	38.86352	508
84	GS5244	ZMA 024	Adik	28/01/2016	15.2534	38.9052	177
84	GS5244	ZMA 016	Quazen	14/01/2016	15.47925	38.91652	1,018
84	GS5244	ZMA 045	Adighebru	23/03/2016	15.33387	38.78326	368

84	GS5244	ZMA 047	Adighebru	25/03/2016	15.34002	38.75993	1,018
84	GS5244	ZMA 053	Konduba	16/12/2016	15.5122	38.8799	859
85	GS5245	ZMA 010	Weki	31/12/2015	15.54732	38.87739	904
85	GS5245	ZMA 021	Tsehaflam	22/01/2016	15.48909	38.85651	223
85	GS5245	ZMA 022	Tsehaflam	22/01/2016	15.48357	38.85218	560
85	GS5245	ZMA 048	Unanalay	06/09/2016	15.45149	38.82464	565
85	GS5245	ZMA 050	Weki	20/10/2016	15.54695	38.87683	1,018
85	GS5245	ZMA 052	Adikuntsi	21/11/2016	15.35527	38.83405	1,018
134	GS6235	ZMA 054	Adibeney 1	07/12/2017	15.40766	38.83129	508
134	GS6235	ZMA 058	Adiyacob 1	09/12/2017	15.37979	38.83119	177
134	GS6235	ZMA 059	Adiyacob 2	09/12/2017	15.38004	38.83119	1,018
134	GS6235	ZMA 060	Tsadachristia n	12/12/2017	15.32542	38.84561	368
134	GS6235	ZMA 062	Shimanguslai lai	14/12/2017	15.47377	38.85293	1,018
135	GS6236	ZMA 055	Adibeney 2	07/12/2017	15.40766	38.83129	904
135	GS6236	ZMA 061	Tsezega	13/12/2017	15.34555	38.79098	223
135	GS6236	ZMA 063	Unaghudo	14/12/2017	15.33312	38.8774	560
135	GS6236	ZMA 064	Ametesi	15/12/2017	15.4372	38.85865	565
135	GS6236	ZMA 065	Adijin	15/12/2017	15.5146	38.87046	1,018
136	GS6237	ZMA 056	Hazega 1	08/12/2017	15.39304	38.83426	904
136	GS6237	ZMA 066	Mesgad	16/12/2017	15.28047	38.85077	223
136	GS6237	ZMA 057	Hazega 2	08/12/2017	15.39304	38.83426	560
136	GS6237	ZMA 067	Adiarada	16/12/2017	15.19167	38.99166	565

VPA 45 - GS4422

VPA 46 - GS4423

VPA 47 - GS4518

VPA 48 - GS4519

VPA 54 - GS4797

VPA 55 - GS4798

VPA 84 - GS5244

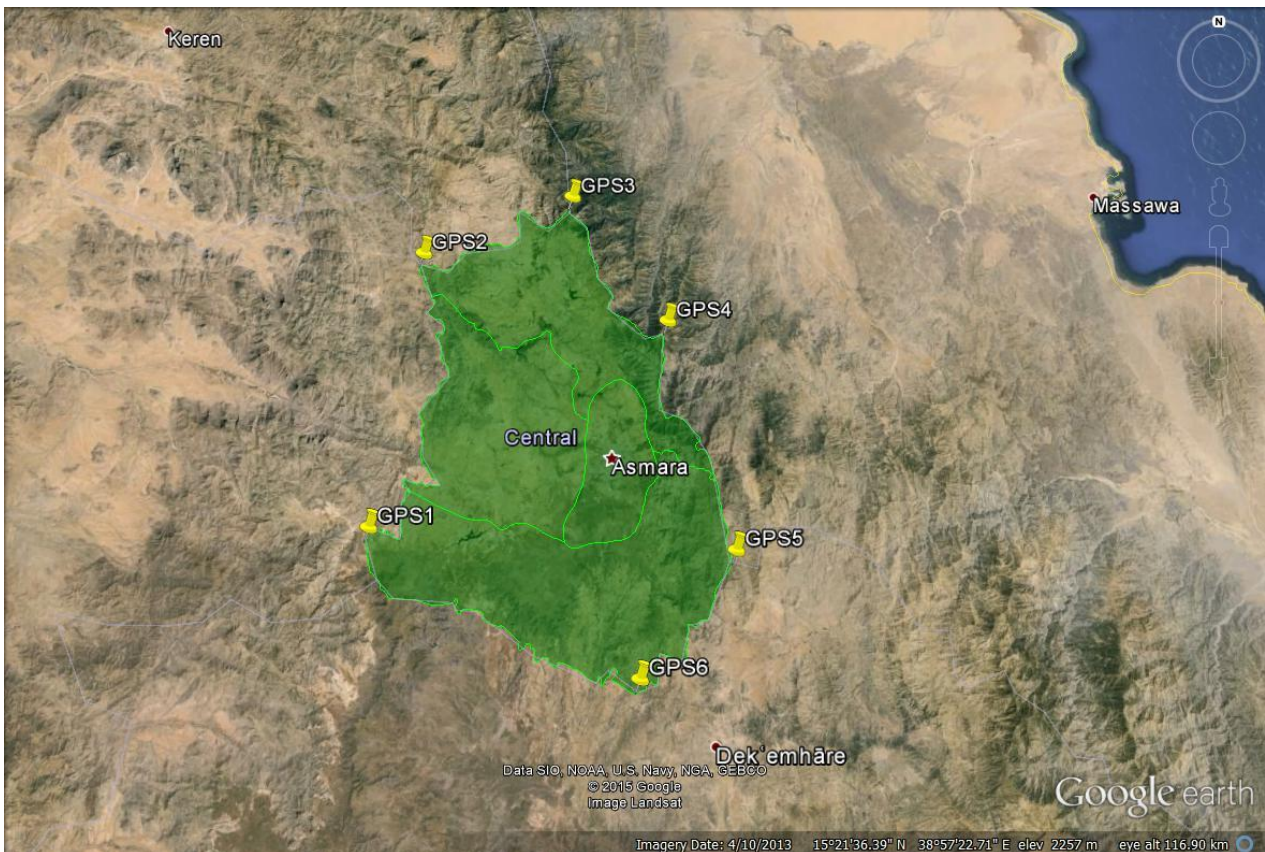
VPA 85 - GS5245
VPA 134 - GS6235
VPA 135 - GS6236
VPA 136 - GS6237

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

A.2. Location of project

Zoba Maekel is a largely rural district where local people typically use wood fuel on inefficient three stone fires to purify their drinking, cleaning and washing water. Below is the geographic reference to allow unique identification of the project boundary for the project. 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.



Project Area Coordinates		
	Latitude	Longitude
GPS1	15.254170°	38.691966°
GPS2	15.526661°	38.734285°
GPS3	15.458455°	38.985377°
GPS4	15.586939°	38.886742°
GPS5	15.233786°	39.051299°
GPS6	15.115250°	38.957312°

A.3. Reference of applied 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

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 to be 7 years, twice renewable totaling 21 years as per the approved PDD.

Please find the start dates for the projects below (crediting period begins the following day):

Project ID	Start Date	Crediting period start date	Crediting period end date
GS4422	16/12/2015	17/12/2015	16/12/2022
GS4423	18/12/2015	19/12/2015	18/12/2022
GS4518	21/12/2015	22/12/2015	21/12/2022
GS4519	11/01/2016	12/01/2016	11/01/2023
GS4797	17/12/2015	18/12/2015	17/12/2022
GS4798	24/12/2015	25/12/2015	24/12/2022
GS5244	14/01/2016	15/01/2016	14/01/2023
GS5245	31/12/2015	01/01/2016	31/12/2022
GS6235	07/12/2017	08/12/2017	07/12/2024
GS6236	07/12/2017	08/12/2017	07/12/2024
GS6237	08/12/2017	09/12/2017	08/12/2024

SECTION B. IMPLEMENTATION OF PROJECT

B.1. Description of implemented project

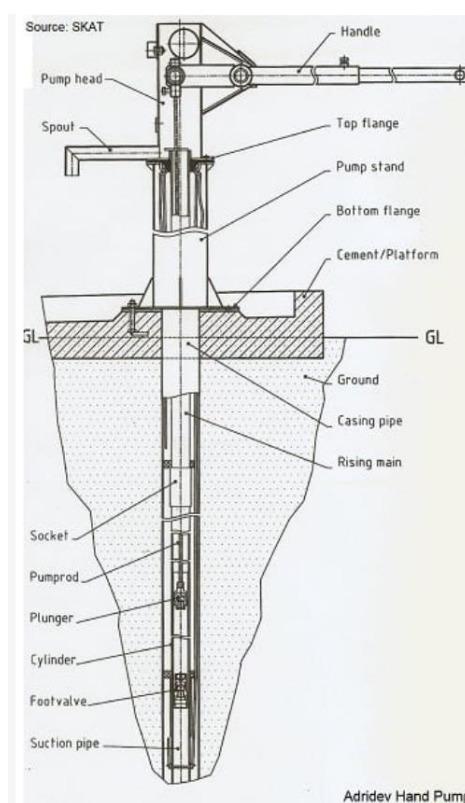
Vita has rehabilitated 62 boreholes as part of these projects and all water points under the VPAs are in good working order and have been crediting since the beginning of their crediting period. Borehole models rehabilitated within the project area are Afridev handpumps. All boreholes undergo annual water quality testing to ensure the water is safe for human consumption as per national water standards. The water quality is approved by the Ministry of Land, Water and Environment in Zoba Maekel.



Examples of Afridev pumps from the project.

Technical Specifications:

	Afridev
Cylinder Diameter (mm)	50
Maximum Stroke (mm)	225
Approx. discharge at about 75 watt input (m ³ /h)	At 10m head 1.4
	At 15 m head 1.1
	At 20m head 0.9
	At 30m head 0.7
Pumping Lift (m)	10-45
Water Consumption (litres per capita)	15-20



Water Quality Standard

All boreholes are chlorinated immediately following rehabilitation and then every 3 months thereafter to ensure a safe water supply. All boreholes undergo water quality testing to ensure the water is safe for human consumption as per WHO water standards, which are used by the Eritrean national government. The standards set parameters with upper limits which must be adhered to for drinking water to qualify as potable. In addition, WASH training was conducted with communities at the beginning of the project to ensure safe use of the boreholes and safe transfer of clean water from the point of distribution to consumption.

Project Feedback

The project includes quarterly monitoring of all included water points. Field staff and government water coordinators visit the water points and undertake an assessment of three core areas with reports submitted to the field office, in the local language Tigrigna:

User Numbers

Community records are kept which include the monitoring of population using the borehole. Any updates to user numbers are then collated by field teams and updated in the project database.

Borehole Functionality

Both preventative and reactive maintenance are conducted as part of quarterly monitoring. Preventative maintenance includes greasing of parts, where needed, and replacement of fast-wearing parts such as rubbers. In the reactive repair element, the borehole is assessed for any mechanical issues that require intervention so that the repair can happen quickly and with minimal disruption to the delivery of safe water. In addition, feedback from the community is collated to assess if there are any further issues such as squeaking parts or difficulty drawing water, which can be an indication of a fault with the borehole. The preventative repairs take a matter of hours and do not affect water access of the community.

Maintenance activities align with national level policy, including Eritrean Water Resources Policy and Water Law Proclamation. These documents discuss procedures of maintenance of safe water supply systems.

WASH Practices

Quarterly checks also assess the ongoing WASH best practices being carried out by the communities. WASH training has been received at all water points. The quarterly checks ensure that these best practices continue to be undertaken by the communities included in the project. Any issues regarding WASH are brought up in the results of the checks and can be actioned upon.

Repair Process

The following table details the repair work done over the monitoring period and the amount of days each borehole was non-functional as a result. Through project experience, it has been found that boreholes do not tend to fail suddenly. Rather, a gradual process of wear leads to an eventual breakdown. The quarterly monitoring done in the project enables the identification of any potential issues so that they can be remedied with minimal disruption to the delivery of safe water. In the event of breakdown, the WASHCO responsible for the borehole contacts the Vita field office to report the breakdown. This marks the 'start date' of a breakdown on a Repair Confirmation Form (RCF).

Borehole ID	VPA ID	GS ID	Replacement parts	Start Date	End Date	Days Non-Functional
ZMA 001	45	4422	Pipes replaced	17/02/2020	20/02/2020	4
ZMA 011	46	4423	New hand pump installed	19/02/2020	21/02/2020	3
ZMA 005	47	4518	Chain and rod replaced	07/02/2020	10/02/2020	4
ZMA 005	47	4518	Pipes replaced	16/09/2020	18/09/2020	3
ZMA 014	55	4797	Rod replaced	01/09/2020	03/09/2020	3
ZMA 044	55	4797	New hand pump installed	19/02/2020	21/02/2020	3
ZMA 010	85	5245	Pipes replaced	16/09/2020	18/09/2020	3
ZMA 063	135	6236	Rod replaced	01/09/2020	03/09/2020	3

Once an issue is reported, Vita liaises with the relevant local Zoba government office and a water technician is sent to the borehole to assess the fault and request parts for the repair. Once the repair is complete, the technicians complete a repair confirmation form and submit this to the local government office. Once a repair is completed the RCF is completed with the 'End Date' marking the date of repair completion. The RCF is then scanned and sent to CO2balance UK Ltd to record down days during a monitoring period. In this monitoring period, a 95% cap on functional days has been applied in line with the SWS Grievance Report findings (Section 2 – p 39).

All interactions take place within the project area and the model used by Vita and the local government has been in place since project start.

Requirements within TPDDTEC v1 methodology for monitoring surveys are as follows:

Relevant Section	Requirement(s)	Compliance
3.1.C	Monitoring surveys are completed annually, beginning 1 year after project registration	Monitoring Surveys have been completed annually, beginning 1 year after project registration in the first monitoring period.
3.1.C – Monitoring Survey Representativeness	End users from a given project scenario are selected using representative sampling techniques to	A random sampling approach was used to select representative users

ensure adequate representation of users with technologies of different ages. Common sampling approaches such as clustered random sampling are allowed and geographic distribution should be factored into selection criteria. End users can be surveyed at any time(s) throughout the year with care taken to collect information pertaining to seasonal variations in technology and fuel use patterns.	for the monitoring surveys. The monitoring surveys were all completed between 15/09/2020 – 19/09/2020. New Usage surveys were conducted between 11/12/2020-16/12/2020 to account for updated changes following GAS TAC review.
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3.1.C – Monitoring
Survey sample sizing
and data collection

The monitoring survey is only conducted with end users representative of the project scenario and currently using the project technology. The minimum total sample size is 100, with at least 30 samples for project technologies of each age being credited.	The monitoring surveys include questions which determine if the respondent is representative of the project scenario. If not, then the respondent is not included in the survey results. The sample size for the monitoring period was 110, satisfying sample size requirements.
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Boreholes were split between three age groups with a minimum of 30 surveys conducted per age group.

For the WCFT, TPDDTEC v1 guidance on representativeness, sample sizing and variability from section II.4 is applicable:

Relevant Section	Requirement(s)	Compliance
2.7 – Representativeness	The [WCFT] must be designed to ensure monitoring is representative of typical technology and [water] use practices. Households must behave and consume [water] normally. [WCFTs] are always required so as to capture the potential use of the baseline technologies as backup, or potential introduction of an emitting backup technology introduced in parallel.	The WCFT survey introduction stresses the importance of normal household activity being maintained throughout the survey. The WCFT contains survey questions designed to capture any continued baseline practices, such as boiling water or collecting from unsafe sources.
2.7 – Sample Sizing and Statistical Estimate of the Fuel or Emission Savings	Sample sizes must be greater than 20. The 90/30 rule is to be complied with when sample sizes are large enough.	The sample size for the WCFT was 44 meaning the 90/30 rule was used.
Annex 4	Applicable sections to WCFT within steps 1-8.	1. A random sampling method determined survey participants.

		2. The test period selected (18/12/2019 – 27/12/2019) was an appropriate time of year where normal practices could be observed. 3. The WCFT survey introduction stresses the importance of normal household activity being maintained throughout the survey. 7. The WCFT results contain an outlier analysis
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Furthermore, grievance expression process books placed at all boreholes have not received any feedback and Vita field staff have not received any feedback during this monitoring period from the borehole users on damage or breaking of boreholes therefore it can be assumed that the project is running as planned.

B.1.1. Forward Action Requests

N/A

B.2. Post-Design Certification changes

N/A

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

N/A

B.2.2. Corrections

N/A

B.2.3. Changes to start date of crediting period

N/A

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

All VPAs transitioned to GS4GG, except VPAs 6235-37 which were validated post-GS4GG introduction. The Monitoring Plan was therefore updated from including Sustainable Development Indicators to monitoring impacts and contributions towards the Sustainable Development Goals as per the approved Transition Annex.

B.2.5. The $W_{p,y}$ value has changed for this monitoring period and will remain as a permanent change. Previous monitoring periods used a measured baseline value obtained from the Baseline Water Boiling Test. However, the recent update to the parameters means a cap has now been introduced which has been applied to this project for this monitoring period- considering the firewood required to boil 1 litre of water for 10 minutes using a three stone fire (0.4 kg/L). Changes to project design of approved project

N/A

SECTION C. DESCRIPTION OF MONITORING SYSTEM APPLIED BY THE PROJECT

All surveys are administered by trained staff who underwent training on the 09/09/2020. Training provides staff with necessary knowledge and skills to carry out surveys to a high standard, as well as understanding Gold Standard's principles and requirements during this process. Evidence of training completion will also be uploaded from this monitoring period. Staff 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 by a minimum of two Eritrea Vita staff involved in typing up the monitoring data into excel and cross-checking the data. The excel data is then stored on a central server in an electronic format and sent to the UK head office for data analysis. The documentation procedure ensures a minimum chance of original data being lost – all original copies of our project documentation are retained in the Eritrean office and are available scanned upon request of the UK team. UK staff use scanned copies to check data input and quality control before submitting for verification.

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 and are determined in accordance

with the required confidence/precision. The size of the sample 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 sample 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
- Quantity of boreholes installed
- The total number of people obtaining their water from each borehole

The total number of households using each borehole has been determined through the lists supplied by the community group and or district water officer responsible for that borehole. Using this method, the total number of people using each borehole has been determined 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 $Q_{p,y}$, $Q_{p,rawboil,y}$, and $Q_{p,cleanboil,y}$) - Completed prior to first verification and then biennially after first verification. The survey was completed between 18/12/2019 – 27/12/2019 and found a $Q_{p,y}$ value of 11.32L per person per day. This has been capped to 7.5L.
- **Quality of the treated water** - The quality of the treated water will be assessed to ensure that it is fit for human consumption. The parameters used to assess the water quality are in line with Eritrean standards for potable water and all parameters will be shown to be within levels considered acceptable for domestic human consumption.

- **Usage Survey** – Three age groupings of boreholes were identified for sampling. In line with the methodology, at least 30 surveys were conducted for each age group, following 90/30 requirements on representativeness. The annual usage survey was conducted using a sample size of 110 between 10/12/2020 – 16/12/2020. The results from the usage survey are used to determine the proportion of beneficiaries that use the borehole which is factored into the emission reduction calculations. The survey was updated following consultation and prior approval by SustainCERT.

- **Project Survey** – Conducted on 110 households between 15/09/2020 – 19/09/2020, surveying end users currently using project technologies to explore changes in project scenario over time. 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.

- **Leakage Assessment** - The PDD has described which sources of leakage detailed within the methodology are relevant to this project and which have been discounted.

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.

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.

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.

- **Project Technology Days ($N_{p,y}$)** – 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. Where necessary a cap will be applied. All monitoring tasks are selected at random.

Cross Sampling

The project proponent has elected to cross-sample technologies across all its homogenous borehole VPAs located within Zoba Maekel. The samples for the survey listed below are randomly selected from the borehole information databases using the RSG procedure 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 biennially

Surveys are conducted through use of a Random Sample Group (RSG). The size of the sample group is selected so the number of boreholes to be sampled satisfies the 90/30 precision rule. A random number generator ranks the unique serial numbers of the boreholes in the project, generating an RSG. The sample group is 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 out of 62 boreholes 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, detailed in section D.3. In the table below is information about the random sample.

Age Group (years)	2-3	3-4	4-5
Boreholes	14	4	44
Sample Size (BH)	6	3	7
Sample Size (surveys)	40	30	40
Average age (years)	2.74	3.83	4.58

Double Counting

To avoid double counting during the monitoring period the project has not been included in any other voluntary or compliance standards programmes, and dual certification has not been sought. As the project area contains multiple VPAs double counting has further been avoided through the unique identification of each water point along with GPS coordinates.

SECTION D. DATA AND PARAMETERS

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

Relevant SDG Indicator	SDG 13.B.1 (Climate Action), SDG 6.1.1 (Clean Water and Sanitation)
Data/parameter:	Cj
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.
Value(s) applied)	0.00%

Choice of data or measurement methods and procedures	The portion of safe water users is determined through 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 and SDG 6 impact.
Additional comments	-

Relevant SDG Indicator	SDG 13.B.1 (Climate Action)
Data/parameter:	EF_{b,CO_2}
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	Calculation of baseline emissions.
Additional comments	-

Relevant SDG Indicator	SDG 13.B.1 (Climate Action)
Data/parameter:	$EF_{b,non\ CO_2}$
Unit	tCO _{2e} /TJ

Description	Non-CO ₂ (CH ₄ and N ₂ O) emission factor arising from use of wood fuel in baseline scenario																							
Source of data	IPCC default emissions factor																							
Value(s) applied)	8.692																							
Choice of data or measurement methods and procedures	Deemed valid by Methodology <table border="1"> <thead> <tr> <th>Ga s</th><th>Default Emissions factor (kg_gas/TJ NCV)</th><th>GWP of gas</th><th>Default Emissions factor (kg_CO₂e/TJ NCV)</th><th>Default Emissions factor (t_CO₂e/TJ_N cv)</th></tr> </thead> <tbody> <tr> <td>CH 4</td><td>300</td><td>25</td><td>7,500</td><td>7.5000</td></tr> <tr> <td>N₂ O</td><td>4</td><td>298</td><td>1,192</td><td>1.1920</td></tr> <tr> <td></td><td></td><td></td><td>Total</td><td>8.692</td></tr> </tbody> </table>				Ga s	Default Emissions factor (kg_gas/TJ NCV)	GWP of gas	Default Emissions factor (kg_CO ₂ e/TJ NCV)	Default Emissions factor (t_CO ₂ e/TJ _N cv)	CH 4	300	25	7,500	7.5000	N ₂ O	4	298	1,192	1.1920				Total	8.692
Ga s	Default Emissions factor (kg_gas/TJ NCV)	GWP of gas	Default Emissions factor (kg_CO ₂ e/TJ NCV)	Default Emissions factor (t_CO ₂ e/TJ _N cv)																				
CH 4	300	25	7,500	7.5000																				
N ₂ O	4	298	1,192	1.1920																				
			Total	8.692																				
Purpose of data	Calculation of emission reductions.																							
Additional comments	-																							

Relevant SDG Indicator	SDG 13.B.1 (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	Volume 2: 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Chapter 2, Table 2.5
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	-
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Relevant SDG Indicator	SDG 13.B.1 (Climate Action)																								
Data/parameter:	EF _{p,non co2}																								
Unit	tCO ₂ e/TJ																								
Description	Non-CO ₂ (CH ₄ and N ₂ O) emission factor arising from use of wood fuel in project scenario																								
Source of data	IPCC default emissions factor																								
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Choice of data or measurement methods and procedures	Deemed valid by Methodology <table><tr><th>Ga s</th><th>Default Emissions factor (kg_gas/T J_{NCV})</th><th>GWP of gas</th><th>Default Emissions factor (kg_CO₂e/T J_{NCV})</th><th>Default Emissions factor (t_CO₂e/T J_{NCV})</th></tr><tr><td>CH 4</td><td>300</td><td>25</td><td>7,500</td><td>7.5000</td></tr><tr><td>N₂ O</td><td>4</td><td>298</td><td>1,192</td><td>1.1920</td></tr><tr><td></td><td></td><td></td><td>Total</td><td>8.692</td></tr></table>					Ga s	Default Emissions factor (kg_gas/T J _{NCV})	GWP of gas	Default Emissions factor (kg_CO ₂ e/T J _{NCV})	Default Emissions factor (t_CO ₂ e/T J _{NCV})	CH 4	300	25	7,500	7.5000	N ₂ O	4	298	1,192	1.1920				Total	8.692
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			Total	8.692																					
Purpose of data	Calculation of emission reductions.																								
Additional comments	-																								

Relevant SDG Indicator	SDG 13.B.1 (Climate Action)
Data/parameter:	NCV _b
Unit	TJ/ton
Description	Net calorific value of the wood fuel used in the baseline
Source of data	http://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_1_Ch1_Introduction.pdf_Table_1.2
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.B.1 (Climate Action)
Data/parameter:	NCV _p
Unit	TJ/ton
Description	Net calorific value of the wood fuel used in the project
Source of data	http://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_1_Ch1_Introduction.pdf Table 1.2
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.B.1 (Climate Action)
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 stated in following document: https://cdm.unfccc.int/Panels/ssc_wg/meetings/037/ssc_37_an14.pdf
Value(s) applied)	0.97
Choice of data or measurement methods and procedures	Default values of fraction of non-renewable biomass as outlined by the UNFCCC CDM.
Purpose of data	Calculation of emission reductions.
Additional comments	-

Relevant SDG Indicator	SDG 13.B.1 (Climate Action), SDG 3.9.1 (Good Health and Well-Being)
Data/parameter:	$W_{b,y}$
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)	0.0004
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: <i>Technologies and Practices to Displace Decentralized Thermal Energy Consumption Version 1, Draft General Guidelines On Sampling And Surveys</i> ; EB37 Annex 27; and <i>Standard For Sampling And Surveys For CDM Project Activities and Programme of Activities (Version 02)</i> ; EB65 Annex 2
Purpose of data	Calculation of emission reductions and impact on SDG 3.
Additional comments	-

Relevant SDG Indicator	SDG 13.B.1 (Climate Action), SDG 3.9.1 (Good Health and Well-Being)
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)	0.0004
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: <i>Technologies and Practices to Displace Decentralized Thermal Energy Consumption Version 1, Draft General Guidelines On Sampling And Surveys</i> ; EB37 Annex 27; and <i>Standard For Sampling And Surveys For CDM Project Activities and Programme of Activities (Version 02)</i> ; EB65 Annex 2
Purpose of data	Calculation of emission reductions.
Additional comments	-

Relevant SDG Indicator	SDG 13.B.1 (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 study. Credible literature, studies, survey, reports, relevant to the project target area
Value(s) applied)	4%

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, 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 5.4.1 (Gender Equality)
Data/parameter:	$T_{b,y}$
Unit	Hours
Description	Baseline time spent collecting firewood per household per day
Source of data	Baseline survey
Value(s) applied)	2.13
Choice of data or measurement methods and procedures	Established through questions in the baseline on a representative sample of the end users.
Purpose of data	To measure the % decrease in hours spent collecting firewood, a responsibility falling disproportionately on women, as an indicator of reduced time poverty of women. For SDG 5 target.
Additional comments	-

Relevant SDG Indicator	SDG 3.9.1 (Good Health and Well-Being)
Data/parameter:	$P_{b,y}$
Unit	Kg/person
Description	Quantity of fuel that is consumed in the baseline scenario b during year y (kg/person-day)
Source of data	Baseline Survey
Value(s) applied)	3
Choice of data or measurement methods and procedures	Baseline Water Boiling Test Result.
Purpose of data	Calculating quantity of fuel used in the baseline scenario.
Additional comments	-

D.2. Data and parameters monitored

Relevant SDG Indicator	SDG 13.B.1 (Climate Action), SDG 6.1.1 (Clean 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	N/A
Source of data	Borehole Project Database
Value(s) of monitored parameter	VPA 45 - GS4422: 624,600 VPA 46 - GS4423: 624,600 VPA 47 - GS4518: 563,528 VPA 48 - GS4519: 607,250 VPA 54 - GS4797: 584,001 VPA 55 - GS4798: 552,077 VPA 84 - GS5244: 581,919 VPA 85 - GS5245: 597,881 VPA 134 - GS6235: 996,000 VPA 135 - GS6236: 1,029,896 VPA 136 - GS6237: 831,600
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 further reduction is applied through applying a cap of 300 users as per the methodology.
QA/QC procedures:	N/A
Purpose of data:	Calculation of emission reductions.
Additional comments:	-

Relevant SDG Indicator	SDG 13.B.1 (Climate Action), SDG 6.1.1 (Clean Water and Sanitation), SDG 3.9.1 (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%
Monitoring equipment	Usage Survey
Measuring/reading/recording frequency:	Annual (conducted 10/12/2020 – 16/12/2020)
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.B.1 (Climate Action), SDG 3.9.1 (Good Health and Well-Being)
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	7.5
Source of data	Water Consumption Field Test (WCFT)
Value(s) of monitored parameter	7.5
Monitoring equipment	WCFT Survey
Measuring/reading/recording frequency:	Biennial (conducted 18/12/2019 – 27/12/2019)
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:	-

Relevant SDG Indicator	SDG 13.B.1 (Climate Action), SDG 3.9.1 (Good Health and Well-Being)
Data/parameter:	$Q_{p, \text{cleanboil}, y}$
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:	Biennial (conducted 18/12/2019 – 27/12/2019)
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:	-
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Relevant SDG Indicator	SDG 13.B.1 (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:	Biennial (conducted 18/12/2019 – 27/12/2019)
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:	-

Relevant SDG Indicator	SDG 6.1.1 (Clean 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 Water Resource Department from the Ministry of Land, Water & Environment has certified each water supply as in line with WHO 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.B.1 (Climate Action)
Data/parameter:	LE _{p,y}
Unit	tCO ₂ e 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:	Biennial
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 5.4.1 (Gender Equality)
Data/parameter:	T _{p,y}
Unit	hours
Description	Project time spent collecting firewood per household per day (hours)
Measured/calculated/default	0
Source of data	Project Survey
Value(s) of monitored parameter	2.47
Monitoring equipment	Project Survey
Measuring/reading/recording frequency:	Annual (conducted 15/09/2020 – 19/09/2020)
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 5.4.1 (Gender Equality)
Data/parameter:	TR _y
Unit	hours
Description	Total reduction in time spent collecting firewood per day for project activity in year y (hours)
Measured/calculated/default	0
Source of data	Project Survey and baseline survey.
Value(s) of monitored parameter	-0.34

Monitoring equipment	Project Survey
Measuring/reading/recording frequency:	Annual
Calculation method (if applicable):	Assessed every year using Project Survey. Calculate the average amount of time spent collecting firewood in the project scenario and compare to the pre-project scenario
QA/QC procedures:	N/A
Purpose of data:	To quantify whether the project has contributed to a reduction in the amount of time spent collecting firewood compared to the pre-project scenario towards SDG 5 target.
Additional comments:	-

Relevant SDG Indicator	SDG 3.9.1 (Good Health and Well-Being)
Data/parameter:	HAPR,y
Unit	percentage
Description	Total reduction in Household Air Pollution for project activity in year y (%)
Measured/calculated/default	0
Source of data	Project Survey and baseline survey
Value(s) of monitored parameter	90%
Monitoring equipment	Project Survey
Measuring/reading/recording frequency:	Annual
Calculation method (if applicable):	Review the number of people using the borehole according to the household lists for each VPA and multiply by the usage rate to calculate the number of people now using a safe water source in order to calculate the amount of biomass that would have been burnt to purify the water in the baseline scenario. Deduct from this any individuals that still boil water in the project scenario.
QA/QC procedures:	N/A
Purpose of data:	To calculate the additional number of persons who have access to safe water in the project activity compared to the baseline scenario and to calculate from that the percentage decrease in biomass used to purify water through boiling for SDG 3 target.
Additional comments:	-

Relevant SDG Indicator	SDG 3.9.1 (Good Health and Well-Being)
Data/parameter:	Pp,y
Unit	Kg/person
Description	Quantity of fuel that is consumed in the project scenario p during year y (kg/person-day)
Measured/calculated/default	0
Source of data	Baseline and Project Surveys

Value(s) of monitored parameter	0
Monitoring equipment	Baseline Water Boiling Test
Measuring/reading/recording frequency:	Annual
Calculation method (if applicable):	Assessed every year using usage survey determining the number of people boiling water in the project scenario.
QA/QC procedures:	N/A
Purpose of data:	Calculation of SDG 3
Additional comments:	-

Relevant SDG Indicator	SDG 6.1.1 (Clean Water and Sanitation)
Data/parameter:	P _{access}
Unit	Number of people
Description	Number of additional persons having access to safe water in the project activity compared to the baseline scenario
Measured/calculated/default	0
Source of data	Project Survey and baseline survey
Value(s) of monitored parameter	VPA 45 - GS4422: 1,620 VPA 46 - GS4423: 1,620 VPA 47 - GS4518: 1,462 VPA 48 - GS4519: 1,575 VPA 54 - GS4797: 1,515 VPA 55 - GS4798: 1,432 VPA 84 - GS5244: 1,509 VPA 85 - GS5245: 1,551 VPA 134 - GS6235: 1,350 VPA 135 - GS6236: 1,336 VPA 136 - GS6237: 1,080
Monitoring equipment	Project Survey, Usage Survey and Household list
Measuring/reading/recording frequency:	Annual
Calculation method (if applicable):	Assessed every year using Project Survey, Usage Survey and Household list. Review the number of people using the borehole according to the household lists for each VPA and multiply by the usage rate to calculate the number of people now using a safe water source.
QA/QC procedures:	N/A
Purpose of data:	To calculate the additional number of persons having access to safe water in the project activity compared to the baseline scenario for SDG 6 target.
Additional comments:	-

Relevant SDG Indicator	SDG 6.1.1 (Clean Water and Sanitation)
Data/parameter:	P,y
Unit	Number of people
Description	Number of persons having access to safe water in the project activity
Measured/calculated/default	0
Source of data	Usage Survey and Household List
Value(s) of monitored parameter	VPA 45 - GS4422: 1800 VPA 46 - GS4423: 1800 VPA 47 - GS4518: 1,624 VPA 48 - GS4519: 1750 VPA 54 - GS4797: 1683 VPA 55 - GS4798: 1591 VPA 84 - GS5244: 1677 VPA 85 - GS5245: 1723 VPA 134 - GS6235: 1500 VPA 135 - GS6236: 1484 VPA 136 - GS6237: 1200
Monitoring equipment	Usage Survey and 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
Additional comments:	-

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

Data/Parameter	Value obtained in this monitoring period	Value obtained last monitoring period
N _{p,y}	VPA 45 - GS4422: 624,600	GS4422: 1,671,700
	VPA 46 - GS4423: 624,600	GS4423: 1,648,705
	VPA 47 - GS4518: 563,528	
	VPA 48 - GS4519: 607,250	GS4518: 1,321,300
	VPA 54 - GS4797: 584,001	GS4519: 1,450,510
	VPA 55 - GS4798: 552,077	GS4797: 1,435,910
	VPA 84 - GS5244: 581,919	GS4798: 1,432,990
	VPA 85 - GS5245: 597,881	
	VPA 134 - GS6235: 996,000	GS5244: 1,441,020
	VPA 135 - GS6236: 1,029,896	
	VPA 136 - GS6237: 831,600	GS5245: 1,565,120
		GS6235: 1,333,749
		GS6236 1,269,457

GS6237:1,482,774		
U _{p,y}	90%	100%
Q _{p,y}	7.5	7.5
Q _{p,cleanboil,y}	0	0
Q _{p,rawboil, y}	0	0
Quality of Treated Water	Pass	Pass
LE _{p,y}	0	0
T _{p,y}	2.47 (all VPAs)	GS4422
		GS4423
		GS4518
		GS4519
		GS4797
		GS4798
		GS5244
		GS5245
2.02		
GS6235-7: 1.76		
TR _y	-0.34 (all VPAs)	GS4422
		GS4423
		GS4518
		GS4519
		GS4797
		GS4798
		GS5244
		GS5245
0.11		
GS6235-7: 0.37		
HAPR _y	90%	100%
Pp _y	0	0
P _{access}	GS4422: 1,620	GS4422: 4,580
	GS4423: 1,620	GS4423: 4,517
	GS4518: 1,462	GS4518: 3,620
	GS4519: 1,575	GS4519: 3,974
	GS4797: 1,515	GS4797: 3,934
	GS4798: 1,432	GS4798: 3,926
	GS5244: 1,509	GS5244: 3,948

P,y	GS5245: 1,551	GS5245: 4,288
	GS6235: 1,350	GS6235: 3209
	GS6236: 1,336	GS6236: 3070
	GS6237: 1,080	GS6237: 3570
	GS4422: 1800	
	GS4423: 1800	GS4422: 4,580
	GS4518: 1,624	GS4423: 4,517
	GS4519: 1750	GS4518: 3,620
	GS4797: 1683	GS4519: 3,974
	GS4798: 1591	GS4797: 3,934
	GS5244: 1677	GS4798: 3,926
	GS5245: 1723	GS5244: 3,948
	GS6235: 1500	GS5245: 4,288
	GS6236: 1484	GS6235: 3209
	GS6237: 1200	GS6236: 3070
		GS6237: 3570

D.4. Implementation of sampling plan

For the surveys, households were selected at random from the household lists. First, the hand pumps were randomly selected for monitoring; secondly, households served by those hand pumps were randomly selected for surveying. This process is outlined fully in Section C under 'Cross Sampling'.

Sample sizes are chosen to meet the minimum requirements set in the methodology requirements.

Field staff are provided training prior to monitoring surveys taking place. This training has the following deliverables:

- Orientation on monitoring surveys
- Ensuring all field staff have the knowledge and skills required to carry out the monitoring surveys with confidence and to a high standard
- Understanding of the monitoring surveys and associated guidelines
- Familiarisation with carbon finance and Gold Standard principles and procedures during surveying

Water Consumption Field Test

The Water Consumption Field Test was carried out on a randomly selected sample of 44 households from the borehole user list. 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. Between 2-3 staff carried out the test over a period of four days (1 day preparation and 3 days measurement) following a similar method as the Kitchen Performance Test. 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 11.32 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).

Usage Survey

The usage survey establishes the proportion of beneficiaries that use the boreholes, a key parameter in the emission reduction calculations. Age-wise sampling was used to meet the methodological requirements of a minimum of 30 samples for each age group of technologies included within these VPAs. 40 households using 2-3 year aged technologies, 30 households using 3-4 year aged technologies and 40 households using 4-5 year old technologies were randomly selected. Therefore, the annual usage survey has been conducted using a sample size of 110.

Usage surveys in this monitoring period were carried out by field staff between 11/12/2020- 16/12/2020. The households that participated in the survey were randomly selected from the borehole user lists. An 90% user cap has been applied to the project in line with updated GS requirements.

The usage survey was updated following consultation and prior agreement with SustainCERT.

Project Survey

Project surveys were conducted by 2-3 staff between 15/09/2020 – 19/09/2020 on 110 randomly selected households from across the homogenous VPAs in Zoba Maekel 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.

SECTION E. CALCULATION OF SDG IMPACTS

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

Details of equations used to estimate baseline values for SDG outcomes appear below. Calculation is provided in the corresponding Emission Reductions calculations in the 'SDG Calculations' Sheet.

Outcomes for SDG 3 (Good Health and Wellbeing):

Providing access to safe water and removing the need to boil, reduces the amount of non-renewable biomass burned. Therefore, the amount of safe water provided can be taken as a proxy indicator of how these VPAs contribute towards the SDG 3 target of substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination.

The quantity of biomass used in the baseline is calculated as follows:

$$P_{b,y} = W_{b,y} * Q_{p,y}$$

$$3 = 0.4 * 7.5$$

Where:

$P_{b,y}$ Quantity of fuel that is consumed in the baseline scenario b during year y (kg/person-day)

- $W_{b,y}$ Quantity of wood fuel or fossil fuel required to boil 1 litre of water using technologies representative of baseline scenario b during year y
- $Q_{p,y}$ Quantity of safe water supplied in the project scenario p during year y , using the “zero or low” emissions’ clean water supply technology

Outcome for SDG 5 (Gender Equality):

The average time spent gathering firewood ($T_{b,y}$) per household in hours will be taken as a proxy contribution towards the SDG target. The baseline parameter for time spent collecting firewood per household per day is monitored in the baseline project survey.

$$T_{b,y} = 2.26 \text{ (Baseline survey)}$$

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. The baseline parameter for this SDG includes C_j which is the portion of users of the project technology j who in the baseline were already consuming safe water without boiling it (expressed as a percentage).

$$C_j = 0 \text{ (Baseline survey)}$$

Outcomes for 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:

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

$$\text{Example VPA, GS4422: } 3,428 = 1,873 * ((0.97 * 112) + 8.692) * 0.0156$$

See accompanying Emissions Reductions calculations for all VPAs.

Where:

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

$$\text{Example VPA, GS4422: } 1,873 = (1 - 0) * 1,017,433 * 0.0004 * (7.5 + 0)$$

See accompanying Emissions Reductions calculations for all VPAs.

Where:

$N_{j,y}$	Number of person days consuming water supplied by project scenario p through year y
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
$B_{b,y}$	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 the project year y, as per Baseline Water Boiling Test

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

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.

Outcomes for SDG 3 (Good Health and Wellbeing):

Providing access to safe water and removing the need to boil, reduces the amount of non-renewable biomass burned. Therefore, the amount of safe water provided can be taken as a proxy indicator of how these VPAs contribute towards the SDG 3 target of substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination. Calculations are as follows:

$$HAPR_y = ((P_{b,y} - P_{p,y}) / P_{b,y}) * U_{p,y}$$

All VPAs:

$$90\% = ((3.0 - 0) / 3.0) * 90\%$$

Where:

HAPR _y	Total reduction in Household Air Pollution for project activity in year (%)
P _{b,y}	Quantity of fuel that is consumed in the baseline scenario b during year (kg/person-day)
P _{p,y}	Quantity of fuel that is consumed in the project scenario p during year y (kg/person-day)
U _{p,y}	Usage rate in project scenario p during year y

$$P_{b,y} = W_{b,y} * Q_{p,y}$$

All VPAs:

$$3.00 = 0.4 * 7.5$$

Where:

W _{b,y}	Quantity of wood fuel or fossil fuel required to boil 1 litre of water using technologies representative of baseline scenario b during year y
Q _{p,y}	Quantity of safe water supplied in the project scenario p during year y, using the “zero or low” emissions’ clean water supply technology

$$P_{p,y} = W_{b,y} * Q_{p,\text{cleanboil},y}$$

$$0 = 0.4 * 0$$

Where:

W _{b,y}	Quantity of wood fuel or fossil fuel required to boil 1 litre of water using technologies representative of baseline scenario b during year y
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Q_{p,cleanboil,y}

Quantity of safe water boiled in the project scenario p during year y, after installation of the project technology

Outcome for SDG 5 (Gender Equality):

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

$$TR_y = T_{b,y} - T_{p,y}$$

All VPAs:

$$-0.34 = 2.13 - 2.47$$

Where:

TR_y Total reduction in time spent collecting firewood per household per day for project activity in year y (hours)

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

$T_{p,y}$ Project time spent collecting firewood per household per day (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:

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

$$GS4422: 1,620 = 1,800 * (1-0) * 0.9$$

$$GS4423: 1,620 = 1,800 * (1-0) * 0.9$$

$$GS4518: 1,462 = 1,624 * (1-0) * 0.9$$

$$GS4519: 1,575 = 1,750 * (1-0) * 0.9$$

$$GS4797: 1,515 = 1,683 * (1-0) * 0.9$$

$$GS4798: 1,432 = 1,591 * (1-0) * 0.9$$

$$GS5244: 1,509 = 1,677 * (1-0) * 0.9$$

$$GS5245: 1,551 = 1,723 * (1-0) * 0.9$$

$$GS6235: 1,350 = 1,500 * (1-0) * 0.9$$

$$GS6236: 1,336 = 1,484 * (1-0) * 0.9$$

$$GS6237: 1,080 = 1,200 * (1-0) * 0.9$$

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

Outcome 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 emissions reductions for the current monitoring period can be found in the corresponding Emission reductions excel document and section E.4. below.

E.3. Calculation of leakage

The project does not result in leakage and therefore the value is 0 as can be seen in the assessment on pg. 19– 20.

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

SDG	SDG Impact	Baseline estimate	Project estimate	Net benefit
SDG 3 Good Health and Well-being	Variation in household smoke (All VPAs)	0% reduction in exposure to Household Air Pollution due to boiling water	90% reduction in exposure to Household Air Pollution due to no longer boiling water	90% additional reduction in exposure to Household Air Pollution due to no longer boiling water
SDG 5 Gender Equality	Variation of time spent on firewood collection	2.13 hours spent collecting firewood per household per day	2.47 hours spent collecting firewood per household per day	0.34 increase in hours spent collecting firewood
SDG 6 Clean Water and Sanitation	People gain access to safe water	0 people with access to safe water	People with access to safe water: GS4422: 1800 GS4423: 1800 GS4518: 1,624 GS4519: 1750 GS4797: 1683 GS4798: 1591	Additional people with access to safe water: GS4422: 1,620 GS4423: 1,620 GS4518: 1,462 GS4519: 1,575 GS4797: 1,515 GS4798: 1,432

		GS5244: 1677	GS5244: 1,509
		GS5245: 1723	GS5245: 1,551
		GS6235: 1500	GS6235: 1,350
		GS6236: 1484	GS6236: 1,336
		GS6237: 1200	GS6237: 1,080
SDG 13	GS4422: 4,857		
Climate	tCO2-e		
Action	GS4423: 4,591		
	tCO2-e		
	GS4518: 3,738		
	tCO2-e		
	GS4519: 4,185		GS4422: 2,961 tCO2-e
	tCO2-e		GS4423: 2,961 tCO2-e
	GS4797: 3,890		GS4518: 2,671 tCO2-e
	tCO2-e		GS4519: 2,879 tCO2-e
	GS4798: 3,922		GS4797: 2,768 tCO2-e
	tCO2-e	All VPAs: 0 tCO2-e	GS4798: 2,617 tCO2-e
	GS5244: 4,177		GS5244: 2,757 tCO2-e
	tCO2-e		GS5245: 2,833 tCO2-e
	GS5245: 4,464		
	tCO2-e		GS6235: 4,928 tCO2-e
			GS6236: 4,882 tCO2-e
	GS6235: 8,799		GS6237: 3,943 tCO2-e
	tCO2-e		
	GS6236: 6,713		
	tCO2-e		
	GS6237: 6,540		
	tCO2-e		

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

SDG	Values estimated in ex ante calculation of approved PDD for this monitoring period	Actual values ¹ achieved during this monitoring period
SDG 3 Good Health and Well-being	80% reduction in exposure to Household Air Pollution due to boiling water GS6235-7: 50%	90% reduction in exposure to Household Air Pollution due to boiling water
SDG 5 Gender Equality	At least 0.5 hours per trip per household time saved	Time spent collecting firewood has increased during this monitoring period by 0.34 hours
SDG 6 Clean Water and Sanitation	GS4422: 4,798 GS4423: 4,618 GS4518: 3,956 GS4519: 4,095 GS4797: 4,432 GS4798: 4,409 GS5244: 4,121 GS5245: 4,312 GS6235-7: 10,867	Additional people with access to safe water: GS4422: 1,620 GS4423: 1,620 GS4518: 1,462 GS4519: 1,575 GS4797: 1,515 GS4798: 1,432 GS5244: 1,509 GS5245: 1,551 GS6235: 1,350 GS6236: 1,336 GS6237: 1,080

¹ Whenever emission reductions are capped, both the original and capped values used for calculations must be transparently reported. Use brackets to denote original values.

SDG 13 Climate Action	GS4422: 10,000 tCO2-e	GS4422: 2,961 tCO2-e
	GS4423: 10,000 tCO2-e	GS4423: 2,961 tCO2-e
	GS4518: 10,000 tCO2-e	GS4518: 2,671 tCO2-e
	GS4519: 10,000 tCO2-e	GS4519: 2,879 tCO2-e
	GS4797: 10,000 tCO2-e	GS4797: 2,768 tCO2-e
	GS4798: 10,000 tCO2-e	GS4798: 2,617 tCO2-e
	GS5244: 10,000 tCO2-e	GS5244: 2,757 tCO2-e
	GS5245: 10,000 tCO2-e	GS5245: 2,833 tCO2-e
	GS6235: 10,000 tCO2-e	GS6235: 4,928 tCO2-e
	GS6236: 10,000 tCO2-e	GS6236: 4,882 tCO2-e
	GS6237: 10,000 tCO2-e	GS6237: 3,943 tCO2-e

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

All VPAs were design certified prior to transition to Gold Standard for the Global Goals, except GS6235-7. All ex-ante estimates of SDG outcomes are derived from the relevant transition annex for these earlier projects. With the exception of SDG5, all other targets were either met or exceeded and report positive SDG impacts.

For SDG 3, in the project scenario there was a 90% reduction in exposure to Household Air pollution arising from smoke emitted from boiling water. This is due to no one boiling the borehole water in the project because it is safe for human consumption as determined by annual water quality tests. This not only frees up time spent previously boiling water but also reduces the negative health implications of smoke related illnesses which are disproportionally suffered by women and children. This impacts positively towards SDG 3 good health and wellbeing.

Time spent collecting firewood increased by 0.34 hours (20.4mins). This is a decrease on the ex-ante estimate of 0.5 hours' time saving. It may have not met the target due to travelling further to collect wood due to local deforestation and wood resource depletion. However, the baseline project survey did not measure the number of trips made per week to collect firewood, comparing number of trips would have given a greater insight into the time spent per week on collecting firewood. In addition,

question 38 of the project survey asks, “has the borehole project saved you time?” with 100% of respondents answering yes.

All project participants now have access to safe water in the project. In the baseline, all participants collected water from unsafe sources such as rivers, streams and open wells, and had to boil their water in order to make it safe to drink. We have applied the GS 90% usage cap, of users now collecting water from a rehabilitated borehole, no longer requiring them to boil water for purification and positively contributing towards SDG 6 clean water and sanitation.

For SDG 13, the ex-ante estimation was 10,000 emission reductions per year per VPA. However, the number of users per borehole has been capped at 300 users as per methodology requirements. Also the Wby has been capped at 0.0004 hence there are less than 10,000 tCO₂-e/y per VPA. Although this does not meet the target of 10,000 tCO₂-e/y, 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 climate action.

SECTION F. SAFEGUARDS REPORTING

Safeguarding principles	Assessment questions	Assessment of relevance to the project (Yes/potentially/no)	Justification	Monitoring
1 Human Rights	a. The Project Developer and the Project shall respect internationally proclaimed human rights and shall not be complicit in violence or human rights abuses of any kind as defined in the Universal Declaration of Human Rights.	No	The project will adhere to all human rights requirements including respecting internationally proclaimed human rights and Universal Declaration of Human Rights and will not discriminate in any way.	During all trainings, it will be emphasised that project beneficiaries should support vulnerable or less mobile community members to access water

	b. The Project shall not discriminate with regards to participation and inclusion.			
2 Gender Equality and Women's Rights	The Project shall not directly or indirectly reinforce gender-based discrimination and shall not lead to/contribute to adverse impacts on gender equality and/or the situation of women. Specifically, this shall include (not exhaustive): (a) Sexual harassment and/or any forms of violence against women – address the multiple risks of gender-based violence, including sexual exploitation or human trafficking. (b) Slavery, imprisonment, physical and mental drudgery, punishment or coercion of women and girls. (c) Restriction of women's rights or access to resources (natural or economic).	No No No	The burden on the whole community of travelling far to collect water and gather firewood for water purification will be reduced. This will also mitigate the social isolation of spending a long time collecting these resources The project will decrease the drudgery by reducing time spent on water and firewood collection The project will increase women's access to resources such as water by	SDG 5 Tp,y TR,y The time spent collecting wood fuel is monitored in the project survey. The project aims to reduce the burden on the whole community of traveling far to collect wood and in particular to women who perform the majority of unpaid domestic work. During this MP the impact to SDG5 was negative probably due travelling further to collect wood due to local deforestation and wood resource depletion.

			making safe water available in the community. The project will increase women's ability to use, develop and protect natural resources by making safe water more readily available and enabling women to participate in project decision-making.	
	(d) Recognise women's ownership rights regardless of marital status – adopt project measures where possible to support to women's access to inherit and own land, homes, and other assets or natural resources. Projects shall apply the principles of non-discrimination, equal treatment, and equal pay for equal work, specifically:	No	The project will decrease the workload of women in collecting water and firewood, thereby allowing more time to engage in other activities.	
	(a) Where appropriate for the implementation of a Project, paid, volunteer work or community contributions will be organised to provide the conditions for equitable participation of men and women in the identified tasks/activities.	Yes	Equal participation of women and men in decision making will be encouraged by promoting their equal membership on water point committees (WPCs). These WPCs will be trained to facilitate the participation of members depending on their specific circumstances. They	

			will also assist all communities members to provide feedback on the project, regardless of their situation.	
	(b) Introduce conditions that ensure the participation of women or men in Project activities and benefits based on pregnancy, maternity/paternity leave, or marital status.	Yes	The project aims to benefit the whole community equally and women's equal participation in the LSC and water point committees is encouraged	
	(c) Ensure that these conditions do not limit the access of women or men, as the case may be, to Project participation and benefits.	Yes	The project will encourage equal participation of men and women.	
	3.2.3 The Project shall refer to the country's national gender strategy or equivalent national commitment to aid in assessing gender risks.	Yes	The analysis of the project is in line with the country gender strategy is in section A.8. of the PDD	
3 Community Health, Safety and Working Conditions	The Project shall avoid community exposure to increased health risks and shall not adversely affect the health of the workers and the community.	Yes	The project will reduce the community exposure to water borne illness through the provision of a safe water source, and will reduce the risk of household air pollution by removing the need for households to boil water for purification.	SDG 3, 6 and 13 Np,y Qp,y Qp,cleanboil,y Quality of Treated Water HAPR,y Paccess P,y Pp,y Incidences of water borne illnesses are

				monitored through the annual Monitoring Project Survey. A WASH programme is carried out by the project including WASH training at the beginning of the project, as well as subsequent WASH follow-up training
4.1 Sites of Cultural and Historical Heritage	Does the Project Area include sites, structures, or objects with historical, cultural, artistic, traditional or religious values or intangible forms of culture (e.g., knowledge, innovations, or practices)?	No	The project area does not include sites or structures of historic and cultural value. Project activities do not compromise historic, cultural or religious practices.	
4.2 Forced Eviction and Displacement	Does the Project require or cause the physical or economic relocation of peoples (temporary or permanent, full or partial)?	No	The project will not impact the physical or economic relocation of peoples. The focus of the project is rehabilitating and installing water point infrastructure only.	
4.3 Land Tenure and Other Rights	Does the Project require any change to land tenure arrangements and/or other rights?	No	The project will not impact on land tenure arrangements or rights.	
4.4 Indigenous Peoples	Are indigenous peoples present in or within the area of influence of the Project and/or is the Project located on land/territory claimed by indigenous peoples?	No	The project will take place on land owned either by the county government or by local people for which their permission will first be sought.	

5 Corruption	The Project shall not involve, be complicit in or inadvertently contribute to or reinforce corruption or corrupt Projects.	No	The project shall ensure that all forms of corruption are avoided. Project beneficiaries are able to contact the project developer and implementer through the continuous grievance mechanism to report any form of corruption.	
6.1 Labour Rights	The Project Developer shall ensure that there is no forced labour and that all employment is in compliance with national labour and occupational health and safety laws, with obligations under international law, and consistency with the principles and standards embodied in the International Labour Organization (ILO) fundamental conventions. Where these are contradictory and a breach of one or other cannot be avoided, then guidance shall be sought from Gold Standard. Child labour, as defined by the ILO Minimum Age convention is not allowed. The Project Developer shall use adequate and verifiable mechanisms for age verification in recruitment procedures. Exceptions are children	No No	The project will adhere to labour laws and requirements The projects will not use child labour	

	for work on their families' property as long as: (a) Their compulsory schooling (minimum of 6 schooling years) is not hindered, AND (b) The tasks they perform do not harm their physical and mental development, AND (c) The opinions and recommendations of an Expert Stakeholder shall be sought and demonstrated as being included in the project design.			
6.2 Negative Economic Consequences	Does the project cause negative economic consequences during and after project implementation, e.g., for vulnerable and marginalised social groups in targeted communities?	Yes	The project is not expected to have any negative economic impacts or cause any risks.	To ensure long term sustainability of the water points, and avoid unexpected breakdowns and spending, training was conducted at the beginning of the project on conducting minor maintenance. The project is expected to benefit all members of the community
7.1 Emissions	Will the Project increase greenhouse gas emissions over the Baseline Scenario?	Yes	The project will reduce greenhouse gas emissions compared to the baseline scenario.	SDG 13 The ERs are monitored during the MP. During this MP a large number of emission reductions were achieved
7.2 Energy Supply	Will the Project use energy from a local grid or power supply (i.e., not connected to a national or regional grid) or fuel resource (such as wood,	No	Only hand pumped boreholes that use no electricity are included in the project.	

	biomass) that provides for other local users?		The project will reduce fuel use due to reducing the need for water purification by boiling	
8.1 Impact on natural water patterns/flows	Will the Project affect the natural or pre-existing pattern of watercourses, ground-water and/or the watershed(s) such as high seasonal flow variability, flooding potential, lack of aquatic connectivity or water scarcity?	No	There will be no significant change in the volume of water consumed by the households.	
8.2 Erosion and/or water body instability	Could the Project directly or indirectly cause additional erosion and/or water body instability or disrupt the natural pattern of erosion?	No	The water is taken from boreholes at household usage levels. Therefore it is extremely unlikely that there will be additional erosion and/or water body instability or disruption of the natural pattern of erosion.	
9.1 Landscape modification and soil	Does the Project involve the use of land and soil for production of crops or other products?	No	No crops or other products will be produced in the project.	
9.2 Vulnerability to Natural Disaster	Will the Project be susceptible to or lead to increased vulnerability to wind, earthquakes, subsidence, landslides, erosion, flooding, drought or other extreme climatic conditions?	No	There will be no impact by the project to natural disasters.	
9.3 Genetic Resources	Could the Project be negatively impacted by the use of genetically modified organisms or GMOs (e.g., contamination, collection	No	No GMOs will be used in the project and the boreholes would not be affected by GMOs	

	and/or harvesting, commercial development)?		as they are all protected.	
9.4 Release of pollutants	Could the Project potentially result in the release of pollutants to the environment?	No	As safe ground water is used, there is no risk or releasing pollutants to the environment.	
9.5 Hazardous and Non-hazardous Waste	Will the Project involve the manufacture, trade, release, and/ or use of hazardous and non-hazardous chemicals and/or materials?	No	The project does not deal with hazardous or non-hazardous chemicals and/or materials.	
9.6 Pesticides and fertilizers	Will the Project involve the application of pesticides and/or fertilisers?	No	No pesticides and/or fertilisers will be used in the project.	
9.7 Harvesting of forests	Will the Project involve the harvesting of forests?	No	As the project reduces the consumption of firewood, there is a positive impact on forests.	
9.8 Food	Does the Project modify the quantity or nutritional quality of food available such as through crop regime alteration or export or economic incentives?	No	The project has no impact on the quantity or nutritional quality of food.	
9.9 Animal Husbandry	Will the Project involve animal husbandry?	No	The project will not involve animal husbandry.	
9.10 High Conservation Value Areas and Critical Habitats	Does the Project physically affect or alter largely intact or High Conservation Value (HCV) ecosystems, critical habitats, landscapes, key biodiversity areas or sites identified?	No	The project rehabilitates water points and decreases the consumption of firewood, having a positive impact on conserving forest ecosystems.	
9.11 Endangered Species	Are there any endangered species identified as potentially being present within the Project	No	The project is not envisaged to have any impact on their habitat as it only	

	boundary (including those that may route through the area)?		affects borehole infrastructure.	
	Does the Project potentially impact other areas where endangered species may be present through transboundary affects?	No	The project only impacts borehole infrastructure and does not impact other areas where endangered species are present.	

SECTION G. STAKEHOLDER INPUTS AND LEGAL DISPUTES

G.1. List all Inputs and Grievances which have been received via the Continuous Input and Grievance Mechanism together with their respective responses/mitigations.

N/A

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

N/A

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

N/A

Revision History

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