

TEMPLATE

MONITORING REPORT

PUBLICATION DATE **14.10.2020**

VERSION **v. 1.1**

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

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KEY PROJECT INFORMATION

This template has been revised to aid a consistent interpretation and to better support project developers submitting documentation for certification. Please read the accompanying guide to understand how to complete this template accurately.

[**TEMPLATE GUIDE Monitoring Report v. 1.1**](#)

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Key Project Information

GS ID (s) of Project (s)	GS5125
Title of the project (s) covered by monitoring report	Eritrea Community Boreholes
Version number of the PDD/VPA-DD (s) applicable to this monitoring report	13
Version number of the monitoring report	6
Completion date of the monitoring report	27/07/2026
Date of project design certification	08/12/2017
Date of Last Annual Report	13/12/2024
Monitoring period number	CP2 MP5
Duration of this monitoring period	22/09/2023 – 31/12/2024
Project Representative	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	Emission reductions from Safe Drinking Water Supply v1.0

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
1 No Poverty	Proportion of population living in households with access to basic services (water treatment)	100%	Percentage
5 Gender Equality	Total reduction time spent collecting water for project activity in year y	46%	Percentage
7 Affordable and clean energy	Total No of households with access to Safe Water from a clean treatment technology	35,278	Number of households
13 Climate Action (mandatory)	Total project emissions reductions	59,471	tCO ₂ e
15 Life on Land	Total non-renewable firewood saved in the project scenario	30,915	Tonnes/year

Table 2 – Product Vintages

		Amount Achieved
Start Dates	End Dates	VERs tCO ₂ e (uncapped value)
22/09/2023	31/12/2023	10,574
01/01/2024	31/12/2024	48,897

SECTION A. DESCRIPTION OF PROJECT

A.1. General description of project

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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. Eritrea 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 many challenges. As the women bear the burden of producing food as well as providing care for their families, including travelling to collect firewood and water. As a result, they cultivate less land and have fewer assets.

Many existing boreholes have fallen into disrepair because maintenance programmes have been poorly managed or proven too expensive. 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.

CO2balance UK Ltd will be working in partnership with the Irish NGO Vita, that operates in Eritrea. CO2balance UK Ltd and Vita will maintain and potentially rehabilitate/install 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.

The project is funded by marketing the anticipated carbon credits from the wood savings to ethical investors, so borehole owners must agree to transfer the emissions reductions over to Vita-CO2balance UK Ltd in return for them supplying the work to renovate the boreholes. 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.

Zoba Debub and Zoba Anseba areas targeted are largely rural districts 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.

The project will also ensure that the quality of the water delivered by the maintained boreholes is fit for human consumption for the entire length of the project.

Monitoring data collected during the rehabilitation and operation of the boreholes will be captured in an electronic data management system, or monitoring database. From this data, the emissions reductions of the project will be determined. This system will be available for review during the validation and verification.

The original project rehabilitated 120 boreholes between the 21st September 2016 and 17th February 2018. An additional 43 boreholes were rehabilitated from 5th December 2018 and 4th June 2020 which have been included within the project during MP2.

Below lists the boreholes included in GS5125:

BH ID	Village	Latitude	Longitude	Date	Use
ZD001	Adikenebet	14.95846	38.80592	21/09/2016	Domestic
ZD002	Adigawl	14.9344	38.73663	21/09/2016	Domestic
ZD003	Adikemene	14.89551	38.77609	22/09/2016	Domestic
ZD004	Gezagobo	14.95327	38.79260	22/09/2016	Domestic
ZD005	Gomero	14.93860	38.73987	22/09/2016	Domestic
ZD006	Ginebale	14.95942	38.81550	22/09/2016	Domestic
ZD007	Embezareb	14.87513	38.86061	23/09/2016	Domestic
ZD008	Adigahad	14.84689	38.79607	23/09/2016	Domestic
ZD009	Newihziban	14.87586	38.93856	24/09/2016	Domestic
ZD010	Kudochira	14.91644	38.88125	24/09/2016	Domestic
ZD011	Mihram ghedo	14.78323	38.93407	25/09/2016	Domestic
ZD012	Suri	14.80887	38.95410	25/09/2016	Domestic
ZD013	OO	14.76435	38.95799	25/09/2016	Domestic
ZD014	Adiberak	14.85030	38.79469	29/09/2016	Domestic
ZD015	Adi bari	14.88087	38.82016	30/09/2016	Domestic
ZD016	Adihare	14.89895	38.79633	06/10/2016	Domestic
ZD017	Zwab	15.02199	38.72949	03/10/2016	Domestic

ZD018	Gerteti	15.01203	38.7316	04/10/2016	Domestic
ZD019	Semasem	15.00521	38.73927	04/10/2016	Domestic
ZD020	Adibezehans-1	15.06190	38.7653	05/10/2016	Domestic
ZD021	Adibezehans-2	15.06300	38.76763	05/10/2016	Domestic
ZD023	Adikunial	15.06345	38.73515	05/10/2016	Domestic
ZD024	Adibelih	15.08926	38.7211	06/10/2016	Domestic
ZD025	Adifelesti-1	15.13354	38.6978	06/10/2016	Domestic
ZD026	Adifelesti-2	15.13391	38.70463	06/10/2016	Domestic
ZD027	Adibaro-1	15.13892	38.78442	09/10/2016	Domestic
ZD028	Adibaro-2	15.14558	38.79181	09/10/2016	Domestic
ZD029	Temajela	15.14184	38.79764	09/10/2016	Domestic
ZD030	Qaqbda	15.15652	38.77307	10/10/2016	Domestic
ZD031	Adi Tala	15.13893	38.73741	10/10/2016	Domestic
ZD032	Adiguari	15.12992	38.77675	12/10/2016	Domestic
ZD033	Adisherefeto	15.17150	38.83439	12/10/2016	Domestic
ZD034	Aditsunay	15.18861	38.82877	12/10/2016	Domestic
ZD035	Adibana	14.97298	38.76791	14/10/2016	Domestic
ZD036	Amadr	15.09892	38.75658	15/10/2016	Domestic
ZD053	Adi embeyto	14.84922	39.35263	29/10/2016	Domestic
ZD054	Adimaelewy	14.81727	39.36509	29/10/2016	Domestic
ZD055	May-tsaeda	14.82083	39.31345	30/10/2016	Domestic
ZD056	Tokondae	14.82422	39.38910	31/10/2016	Domestic
ZD058	Sibiraso	14.88375	39.39803	01/11/2016	Domestic
ZD059	Adiighila	14.78838	39.42682	01/11/2016	Domestic
ZD060	Cambojubuti	14.84187	39.37044	02/11/2016	Domestic
ZD062	Adi hashmele	14.86785	39.37187	03/11/2016	Domestic
ZD063	Karibosa-Debhina	14.91742	39.42044	04/11/2016	Domestic
ZD064	Mendefera	14.90230	39.32728	15/11/2016	Domestic
ZD065	Sanako	14.76543	39.44693	17/11/2016	Domestic
ZD066	Semdi	14.97602	39.33442	17/11/2016	Domestic
ZD067	Indihish	14.91240	39.28647	17/11/2016	Domestic
ZD068	Brkito	14.94416	39.25391	18/11/2016	Domestic
ZD069	Adiawhilailai	14.98310	39.19379	19/11/2016	Domestic
ZD070	Digsa	14.98897	39.22661	19/11/2016	Domestic
ZD071	Haddishadihalai	15.01517	39.30918	20/11/2016	Domestic
ZD072	Adihalai	14.99948	39.32912	20/11/2016	Domestic
ZD073	Adidigraleb	15.02538	39.20659	21/11/2016	Domestic
ZD074	Maimogdom	15.05489	39.18575	21/11/2016	Domestic
ZD075	Akrur	15.08094	39.23396	22/11/2016	Domestic
ZD076	Tikul	15.02497	39.02888	25/11/2016	Domestic
ZD077	Adiharm	15.04569	39.06461	26/11/2016	Domestic
ZD078	Adifekaih	15.0243	38.91315	27/11/2016	Domestic
ZD079	Kilawta	14.99217	39.00127	28/11/2016	Domestic
ZD080	Damba 1	15.14852	38.96456	30/11/2016	Domestic
ZD081	Damba 2	15.14882	38.96376	30/11/2016	Domestic
ZD082	Dekinazo	15.12232	39.01662	01/12/2016	Domestic
ZD083	Adroso	15.17875	39.14310	02/12/2016	Domestic
ZD084	Wikirti	15.14277	39.00569	03/12/2016	Domestic

ZD085	Adibahalay	14.72337	38.68292	17/12/2016	Domestic
ZD086	Adishemkele	14.69768	38.74014	18/12/2016	Domestic
ZD087	Aditereke	14.71723	38.73045	18/12/2016	Domestic
ZD088	Adihalewat	14.68880	38.72905	19/12/2016	Domestic
ZD089	Adihirwaghedena	14.73402	38.79483	19/12/2016	Domestic
ZD090	Hidad	14.80916	38.73266	20/12/2016	Domestic
ZD091	Adiblad	14.83071	38.74564	20/12/2016	Domestic
ZD092	Adisihalab	14.82540	38.74596	20/12/2016	Domestic
ZD093	Adikodo	14.79707	38.86354	21/12/2016	Domestic
ZD094	Adiigrimekel	14.81651	38.81265	21/12/2016	Domestic
ZD095	Adiunabuta	14.72413	38.85771	22/12/2016	Domestic
ZD096	Adiwuhi	14.72414	38.85713	23/12/2016	Domestic
ZD097	Adiandel	14.70865	38.85640	23/12/2016	Domestic
ZD098	Endamariam	14.72058	38.86188	24/12/2016	Domestic
ZD099	Adibardi 1	14.81789	38.84883	27/12/2016	Domestic
ZD100	Adibardi 2	14.81883	38.84775	27/12/2016	Domestic
ZD153	Shekuano	14.95847	38.8059	27/03/2017	Domestic
ZD154	Adighered 1	15.0828	38.78359	28/03/2017	Domestic
ZD155	Adighered 2	15.08276	38.78351	28/03/2017	Domestic
ZD156	Asheran-adigumani	14.77725	39.25689	29/03/2017	Domestic
ZD159	Zebandebri	14.74743	38.54052	05/05/2017	Domestic
ZD160	Adigoned	14.78676	38.53708	06/05/2017	Domestic
ZD161	Adihilae	14.78641	38.53601	07/05/2017	Domestic
ZD163	Adimomesh	14.97571	38.5776	08/05/2017	Domestic
ZD166	Adigulti	15.00143	38.58742	10/05/2017	Domestic
ZD168	Adiembagodad	14.96862	38.63345	11/05/2017	Domestic
ZD169	Aditsenfa	14.95088	38.61882	12/05/2017	Domestic
ZD170	Adibeza	14.95214	38.62051	12/05/2017	Domestic
ZD171	Adimaighuda	14.9148	38.67809	13/05/2017	Domestic
ZD172	Adimaicuak	14.92417	38.66984	13/05/2017	Domestic
ZD173	Adigherot	14.93025	38.50359	14/05/2017	Domestic
ZD174	Adigandefer	14.90651	38.69639	14/05/2017	Domestic
ZD175	Adiagama	14.95188	38.68891	15/05/2017	Domestic
ZD177	Adisagla	14.86244	38.65874	15/05/2017	Domestic
ZD179	Adimglab	14.86232	38.65808	16/05/2017	Domestic
ZD181	Shekawedibsrat	14.89386	38.76452	05/10/2017	Domestic
ZD182	Adidebereberhan	14.66628	38.81431	09/12/2017	Domestic
ZD184	Adichemai	14.63874	38.87478	11/12/2017	Domestic
ZD185	Adihaber	14.59824	38.86842	12/12/2017	Domestic
ZD186	Aikebetsu	14.83870	38.62535	16/12/2017	Domestic
ZD187	Adigaul	14.93045	38.73216	19/12/2017	Domestic
ZD188	Adigaba	14.88051	38.48464	30/12/2017	Domestic
ZD193	Adibohununa	14.77859	38.64560	01/01/2018	Domestic
ZD194	Adijemel	14.80557	38.64960	01/01/2018	Domestic
ZD195	Ilaandom	14.92527	38.56415	04/01/2018	Domestic
ZD196	Adideraghudi	14.95156	39.33902	21/01/2018	Domestic
ZD197	Maighoduf	14.74524	39.38937	24/01/2018	Domestic
ZD198	Adiaderho	14.53691	39.45740	26/01/2018	Domestic

ZD200	Barkenaha	14.56308	39.42921	28/01/2018	Domestic
ZD202	Adimesihal	14.61719	39.37820	29/01/2018	Domestic
ZD203	Adiforto	14.60691	39.36358	30/01/2018	Domestic
ZD205	Adihiguana	14.64251	39.44874	08/02/2018	Domestic
ZD206	Adimbark	14.57720	39.46685	10/02/2018	Domestic
ZD208	Adiahiz	14.53712	39.31182	17/02/2018	Domestic
ZD209	Adirokoyto	14.61719	39.37820	29/01/2018	Domestic
ZD227	Tisha	14.72614	39.44954	02/03/2020	Domestic
ZD228	Egriabew	14.74965	39.40397	03/03/2020	Domestic
ZD229	Karibosa	14.72301	39.40951	04/03/2020	Domestic
ZD230	Adital	14.69526	39.47869	05/03/2020	Domestic
ZD231	Hiret	14.81282	39.02266	06/03/2020	Domestic
ZD232	Adiageb	14.72552	39.44076	07/03/2020	Domestic
ZD233	Berkito	14.94973	39.26484	02/03/2020	Domestic
ZD234	Astah	14.94287	39.17035	03/03/2020	Domestic
ZD235	Zebanageb	15.14	38.985	04/03/2020	Domestic
ZD236	Adizemati	14.71763	38.85415	10/03/2020	Domestic
ZD237	Adichelku	14.72514	38.73888	11/03/2020	Domestic
ZD238	Kudozebo	14.735	38.87	12/03/2020	Domestic
ZD239	Adishimadi	14.67691	38.72894	10/03/2020	Domestic
ZD240	Dandereghenet	14.8718	38.77391	11/03/2020	Domestic
ZD241	Adikotoyo	14.61445	38.83023	02/03/2020	Domestic
ZD242	Ghezakenen	14.5647	38.8133	03/03/2020	Domestic
ZD243	Adewti	14.83104	39.25385	12/03/2020	Domestic
ZD244	Adiarbaet	14.73195	39.03443	13/03/2020	Domestic
ZD245	Tekelabi	14.8969	39.1308	14/03/2020	Domestic
ZD246	Mebered	14.85851	39.0596	16/03/2020	Domestic
ZD247	Gheniseba	14.83625	39.08256	17/03/2020	Domestic
ZD248	Adilogo	15.0969	38.8019	20/03/2020	Domestic
ZD249	Zerben	15.1231	38.7981	21/03/2020	Domestic
ZD250	Adiatsida	14.5247	38.6275	23/03/2020	Domestic
ZD251	Berikhutsa	14.71098	39.10346	24/03/2020	Domestic
ZD252	Meserar	14.65715	39.20754	25/03/2020	Domestic
ZD253	Aditsanef	14.9509	38.61891	26/03/2020	Domestic
ZD254	Adibal	14.81449	38.45672	02/06/2020	Domestic
ZD255	Aditeme	14.65076	38.85764	04/06/2020	Domestic
ZD212	Meareda	14.64905	39.44918	05/12/2018	Domestic
ZD213	Adibaekel	14.65016	39.45500	07/12/2018	Domestic
ZD214	Betgheriel	15.12129	38.67368	10/12/2018	Domestic
ZD216	Mefalso	14.81800	38.83761	05/03/2019	Domestic
ZD217	Gadien	15.18048	39.04226	25/03/2019	Domestic
ZD218	Adiwatot	15.06024	38.85283	01/04/2019	Domestic
ZD219	Adiabraham	14.75284	38.75705	02/04/2019	Domestic
ZD220	Adisheretay	14.56879	38.67112	12/04/2019	Domestic
ZD221	Edagadehina	15.07924	38.74953	16/04/2019	Domestic
ZD222	Kesadaguruf	14.65023	39.47472	20/04/2019	Domestic
ZD223	Beletsodebrekeih	15.19030	39.08193	12/05/2019	Domestic
ZD224	Saloda 2	14.64662	39.46494	16/05/2019	Domestic

ZD225	Bambeko	15.18860	38.69780	17/05/2019	Domestic
ZD226	Kesaddaero	14.99976	38.75026	20/05/2019	Domestic
ZD037	Adiembahsea	14.60234	39.39475	20/10/2016	Domestic
ZD050	Adiferas-Maygoduf	14.73116	39.39709	27/10/2016	Domestic
ZD103	Adideraghudi	14.52234	38.80716	27/12/2016	Domestic
ZD114	Adenfi	14.63129	38.79645	29/01/2017	Domestic
ZD138	Adiraghenay	14.52966	38.42865	18/03/2017	Domestic
ZD038	Adighubo	14.58613	39.39523	20/10/2016	Domestic
ZD039	Kesadburka	14.60510	39.37565	21/10/2016	Domestic
ZD040	Adichoka	14.57931	39.38140	21/10/2016	Domestic
ZD045	Adimenekseyto	14.53146	39.48664	24/10/2016	Domestic
ZD101	Endagherghish	14.55700	38.75309	25/12/2016	Domestic
ZD042	Adimighiderbena	14.60044	39.46406	22/10/2016	Domestic
ZD044	Adimesraha	14.61916	39.45731	23/10/2016	Domestic
ZD104	Adiguwur	14.52174	38.78847	27/12/2016	Domestic
ZD105	Adibaresom	14.53625	38.71119	28/12/2016	Domestic
ZD110	Kusmodengolo	14.70787	38.84775	24/01/2017	Domestic
ZD043	Adiqelqelmelasa	14.61063	39.47063	22/10/2016	Domestic
ZD049	Adiareghen	14.55251	39.34296	26/10/2016	Domestic
ZD102	Himbar	14.56032	38.75577	25/12/2016	Domestic
ZD111	Adihdug	14.58293	38.85257	25/01/2017	Domestic
ZD120	Adighodo	14.77771	39.12907	18/01/2017	Domestic
ZD046	Adigolo-Imbasoyra	14.72127	39.50390	25/10/2016	Domestic
ZD051	Adikaribosa-maygoduf	14.72284	39.40948	27/10/2016	Domestic
ZD106	Adiguer	14.55558	38.77398	28/12/2016	Domestic
ZD145	Mekabirtsabla	14.53337	38.50480	22/03/2017	Domestic
ZD148	Adihawya	14.55404	38.54628	23/03/2017	Domestic
ZD041	Dibdib	14.63570	39.41110	21/10/2016	Domestic
ZD048	Ambesetegheleba	14.52690	39.36560	26/10/2016	Domestic
ZD109	Adishertai	14.56879	38.67112	04/01/2017	Domestic
ZD123	Haddishadihalai	15.01517	39.30918	27/02/2017	Domestic
ZD151	Adishimandit	14.53306	38.55421	24/03/2017	Domestic
ZD162	Adisemharo	14.86439	38.54125	07/05/2017	Domestic
ZD165	Adibelesey	15.02274	38.57111	10/05/2017	Domestic
ZD178	Adilalayadi	14.86234	38.65809	16/05/2017	Domestic
ZD183	Maihans	14.63533	38.79704	10/12/2017	Domestic
ZD191	Adiasmeru	14.97780	38.58642	29/12/2017	Domestic
ZD199	Adiembahagoda	14.54391	39.44573	27/01/2018	Domestic
ZD204	Embamedhan	14.55520	39.37903	31/01/2018	Domestic
ZD158	Adinefas	14.86579	38.42416	04/05/2017	Domestic
ZD167	Aditsetserat	15.02267	38.57102	11/05/2017	Domestic
ZD180	Areza	14.92754	38.56274	17/05/2017	Domestic
ZD189	Dekiwerasi	14.94946	38.61462	27/12/2017	Domestic
ZD190	Adiwesek	14.81237	38.41819	28/12/2017	Domestic
ZD207	Adinedwe	14.56684	39.47941	11/02/2018	Domestic
ZD157	Adinefas-Maiaye	14.866 80	38.40997	04/05/2017	Domestic
ZD164	Adimomosh-sebea	15.00224	38.57816	09/05/2017	Domestic

ZD176	Adikushet	14.94407	38.66774	15/05/2017	Domestic
ZD192	Adighurdi	14.93222	38.58708	31/12/2017	Domestic
ZD201	Adiembakom	14.53887	39.43643	28/01/2018	Domestic
ZD211	Damba	14.61719	39.37820	02/03/2018	Domestic
ZD052	Saloda	14.64671	39.46481	28/10/2016	Domestic
ZD112	Betghebriel	14.61149	38.87411	26/01/2017	Domestic
ZD127	Dekilefey	14.75073	39.2851	19/02/2017	Domestic
ZD129	Arazn	14.63906	39.25501	22/02/2017	Domestic
ZD135	Adikolakul	14.54717	38.49318	16/03/2017	Domestic
ZD140	Maighorzo 1	14.51071	38.42885	19/03/2017	Domestic
ZD108	Kuhulizbi	14.51105	38.63651	03/01/2017	Domestic
ZD119	Adimesghan	14.77644	39.15696	18/01/2017	Domestic
ZD139	Adihans	14.53787	38.45353	19/03/2017	Domestic
ZD142	Adihidug	14.54723	38.51401	20/03/2017	Domestic
ZD152	Aditsekemete	14.52733	38.55903	25/03/2017	Domestic
ZD115	Dembesilase	14.63725	38.81214	30/01/2017	Domestic
ZD117	Adighad 2	14.79131	39.17464	17/01/2017	Domestic
ZD118	Adighad 1	14.79244	39.17344	17/01/2017	Domestic
ZD132	Aditelae	14.75135	39.18513	24/02/2017	Domestic
ZD137	Adiserenta	14.54437	38.49462	17/03/2017	Domestic
ZD146	Meztaeshenfae	14.52633	38.49049	22/03/2017	Domestic
ZD121	Adizebe	14.75382	39.13788	26/02/2017	Domestic
ZD122	Adihabenat	14.79504	39.08945	27/02/2017	Domestic
ZD130	Wulusho 1	14.63958	39.23034	23/02/2017	Domestic
ZD134	Adimesihal	14.61430	39.37714	06/03/2017	Domestic
ZD136	Endabaynas	14.54377	38.4754	17/03/2017	Domestic
ZD147	Adimerobi	14.57015	38.54163	23/03/2017	Domestic
ZD116	Adilghese	14.67419	38.84986	31/01/2017	Domestic
ZD125	Maichena	14.56999	39.2709	15/02/2017	Domestic
ZD128	Chearegahit	14.77176	39.22009	20/02/2017	Domestic
ZD131	Wulusho 2	14.63845	39.23017	23/02/2017	Domestic
ZD150	Gezaterer	14.53168	38.55079	24/03/2017	Domestic
ZD047	Adimelhidaga	14.72299	39.47275	25/10/2016	Domestic
ZD113	Unagaaben	14.63448	38.86509	27/01/2017	Domestic
ZD124	Ghenetseba	14.83629	39.08263	28/02/2017	Domestic
ZD143	Aditsetser	14.55885	38.51297	21/03/2017	Domestic
ZD144	Adiamine	14.54193	38.51299	22/03/2017	Domestic
ZD107	Adiburkut	14.51480	38.68100	29/12/2016	Domestic
ZD126	Adiflho	14.75765	039.29788	18/02/2017	Domestic
ZD133	Unawelesti	14.50053	39.279	25/02/2017	Domestic
ZD141	Maighorzo 2	14.51118	38.42827	20/03/2017	Domestic
ZD149	Adinaamn	14.53102	38.55626	23/03/2017	Domestic
ZA002	Etharewyatat	16.26033	38.40542	02/11/2017	Domestic
ZA003	Kedhat	16.1703	38.42163	03/11/2017	Domestic
ZA012	Balwa	15.67374	38.69865	10/11/2017	Domestic
ZA020	Bekushemnuk	15.59462	38.64577	18/11/2017	Domestic
ZA021	Wasdamba 1	15.65963	38.57862	21/11/2017	Domestic
ZA035	Kush	16.14950	38.05349	08/12/2017	Domestic

ZA037	Orota	16.17624	37.95590	12/12/2017	Domestic
ZA039	Shirara 2	15.81786	38.86357	16/12/2017	Domestic
ZA041	Weledteshim	16.15750	38.07294	19/12/2017	Domestic
ZA005	Karibosa	15.80716	38.38365	04/11/2017	Domestic
ZA010	Jertem	15.68129	38.61430	09/11/2017	Domestic
ZA027	Ghergher	15.77427	38.68305	26/11/2017	Domestic
ZA030	Deghedeg	15.58268	38.77090	28/11/2017	Domestic
ZA031	Glass	15.71860	38.31357	30/11/2017	Domestic
ZA033	Asmat	16.15725	38.07292	08/12/2017	Domestic
ZA038	Shirara 1	15.81800	38.86359	16/12/2017	Domestic
ZA042	Dighi	15.75369	38.48991	21/12/2017	Domestic
ZA004	Guluy	16.1903	38.41542	03/11/2017	Domestic
ZA006	Robto	15.74029	38.66324	07/11/2017	Domestic
ZA007	Garalebu	15.73062	38.67674	07/11/2017	Domestic
ZA009	Jemberek	15.75284	38.66217	08/11/2017	Domestic
ZA015	Hamrehamareb 1	15.62318	38.62206	17/11/2017	Domestic
ZA019	Firkutu	15.628	38.65469	18/11/2017	Domestic
ZA029	Marat	15.86812	38.67113	27/11/2017	Domestic
ZA036	Embelday	16.33935	37.78753	09/12/2017	Domestic
ZA040	Shindwa	15.61528	38.71335	18/12/2017	Domestic
ZA013	Haddishadi 1	15.64937	38.57620	11/11/2017	Domestic
ZA018	Tuumkofa	15.62773	38.62445	17/11/2017	Domestic
ZA024	Iratahtai 2	15.6922	38.73472	22/11/2017	Domestic
ZA025	Hashishay 1	15.78612	38.14242	24/11/2017	Domestic
ZA028	Gherbet	15.83531	38.74289	27/11/2017	Domestic
ZA032	Golagul	15.57881	38.79442	05/12/2017	Domestic
ZA034	Hawish	16.19937	38.06788	08/12/2017	Domestic
ZA008	Adkom	15.75306	38.64642	08/11/2017	Domestic
ZA011	Habrenkeka	15.64808	38.70981	09/11/2017	Domestic
ZA014	Haddishadi 2	15.64992	38.62321	13/11/2017	Domestic
ZA016	Hamrehamareb 2	15.62401	38.62231	17/11/2017	Domestic
ZA022	Wasdemba 2	15.66615	38.57717	21/11/2017	Domestic
ZA023	Iratahtai 1	15.69231	38.73512	22/11/2017	Domestic
ZA026	Hashishay 2	15.78601	38.13548	24/11/2017	Domestic

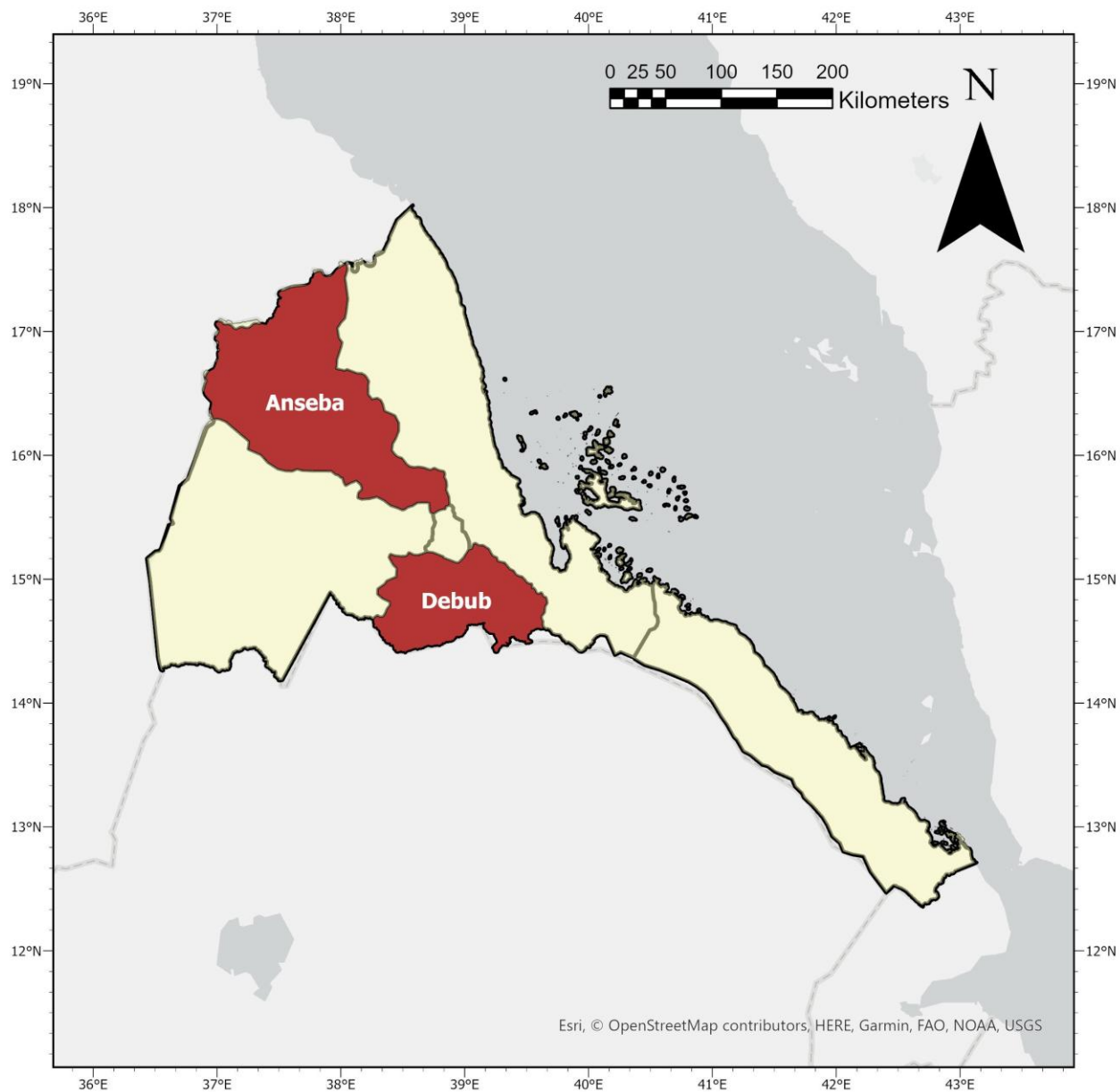
A.2. Location of project

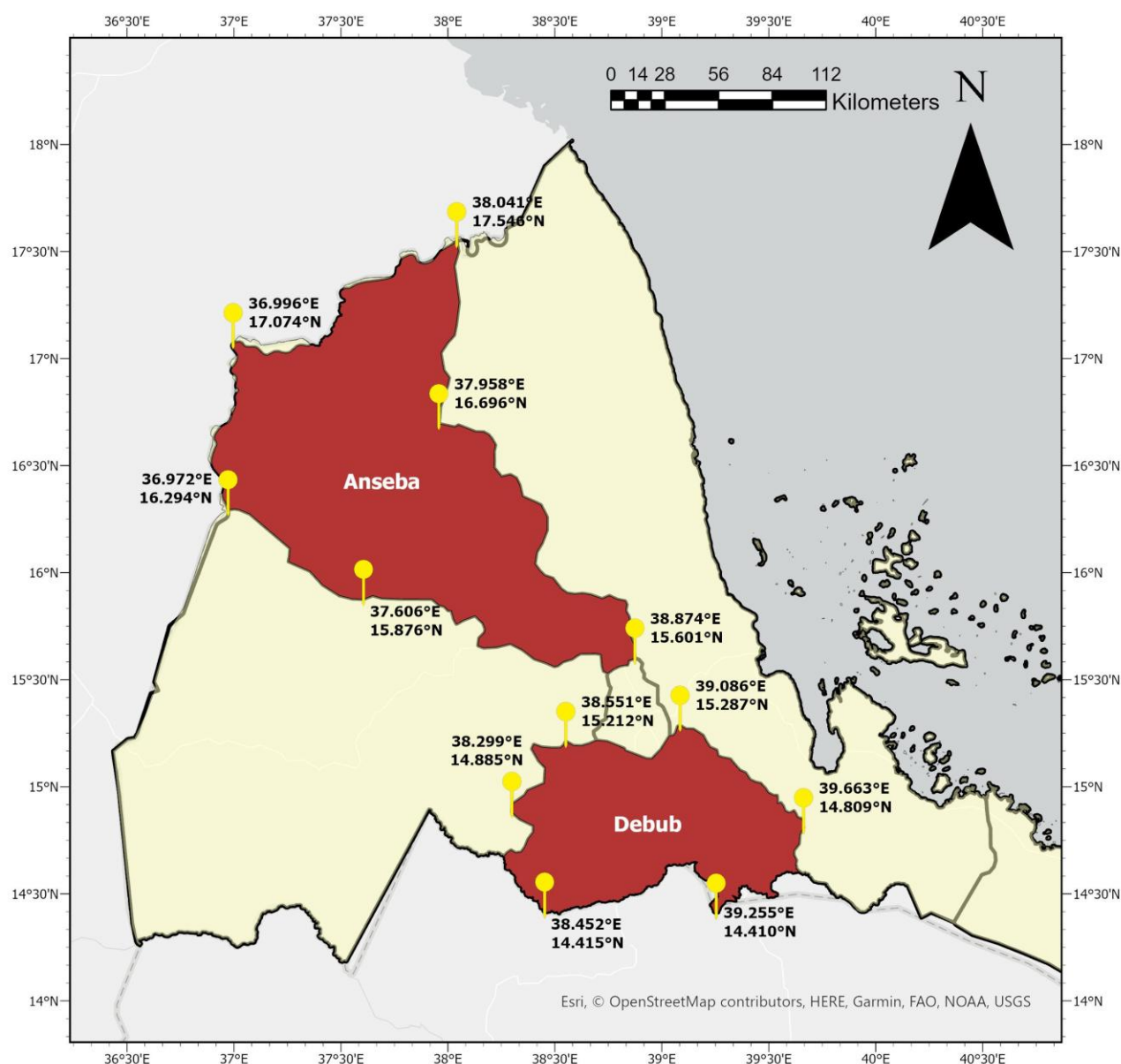
>>

Eritrea is an African country situated in the northeast of Africa on the Red Sea coast. It shares its borders with Djibouti, Ethiopia and Sudan. The project is located in semi-rural districts in Eritrea in which local people must use wood fuel 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 have fallen into disrepair because maintenance programmes have been poorly managed, or proven too expensive. CO2balance and Vita, an Irish Charity that works in Eritrea, have developed multiple projects that renovate broken boreholes so that they deliver clean, safe water. The projects will 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 7 years.

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





Project Area Coordinates

Region	Point	Longitude	Latitude
Anseba	1	38.041°E	17.546°N
Anseba	2	37.958°E	16.696°N
Anseba	3	38.874°E	15.601°N
Anseba	4	37.606°E	15.876°N
Anseba	5	36.972°E	16.294°N
Anseba	6	36.996°E	17.074°N
Debub	7	39.086°E	15.287°N
Debub	8	39.663°E	14.809°N
Debub	9	39.255°E	14.410°N
Debub	10	38.452°E	14.415°N

Debub	11	38.299°E	14.885°N
Debub	12	38.551°E	15.212°N

The unique geographical identification of the boreholes included in the project are reported in Section A.1.

A.3. Reference of applied methodology

GS Emission Reductions from Safe Drinking Water Supplies v 1.0

TOOL30: "Calculation of the fraction of non-renewable biomass". Version 4.0

A.4. Crediting period of project

A.4.1 Start dates of crediting periods

CP1: 22/09/2016 – 21/09/2023 (7 years)

CP2: 22/09/2023– 21/09/2030 (7 years)

A.4.2 Total length of crediting period

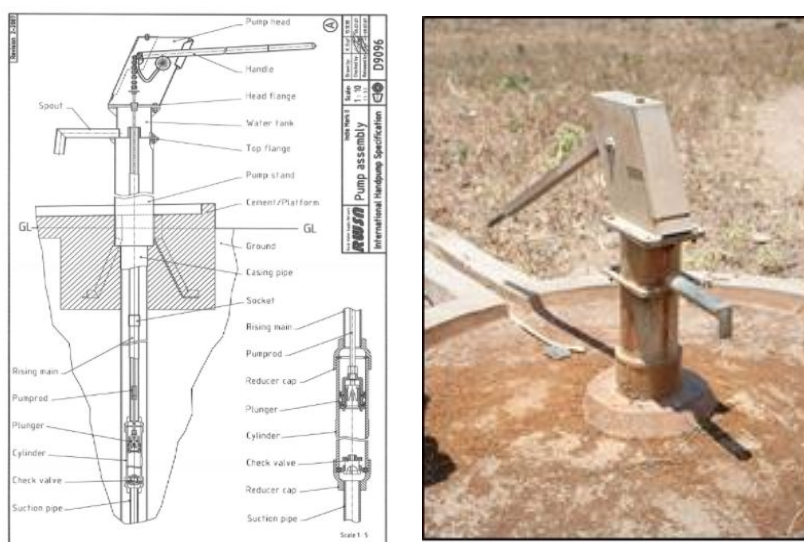
7 years (renewable one more time in order to cover CP3)

SECTION B. IMPLEMENTATION OF PROJECT

B.1. Description of implemented project

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The vast majority of pumps to be fixed are India Mark II pump as shown below. Other hand pump models may also be included in the project. This includes but is not limited to the India Mark II and Afridev The project is not limited to any particular model of hand-pump or water scheme; installation and rehabilitation will be according to local needs.



India Mark II pump

Technical Specifications¹:

	Afridev	India Mark II
Cylinder diameter (mm):	50	63.5
Maximum Stroke (mm):	225	125

¹ Source RWSN <https://www.rural-water-supply.net/en/implementation/public-domain-handpumps/>

Approx. discharge at about 75 watt input m3/h:	at 10 m head 1.4	at 10 m head 1.8
	at 15 m head 1.1	at 15 m head 1.3
	at 20 m head 0.9	at 20 m head 1.0
	at 30 m head 0.7	at 30 m head 0.8
Pumping lift (m):	10-45	10-50
Water consumption (lpcd):	15-20	15-20

SDG Contribution

In this project, boreholes are maintained functional so that they deliver clean, safe water for human consumption which contributes positively to SDG 1 and 7.

Contribution to SDG 1 will be calculated based on the proportion of population having “access to basic service” in terms of safe water in the project activity compared to the baseline scenario: “access to basic services” can be taken as a proxy indicator of how these project contributes towards the SDG 1 in the context of poverty eradication linked to access to sufficient, affordable and adequate quality services. SDG 7 will be assessed based on the number of households having access to safe water from a clean treatment technology.

As boiling is common practice in the project areas, the process of boiling water on an inefficient stove or open fire has negative health impacts on the Eritrean rural communities through the production of household air pollution; providing access to safe water and removing the need to boil, reduces the amount of non-renewable firewood burned. Therefore, the project contributes towards SDG 15, calculated as the total non-renewable firewood saved (tons) in the project scenario.

The boreholes are usually located close to villages and offer a reliable safe water source. Once repaired, it is predicted that women time spent collecting water, and their time spent collecting wood fuel for boiling water for purification will be reduced, contributing positively to SDG 5. The project will monitor the time reduction collecting water as a result of the project and the time spent on unpaid domestic work. As mentioned above, the project location is a largely rural district where people typically use wood fuel in order to purify their drinking water by boiling. The project will provide support, technology, capacity building, training activities to raise awareness

on climate change and related planning and management among the communities focusing on women, youth and local and marginalized communities.

The rehabilitation of boreholes proposes to displace the need to boil water by providing safe water from the source. This will achieve a reduction in GHG emissions and aligns with SDG 13.

B.1.1 Forward Action Requests

N/A

B.2. Post-Design Certification changes

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

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DEV_762 and REC_DEV_462

The deviation was submitted by CO2balance UK Ltd as there was not suitable technology to comply with SDWS 23 requirements. As per GS feedback on the deviation:

The CME may claim emission reduction for the monitoring period until 31/12/2024 provided that:

- *Default values for water consumption per capita are applied and*
- *Monitored data confirms a minimum 1200 liter/day water discharge per water point and operational status of borehole/water pumps including any potential seasonal variations. This may be measured on a sampling basis, following the section 4.2-General requirements for sampling of the methodology.*

PD is applying the default value of 4 l/p and has conducted field testing on a sample of boreholes to confirm the minimum 1200 liter/day water discharge. The field tests (5 Minute Stroke tests) were conducted in July 2024 and October 2024 on 58 randomly selected boreholes to monitor the yield of water the pump.

Both samples demonstrate that the minimum 1200 litres/day water discharge was reached.

The July 2024 (Wet Season) 5MST showed an average output of 4,608 litres of water per day whilst the October 2024 (Dry Season) 5MST showed an average output of

4,717 litres per day, resulting in an average of 4662 litres per day (round down) for both seasons.

B.2.2. Corrections

>>

N/A

B.2.3. Changes to start date of crediting period

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No changes have been made during this monitoring period.

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

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N/A

B.2.5. Changes to project design of approved project

The project submitted two design changes to incorporate boreholes originally included in two separate microscale projects. Both design changes have been approved by Gold Standard. Details are as follows:

- Design Change (DC) dated 18/01/2024 for GS5038–43, GS5825–27, and 7330–36 – Zoba Debub Community Boreholes
- Design Change (DC) dated 03/11/2024 for VPAs GS5951–55 – Zoba Anseba Community Safe Water

In accordance with the approved design change dates, the boreholes under these VPAs have now been consolidated under GS5125.

SECTION C. DESCRIPTION OF MONITORING SYSTEM APPLIED BY THE PROJECT

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All surveys are administered by trained staff that are local to the area and conversant in the local dialects to ensure that the responses are consistent and not biased by any regional language barriers. Each participant is provided with a briefing on the purpose of the survey.

The results of the surveys are collated in excel spreadsheets and stored on a central server in an electronic format then are 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.

In accordance with the Gold Standard methodology “Emission Reductions from Safe Drinking Water Supplies v 1.0”, 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 of the parameter being monitored to ensure the parameters measured satisfy minimum sample requirements as well as required confidence/precision requirements. 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 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 and their distance from it.

- Model of borehole.
- Geographic information of borehole.
- Mode of use.

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.

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

- Usage Survey – took place from 18/11/2024 to 23/11/2024
- Project Survey – took place from 18/11/2024 to 23/11/2024
- Project/Usage Survey – took place from 12/12/2023 to 15/12/2023
- Household Water Quality testing (SDWS1 18) - conducted twice during this Monitoring Period, from 12/12/2023 to 18/12/2023 and 09/12/2024 to 14/12/2024.
- WASH reporting (SDWS 20) – carried out among project safe water end users. The outcomes of the activities are reported in the “Eritrea LS WASH Report 23-24”. The WASH training took place in December 2023 and September and October 2024.

The training involves sensitisation on principles of WASH, role of the water committees, household water management, safe water chain and preventing pollution of the ground water. A report will be produced for each monitoring period in line with SDWS 20.

- Water consumption field test – not conducted for this MP, the default value of 4L / person / day has been applied in the calculations.
- Quantity of safe drinking water provided by the project (SDWS 23) – The project will not be applying $Q_{m,y}$, as the required technology is not yet available. For this MP, the projects applies $Q_{pop,y}$.

Additional monitoring studies were conducted:

- 5 Minutes stroke tests - As per the deviation request, REC_DEV_462, PP introduced a 5 Minute Stroke Test for this monitoring period. The test and method

were created by UPGro Hidden Crisis Research Project and approved by GS. The Deviation request and field methodology have been included with the verification documents.

The test requires four people for different roles. One person is responsible for ensuring a steady pump rate of 40 strokes per minute, one is responsible for counting the number of strokes using a tally counter, one is ready to change the buckets collecting water, and one is responsible for recording the results and keeping time.

A metronome ensures a steady pump rate of 40 strokes per minute. The pump handle is then pumped at 40 strokes per minute and the observer counts the number of strokes before water is released. Once the flow is consistent and continuous two stop watches are started simultaneously. With a constant pump rate of 40 strokes per minute, using full length strokes, water is collected into empty buckets and when the volume reaches 10 litres the time is recorded. For the last 5 seconds of each minute, a countdown is begun and the person responsible for counting the number of strokes says what the count is. This is recorded.

The test continues for 5 minutes with a consistent stroke rate.

The tests were conducted between 11/07/2024 and 14/07/2024 for the Wet season and between 08/10/2024 and 12/10/2024 for the Dry season and the results confirm a minimum 1200 litre/day water discharge per water point and operational status of borehole/water pumps.

- Quality of the treated water (SDWS 3) - The quality of the treated water has been 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.

SECTION D. DATA AND PARAMETERS

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

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SDGs 1, 5, 7, 13 and 15

Data/parameter	SDWS 1
Unit	Number of household/institution per CWT/CWS
Description	Coordinates of CWT/CWS – Acceptable formats for GPS coordinates include DMS (degrees, minutes and seconds), DMM (degrees and decimal minutes), and DD (decimal degrees) Number of end-user premises, quantity
Source of data	End users premises (e.g. household, institutions) within 1km distance of project water source. Recorded for each CWT/CWS installation ex-ante at the time of start of crediting period. In case of progressive installation – for new CWT/CWS units before 1 st issuance for new units.
Value(s) applied	2023: 128 2024: 122
Choice of data or Measurement methods and procedures	GPS coordinates for each individual water point location Number of eligible households/institutions for each water point collected in user lists
Purpose of data	HH Lists
Additional comment	Determine location of water point, number of end-users and distance from water point
	-

SDGs 1, 5, 7, 13 and 15

Parameter ID	SDWS 2
Data/parameter	Project technology description
Unit	N/A
Description	Detailed description of the planned project technology shall include as a minimum: CWT and CWS: - manufacturer name - product name (if applicable) - technology type

	- capacity (in case of pumps: rated flow rate, or flow-rate calculation) For all technologies, any performance certifications issued by national standard body or an appropriate certification part recognised by national standards body or recognised International Organisation agency also shall be provided. Rehabilitated technologies: In case the project technology (CWT and CWS) is rehabilitated, the following is also required as part of technology description: - Evidence of Non-operational time prior to proposed rehabilitation (at minimum with evidence letter from local representative or government, etc.); - Evidence of lack of an existing maintenance or repair plan (at minimum with evidence letter from local representative or government, etc.); - Original installation date/month (approximate month/year); and - Information/evidence to confirm the details of rehabilitation activity (e.g. parts replaced, specifications followed, personnel conducting the repairs and date of retrofitting) CTF and RCFs demonstrate evidence of such project details.
Source of data	CWT and CWS: Any of the following sources shall be used: - Manufacturer specifications - Commercial guarantee - Technical reports from the installer - Third-party certification by a qualified entity, for example recognised certification agency by National/ International Standard body Rehabilitated technologies: - Sources mentioned for CWT and CWS above and - Technical reports from a qualified entity that undertakes the rehabilitation Professional opinion or expert opinion is not accepted as a source for this parameter.
Value(s) applied	Handpump manufacturer specifications: https://www.rural-water-supply.net/en/implementation/public-domain-handpumps/afridev https://www.rural-water-supply.net/en/implementation/public-domain-handpumps/india-mark-ii https://www.rural-water-supply.net/en/implementation/public-domain-handpumps/india-mark-iii The project is not limited to any model of hand-pump or water scheme

Choice of data or Measurement methods and procedures	CTFs and RCFs show required project details
Purpose of data	Outline project details
Additional comment	See section B.1 for details

SDG 1, 7 & 15

Parameter ID	SDWS 3
Data/parameter	Project technology performance level
Unit	N/A
Description	The water directly supplied by the water source (CWS or from the CWT) must comply with - Microbial quality in line with (i) national standards or guideline for microbial quality of drinking water, or in their absence, (ii) the guideline values for verification of microbial quality from the Guidelines for drinking-water quality, 4th edition (Table 7.10, WHO, 2017); and - Chemical quality (i) national standards or guidelines on priority chemical contamination and physical and aesthetic aspects, or in the absence of such requirements, (ii) international standards or guidelines on priority chemical contamination¹⁸ and physical and aesthetic aspects. Once at the start of the crediting period, and microbial quality at the CWS and CWT location must be retested following an event that could lead to contamination of the source water (e.g. flooding).
Source of data	Water quality test report
Value(s) applied	Laboratories used for water quality testing must be approved by local health authorities and/or have quality accreditation; and The laboratory used shall have evidence to demonstrate that it has an adequate quality management plan in place which addresses both quality assurance and quality control test procedures. Table 4.6 Checklist for effective analytical quality assurance of WHO Guidelines, 1997 may be used as a guideline for laboratory compliance with quality assurance practices.
Choice of data or Measurement methods and procedures	Water quality laboratory analysis
Purpose of data	Determine water quality
Additional comment	- The Water Resource Department laboratory are state-run by the Eritrean government.

SDG 1, 7 & 15

Parameter ID	SDWS 4
Data/parameter	Regulatory framework for safe water supply
Unit	N/A
Description	The Eritrean Water Proclamation No. 162/2010 issued on 23 August 2010 stipulates that “the State shall exert all effort to ensure that every citizen exercises the right of access to basic supply of clean and safe water (article 20(1))” and “schemes shall be developed to subsidize the costs associated with the provision of basic water services for the disadvantaged segments of the society (article 20(2))”. In addition, the Eritrean Water Proclamation stipulates that “the use of water for domestic purposes shall have priority over any other water use rights (article 5(2))”. The project complies with key information throughout the policy and working collaboratively with multi-level agencies. Safe water supply, operation and maintenance regulations outlined in the policy have been incorporated in the project activities. Working closely with the Water Resource Department throughout the project cycle ensures that regulations are met.
Source of data	National, sub-national and local authorities
Value(s) applied	N/A
Choice of data or Measurement methods and procedures	N/A
Purpose of data	Adhere to regulatory framework for safe water supply
Additional comment	The project shall not undermine or conflict with any national, subnational and local regulations or guidance for safe drinking water supply, operation and maintenance, including any tariff requirements.

SDG 1, 7 & 15

Parameter ID	SDWS 5
Data/parameter	Water sources in the project boundary
Unit	N/A
Description	PP defined 1km radius surrounding borehole. In the defined area, water source uses has been determined. Using Annex 2 from the

	methodology, PP determined the status of the water source (i.e 'improved' or 'unimproved').
Source of data	Baseline Study
Value(s) applied	100% unimproved
Choice of data or Measurement methods and procedures	SDWS parameter 5 Survey
Purpose of data	Determine water sources in project boundary
Additional comment	-

SDG 13 & 15

Parameter ID	SDWS 6
Data/parameter	Stove technologies used in the project boundary
Unit	N/A
Description	80 % are Traditional Stoves, 20% are Improved Woodfuel Stoves
Source of data	Re-validation Baseline survey :Re-val Baseline Survey_Anseba 2023_V1 and Re-val Baseline Debub_2023_V1"
Value(s) applied	N/A
Choice of data or Measurement methods and procedures	80 % are Traditional Stoves, 20% are Improved Woodfuel Stoves
Purpose of data	Determine stove technology in project boundary
Additional comment	-

SDG 13

Parameter ID	SDWS 7
Data/parameter	Expected technical life of project technology
Unit	Treatment volume or operational hours or time period
Description	The expected technical life of an individual project technology shall be defined in the PDD. The details include both technology/device life and filter life, if a filter is used and it is replaceable.
Source of data	1. Manufacturer Guidelines

	2. Safe water International Organisation Agreement
Value(s) applied	Water Sources are designed to last for up to 20-50 years with adequate maintenance.
Choice of data or Measurement methods and procedures	N/A
Purpose of data	Determine technical life of project technology
Additional comment	The project shall ensure that the units are replaced with systems of comparable quality or retrofitted at the end of their technical life in order to continue claiming emission reductions. If no replacement or retrofitting is provided, emission reduction claims are limited to the expected technical life.

SDG 7 and 15 & 13

Parameter ID	SDWS 8
Data/parameter	X_f
Unit	Percentages of fuel f use in target population
Description	The proportion of each different cooking fuel f used in the project boundary by end-users: - % among the target population if single fuel is used for water boiling. For example, the target population either use wood or charcoal - 60% end users use wood and 40% charcoal. - Weighted average on energy basis, if multifuel situation exists within premise. For example, a household that uses 1000 kg fuelwood per year and 500 kg charcoal per year for cooking and water boiling uses 51.4% fuelwood and 48.6% charcoal on an energy basis. If the project covers different types of end-users premises (e.g. households, schools), then the fuels used in the geographical area of the project by the same types of end-users are to be determined for each end-user premises type. Undertake assessment at the start of each crediting period. SDG 3 (Good Health and Wellbeing) 3.9: By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination 3.9.1: Mortality rate attributed to household and ambient air pollution. SDG 13 (Climate Action), 13B: Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries and small island developing States, including focusing on women, youth and local and marginalized communities

Source of data	Re-validation Baseline survey :Re-val Baseline Survey_Anseba 2023_V1 and Re-val Baseline Debub_2023_V1" Q35
Value(s) applied	Wood: 100%
Choice of data or Measurement methods and procedures	100
Purpose of data	Determine the proportion of each different cooking fuel f used in the project boundary by end-users
Additional comment	

SDG 13

Parameter ID	SDWS 9
Data/parameter	EF_{b,f,CO_2}
Unit	tCO ₂ /TJ
Description	CO ₂ emission factor from use of fuels SDG 13 (Climate Action), 13B: Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries and small island developing States, including focusing on women, youth and local and marginalized communities
Source of data	IPCC defaults; Volume 2: 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Chapter 2, Table 2.5; https://www.ipccnggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_2_Ch2_Stationary_Combustion.pdf
Value(s) applied	112 tCO ₂ /TJ
Choice of data or Measurement methods and procedures	Deemed valid by methodology
Purpose of data	Calculation of baseline emissions
Additional comment	

SDG 13

Parameter ID	SDWS 10
Data/parameter	$EF_{b,f,nonCO_2}$

Unit	tCO ₂ e/TJ
Description	Non-CO₂ emission factor from use of fuels, in case the baseline fuel is biomass or charcoal SDG 13 (Climate Action), 13B: Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries and small island developing States, including focusing on women, youth and local and marginalized communities
Source of data	IPCC defaults: Non-CO₂ Emissions from Stationary Combustion. Annex 1, Table 2 and Table 3. https://www.ipccnggip.iges.or.jp/public/gp/bgp/2_2_Non-CO2_Stationary_Combustion.pdf Global Warming Potential: http://www.ipcc.ch/publications_and_data/ar4/wg1/en/ch2s2-10-2.html#table2-14
Value(s) applied	9.46 tCO ₂ e/TJ
Choice of data or Measurement methods and procedures	Deemed valid by methodology
Purpose of data	Calculation of baseline emissions
Additional comment	

SDG 13 & 15

Parameter ID	SDWS 11
Data/parameter	η_{wb}
Unit	Percentage
Description	Weighted average efficiency of the baseline water boiling devices. Calculate the weighted average of the water boiling efficiency in the project boundary using the proportion of different stove types used and the stove efficiencies. SDG 13 (Climate Action), 13B: Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries and small island developing States, including focusing on women, youth and local and marginalized communities SDG 15 (Life on Land) 15.1: By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements

Source of data	Re-validation Baseline survey: Re-val Baseline Survey_Anseba 2023_V1 and Re-val Baseline Debub_2023_V1"
Value(s) applied	10% for traditional stoves and 23% for improved cookstoves
Choice of data or Measurement methods and procedures	The baseline survey shows that 20% of households cook on ICS, the remaining is traditional stoves.
Purpose of data	Determine efficiency of the baseline water boiling.
Additional comment	

SDG 7, 13 & 15

Parameter ID	SDWS 12
Data/parameter	C_b
Unit	Percentage
Description	Proportion of project households who in the baseline were already using a safe water supply that did not require boiling it (%) SDG 7 (Affordable and Clean Energy) 7.1 By 2030, ensure universal access to affordable, reliable and modern energy services SDG 13 (Climate Action), 13B: Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries and small island developing States, including focusing on women, youth and local and marginalized communities. SDG 15 (Life on Land) 15.1: By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements
Source of data	Re-validation Baseline survey: Re-val Baseline Survey_Anseba 2023_V1 and Re-val Baseline Debub_2023_V1"
Value(s) applied	0 %
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 calculate the additional number of persons having access to safe water in the project activity compared to the baseline scenario
Additional comment	

SDG 13 and 15

Parameter ID	SDWS 14
Data/parameter	NCV_f
Unit	TJ/fuel units, i.e. mass or volume units
Description	Net calorific value of fossil fuel f
Source of data	IPCC defaults
Value(s) applied	0
Choice of data or Measurement methods and procedures	N/A
Purpose of data	ERs calculations
Additional comment	-

SDG 13

Parameter ID	SDWS 15
Data/parameter	EF_f
Unit	tCO ₂ /TJ
Description	Emission factor of fossil fuel f
Source of data	IPCC defaults
Value(s) applied	0
Choice of data or Measurement methods and procedures	N/A
Purpose of data	ERs calculations
Additional comment	-

SDG 13

Parameter ID	SDWS 16
Data/parameter	EF_{ec}

Unit	tCO ₂ /kWh
Description	Emission factor associated with the electricity use
Source of data	0
Value(s) applied	N/A
Choice of data or Measurement methods and procedures	N/A
Purpose of data	N/A
Additional comment	-

SDG 13

Parameter ID	SDWS 17
Data/parameter	TDL_{ec}
Unit	%
Description	Transmission and distribution losses associated with the electricity use
Source of data	N/A
Value(s) applied	N/A
Choice of data or Measurement methods and procedures	N/A
Purpose of data	N/A
Additional comment	-

SDG 13 and 15

Parameter ID	SDWS 19
Data/parameter	$SE_{w,b,y}$
Unit	kJ/L
Description	Specific energy required to boil water SDG 13 (Climate Action), 13B: Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries and small island developing

	States, including focusing on women, youth and local and marginalized communities. SDG 15 (Life on Land) 15.1: By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements
Source of data	Re-validation Baseline survey: Re-val Baseline Survey_Anseba 2023_V1 and Re-val Baseline Debub_2023_V1"
Value(s) applied	3208.90
Choice of data or Measurement methods and procedures	Value calculated in line with Section 3.6.2 of SWDS Methodology: $360.83/\eta_{wb}$
Purpose of data	Calculation of baseline emissions
Additional comment	-

SDG 5

Parameter ID	SDWS 19
Data/parameter	$T_{b,y}$
Unit	Minutes
Description	Time spent collecting water per household per trip prior to project SDG 5 (Gender Equality) 5.4: Recognize and value unpaid care and domestic work through the provision of public services, infrastructure and social protection policies and the promotion of shared responsibility within the household and the family as nationally appropriate. 5.4.1: Proportion of time spent on unpaid domestic and care work, by sex, age and location
Source of data	Re-validation Baseline survey: Re-val Baseline Survey_Anseba 2023_V1 and Re-val Baseline Debub_2023_V1"
Value(s) applied	63.35 minutes (1.06 hours)
Measurement methods and procedures	Survey
Monitoring frequency	Calculating time saved by project
QA/QC procedures	-

Purpose of data	Calculate total reduction of time spent collecting water per household per trip
Additional comment	-

SDG 15

Parameter ID	SDWS 19
Data/parameter	$P_{b,boil}$
Unit	Percentage
Description	Percentage of persons boiling water in the baseline SDG 15 (Life on Land) 15.1:By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements
Source of data	Re-validation Baseline survey: Re-val Baseline Survey_Anseba 2023_V1 and Re-val Baseline Debub_2023_V1"
Value(s) applied	100%
Choice of data or Measurement methods and procedures	The percentage of people stating that they used to boil their water for purification in the baseline scenario, evaluated through the baseline survey.
Purpose of data	Determine number of persons boiling water in the baseline
Additional comment	-

SDG 13 and 15

Parameter ID	SDWS 21
Data/parameter	f_{NRB}
Unit	Percentage
Description	Fractional non-renewability status of woody biomass fuel during year y , in case the baseline fuel is biomass or charcoal
Source of data	Determined by: - CDM TOOL30 v.4, Calculation of the fraction of non-renewable biomass
Value(s) applied	0.79

Choice of data or Measurement methods and procedures	Deemed valid by methodology
Purpose of data	To calculate baseline emissions
Additional comment	-

SDG 1

Parameter ID	N/A
Data/parameter	<i>Baseline: Basic</i>
Unit	Percentage
Description	Drinking water from an improved source, provided collection time is not more than 30 minutes for a round trip, including queuing
Source of data	Re-validation Baseline survey: Re-val Baseline Survey_Anseba 2023_V1 and Re-val Baseline Debub_2023_V1"
Value(s) applied	0%
Choice of data or Measurement methods and procedures	Values obtain from re-validation Baselines
Purpose of data	To calculate Paccess
Additional comment	N/A

D.2 Data and parameters monitored

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SDG 1 and 7

Parameter ID	SDWS 18
Data/parameter	$M_{q,y}$
Unit	Fraction
Description	Ongoing water quality indicated as the fraction of the samples that pass microbial quality standard requirements specified in relevant microbial quality standard for drinking water of the host country. In case a national standard is not available, the water quality shall

	comply with WHO Guideline values for verification of microbial quality i.e., all water directly intended for drinking must not have detectable E.Coli in any 100 ml sample i.e., less than 1 Colony Forming Unit (CFU) of E.Coli /100 ml. SDG 1 (No poverty)1.4.1 By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance. SDG 7 (affordable and clean energy) 7.1 By 2030, ensure universal access to affordable, reliable and modern energy services
Source of data	Water quality tests conducted either by a lab or through a field kit.
Value(s) applied	0.98 (average of 2023 and 2024 testing) 2023: 0.96 2024: 1.00
Measurement methods and procedures	The National Water Quality Reference Laboratory has certified each water supply in line with national standards.
Monitoring frequency	Annual sampling, and the first round of testing shall be conducted at least after six months from the start date.
QA/QC procedures	1. Laboratories used for water quality testing must be approved by local health authorities and/or have quality accreditation; and 2. The laboratory used must demonstrate that it has an adequate quality management plan in place which addresses both quality assurance and quality control test procedures. 3. Field testing kits also are eligible, e.g. based on Colony Forming Unit method or Most Probable Number method. To use the field testing kits the project shall meet the following requirements: a. Testing kits must be approved by national agency or meet standards set by relevant international organisation e.g. US-EPA, and b. Testing kits shall be tested for its accuracy and robustness prior to application for project level monitoring, whereby local or accredited laboratory shall conduct water quality tests using testing kits and a relevant ISO standard or an equivalent standard, in parallel with field testing kits.
Purpose of data	Determine water quality in year
Additional comment	The water quality tests will be conducted annually with randomly selected users in line with the methodology requirements.

SDG 1, 5, 7, 13 and 15

Parameter ID	SDWS 19
Data/parameter	SDG claims

Unit	N/A
Description	The project will transparently include information in project documents (PDD & Monitoring reports) to make claims on SDG contributions.
Source of data	Annual surveys
Value(s) applied	N/A
Measurement methods and procedures	-
Monitoring frequency	Annual
QA/QC procedures	N/A
Purpose of data	Determine SDG claims
Additional comment	-

SDG 1 & 7

Parameter ID	SDWS 20
Data/parameter	Water hygiene education campaigns
Unit	N/A
Description	Hygiene campaigns carried out among project safe water end users. The following guidelines apply for conducting these campaigns: - Hygiene refers to access to sanitation amenities, equipment and infrastructure, as well as to the behavior in respect to regular and correct use of such amenities. It also refers to behavior that prevents infections from water-related diseases. - The project developer shall report the activities conducted each year in a detailed "Report of annual hygiene campaigns results" and summarize the results in the project monitoring reports. - Any major changes in the health status of the water users as a result of contaminated water (e.g. an outbreak of water related disease) must be reported and, if relevant, a strategy put in place to address it through the subsequent hygiene campaign. - The detailed method used to assess hygienic handling of clean water must be provided with the PDD and verified by the VVB. - The details of the method should be adjusted to suit the circumstances of each project and also to suit learning year on year. The impacts of the hygiene campaign shall be assessed using the WHO/UNICEF Joint Monitoring Programme Core questions for drinking water and hygiene to determine the fraction of the households and institutions where Safe water and Hygiene practices are found to fulfill "safely managed" or "basic" requirements.

	In-person or telephone or by messaging (e.g. text, app) based survey shall be conduct covering all the JMP core questions for drinking water and core questions for hygiene. For sampling requirements, follow section 4.2 General requirements for sampling, below. The JMP core questions for households, schools and health care facilities are available at https://washdata.org/monitoring/methods/core-questions
Source of data	Eritrea LS WASH Report 23-24
Value(s) applied	N/A
Measurement methods and procedures	WASH training activities and project surveys
Monitoring frequency	Annually.
QA/QC procedures	The fraction of the households where Safe water and Hygiene practices are found to fulfill "safely managed" or "basic" requirements is expected to increase over time as a result of the hygiene campaigns.
Purpose of data	Determine community WASH understanding
Additional comment	WASH workshops were conducted in Dec 2023 and September and October 2024. For the Anseba region communities, the workshops took place in July 2024

SDG 13

Parameter ID	SDWS 22
Data/parameter	$X_{cleanboil,y}$
Unit	Percentage
Description	Proportion of project end-users that boil safe (treated, or from safe supply) water after installation of project technology in year y. SDG 7 (Affordable and Clean Energy) 7.1 By 2030, ensure universal access to affordable, reliable and modern energy services. SDG 13 (Climate Action), 13B: Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries and small island developing States, including focusing on women, youth and local and marginalized communities. SDG 15 (Life on Land) 15.1: By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements.

Source of data	Project Survey
Value(s) applied	0
Measurement methods and procedures	-
Monitoring frequency	Annually
QA/QC procedures	-
Purpose of data	Calculation of baseline emissions
Additional comment	-

SDG 13

Parameter ID	SDWS 23
Data/parameter	$Q_{m,y}$
Unit	Litres/year
Description	Monitored quantity of safe water provided by the project in year y SDG 1 (No Poverty) 1.4 By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance. SDG 13 (Climate Action), 13B: Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries and small island developing States, including focusing on women, youth and local and marginalized communities.
Source of data	Flow meter measures water volume directly or Operation sensor measures directly operation time or pump stroke count, and the volume is calculated as capacity (defined in Project technology description) multiplied by operation time or pump strokes, depending on the sensor type. This may be measured on a sampling basis, in which case follow ERSDWS sampling requirements.
Value(s) applied	1,617,714
Measurement methods and procedures	Field test as per Dev_762 and REC_DEV_462
Monitoring frequency	Seasonally as per Dev 762 and REC_DEV_462
QA/QC procedures	Follow manufacturer, sector, national or international standards or guidelines for calibration and maintenance of the measurement device.
Purpose of data	Determine quantity of safe water provided by the project in year
Additional comment	The project will not be applying $Q_{m,y}$ as the required technology is not yet available. As soon as the required technology is available and reliable it will be implemented. Until this time $Q_{pop,y}$ will be applied. Please see Dev 762 and REC_DEV_462 for details relating to this monitoring period. This is also explained in section B.2 of the MR.

The value is calculated by multiplying the average of the 5MST results (4,662 L/day) by the crediting days as demonstrated in the ER calculations.

SDG 1 & 13

Parameter ID	SDWS 24
Data/parameter	QPW_p
Unit	Litres/person/day
Description	Volume of drinking water per person per day for premises type p SDG 1 (No Poverty) 1.4 By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance. SDG 13 (Climate Action), 13B: Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries and small island developing States, including focusing on women, youth and local and marginalized communities.
Source of data	Default value (4 L)
Value(s) applied	4 L/person/day
Measurement methods and procedures	Deemed valid by methodology
Monitoring frequency	Biennial if monitored with WCFT
QA/QC procedures	-
Purpose of data	Determine volume of drinking for quantity of safe drinking water calculations
Additional comment	-

SDG 13

Parameter ID	SDWS 25
Data/parameter	$HN_{p,y}$
Unit	Number
Description	Number of individuals per premises type p in the project boundary in year y SDG 13 (Climate Action), 13B: Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries and small island developing States, including focusing on women, youth and local and marginalized communities.
Source of data	Project Survey

Value(s) applied	2023: 3.9 2024: 3.8
Measurement methods and procedures	Household questions in survey
Monitoring frequency	Annually
QA/QC procedures	The value applied shall be cross-checked against at least one other source on the list. For cross-check purposes, sources applied may be up to 5 years old. Further, cross-check with older sources may be used provided they provide conservative results. The value has been crosschecked against several available sources, namely 'Credible published literature for project region'. These studies give values ranging from 4.2 to 5.7 people per household. The Project Sources: https://academicjournals.org/journal/JDAE/article-full-text-pdf/E68787E71571 https://www.tandfonline.com/doi/full/10.2147/RMHP.S478511#d1e263 https://www.afdb.org/sites/default/files/3tesseney_solar_pv_mini-grid_esia_final_version_08102024_final.pdf
Purpose of data	Determine number of individuals for quantity of safe drinking water calculations
Additional comment	

SDG 7 & 13

Parameter ID	SDWS 26
Data/parameter	$HH_{p,y}$
Unit	Number
Description	Number of premises type p served by the project in year y SDG 7 (Affordable and Clean Energy) 7.1 By 2030, ensure universal access to affordable, reliable and modern energy services. SDG 13 (Climate Action), 13B: Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries and small island developing States, including focusing on women, youth and local and marginalized communities.
Source of data	Survey of the premises (e.g. households, schools) within 1 km distance of project water source to check how often the premises used the project water source during the year. This survey may be part of the project survey and may be performed in person, by telephone, by messaging (e.g. text, app), appropriate to the context. Premises that report at least every-two-days use may be counted.
Value(s) applied	2023: 128 per CWS, Total: 26,828 2024: 122 per CWS, Total 35,278
Measurement methods and procedures	Household questions in project surveys will be applied to premises recorded in HH list (SDWS 1)
Monitoring frequency	Annually
QA/QC procedures	-

Purpose of data	Determine number of premises type for quantity of safe drinking water calculations
Additional comment	-

SDG 13 and 15

Parameter ID	SDWS 27
Data/parameter	$DO_{p,y}$
Unit	Days
Description	Days the project technology is operational for end-users in premises p in year y SDG 13 (Climate Action), 13B: Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries and small island developing States, including focusing on women, youth and local and marginalized communities. SDG 15 (Life on Land) 15.1: By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements.
Source of data	In order of preference: 1. Measure directly using operation sensor, or 2. Demonstrate from log of operation and maintenance system.
Value(s) applied	63.2 average days in 2023, 305.4 average days in 2024
Measurement methods and procedures	Maintenance log
Monitoring frequency	Annually
QA/QC procedures	Values higher than 347 days may only be applied when option 1 is used. 347 days is 95% of days, in line with pump-maintenance in the literature.
Purpose of data	Determine number of days for quantity of safe drinking water calculations
Additional comment	-

SDG 7 and 15

Parameter ID	SDWS 19
Data/parameter	Up,y
Unit	Percentage
Description	Usage rate in project scenario p in project year y
Source of data	Usage Survey 'LS_Usage_Survey_24 v1'
Value(s) applied	100%
Monitoring Frequency	Annually
QA/QC Procedures	-

Purpose of data	To determine the number of users of the technology within the project year.
Additional comment	The Usage Survey is conducted annually with randomly selected users in line with the methodology requirements.

SDG 5

Parameter ID	SDWS 19
Data/parameter	$T_{p,y}$
Unit	Minutes
Description	Time spent collecting water per household per trip in project SDG 5 (Gender Equality) 5.4: Recognize and value unpaid care and domestic work through the provision of public services, infrastructure and social protection policies and the promotion of shared responsibility within the household and the family as nationally appropriate. 5.4.1: Proportion of time spent on unpaid domestic and care work, by sex, age and location
Source of data	Project Survey
Value(s) applied	0.5 hours
Measurement methods and procedures	Project Survey
Monitoring frequency	Annually
QA/QC procedures	Transparent data analysis and reporting
Purpose of data	Calculate time saved for women by the project
Additional comment	-

SDG 1

Parameter ID	SDWS 19
Data/parameter	Paccess
Unit	Percentage
Description	Proportion of population living in HHs with access to basic service (safe water)

	SDG 1 (No Poverty) 1.4 By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance.
Source of data	Project Survey
Value(s) applied	100%
Measurement methods and procedures	Proportion of access in the project compared to the baselines.
Monitoring frequency	Annual
QA/QC procedures	Transparent data analysis and reporting
Purpose of data	To quantify the proportion of population living in HHs with access to basic service (safe water) in the project activity compared to the baseline scenario
Additional comment	-

SDG 5

Parameter ID	SDWS 19
Data/parameter	TR _y
Unit	Percentage
Description	Total reduction time spent collecting water for project activity in year y (%) SDG 5: Recognize and value unpaid care and domestic work through the provision of public services, infrastructure and social protection policies and the promotion of shared responsibility within the household and the family as nationally appropriate 5.4.1: Proportion of time spent on unpaid domestic and care work, by sex, age and location
Source of data	Project Survey
Value(s) applied	46%
Measurement methods and procedures	Calculate the average amount of time spent collecting water in the project scenario and compare to the pre-project scenario
Monitoring frequency	Annual
QA/QC procedures	Transparent data analysis and reporting
Purpose of data	To quantify whether the project has contributed to a reduction in the amount of time spent collecting water compared to the pre-project scenario
Additional comment	-

SDG 13b

Parameter ID	SDWS 35
Data/parameter	LE _y

Unit	tCO ₂ e per year
Description	Leakage emissions during year y SDG 13 (Climate Action), 13B: Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries and small island developing States, including focusing on women, youth and local and marginalized communities.
Source of data	Sources established by following Leakage emissions section
Value(s) applied	5%
Measurement methods and procedures	Ex-ante evaluation shows that leakage emissions are less than 5% of total emission reductions, then no monitoring is needed, and emission reductions simply shall be adjusted 5% down. In this case, the sources and magnitude of leakage emissions must be reassessed at the time of crediting period renewal
Monitoring frequency	N/A
QA/QC procedures	Compliance with the general requirements for sampling and general requirements for data and information sources
Purpose of data	Emission reduction calculations
Additional comment	-

Parameter ID	SDWS 19
Data/parameter	$N_{p,y}$
Unit	Number
Description	Number of people p served by the project in year y SDG 15 (Life on Land) 15.1: By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements.
Source of data	This survey may be part of the project survey and may be performed in person, by telephone, by messaging (e.g. text, app), appropriate to the context. Premises that report at least every-two-days use may be counted.
Value(s) applied	2023: 104,629 2024: 134,056
Measurement methods and procedures	Household questions in survey
Monitoring frequency	Annually
QA/QC procedures	-
Purpose of data	Determine number of people for quantify SDG 15
Additional comment	-

SDG 1

Parameter ID	SDWS 19
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Data/parameter	Project Basic
Unit	Percentage
Description	Proportion of population living in HHs with access to basic service (safe water). SDG 1 (No Poverty) 1.4 By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance.
Source of data	Project Survey
Value(s) applied	100%
Measurement methods and procedures	Proportion of access in the project compared to the baselines.
Monitoring frequency	Annual
QA/QC procedures	Transparent data analysis and reporting
Purpose of data	To calculate proportion of population living in HHs with access to basic service (safe water) in the project activity compared to the baseline scenario
Additional comment	-

SDG 7

Parameter ID	SDWS 19
Data/parameter	HHaccess
Unit	Number
Description	Proportion of population living in HHs with access to Safe Water from a clean treatment technology in the project scenario SDG 7 (Affordable and Clean Energy) 7.1 By 2030, ensure universal access to affordable, reliable and modern energy services.
Source of data	Project Survey and Project Database
Value(s) applied	2023: 26,828 2024: 35,278
Measurement methods and procedures	Proportion of access in the project compared to the baselines.
Monitoring frequency	Annual
QA/QC procedures	Transparent data analysis and reporting
Purpose of data	To calculate proportion of population living in HHs with access to basic service (safe water) in the project activity compared to the baseline scenario
Additional comment	-

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

HNp,y	2023: 3.9 2024: 3.8	N/A
HHp,y	2023: 128 per CWS 2024: 122 per CWS	N/A
Np,y	2023: 104,629 2024: 134,056	N/A
Tp,y	0.5 hours	N/A
TRy	46%	N/A
Paccess	100%	N/A
Up,y	100%	N/A
HHaccess	2023: 26,828 2024: 35,278	N/A
Mq,y	2023: 96% 2024: 100%	N/A
Xcleanboil	0%	N/A
LEp,y	5%	N/A
Project Basic	100%	N/A

This Monitoring period is the first in the ERSDWS methodology, thus the parameters of this monitoring period are not comparable with the previous monitoring period.

D.4. Implementation of sampling plan

In accordance with the Gold Standard ERSDWS v1.0 methodology, the number of households was randomly sampled following the 90/10 confidence/precisions. Sample sizes were chosen to meet the minimum requirements set in the methodology and to ensure full representativeness of the project area.

The surveys have been conducted to ensure that they are within the end date of the respective monitoring periods for each VPA and they satisfy the sampling requirements in the methodology, cross sampling is applied:

Project and Usage surveys were conducted to explore changes in the project scenario demographics, water use and purification practices, time spent on water, fuel collection and usage of the project water point. The surveys were conducted in November 2024 on 120 households.

As per methodology guidelines section 4.2.3: when the group size is above 1000, the minimum sample size is 100, both annual project surveys comply with the minimum requirement.

An additional check has been carried to make sure the number of surveys is statistically valid. For guidance, the “Guidelines for sampling and surveys for CDM project activities and programmes of activities” has been used:

For the usage rate, for both 2023 and 2024 surveys, 120 households interviewed is sufficient to fulfil minimum sample size 90/10 precision.

Calculator to check if the precision has been met or not after a sampling survey is conducted

Input	Value	Notes
Actual sample size	120	
Sample proportion	1.0000	
Standard error of the proportion	0.0000	
Precision associated with a proportion	0.0000	
Relative precision	0.0%	

Note:

If the estimates from the actual samples fail to achieve the target minimum levels of precision (e.g. 10%), measures indicated in para. 16 of the sampling standard (ver. 4.1) shall be followed.

Household water quality testing (Mq,y) were conducted in December 2023 and December 2024.

As per methodology requirement, the sampling results shall satisfy at minimum the 90/10 rule. The sample size and proportional result of the survey have been entered into the “Guideline: Sampling and surveys for CDM project activities and programmes of activities Version 03.1”.

For the testing conducted in December 2023, a total of 56 water samples were taken fulfilling the minimum sample size 90/10 precision.

Calculator to check if the precision has been met or not after a sampling survey is conducted

Input	Value	Notes
Actual sample size	56	
Sample proportion	0.9643	
Standard error of the proportion	0.0248	
Precision associated with a proportion	0.0408	
Relative precision	4.2%	

Note:
If the estimates from the actual samples fail to achieve the target minimum levels of precision (e.g. 10%), measures indicated in para. 16 of the sampling standard (ver. 4.1) shall be followed.

For the testing conducted in December 2024, a total of 70 water samples were taken fulfilling the minimum sample size 90/10 precision.

Calculator to check if the precision has been met or not after a sampling survey is conducted

Input	Value	Notes
Actual sample size	70	
Sample proportion	1.0000	
Standard error of the proportion	0.0000	
Precision associated with a proportion	0.0000	
Relative precision	0.0%	

Note:
If the estimates from the actual samples fail to achieve the target minimum levels of precision (e.g. 10%), measures indicated in para. 16 of the sampling standard (ver. 4.1) shall be followed.

SECTION E. CALCULATION OF SDG IMPACTS

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

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Outcomes for SDG 1 (No Poverty):

The outcome for SDG 1 is quantified as the proportion of population living in HHs with access to basic service in terms of safe water in the project activity compared to the baseline scenario.

The baseline number of persons having access to basic services was determined with the Baseline Survey, the outcome was:

$$\text{Baseline Basic Service} = 0\%$$

Where:

Baseline Basic Service (Baselines survey): Drinking water from an improved source, provided collection time is not more than 30 minutes for a round trip, including queuing.

(Please refer to the Baseline Survey and latest version of the ERs calculations).

SDG 5 (Gender Equality):

As the safe water sources are located centrally within communities, closer to public institutions and villages, the distance travelled to collect water will be reduced, reducing the time per trip spent collecting water. In addition, as the water sources will be maintained, they will provide a reliable water supply, ensuring that water needs can be met by one central water source, so the time spent collecting water is minimised. The average % decrease per household in time spent gathering water will be taken as a proxy contribution towards the SDG target.

The baseline time spent gathering water was determined with the Baseline Survey, the outcome was:

$$T_{b,y} = 0.92 \text{ hours}$$

Where:

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

(Please refer to the Baseline Survey and latest version of the ERs calculations)

SDG 7 (Affordable and Clean energy):

The outcome for SDG 7 is quantified as the total number of households with access to safe water from a clean treatment technology.

Baseline access to safe water from a clean treatment technology was determined with the Baseline Survey, the outcomes showed that none of the households had access.

(Please refer to the Baseline Survey and latest version of the ERs calculations).

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 VPA's emission reductions calculations.

Baseline Emissions are calculated as per equations below:

Equation 1

$$EF_b = SE_{w,b,y} * \sum (x_f * (EF_{b,f,CO_2} * f_{NRB} + EF_{b,f, nonCO_2})) \div 10^9$$

where

EF_b	=	Emission factor for the use of fuel to obtain safe water in the baseline (tCO ₂ e/L)
$SE_{w,b,y}$	=	Specific energy required to boil water (kJ/L), to be calculated as per the paragraph below
x_f	=	Proportion of fuel f used in the baseline (fraction determined based on an energy basis)
EF_{b,f,CO_2}	=	CO ₂ emission factor from use of fuel f (tCO ₂ /TJ)
$EF_{b,f, nonCO_2}$	=	Non-CO ₂ emission factor arising from use of fuel f, when the baseline fuel f is biomass or charcoal (tCO ₂ e/TJ). This parameter is omitted when f is a fossil fuel.
$f_{NRB,f,y}$	=	Fractional non-renewability status of woody biomass fuel during year y (fraction). For biomass, it is the fraction of woody biomass that can be established as non-renewable. This parameter is omitted when f is a fossil fuel.

f = Index for baseline fuel types

Equation 2

360.83 = Default amount of energy required to boil 1 L of water from a first principles approach

η_{wb} = 3SF - Efficiency of the baseline water boiling (%). Weighted average of baseline stove types.

η_{wb} = ICS - Efficiency of the baseline water boiling (%). Weighted average of baseline stove types.

The Baselines emission shall be calculated as follows:

Equation 3

$$BE_y = EF_b * (1 - C_b - X_{cleanboil,y}) * Q_y * M_{q,y}$$

Where:

BE_y = Baseline emissions from the use of fuel to obtain safe water in the baseline (tCO_{2e})

C_b = Proportion of project households who in the baseline were already using a safe water supply that did not require boiling it (%)

$X_{cleanboil,y}$ = Proportion of project households that boil safe water in the project year y (%)

Q_y = Quantity of safe drinking water provided by the project in year y (L)

$M_{q,y}$ = Modifier for the water quality in year y

Baseline outcomes for SDG 13 are 62,602 tCO₂ (please refer to the latest version of the ERs calculations to review detailed calculations).

SDG 13 Example Baseline Emissions for ZD001 handpump

$$BE_y = EF_b * (1 - C_b - X_{cleanboil,y}) * Q_y * M_{q,y}$$

$$2023: 58.229 = 0.00031 * (1 - 0 - 0) * 192,137 * 0.96$$

$$2024: 202.055 = 0.00031 * (1 - 0 - 0) * 642,916 * 1$$

Refer to document:

ER_Calcs_LS CP2 Tab ERs Calcs. ZD001 Baseline Emissions.

SDG 15 (Life on Land)

The outcomes of SDG 15 are quantified the Total non-renewable firewood saved (tons) in the project scenario compared to the baseline scenario.

Baseline scenario is calculated as per equations below:

Equation 1

$$Wb, NRB = Wb,n * fNRB,f,y$$

$$\mathbf{2023: 4,301 = 5,316 * 0.79}$$

$$\mathbf{2024: 26,613 = 33,688 * 0.79}$$

Equation 2

$$Wb,n = Np,y * Pb,y * DOp,y$$

$$\mathbf{2023: 5,445 = 104,629 * 0.00082 * 63}$$

$$\mathbf{2024: 33,688 = 134,056 * 0.00082 * 305}$$

Equation 3

$$Pb,y = QPw,p * Wb,y$$

$$0.00082 = 4 * 0.00021$$

Equation 4

$$Wb,y = SEw,b,y / NVCwood$$

$$0.00021 = ((3,208.90 / 15,600)) / 1000$$

Where:

Np,y	=	Number of People served by the project in year y
QPw,p	=	Quantity of safe water supplied in the project scenario p during year y, using the “zero or low” emissions’ clean water supply technology
Wb,y	=	Average firewood usage (tonnes) for boiling 1 liter of water
Pb,y	=	Quantity of fuel that is consumed in the baseline scenario b during year y (kg/person-day)
DOp,y	=	Tot days capped at 95% functionality
$fNRB$	=	Fractional non-renewability status of woody biomass fuel during year y (fraction). For biomass, it is the fraction of woody biomass that can be established as non-renewable. This parameter is omitted when f is a fossil fuel

Wb,n = Baseline average firewood usage (tons) for boiling water (tot of users)

Wb, NRB = Baseline non-renewable firewood usage (tons/year)

Baseline outcomes for SDG 15 are 30,915 tCO₂ (please refer to the latest version of the ERs calculations to review detailed calculations).

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

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SDG 1 (No Poverty)

The outcome for SDG 1 is quantified as the proportion of population living in HHs with access to basic service in terms of safe water in the project activity compared to the baseline scenario.

The project number of persons having access to basic services is determined with the Project Survey, the outcome was:

$$\text{Project Basic service} = 100\%$$

Where:

Project Basic Service (Project survey 2024): Drinking water from an improved source, provided collection time is not more than 30 minutes for a round trip, including queuing

(Please refer to the Project Surveys and latest version of the ERs calculations).

SDG 5 (Gender Equality):

As the safe water sources are located centrally within communities, closer to public institutions and villages, the distance travelled to collect water will be reduced, reducing the time per trip spent collecting water. In addition, as the water sources will be maintained, they will provide a reliable water supply, ensuring that water needs can be met by one central water source, so the time spent collecting water is minimised. The average % decrease per household in time spent gathering water will be taken as a proxy contribution towards the SDG target.

The Project time spent gathering water is determined with the Projects Survey, the outcome was:

$$T_{p,y} = 0.5 \text{ hours}$$

Where:

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

(Please refer to the Project Surveys and latest version of the ERs calculations).

SDG 7 (Affordable and Clean energy):

The outcome for SDG 7 is quantified as the total number of households with access to safe water from a clean treatment technology.

Project access to safe water from a clean treatment technology was determined with the project Survey. The outcomes showed that 35,278 households have access to Safe Water from a clean treatment technology.

(Please refer to the Project Surveys and latest version of the ERs calculations).

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 VPA's emission reductions calculation

Project emissions are calculated as per the equations below:

Equation 8

$$PE_y = PE_{ff,p,y} + PE_{ec,p,y}$$

Where:

PE_y Project emissions in year y (tCO₂)

$PE_{ff,p,y}$ Project emissions from fossil fuel use in year y (tCO₂)

$PE_{ec,p,y}$ Project emissions from electricity use in year y (tCO₂)

Project emissions from fossil fuel use are determined as follows.

Equation 9

$$PE_{ff,p,y} = \sum P_{p,f,y} * NCV_f * E_{ff}$$

Where:

$P_{p,f,y}$	Quantity of fossil fuel f that is consumed in the project during year y (mass or volume units)
NCV_f	Net calorific value of fossil fuels f (TJ/fuel units)
EF_f	Emission factor of fossil fuel f (tCO ₂ e/TJ)

Project emissions from electricity use are estimated as follows.

Equation 10

$$PE_{ec,p,y} = \sum EC_{p,y} * EF_{ec} * (1 + TD_{lec})$$

Where:

$EC_{p,y}$	Quantity of electricity that is used in the project during year y (kWh)
EF_{ec}	Emission factor associated with the electricity use (tCO ₂ /kWh)
TD_{lec}	Transmission and distribution losses associated with the electricity use (%)

Project outcomes for SDG 13 are 0 tCO₂ (*please refer to the latest version of the ERs calculations to review detailed calculations*).

SDG 15 (Life on Land)

The outcomes of SDG 15 are quantified the Total non-renewable firewood saved (tons) in the project scenario compared to the baseline scenario.

Project savings are calculated as the difference between Baseline non-renewable firewood usage (please refer to equations in section E.1 of the MR) and Total non-renewable firewood saved in the project scenario.

Project savings are determined as follows:

Equation 3

$$P_{b,y} = QP_{w,p} * W_{b,y}$$

$$0.00082 = 4 * 0.00021$$

Where:

$QP_{w,p}$	Quantity of safe water supplied in the project scenario p during year y , using the "zero or low" emissions' clean water supply technology
$W_{b,y}$	Average firewood usage (tonnes) for boiling 1 litre of water

Equation 4

$$W_{b,y} = SE_{w,b,y} \div NVC_{wood}$$

$$0.00021 = ((3,208.9 / 15,600))/1000$$

Equation 5

$$W_{p, NRB} = W_{p,n} * f_{NRB,f,y}$$

$$2023: 4,301 = 5,445 * 0.79$$

$$2024: 26,613 = 33,688 * 0.79$$

Equation 6

$$W_{p,n} = N_{p,y} * P_{b,y} * D_{Op,y} * U_{p,y} * (1 - C_b)$$

$$2023: 5,316 = 104,629 * 0.00082 * 63 * 1 * (1-0)$$

$$2024: 33,688 = 134,056 * 0.00082 * 305 * 1 * (1-0)$$

Where:

$N_{p,y}$	=	Number of People served by the project in year y
$Q_{Pw,p}$	=	Quantity of safe water supplied in the project scenario p during year y, using the “zero or low” emissions’ clean water supply technology
$W_{b,y}$	=	Average firewood usage (tonnes) for boiling 1 liter of water
$P_{b,y}$	=	Quantity of fuel that is consumed in the baseline scenario b during year y (kg/person-day)
$D_{Op,y}$	=	Tot days capped at 95% functionality
f_{NRB}	=	Fractional non-renewability status of woody biomass fuel during year y (fraction). For biomass, it is the fraction of woody biomass that can be established as non-renewable. This parameter is omitted when f is a fossil fuel
C_b	=	Proportion of project households who in the baseline were already using a safe water supply that did not require boiling it (%)
$U_{p,y}$	=	Usage rate in project scenario p during year y
$W_{p,n}$	=	Tonnes of firewood per year saved through the project (tot users)

Wp, NRB = Total non-renewable firewood saved (tons) in the project scenario

Project outcomes for SDG 15 are: 0 tonnes (*please refer to the latest version of the ERs calculations to review detailed calculations*).

E.3. Calculation of leakage

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Leakage:

As the ex-ante evaluation showed that leakage emissions were less than 5% of total emission reductions, then no monitoring is needed, and emission reductions simply shall be adjusted 5% down. In this case, the sources and magnitude of leakage emissions must be reassessed at the time of crediting period renewal.

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

SDG	SDG Impact	Baseline estimate	Project estimate	Net benefit
1 No Poverty	Proportion of population living in households with access to basic services (water treatment)	0	100%	100%
5 Gender Equality	Total reduction time spent collecting water for project activity in year y	0.92	0.5	46%
7 Affordable and clean energy	Total No of households with access to Safe Water from a clean treatment technology	0	35,278	35,278
13 Climate Action	Total project emissions	62,602 tCO ₂ e	3,130 tCO ₂ e	59,471 tCO ₂ e
15 Life on Land	Total non-renewable firewood saved in the project scenario	30,915 tonnes	0	30,915 tonnes

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 ² achieved during this monitoring period
1 No Poverty	20% of population living in households with access to basic services (water treatment)	100% of population living in households with access to basic services (water treatment)
5 Gender Equality	53% reduction in time spent collecting water for project activity in year y	46% reduction in time spent collecting water for project activity in year y
7 Affordable and clean energy	31,771 households with access to Safe Water from a clean treatment technology	35,278 households with access to Safe Water from a clean treatment technology
13 Climate Action (mandatory)	Emissions reduced by 64,771 tCO ₂ e per year.	Emissions reduced by 59,471 tCO ₂ e in this MP. (58,880 per 365 days)
15 Life on Land	33,215 tonnes of non-renewable firewood saved in the project scenario per year	30,915 tonnes of non-renewable firewood saved in the project scenario in this MP (30,603 per 365 days)

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

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The values mentioned in the approved VPA-DD were based on the following assumptions:

- The SDGs Ex-antes report the estimated annual average over the 7 years of crediting period.
- $M_{q,y} = 90\%$
- $DO_{p,y} = 347$ days

² Whenever emission reductions are capped, both the original and capped values used for calculations must be transparently reported. Use brackets to denote original values.

- $N_{p,y} = 134,056$ number of people
- $Q_{pop,y} = 228,995,142$ L
- $U_{p,y} = 90\%$

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

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SDG 1 shows a 100% increase compared to the value of 20% estimated in approved PDD: 100% of project survey respondents confirmed that they are spending between 0 and 30 minutes for water collection.

SDG 7 shows a higher value compared to the estimated value in approved PDD due to the increased value of $U_{p,y}$ (100% for this monitoring period) compared to the ex-ante estimations.

SECTION F. SAFEGUARDS REPORTING

N/A

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.

Continuous input/Grievance Expression Process log books are held at a water point level on which users can comment on. The users are informed about the grievance mechanism by the water committee who either keep the logbook at the borehole or in the possession of the head villager/water committee member, to protect it from damage, but available to all users.

There were no grievances raised during the monitoring period.

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

No stakeholder mitigations were agreed to be monitored.

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

No legal contests or disputes have arisen during the monitoring period.

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