Gold Standard for the Global Goals

TEMPLATE

MONITORING REPORT

PUBLICATION DATE **14.10.2020**

VERSION **v. 1.1**

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

This document contains the following Sections

KEY PROJECT INFORMATION

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
Please delete this blue text box upon completion

Programme of Activity Information – (delete below table if N/A)

GS ID of Programme	GS5658
Title of Programme	PoA – Climate Finance for Sustainable Development
Version of POA-DD applicable to this monitoring report	Ver 06
Name and GS ID of fully Validated CPA/VPAs (i.e. non compliance check)	GS5658 VPA 1: Borehole project "Ease Water Madagascar" (GS ID GS:5230) GS5658 VPA 2: Improved Cookstoves for Rural Families in Gilé Reserve Area, Mozambique (GS ID: GS5812)

Key Project Information

GS ID (s) of Project (s)	GS6752 GS7311 GS7567 GS7566 GS10657 GS10658 GS10659 GS10783 GS10784
Title of the project (s) covered by monitoring report	GS5658 VPA 7: Water is Life, Madagascar GS5658 VPA 9: Water is Life - Phase II, Madagascar GS5658 VPA 13: Water is Life, Madagascar GS5658 VPA 14: Water is Life, Madagascar GS5658 VPA 16: Water is Life, Madagascar GS5658 VPA 17: Water is Life, Madagascar GS5658 VPA 18: Water is Life, Madagascar GS5658 VPA 23: Water is Life, Madagascar GS5658 VPA 24: Water is Life, Madagascar

Version number of the PDD/VPA-DD (s) applicable to this monitoring report	GS6752: Ver 05 GS7311: Ver 04 GS7567: Ver 08 GS7566: Ver 08 GS10657: Ver 05 GS10658: Ver 05 GS10659: Ver 05 GS10783: Ver 04 GS10784: Ver 04
Version number of the monitoring report	Ver 04
Completion date of the monitoring report	17/04/2023
Date of project design certification	GS6752: 16/04/2019 GS7311: 17/04/2019 GS7567: 24/03/2020 GS7566: 24/03/2020 GS10657: 30/07/2020 GS10658: 30/07/2020 GS10659: 30/07/2020 GS10783: 15/10/2020 GS10784: 15/10/2020
Date of Last Annual Report	N/A
Monitoring period number	GS6752: 4 GS7311: 4 GS7567: 2 GS7566: 3 GS10657: 3 GS10658: 3 GS10659: 3 GS10783: 2 GS10784: 2
Duration of this monitoring period	31/08/2021-30/08/2022
Project Representative	Carbonsink Group S.r.l (Carbonsink)
Host Country	Madagascar
Activity Requirements applied	☒ Community Services Activities ☐ Renewable Energy Activities ☐ Land Use and Forestry Activities/Risks & Capacities ☐ N/A
Methodology (ies) applied and version number	Technologies and practices to displace decentralized thermal energy consumption (TPDDTEC), version 3.1
Product Requirements applied	☒ GHG Emissions Reduction & Sequestration ☐ Renewable Energy Label ☐ N/A

Table 1 - Sustainable Development Contributions Achieved

GS6752

Sustainable Development Goals Targeted	SDG Impact	Amount Achieved	Units/ Products
13 Climate Action (mandatory)	Emissions Reductions	1,957	VERs
SDG 3: Good Health and Well-being	Additional persons using safe water in the project activity compared to the baseline scenario	1,188	Households
SDG 6: Clean Water and Sanitation	Additional persons having access to a safe water source in the project activity compared to the baseline scenario	1,250	Households
SDG 12: Responsible Consumption and Production	Hygiene campaign on water, sanitation and health related issues made in the project area	1	Hygiene campaign

GS7311

Sustainable Development Goals Targeted	SDG Impact	Amount Achieved	Units/ Products
13 Climate Action (mandatory)	Emissions Reductions	1,638	VERs
SDG 3: Good Health and Well-being	Additional persons using safe water in the project activity compared to the baseline scenario	950	Households
SDG 6: Clean Water and Sanitation	Additional persons having access to a safe water source in the project activity compared to the baseline scenario	1,000	Households

SDG 12: Responsible Consumption and Production	Hygiene campaign on water, sanitation and health related issues made in the project area	1	Hygiene campaign

GS7566

Sustainable Development Goals Targeted	SDG Impact	Amount Achieved	Units/ Products
13 Climate Action (mandatory)	Emissions Reductions	7,765	VERs
SDG 3: Good Health and Well-being	Additional persons using safe water in the project activity compared to the baseline scenario	4,762	Households
SDG 6: Clean Water and Sanitation	Additional persons having access to a safe water source in the project activity compared to the baseline scenario	5,013	Households
SDG 12: Responsible Consumption and Production	Hygiene campaign on water, sanitation and health related issues made in the project area	1	Hygiene campaign

GS7567

Sustainable Development Goals Targeted	SDG Impact	Amount Achieved	Units/ Products
13 Climate Action (mandatory)	Emissions Reductions	7,760	VERs
SDG 3: Good Health and Well-being	Additional persons using safe water in the project activity compared to the baseline scenario	4,759	Households

SDG 6: Clean Water and Sanitation	Additional persons having access to a safe water source in the project activity compared to the baseline scenario	5,009	Households
SDG 12: Responsible Consumption and Production	Hygiene campaign on water, sanitation and health related issues made in the project area	1	Hygiene campaign

GS10657

Sustainable Development Goals Targeted	SDG Impact	Amount Achieved	Units/ Products
13 Climate Action (mandatory)	Emissions Reductions	7,933	VERs
SDG 3: Good Health and Well-being	Additional persons using safe water in the project activity compared to the baseline scenario	4,766	Households
SDG 6: Clean Water and Sanitation	Additional persons having access to a safe water source in the project activity compared to the baseline scenario	5,017	Households
SDG 12: Responsible Consumption and Production	Hygiene campaign on water, sanitation and health related issues made in the project area	1	Hygiene campaign

GS10658

Sustainable Development Goals Targeted	SDG Impact	Amount Achieved	Units/ Products
13 Climate Action (mandatory)	Emissions Reductions	6,529	VERs

SDG 3: Good Health and Well-being	Additional persons using safe water in the project activity compared to the baseline scenario	3,833	Households
SDG 6: Clean Water and Sanitation	Additional persons having access to a safe water source in the project activity compared to the baseline scenario	4,259	Households
SDG 12: Responsible Consumption and Production	Hygiene campaign on water, sanitation and health related issues made in the project area	11	Hygiene campaign

GS10659

Sustainable Development Goals Targeted	SDG Impact	Amount Achieved	Units/ Products
13 Climate Action (mandatory)	Emissions Reductions	7,760	VERs
SDG 3: Good Health and Well-being	Additional persons using safe water in the project activity compared to the baseline scenario	4,759	Households
SDG 6: Clean Water and Sanitation	Additional persons having access to a safe water source in the project activity compared to the baseline scenario	5,009	Households
SDG 12: Responsible Consumption and Production	Hygiene campaign on water, sanitation and health related issues made in the project area	1	Hygiene campaign

GS10783

Sustainable Development Goals Targeted	SDG Impact	Amount Achieved	Units/ Products

13 Climate Action (mandatory)	Emissions Reductions	8,766	VERs
SDG 3: Good Health and Well-being	Additional persons using safe water in the project activity compared to the baseline scenario	5,376	Households
SDG 6: Clean Water and Sanitation	Additional persons having access to a safe water source in the project activity compared to the baseline scenario	5,659	Households
SDG 12: Responsible Consumption and Production	Hygiene campaign on water, sanitation and health related issues made in the project area	1	Hygiene campaign

GS10784

Sustainable Development Goals Targeted	SDG Impact	Amount Achieved	Units/ Products
13 Climate Action (mandatory)	Emissions Reductions	8,045	VERs
SDG 3: Good Health and Well-being	Additional persons using safe water in the project activity compared to the baseline scenario	4,809	Households
SDG 6: Clean Water and Sanitation	Additional persons having access to a safe water source in the project activity compared to the baseline scenario	5,062	Households
SDG 12: Responsible Consumption and Production	Hygiene campaign on water, sanitation and health related issues made in the project area	1	Hygiene campaign

Table 2 – Product Vintages

GS6752

		Amount Achieved
Start Dates	**End Dates**	**VERs**
31/08/2021	31/12/2021	659
01/01/2022	30/08/2022	1,298

GS7311

		Amount Achieved
Start Dates	**End Dates**	**VERs**
31/08/2021	31/12/2021	552
01/01/2022	30/08/2022	1,086

GS7566

		Amount Achieved
Start Dates	**End Dates**	**VERs**
31/08/2021	31/12/2021	2,617
01/01/2022	30/08/2022	5,148

GS7567

		Amount Achieved
Start Dates	**End Dates**	**VERs**
31/08/2021	31/12/2021	2,615
01/01/2022	30/08/2022	5,145

GS10657

		Amount Achieved
Start Dates	**End Dates**	**VERs**
31/08/2021	31/12/2021	2,673
01/01/2022	30/08/2022	5,260

GS10658

		Amount Achieved
Start Dates	**End Dates**	**VERs**
31/08/2021	31/12/2021	2,200
01/01/2022	30/08/2022	4,329

GS10659

		Amount Achieved
Start Dates	**End Dates**	**VERs**
31/08/2021	31/12/2021	2,615
01/01/2022	30/08/2022	5,145

GS10783

		Amount Achieved
Start Dates	**End Dates**	**VERs**
31/08/2021	31/12/2021	2,954
01/01/2022	30/08/2022	5,812

GS10784

		Amount Achieved
Start Dates	**End Dates**	**VERs**
31/08/2021	31/12/2021	2,711
01/01/2022	30/08/2022	5,045

SECTION A. DESCRIPTION OF PROJECT

A.1. General description of project

The micro-scale voluntary Project Activities (VPA) "Water is Life, Madagascar" and "Water is Life – Phase II, Madagascar" are developed by an Italian Associazione Mondobimbi Veneto Onlus in collaboration with Carbonsink.
The project activity includes the construction and securing of a network of wells for increase accessibility to safe and clean drinking water for local families living in the surroundings of the city of Tulear located in the Region of Atsimo-Andreafana, in Toliara Province, Madagascar.

In targeted areas, many families do not have access to safe and clean drinking water and, moreover, long daily journeys are needed to reach the water sources in these semi-desert areas. Many health problems are linked to the use of unsafe drinking water: a high incidence of diseases such as diarrhea, intestinal infections, and parasites. Local people typically use boiling with firewood or charcoal to purify their drinking water. This process results in the release of greenhouse gas emissions from the wood combustion.

The project is addressed to supply safe drinking water for domestic use and consequently to improve the hygiene, social, economic and environmental issues related to the water consume. Moreover, verifiable Carbon Dioxide (CO2) emission reductions are achieved through the reduced wood/charcoal combustion and the need for water purification through boiling is reduced. The project will also raise awareness among population regarding hygiene and contribute to sustainable development.

The water supply systems of the projects GS6752 and GS 7311 are equipped with manual pumps and all the other projects involve boreholes with solar powered pumps (GS7567, GS7566, GS10657, GS10658, GS10659, GS10783 and GS10784).

A.2. Location of project

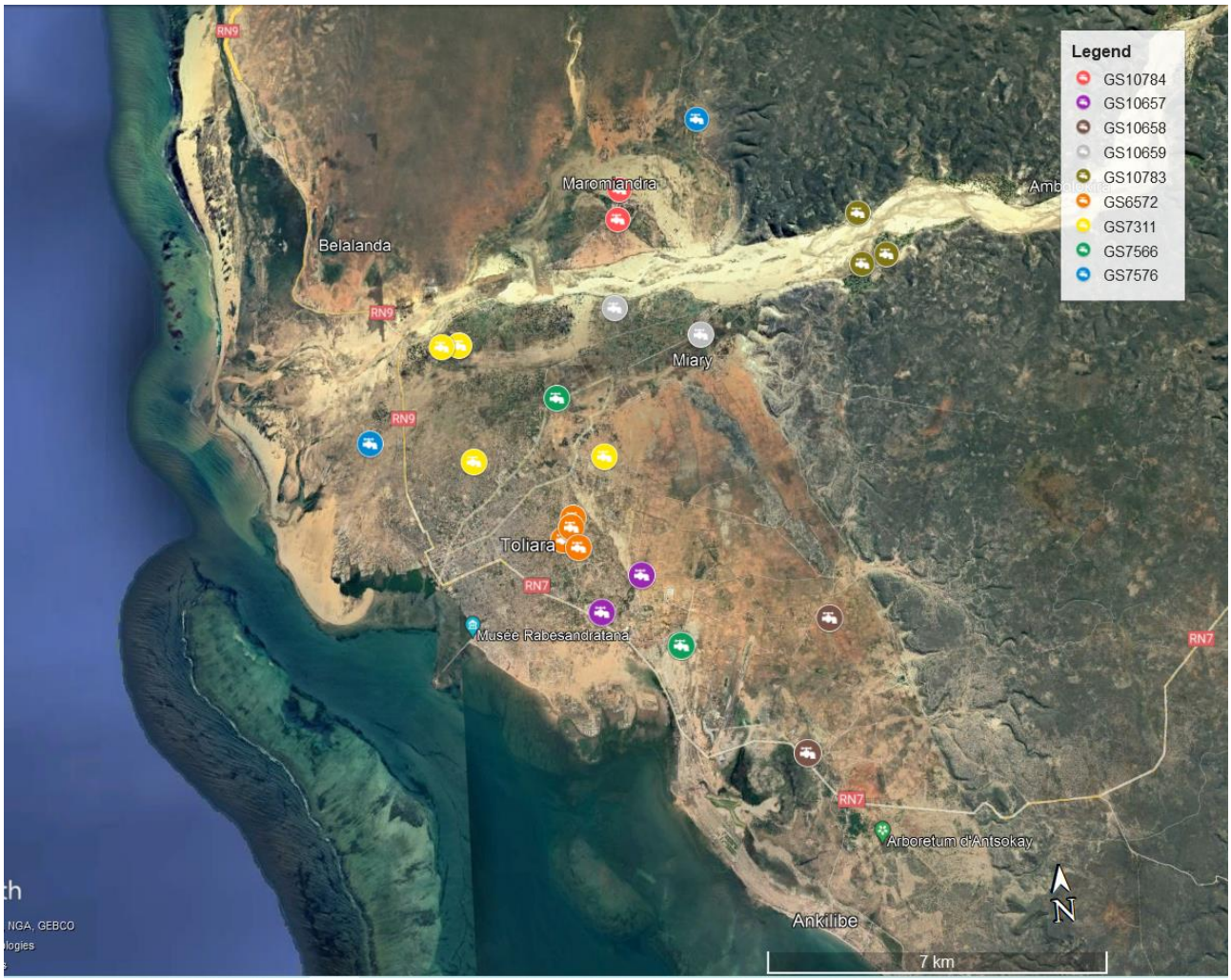
Republic of Madagascar, Atsimo-Andreafana Region, in Province of Toliara.

GS6752- Villages of Betsingilo and Ambolofoty
GS7311- Villages of Samontilahy, Andaboly and Ankilofolo
GS7567- Villages of Anketrake Andranogadra and Ankatsaky
GS7566- Villages of Belemboky Androvakely and Andranomena
GS10657- Villages of Ankilimarovahatse and Antanamikodoy
GS10658- Villages of Antobe and Ankoronga
GS10659- Villages Miary Ville and Miary Ankoronga
GS10783- Villages of Mandrosoa, Mandrosoa Antaikoaki and Ankotsahobihia
GS10784- Villages of Maromiandra and Maromiandra Antevamena

Table A-1. The GPS coordinates of the projects water systems

GS6752		
Betsingilo Centre	-23.35202	43.69526
Betsingilo Flamboyant	-23.35403	43.69715
Betsingilo Video	-23.35206	43.69393
Ambolofoty Nord	-23.34769	43.69626
Ambolofoty Sud	-23.34956	43.69575
GS7311		
Samotilahy	-23.34653	43.70489
Andaboly	-23.33425	43.67507
Ankilofolo Bekitrely	-23.31054	43.66988
Ankilofolo Hazomanga	-23.30875	43.67334
GS7567		
Anketrake Andranogadra	-23.33311	43.65463
Ankatsaky	-23.26096	43.73199
GS7566		
Belemboky Androvakely	-23.32179	43.69703
Andranomena	-23.37465	43.71739
GS10657		
Ankilimarovahatse	-23.36874	43.70564
Antanamikodoy	-23.35997	43.71032

GS10658		
Antobe	-23.37236	43.74957
Ankoronga Angara	-23.39817	43.74081
GS10659		
Miary Ville	-23.30545	43.72835
Miary Ankoronga	-23.30334	43.70805
GS10783		
Mandrosoa	-23.29799	43.76655
Mandrosoa Antaikoaki	-23.29626	43.77237
Ankotsobohia	-23.28626	43.76706
GS10784		
Maromiandra	-23.27623	43.71246
Maromiandra Antevamena	-23.28319	43.71148



Imagine A-1. Location of projects water systems

Imagine A-2. Example of project scenario of GS6752 (Betsingilo P2)

Imagine A-3. Example of project scenario of GS7311 (Andaboly)

Imagines A-4, A-5. Project water systems constructed in Belemboky Androvakely and Andranomena villages (GS7566)

Imagines A-6, A-7. Project water systems constructed in Ankilimarovahatse and Antanimikodoy villages (GS10657)

Imagines A-7, A-8. Project water systems constructed in Antobe and Ankoronga villages (GS10658)

Imagines A-9, A-10. Project water systems constructed in Miary Ville and Miary Ankoronga villages (GS10659)

Imagines A-11. Project water system constructed in Mandrosoa village (GS10783)

Imagines A-12. Project water system constructed in Mandrosoa/Antaikoaki village (GS10783)

Imagines A-13. Project water system constructed in Ankotsahobihia village (GS10783)

Imagines A-14. Project water system constructed in Maromiandra village (GS10784)

Imagines A-15. Project water system constructed in Maromiandra Antevamena

village (GS10784)

Imagines A-16, A17. Project water systems constructed in Anketrake Andranogadra and Ankatsaky villages (GS7567)

Ankatsaky

A.3. Reference of applied methodology

Technologies and practices to displace decentralized thermal energy consumption (TPDDTEC), version 3.1

A.4. Crediting period of project

The length of the crediting period is 5 years, twice renewable in line with Community Services Activity Requirements.

The start and end dates of all the projects crediting period are as follows:

GS6752: 18/11/2018 – 17/11/2023
GS7311: 26/11/2018 – 25/11/2023
GS7567: 01/09/2020 – 31/08/2025
GS7566: 22/09/2019 – 21/09/2024

GS10657: 22/09/2019 – 21/09/2024

GS10658: 23/11/2019 – 22/11/2024

GS10659: 22/09/2019 – 21/09/2024

GS10783: 01/09/2020 – 31/08/2025

GS10784: 01/09/2020 – 31/08/2025

SECTION B. IMPLEMENTATION OF PROJECT

B.1. Description of implemented project

As per the registered PDDs, the water systems have been installed to ensure the supply of safe drinking water for domestic use in the villages.

Table B-1. Summary of projects water systems

Borehole ID (i.e. name of the village)	Start date of the construction	End date of the construction	Model of the pump	Total number of people obtaining water
GS6752				
Betsingilo P1	13/08/2018	17/11/2018	India Mark II	300
Betsingilo P2	13/08/2018	17/11/2018	India Mark II	300
Betsingilo P3	17/08/2018	17/11/2018	India Mark II	300
Ambolofoty P6	09/08/2018	16/11/2018	India Mark II	300
Ambolofoty P7	01/09/2018	04/11/2018	India Mark II	300
GS7311				
Samotilahy	06/08/2018	16/11/2018	India Mark II	300
Andaboly	21/08/2018	29/10/2018	India Mark II	300
Ankilofolo P1	27/08/2018	30/10/2018	India Mark II	300
Ankilofolo P2	05/09/2018	25/11/2018	India Mark II	300
GS7567				
Anketrake Andranogadra	02/12/2019	31/08/2020	LSPI Series DC Brush Plastic Impeller Solar Pump	3,010
Ankatsaky	01/09/2020	30/12/2020	LSPI Series DC Brush Plastic Impeller Solar Pump	2,997
GS7566				
Belemboky Androvakely	15/05/2019	21/09/2019	LSPI Series DC Brush Plastic Impeller Solar Pump	2,984
Andranomena	15/05/2019	21/09/2019	LSPI Series DC Brush Plastic Impeller Solar Pump	3,027

GS10657				
Ankilimarovahatse	15/05/2019	21/09/2019	LSPI Series DC Brush Plastic Impeller Solar Pump	2,995
Antanamikodoy	15/05/2019	22/11/2019	LSPI Series DC Brush Plastic Impeller Solar Pump	3,021
GS10658				
Antobe	15/05/2019	24/12/2019	LSPI Series DC Brush Plastic Impeller Solar Pump	2,084
Ankoronga Angara	15/05/2019	22/11/2019	LSPI Series DC Brush Plastic Impeller Solar Pump	3,024
GS10659				
Miary Ville	15/05/2019	21/09/2019	LSPI Series DC Brush Plastic Impeller Solar Pump	3,010
Miary Ankoronga	15/05/2019	21/09/2019	LSPI Series DC Brush Plastic Impeller Solar Pump	2,997
GS10783				
Mandrosoa	01/04/2020	31/08/2020	LSPI Series DC Brush Plastic Impeller Solar Pump	2,356
Mandrosoa Antaikoaki	01/04/2020	31/08/2020	LSPI Series DC Brush Plastic Impeller Solar Pump	2,258
Ankotsahobihia	01/09/2020	30/12/2020	LSPI Series DC Brush Plastic Impeller Solar Pump	2,172
GS10784				
Maromiandra	15/05/2020	15/09/2020	LSPI Series DC Brush Plastic Impeller Solar Pump	3,088

Maromiandra Antevamena	15/05/2020	31/08/2020	LSPI Series DC Brush Plastic Impeller Solar Pump	2,982

Table B-2. Monitoring Activities implemented during the current Monitoring Period

Monitoring Activity	Time
Annual hygiene campaigns	31/05/2022 (GS6752)
	02/06/2022 (GS7311)
	16/06/2022 (GS7567)
	02/06/2022 (GS7566)
	07/06/2022 (GS10657)
	09/06/2022 (GS10658)
	08/06/2022 (GS10659)
	29/06/2022 (GS10783)
	15/06/2022 (GS10784)
Monitoring survey	30/06/2022
WCFT	10/08/2021-30/08/2021

Table B-3. Water quality tests. (dd/mm/yyyy)

GS ID	Village	WP Name	WQT Nov	WQT Feb	WQT May	WQT Aug
GS6752	AMBOLOFOTY	Ambolofoty Nord P6	29/11/2021	26/02/2022	30/05/2022	29/08/2022
GS6752	AMBOLOFOTY	Ambolofoty Sud P7	29/11/2021	26/02/2022	30/05/2022	29/08/2022
GS6752	BETSINGILO	Betsingilo Centre P2	29/11/2021	28/02/2022	30/05/2022	29/08/2022
GS6752	BETSINGILO	Betsingilo Flamboyant P3	29/11/2021	28/02/2022	30/05/2022	29/08/2022
GS6752	BETSiNGILO	Betsingilo Vidéo P1	29/11/2021	28/02/2022	30/05/2022	29/08/2022
GS7311	ANDABOLY	Andaboly	29/11/2021	26/02/2022	30/05/2022	29/08/2022
GS7311	ANKILIFOLO	Ankilifolo Bekitrely P 1	29/11/2021	26/02/2022	30/05/2022	29/08/2022
G 7311	ANKILIFOLO	Ankilifolo Hazomanga P2	29/11/2021	26/02/2022	30/05/2022	29/08/2022
GS7311	SAMONTILAHY	Samontilahy	29/11/2021	28/02/2022	30/05/2022	29/08/2022
GS7566	ANDRANOMENA	Andranomena	22/11/2021	19/02/2022	23/05/2022	22/08/2022
GS7566	BELEMBOKY	Belemboky Androvakely	22/11/2021	21/02/2022	23/05/2022	22/08/2022
GS7567	ANKTSAKY	Ankatsake	15/11/2021	12/02/2022	16/05/2022	15/08/2022

GS7567	ANKETRAKE ANDRANOGADRA	Andranogadra	15/11/2021	12/02/2022	16/05/2022	15/08/2022
GS10657	ANKILIMAROVAHATSE	Ankilimarovahatse	22/11/2021	19/02/2022	23/05/2022	22/08/2022
GS10657	ANTANIMIKODOY	Antanimikodoy	22/11/2021	21/02/2022	23/05/2022	22/08/2022
GS10658	ANKORONGA ANGARA	Ankoronga Angara	22/11/2021	21/02/2022	23/05/2022	22/08/2022
GS10658	ANTOBY	Antoby	20/11/2021	21/02/2022	23/05/2022	22/08/2022
GS10659	MIARY ANKORONGA	Miary Ankoronga	22/11/2021	21/02/2022	23/05/2022	22/08/2022
GS10659	MIARY VILLE	Miary Ville	22/11/2021	21/02/2022	23/05/2022	22/08/2022
GS10783	ANKOTSOBIHiA	Arkotsobihia	15/11/2021	14/02/2022	16/05/2022	15/08/2022
GS10783	MANDROSOA ANTAIKOAKY	Antaikoaky	15/11/2021	14/02/2022	16/05/2022	15/08/2022
GS10783	MANDROSOA	Mandrosoa	15/11/2021	14/02/2022	16/05/2022	15/08/2022
GS10784	MAROMIANDRA ANTEVAMENA	Antevamena	13/11/2021	14/02/2022	16/05/2022	15/08/2022
GS10784	MAROMIANDRA	Maromiandra	15/11/2021	14/02/2022	16/05/2022	15/08/2022

B.1.1 Forward Action Requests

Forward Action Request # 1

During the next OO visit, the average number of people/households will be cross-checked by the OO.

The OO site visit has been planned together with SC Team.

B.2. Post-Design Certification changes

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

N/A

B.2.2. Corrections

N/A

B.2.3. Changes to start date of crediting period

N/A

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

N/A

B.2.5. Changes to project design of approved project

The applied value for charcoal and wood fuel consumption is change from the registered VPA-DD (GS6752 and GS7311) to be in line with the latest GS Update and BAMG report.

SECTION C. DESCRIPTION OF MONITORING SYSTEM APPLIED BY THE PROJECT

In line the section B.7.3. of the registered VPA-DD the monitoring is to be made by keeping records on the water supply systems and by conducting the studies after the project implementation start in line with the applied methodology as described below:

D) Record of the Water Supply Systems

The records of the information collected in an electronic database in line with the Section B.3 of the PoA-DD for enabling the unique identification of the project water supply systems was been kept. The database includes the following information:

- Unique identification number of each Water Supply System
- Date of installation of each Water Supply System
- GPS location of each Water Supply System
- Model of the pump and filter used for each Water Supply System
- Total quantity of the constructed Water Supply Systems
- The total number of people obtaining their water from each Water Supply System

These data are summarised in the Emission Reduction Calculation sheet[1] as well as in the above tables A-1 and B-1.

2) Studies on Project Scenario

After the project implementation start, the following studies have been conducted for the project scenario:

D. Project Non-Renewable Biomass (NRB) Assessment – at least at renewal of crediting period

In accordance with the TPDDTEC methodology, the NRB assessment can be remained fixed for the entire crediting period and thus no updates or now assessment have been made during this monitoring period.

B. Project Survey (PS) of end-user characteristics – completed annually

The project survey has the same requirements as the baseline survey (described in Section B.4 of this VPA-DD) but is conducted with end-users representative of

[1] Please refer tab "ERs" with in the ER Ex post calculations spreadsheets

the project scenario target population and currently using the safe water project technology. In the guidance data collected, questions about end-user characteristics and baseline technology and fuels should be treated as specific to safe water supply and water treatment.

During this monitoring period, the Project Survey and the below-described Usage Survey has been implemented together on the 30 th of June 2022.The summary of the obtained results is described below. A more detailed description of the results is made in a separate document[2].

C. Baseline Water Boiling Test (BWBT) – completed at least once

In line with BAMG report, the following conservative values for baseline fuels have been used:

- 0.4 Kg/l for wood (default value)
- 0.125 Kg/l for charcoal (capped value).

A separate baseline water boiling test (BWBT) for charcoal fuel consumption has been conducted in Spring 2021 in line the indications of the applied methodology and the BAMG report. The value obtained from the field measurement has been selected to be conservatively capped at 0.125 Kg/litre.[3]

Moreover, the monitoring survey has confirmed the same water boiling technologies prevalent in the baseline and in the project scenarios.

D. Water Consumption Field Test (WCFT) – completed at least biennially

The project proponent has carried out the WCFTs to determine the actual safe water consumption and boiling volumes (both of raw/unsafe water and safe water)[4] for the projects scenarios. The WCFTs have been completed prior to the verification and in future will be made at least every two years after with randomly selected end-users representative of the project scenario target population and currently using the projects technology following the WCFT Procedure designed for the project[5] .

[2] Sample Selection_Usage Survey 2022

[3] REPORT IEST

[4] Measured as volume per person per day

[5] WCFT Procedure has been provided to Gold Standard at the projects validation.

The following three different volumetric variables are measured during the WCFTs:

Q_p Quantity of safe water in litres consumed in the project scenario p and supplied by project technology per person per day

$Q_{p,rawboil,y}$ Quantity of raw or unsafe water boiled in the project scenario p per person per day

$Q_{p,cleanboil,y}$ Quantity of safe (treated, or from safe supply) water boiled in the project scenario p per person per day

The Water Consumption Test was made between 10th August and 30th August 2021 in 30 randomly selected families among nine of the projects' villages (Ambolofoty, Andranomena, Ankilifolo, Ankilimarovahatse, Ankoronga Angara, Miary Ankoronga, Ankotsobohia, Antaikoaky, Belemboky Androvakely, Bestingilo, Mandrosoa, Miary Ville)[6].

D. On-going Monitoring Studies: Usage rates, leakage, water quality

Water quality testing – completed every quarter

The quality of the treated water will be assessed to ensure that it is fit for human consumption. In line with the national standard the quality shall be 0 Colony Forming Unit (CFU) of E. Coli / 100 ml of safe water[7]. The water quality must be tested every quarter, with the first test within 6 months of the stated project start date. In addition, project participants shall ensure that water quality is tested at least once during season where there is a high chance of contamination, for example the rainy season.

The water quality testing has been made in the local laboratory or in the accredited laboratory[8]. The detailed results of each test are provided as a separate document[9]. All the test confirmed the water to be in line with the

[6] WCFT 2021 Report uploaded to SC application

[7] See the document "Décret MECIE - 2004" uploaded in SC application at project validation

[8] Univerite de Toliara Institut d'enseignement superieur de Toliara (IEST) Laboratoire de chimie et de contrôle de qualite des eaux

[9] Results of the quality tests 2021

national water quality requirements and no Colony Forming Units (CFU) were found to be present.

The hygienic campaigns organized during this monitoring period have further enhanced awareness raising regarding the hygienic water usage in the project area. The detailed description of the made hygienic campaigns is provided in a separate document[10].

Usage Survey – completed at least annually

In line with the registered VPA-DDs, the Usage Survey is completed annually, or more frequently, and all cases on time for any request of issuance. The usage survey provides a single usage parameter that is weighted based on drop off rates that are representative of age distribution for project technologies in the sales/distribution/construction record.

For this monitoring period Usage Survey and the above-described Project Survey have been implemented together on the 30th of June, 2022. Totally 110 households were interviewed. Below are summarized the obtained main results.

- 110 randomly selected persons were interviewed within 17 out of 20 project villages.
- 96% of the households are using traditional charcoal stoves as their principal cooking device and the 97% affirmed to use charcoal as main fuel and the remaining 3% declared to wood as fuel.
- 100% of the households obtain the water from project boreholes for drinking purposes. Furthermore, all the respondents declared to use the project water point on a daily basis both during the dry and rainy seasons. Therefore, no seasonal variation was observed in the use of the project's water systems.
- Considering the non-drinking purposes, most of the users declared to use unprotected wells and less than 10 households stated to prefer river or stream. Only one respondent declared to use the water point during the rainy season.
- The one-way distance to the project boreholes was averagely 68 meters.

[10] Reports on hygiene campaign uploaded to SC Application

- No one of the respondents stated to purify the water deriving from project borehole before drinking it.

Leakage Assessment – completed every other year

As the leakage risks related to the safe water supply and treatment technologies can be deemed very low, the leakage can be ignored, and leakage is expected to be 0.

However, to confirm that leakage can be deemed very low, the below described leakage assessment regarding the potential leakage sources (listed in the methodology TPDDTEC, pages 12-13) shall be completed every other year, starting on time for the first verification in line with the section 2.6 ("Leakage") of the applied TPDDTEC methodology.

A) The displaced baseline technologies are reused outside the project boundary in place of lower emitting technology or in a manner suggesting more usage than would have occurred in the absence of the project.

Not applicable and therefore not counted. In these VPAs the baseline technologies are referring to the methodologies used for water boiling which are three stone fires and traditional charcoal stoves. As confirmed by the made Monitoring Survey made in 2019 these baseline methodologies have continued to be used by the families for cooking activities (even though the project has replaced the need for boiling the water) and it's not foreseen that the project would have led to the displacement of the baseline technologies outside the project boundary.

b) Non-project users who previously used lower emitting energy sources use the non-renewable biomass or fossil fuels saved under the project activity.

Not applicable and therefore not counted. As confirmed by the Monitoring Survey made in 2019, the energy used in the area for eventual water boiling are firewood and charcoal. It is very unlikely that users who previously (in the baseline) used for example non-GHG emitting methods like chlorine treatment for water purification would switch to boiling drinking water because another 'zero emission' technology is promoted by the project.

c) The project significantly impacts the NRB fraction within an area 3131ere other CDM or VER project activities account for NRB fraction in their baseline scenario.

Due to the small size of these VPAs, it's not expected that it will have significant influence on the national NRB fraction.

d) The project population compensates for loss of the space heating effect of inefficient technology by adopting some other form of heating or by retaining some use of inefficient technology.

Not applicable and therefore not counted. It is unlikely that households would had used the boiling of drinking water for space heating. In addition, end-users retain use of the baseline technologies for cooking and the difference in heat effects from no longer boiling water can be considered minimal. Any retaining use of inefficient technology for water boiling will, anyhow, be covered in the results of the water consumption field test (WCFT).

e) By virtue of promotion and marketing of new technology with high efficiency, the project stimulates substitution within households who commonly used a technology with relatively lower emissions, in cases where such a trend is not eligible as an evolving baseline.

Not applicable and therefore not counted. As confirmed by the Monitoring Survey made in 2019, the technologies used in the baseline for water boiling are three stone fires and traditional charcoal stoves with either non-renewable biomass or fossil fuels and/or the end-users are lacking access to safe water. It is very unlikely that users who previously (in the baseline) used for example non-GHG emitting methods like chlorine treatment for water purification would switch to boiling drinking water because another 'zero emission' technology is promoted by the project.

D. Hygiene Survey – completed annually

The hygiene campaigns are to be carried out in the project area annually. All the hygiene campaigns are foreseen to be based on "Water, Sanitation, and Hygiene Improvement, Training Package for the Prevention of Diarrheal Disease, Guide for Training Outreach Workers, USAID Hygiene Improvement Project, 2009" which is referred to in the applied methodology and to be in line with the plan described in the section B.7.2 of the registered VPA-DDs.

The conducted activities as well as the number of the participants in the organized campaigns and the number of the trained personnel are to be described annually in the monitoring reports. Moreover, any major changes on the health status of the water users as a result of contaminated water (e.g. an outbreak of water

related disease) should be reported and, if relevant, a strategy put in place to address it through the hygiene campaign. Hygiene refers here to access to sanitation amenities, equipment and infrastructure, as well as to the behaviour in respect to regular and correct use of such amenities. It also refers to behaviour that prevents infections from water-related diseases.

The success of education on hygiene issue will also be monitored through the WCFT which will study the ratio of end-user that are still boiling their drinking water in the project scenario and through the usage/monitoring survey to check on the use of clean/safe containers and devices for transport and storage of water used for drinking, cooking, food preparation and basic personal hygiene. In case needed the education on the hygiene will be adjusted if proven unsuccessful.

During this monitoring period the following hygiene campaigns and have been organized:

- Hygiene Campaign GS6752 (Ambolofoty village)
- Hygiene Campaign GS7311 (Andaboly village)
- Hygiene Campaign GS7566 (Belemboky Androvakely village)
- Hygiene Campaign GS10657 (Antanimikodoy village)
- Hygiene Campaign GS10658 (Ankoronga Angara village)
- Hygiene Campaigns GS10659 (Miary Ville village)
- Hygiene Campaign GS7567 (Ankatsaky village)
- Hygiene Campaigns GS10783 (Ankotsaobihia village)
- Hygiene Campaigns GS10784 (Maromiandra village)

During the events water, sanitation and health related issues were discussed and the benefits of consumption of clean water and the ways for hygienic handling during transport, storage and usage of clean water have been highlighted. Moreover, particular attention was paid to the transport of water. All participants were advised not to let the children of their families carry heavy containers. At the end of all campaigns. At the end of all the hygiene campaigns, it was recalled that all stakeholders have the opportunity to leave comments when they prefer, using the grievance Continuous Input / Grievance Expression Process Book among all the other methods for the reporting of all grievances. The detailed

description of the hygienic campaigns made during this monitoring period is provided in a separate document[11].

SECTION D. DATA AND PARAMETERS

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

SDG 13

Data/parameter:	X_{boil}
Unit	Percentage
Description	Percentage of premises that in the absence of the project activity would have used non-GHG emitting technologies like chlorine treatment techniques (if available) in the project boundary.
Source of data	Baseline Survey[12]
Value(s) applied)	0.149
Choice of data or measurement methods and procedures	Baseline Study found 14.9% of the interviewed families, in the absence of the project activity, would have preferred to use liquid chlorine for water purification if it would be available for them.
Purpose of data	Estimation of CO2e emission reductions
Additional comments	Transparent data analysis and reporting. This parameter is only applied for premises that are under suppressed demand situation. Parameter is also used to calculate: SDG 3 and SDG 6

Data/parameter:	C_j
Unit	Percentage
Description	Percentage of users of project safe water supply who were already in baseline using a non-boiling safe water supply
Source of data	Baseline Survey
Value(s) applied)	0.02
Choice of data or measurement methods and procedures	Baseline Study found 2% of the interviewed families to consume non-boiling safe water supply (water purified with liquid chlorine).
Purpose of data	Estimation of CO2e emission reductions
Additional comments	Transparent data analysis and reporting. Parameter is also used to calculate: SDG 3 and SDG 6

[11] Hygiene campaigns 2022

[12] See the document "GS6752_GS7311 Baseline Survey Report_2018", uploaded to SC application

Data/parameter:	Specific fuel consumption
Unit	Kg/Litre
Description	Quantity of wood fuel or fossil fuel required to boil 1 litre of water using technologies representatives of baseline scenario b during year y
Source of data	BAMG report BWBT [13]
Value(s) applied)	0.40 for wood (default value, BAMG report) 0.125 for charcoal (capped value, BWBT)
Choice of data or measurement methods and procedures	Default value for wood (from BAMG report) A separate baseline water boiling test (BWBT) for charcoal fuel consumption has been conducted in Spring 2021 in line the indications of the applied methodology and the BAMG report. The value obtained from the field measurement has been selected to be conservatively capped at 0.125 Kg/litre
Purpose of data	Estimation of CO2e emission reductions
Additional comments	

Data/parameter:	$EF_{b,co2}$
Unit	tCO_2/TJ
Description	CO_2 emission factor arising from use of fuels in baseline scenario
Source of data	IPCC default value for wood
Value(s) applied)	112
Choice of data or measurement methods and procedures	Deemed valid by TPDDTEC Methodology
Purpose of data	Estimation of CO2e emission reductions
Additional comments	

Data/parameter:	$EF_{b,non\ co2}$
Unit	tCO_2/TJ
Description	CO_2 emission factor arising from use of fuels in project scenario
Source of data	IPCC default value for wood
Value(s) applied)	8.692 (2020), 9.46 (2021-2022)
Choice of data or measurement methods and procedures	Deemed valid by TPDDTEC Methodology

[13] REPORT IEST

Purpose of data	Estimation of CO_2e emission reductions
Additional comments	If EF is in units of tCO_2/t_fuel, remove NCV term from emission calculations. Term can include a combination of emission factors from fuel production, transport and use in line with the emission sources included in the project. CO_2-emission factors for charcoal may be estimated from project specific monitoring or alternatively by researching a conservative wood to charcoal ratio (from IPCC, credible published literature, project-relevant measurement reports, or project-specific monitoring) and multiplying this value by the pertinent EF for wood. According to the GS rules, for the period starting from 01 January 2021 is applied the AR5 GWP values.

Data/parameter:	$EF_{p,co2}$
Unit	tCO_2/TJ
Description	CO_2 emission factor arising from use of fuels in project scenario
Source of data	IPCC default value for wood
Value(s) applied)	112
Choice of data or measurement methods and procedures	Deemed valid by TPDDTEC Methodology
Purpose of data	Estimation of CO_2e emission reductions
Additional comments	If EF is in units of tCO_2/t_fuel, remove NCV term from emission calculations. Term can include a combination of emission factors from fuel production, transport and use in line with the emission sources included in the project. CO_2-emission factors for charcoal may be estimated from project specific monitoring or alternatively by researching a conservative wood to charcoal ratio (from IPCC, credible published literature, project-relevant measurement reports, or project-specific monitoring) and multiplying this value by the pertinent EF for wood.
Data/parameter:	Efp,non-co2
Unit	tCO2/TJ
Description	Non-CO2 emission factor arising from use of fuels in project scenario
Source of data	IPCC default value for wood
Value(s) applied)	8.692
Choice of data or measurement methods and procedures	Deemed valid by TPDDTEC Methodology
Purpose of data	Estimation of CO2e emission reductions

Additional comments	If EF is in units of tCO2/t_fuel, remove NCV term from emission calculations. Term can include a combination of emission factors from fuel production, transport and use in line with the emission sources included in the project. Non-CO2-emission factors for charcoal may be estimated from project specific monitoring or alternatively by researching a conservative wood to charcoal ratio (from IPCC, credible published literature, project-relevant measurement reports, or project-specific monitoring) and multiplying this value by the pertinent EF for wood.

Data/parameter:	$f_{NRB,I,y}$
Unit	Fraction
Description	Non-renewability status of woody biomass fuel in scenario I during the year y
Source of data	Default fNRB value provided by CDM Executive Board and endorsed by the host country DNA[14].
Value(s) applied)	0.72
Choice of data or measurement methods and procedures	The default NRB value provided by the CDM Executive Board and endorsed by the host country DNA is deemed valid by the applied TPDDTEC methodology.
Purpose of data	Estimation of CO_2e emission reductions
Additional comments	The value of f_{NRB} is fixed ex-ante for entire crediting period even though the project activity may choose to update the f_{NRB} during the crediting period. In case CDM/DNA updates on this value, PP may continue to use the registered value by demonstrating it's to be a conservative approach. Otherwise, PP shall use an updated value

Data/parameter:	$NCV_{b\ ,fuel}$
Unit	TJ/ton
Description	Net calorific value of the fuels used in the baseline
Source of data	IPCC default value for wood
Value(s) applied)	0.0156
Choice of data or measurement methods and procedures	Deemed valid by TPDDTEC Methodology
Purpose of data	Estimation of CO_2e emission reductions
Additional comments	Fixed for the entire VPA crediting period Term can include a combination of emission factors from fuel production, transport and use in line with the emission sources included in the project.

Data/parameter:	$NCV_{p,\ fuel}$
Unit	TJ/ton
Description	Net calorific value of the fuels used in the project

[14] Available at http://cdm.unfccc.int/DNA/fNRB/index.html (Site visited 02/12/2019)

Source of data	IPCC default value for wood
Value(s) applied)	0.0156
Choice of data or measurement methods and procedures	Deemed valid by Methodology
Purpose of data	Estimation of CO_2e emission reductions
Additional comments	Fixed for the entire VPA crediting period Term can include a combination of emission factors from fuel production, transport and use in line with the emission sources included in the project. If EF in units of tCO_2/t_fuel, remove NCV term from emission calculations. This has same values as $NCV_{baseline}$ in projects which reduce use of the same fuel.

D.2 Data and parameters monitored

SDG 13

Data/parameter:	$N_{p,y}$
Unit	Persons.days
Description	Number of person.days consuming water supplied by project scenario p through year y
Source of data	The total number of persons using each water supply and treatment system is monitored through the production of an end-users list[15] The total number of operational days is monitored[16].
Value(s) applied	GS6752: 531,075 GS7311: 420,480 GS7567: 2,104,853 GS7566: 2,106,254 GS10657: 2,151,923 GS10658: 1,771,199 GS10659: 2,104,853 GS10783: 2,377,814 GS10784: 2,182,317

[15] Please refer to the relative spreadsheet in the Ex-post calculation documents uploaded to SC Application.

[16] The number of operation days ("Technology days") has been monitored for each supply systems, please refer to "maintenance plan" uploaded to SC Application. To be conservative the value of technology days has been capped at 347 days as per GS recommendations.

Measurement methods and procedures	As per FT updates
Monitoring frequency	Annually
QA/QC procedures:	Transparent data analysis and reporting
Purpose of data:	Estimation of CO2e emission reductions
Additional comments:	Example of calculation methods: GS6752: 1,500 persons * 354 days= 531,075persons.days For the complete calculations please refer the ER spreadsheet (tap ERs, column E)

Data/parameter:	Project Technology Days
Unit	%
Description	days of non-operation of the borehole
Source of data	Monitoring survey
Value(s) applied	GS6752: 3% GS7311: 4% GS7566: 4% GS7567: 4% GS10657:2% GS10658:5% GS10659: 4% GS10783: 4% GS10784: 2%
Measurement methods and procedures	Maintenance plan
Monitoring frequency	Annually
QA/QC procedures:	Transparent data analysis and reporting
Purpose of data:	Estimation of CO2e emission reductions
Additional comments:	Please refer to "Maintenance Plan 2022" uploaded to SC App for further information regarding the boreholes downtime. Furthermore, please also refer to tab "ERs" within the Ex post ER calculation spreadsheet for the operational days.

Data/parameter:	Percentage of users per used fuel
Unit	%
Description	Percentage of user that are using firewood or charcoal
Source of data	Monitoring survey
Value(s) applied	0.73 charcoal; 0.27 firewood
Measurement methods and procedures	This parameter is used to calculate Wb,y and Wp,y
Monitoring frequency	Annually
QA/QC procedures:	Transparent data analysis and reporting
Purpose of data:	Estimation of CO2e emission reductions
Additional comments:	

Data/parameter:	$Q_{p,y}$
Unit	Liters per person per day (l/person/day)
Description	Quantity of safe water supplied in the project scenario p during the year y, using the "zero or low" emissions' clean water supply technology
Source of data	Water Consumption Field Test (WCFT)
Value(s) applied	7
Measurement methods and procedures	As per WCFT
Monitoring frequency	At least biennially
QA/QC procedures:	Transparent data analysis and reporting
Purpose of data:	Estimation of CO_2e emission reductions
Additional comments:	WCFT made in 2021 resulted as 8.6 litre/person/day. This value has been capped to 7 litres in line with the page 39 of the applied methodology. For further details on WCFT please refer the separate WCFT Report 2021

Data/parameter:	$Q_{p,rawboil,y}$
Unit	Litres per person per day (l/person/day)
Description	Quantity of raw or unsafe water that is still boiled after installation of the water treatment technology.
Source of data	Water Consumption Field Test (WCFT)
Value(s) applied	0
Measurement methods and procedures	As per WCFT
Monitoring frequency	At least biennially
QA/QC procedures:	Transparent data analysis and reporting
Purpose of data:	Estimation of CO_2e emission reductions
Additional comments:	For further details on WCFT please refer the separate WCFT Report 2021.

Data/parameter:	$Q_{p,cleanboil,y}$
Unit	Litres per person per day (l/person/day)
Description	Quantity of safe (treated, or from safe supply) water boiled in the project scenario p, after installation of project technology
Source of data	Water Consumption Field Test (WCFT)
Value(s) applied	0
Measurement methods and procedures	As per WCFT
Monitoring frequency	At least biennially
QA/QC procedures:	Transparent data analysis and reporting
Purpose of data:	Estimation of CO_2e emission reductions
Additional comments:	For further details on WCFT please refer the separate WCFT Report 2021.

Data/parameter:	$U_{p,y}$
Unit	Percentage
Description	Usage rate in project scenario p during year y
Source of data	Annual usage survey
Value(s) applied	95%
Measurement methods and procedures	Field survey
Monitoring frequency	Annual or more frequently, in all cases on time for any request for issuance
QA/QC procedures:	Transparent data analysis and reporting
Purpose of data:	Estimation of CO2e emission reductions and monitoring of SDG 3
Additional comments:	During the usage survey all the respondents declared to use the water point on daily basis both during the dry season and during the rainy season. Only one user stated to use both the project water system and packaged water during the rainy season. For conservativeness, the applied value of usage rate is 95%. Parameter is also used to calculate SDG 3

Data/parameter:	$LE_{p,y}$
Unit	tCO_2e /year
Description	Leakage in project scenario p during year y
Source of data	Baseline and monitoring surveys
Value(s) applied	0
Measurement methods and procedures	Field survey
Monitoring frequency	Every two years
QA/QC procedures:	Transparent data analysis and reporting
Purpose of data:	Estimation of CO_2e emission reductions
Additional comments:	Aggregate leakage can be assessed for multiple project scenarios

Data/parameter:	Quality of the treated water
Unit	As appropriate in alignment with QA/QC procedures
Description	Performance of the treatment technology – less than 1 Colony Forming Unit (CFU) of E.Coli / 100 ml of safe water[17]
Source of data	Water quality test
Value(s) applied	Zero Colony Forming Units (CFU) of E.Coli / 100 ml of safe water
Measurement methods and procedures	As per the local laboratory procedures for measuring E. Coli.
Monitoring frequency	Quarterly
QA/QC procedures:	Transparent data analysis and reporting
Purpose of data:	Estimation of CO_2e emission reductions
Additional comments:	N/A

[17] See the National Water Quality Standard Madagascar uploaded to Sustaincert

Data/parameter:	Hygiene campaigns
Unit	N/A
Description	Hygiene campaigns carried out among project technology users. The description of the campaigns is provided in Section B.6.1.
Source of data	Annual hygiene campaigns results
Value(s) applied	Report of the annual hygiene campaign
Measurement methods and procedures	N/A
Monitoring frequency	Annually
QA/QC procedures:	N/A
Purpose of data:	Estimation of CO_2e emission reductions and monitoring of SDG 12
Additional comments:	Prior to the project the local communities received no regular training on water, sanitation and health related issues Parameter is also used to calculate SDG 12

Data/parameter:	Capacity[18]
Unit	Litres per day
Description	Treatment capacity of the project technology/improved sources
Source of data	Manufacturer specification/design specification
Value(s) applied	GS6752-GS7311: 14,400 litres per day / each water supply system GS7566-GS10657-GS10658-GS10659-GS7567-GS10783-GS10784: 31,448 litres per day[19]
Measurement methods and procedures	GS6752-GS7311: The capacity of the pump model (India Mark II) is 1,800 litres/h at 10 m head. Assuming an average 8 hours/day consecutive usage, the pump can estimate to be able to supply averagely 14,400 litres of water per day (1,800 l/h * 8 h[20] = 14,400 l/day). GS7566-GS10657-GS10658-GS10659-GS7567-GS10783-GS10784: The calculation is based on: - Capacity water pump - Capacity of the batteryNumber of water taps - Flow rate of each water tap - Peak demand simulation - Capacity of the tank
Monitoring frequency	Once at the time of registration or at inclusion of new technology.
QA/QC procedures:	N/A
Purpose of data:	Estimation of CO_2e emission reductions

[18] In line with the GS TAC rule update at http://www.goldstandard.org/articles/tac-rule-updates (Site visited 25/02/2020)

[19] Please refer to spreadsheet "BenConsAndStorage" in ERs calculation uploaded to SC Application.

[20] The average length of the day in the Tulear area in Madagascar is 10-13 hours/day depending the month (https://www.timeanddate.com/sun/madagascar/toliara). Here estimated that water fetching is done during 8 hours/day.

Additional comments:	The water volume values used in the calculations of emission reductions must be justified in terms of capacity of the project technology/improved sources.

SDG 3

Data/parameter:	Frequency of water-borne diseases (like e.g. diarrhea)
Unit	N/A
Description	Frequency of water-borne diseases with the project families estimated via qualitatively self-estimation by the families
Source of data	Monitoring Survey
Value(s) applied	100% of people are suffering less of diarrhea and other water-borne diseases in the project scenario compared to the baseline scenario
Measurement methods and procedures	Monitoring Survey studied qualitatively the frequency of suffering diarrhea and other water-borne diseases in the project scenario in comparison with the baseline scenario (The sample of project households are asked to evaluate if they experience less, more or the same amount of diarrhea and other water-borne diseases than prior to the project).
Monitoring frequency	Annually
QA/QC procedures:	N/A
Purpose of data:	Monitoring of SDG 3
Additional comments:	Based on the Baseline Survey averagely 52.5 % of the families living in the project are suffering diarrhea and other water-borne diseases. The Monitoring Survey studied qualitatively the frequency of water-borne diseases in the project scenario and found that all the people (100%) auto evaluated to suffer less of water-borne diseases like diarrhoea in confront with the baseline scenario.

Data/parameter:	Py
Unit	Number of persons
Description	Number of persons having access to safe water in the project activity compared to the baseline scenario
Source of data	The total number of persons using each water supply and treatment system will be monitored through the production of an end-users list
Value(s) applied	GS6752: 1,500 GS7311: 1,200 GS7567: 6,007 GS7566: 6,011 GS10657: 6,016 GS10658: 5,108 GS10659: 6,007 GS10783: 6,786 GS10784: 6,070
Measurement methods and procedures	The total number of persons using each water supply and treatment system is monitored through the production of an end-users list

Monitoring frequency	Annually
QA/QC procedures:	N/A
Purpose of data:	Monitoring SDG 3 and SDG 6
Additional comments:	The number of users included in the Project Database will be monitored throughout the project duration. Parameter is also used to calculate SDG 6

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

Data/Parameter	Value obtained in this monitoring period	Value obtained last monitoring period
$N_{p,y}$	GS6752: 531,075 GS7311: 420,480 GS7566: 2,106,254 GS7567: 2,104,853 GS10657: 2,151,923 GS10658: 1,771,199 GS10659: 2,104,853 GS10783: 2,377,814 GS10784: 2,182,317	GS6752: 465,975 GS7311: 372,780 GS7566:1,866,075 GS7567: 2,076,875 GS10657: 1,867,317 GS10658: 1,584,004 GS10659: 1,865,764 GS10783: 2,345,561 GS10784: 2,096,931
Percentage of users per used fuel	Charcoal: 0.73 Firewood: 0.27	Charcoal: 0.73 Firewood: 0.27
$Q_{p,y}$	7	7
$Q_{p,rawboil,y}$	0	0
$Q_{p,cleanboil,y}$	0	0
$U_{p,y}$	95%	90%
$LE_{p,y}$	0	0
Quality of the treated water	Zero Colony Forming Units (CFU) of E.Coli / 100 ml of safe water	Zero Colony Forming Units (CFU) of E.Coli / 100 ml of safe water
Hygiene campaigns	One annual hygiene campaign	One annual hygiene campaign
Capacity	GS6752-GS7311: 14,400 litres per day / each water supply system GS7566-GS10657-GS10658-GS10659: 31,448 litres per day	GS6752-GS7311: 14,400 litres per day / each water supply system GS7566-GS10657-GS10658-GS10659: 34,792 litres per day
Frequency of water-borne diseases (like e.g. diarrhea)	100% of people are suffering less of diarrhea and other water-borne diseases in the project scenario compared to the baseline scenario	100% of people are suffering less of diarrhea and other water-borne diseases in the project scenario compared to the baseline scenario

P_y	GS6752: 1,500 GS7311: 1,200 GS7566:6,011 GS7567: 6,007 GS10657: 6,016 GS10658: 5,108 GS10659: 6,007 GS10783: 6,786 GS10784: 6,070	GS6752: 1,500 GS7311: 1,200 GS7566:6,007 GS7567:6,014 GS10657: 6,011 GS10658: 5,099 GS10659:6,006 GS10783:6,783 GS10784: 6,064

The parameters $N_{p,y}$ and P_y have been updated according to the annual monitoring activities (i.e., number of days and users of the monitoring period).

D.4. Implementation of sampling plan

The sampling approach (line in Section B.7.2 of the registered VPA-DD has been used for the following surveys as summaries below:

Project Survey (PS) of end-user characteristics:

- The Project Survey has the same requirements as the Baseline Survey (described in Section B.4 of the VPA-DDs) regarding the representativeness and sample sizing i.e. at least 100 households need to be sampled when the target groups size is > 1000.
- The Project Survey and the Usage Survey were implemented together using the same sample.

Usage Survey.:

- The total number of villages to be included in the sample was set as 17 (out of 20) using the 95/10 rule. To ensure the transparency of the sampling process, the random selection was made using an online number generator (www.randomizer.org). A list of random numbers (as many as the villages, Table D-1) was placed next to the list of villages and the numbers generated randomly were sorted in ascending order, ordering all the other lines accordingly (Table D-2).

Table D-1. Set of random numbers

	A	B	C	D	E
	Research Randomizer Results:				
	1 Set of 20 Yes Numbers Per Set				
	Range: From 1 to 20 -- No				
	Set 1				
	10		Ambolofoty	GS6752	18/11/2018
	11		Ankilifolo	GS7311	26/11/2018
	1		Betsingilo	GS6752	18/11/2018
	3		Samontilahy	GS7311	26/11/2018
	8		Andaboly	GS7311	26/11/2018
	15		Andranomena	GS7566	22/09/2019
	4		Ankoronga Angara	GS10658	23/11/2019
	19		Antobe	GS10658	23/11/2019
	13		Belemboky Androvakely	GS7566	22/09/2019
	6		Miary Ankoronga	GS10659	22/09/2019
	17		Miary ville	GS10659	22/09/2019
	14		Ankatsaky	GS7567	01/09/2020
	20		Anketrake Andranogadra	GS7567	01/09/2020
	16		Ankilimarovahatse	GS10657	01/09/2020
	5		Ankotsobohia	GS10783	01/09/2020
	7		Antanimikodoy	GS10657	01/09/2020
	9		Mandrosoa	GS10783	01/09/2020
	18		Mandrosoa/Antaikoaki	GS10783	01/09/2020
	12		Maromiandra	GS10784	01/09/2020
	2		Maromiandra/Antevamena	GS10784	01/09/2020

Table D-2. Randomly Selected Villages

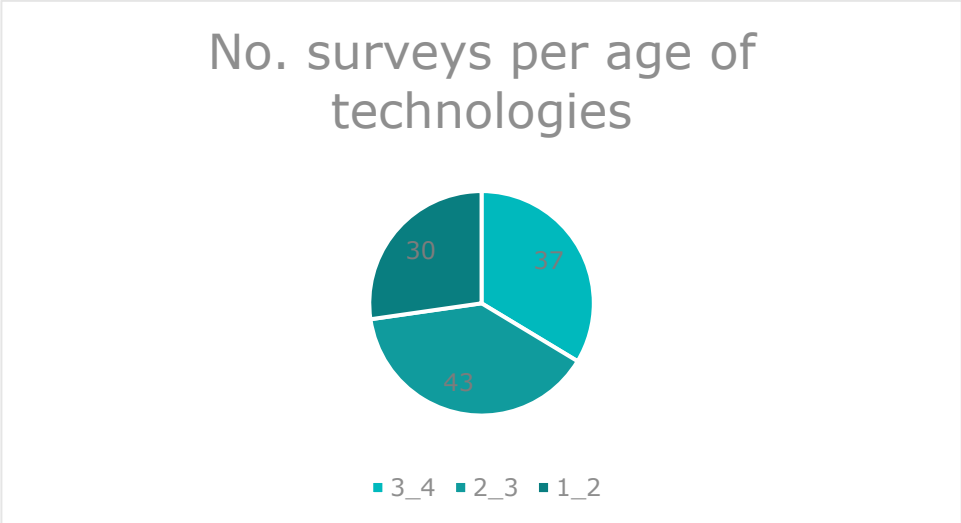
Set 1			
1	Betsingilo	GS6752	18/11/2018
2	Maromiandra/Antevamena	GS10784	01/09/2020
3	Samontilahy	GS7311	26/11/2018
4	Ankoronga Angara	GS10658	23/11/2019
5	Ankotsobohia	GS10783	01/09/2020
6	Miary Ankoronga	GS10659	22/09/2019
7	Antanimikodoy	GS10657	01/09/2020
8	Andaboly	GS7311	26/11/2018
9	Mandrosoa	GS10783	01/09/2020
10	Ambolofoty	GS6752	18/11/2018
11	Ankilifolo	GS7311	26/11/2018
12	Maromiandra	GS10784	01/09/2020
13	Belemboky Androvakely	GS7566	22/09/2019
14	Ankatsaky	GS7567	01/09/2020
15	Andranomena	GS7566	22/09/2019
16	Ankilimarovahatse	GS10657	01/09/2020
17	Miary ville	GS10659	22/09/2019
18	Mandrosoa/Antaikoaki	GS10783	01/09/2020
19	Antobe	GS10658	23/11/2019
20	Anketrake Andranogadra	GS7567	01/09/2020

The number of families, belonging to the selected villages, was set at 110 and the sample was selected randomly from the total end-user list using the same approach as for the selection of the villages. In line with Section 3.0 of the applied

methodology, the minimum sample size of 100 is met with at least 30 samples for project technologies of each age being credited.

Tables D-3 and Table D-4. Number of samples per village and age groups

	A	B	C	D	E
	Village	*VPA*	*Start date of the VPA*	*Age of the technologies*	*No. Surveys (Monitoring Survey)*
1	Betsingilo	GS6752	18/11/2018	3_4	13
2	Maromiandra/Antevamena	GS10784	01/09/2020	1_2	8
3	Samontilahy	GS7311	26/11/2018	3_4	3
4	Ankoronga Angara	GS10658	23/11/2019	2_3	5
5	Ankotsobohia	GS10783	01/09/2020	1_2	4
6	Ankoronga Miary	GS10659	22/09/2019	2_3	5
7	Antanimikodoy	GS10657	01/09/2020	2_3	8
8	Andaboly	GS7311	26/11/2018	3_4	5
9	Mandrosoa	GS10783	01/09/2020	1_2	6
10	Ambolofoty	GS6752	18/11/2018	3_4	9
11	Ankilifolo	GS7311	26/11/2018	3_4	7
12	Maromiandra	GS10784	01/09/2020	1_2	6
13	Belemboky Androvakely	GS7566	22/09/2019	2_3	7
14	Ankatsaky	GS7567	01/09/2020	1_2	6
15	Andranomena	GS7566	22/09/2019	2_3	8
16	Ankilimarovahatse	GS10657	01/09/2020	2_3	3
17	Miary ville	GS10659	22/09/2019	2_3	7
18					110
19					



Leakage Assessment:

- Leakage assessment regarding the potential leakage sources was completed with the Usage Survey and therefore no separate sampling approach was used for the leakage assessment.

Water Consumption Field Test (WCFT):

- The minimum sample size requirement of the applied Gold Standard methodology has been reached as the sample size was 30.
- All the sample households were selected randomly within the project's areas in Betsingilo, Ambolofoty, Ankilofolo, Belemboky Androvakely, Andranomena, Ankilimarovahatse, Ankoronga Angara, Miary Ville, Miary Ankoronga, Mandrosoa, Antaikoaky and Ankotsobohia villages.
- According to CDM's standard when two or more projects activities are grouped for undertaking a common survey, as for GS6752, GS7311, GS7566, GS10657, GS10658, GS10659, GS7567, GS10783 and GS10784 it shall be ensured that a confidence/precision of 95/10 is achieved for each of the project activity or alternatively lower bound of the 95% confidence level is to be used.
- WCFT was performed during 10/08/2021 – 30/08/2021.
- Further details has been described in the WCFT Report.
- The samples were randomly selected (simple random sample using the random number generator of Excel) out from the 110 end-user households who were previously selected for the Usage Survey[21].

Water quality testing:

- The sample for water quality testing was made following the 90/10 precision rule indicated by the applied TPDDTEC methodology.
- Please refer to table B-3 for more details.
- Detailed results of each test are provided as a separate document. All the tests confirmed the water quality to be in line with the national water quality requirements as no Colony Forming Units (CFU) were found to be present.

Baseline Water Boiling Test (BWBT):

In line with BAMG report, the following conservative values for baseline fuels have been used:

- 0.4 Kg/l for wood (default value)
- 0.125 Kg/l for charcoal (capped value)

[21] For further information, please refer to "Sample Selection_Usage Survey 2022" uploaded to SC Application.

A separate baseline water boiling test (BWBT) for charcoal fuel consumption has been conducted in Spring 2021 in line the indications of the applied methodology and the BAMG report. The value obtained from the field measurement has been selected to be conservatively capped at 0.125 Kg/litre. For further information regarding the sampling protocol and sample selection of the BWBT please refer to a separate document[22].

SECTION E. CALCULATION OF SDG IMPACTS

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

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

Calculation of baseline for SDG 13 outcomes

The equation used to calculate the baseline fuel consumption is calculated in line with the Gold Standard TPDDTEC methodology version 3.1 and registered VPA-DD is as follows:

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

Where:

$B_{b,y}$	Quantity of fuel consumed in baseline scenario b during the year in tons (L/p/d)
X_{boil}	Percentage of premises that in the absence of the project activity would have used non-GHG emitting technologies like chlorine treatment techniques (if available) in the project boundary
C_j	Percentage of users of project safe water supply who were already in baseline using a non-boiling safe water supply
$N_{p,y}$	Number of person.days consuming water supplied by project scenario p through year y

[22] BWBT Madagascar 2021

$W_{b,y}$	Quantity of fuel in tons required to treat 1 litre of water using technologies representative of baseline scenario b in year y as per Baseline Water Boiling Test.
$Q_{p,y}$	Quantity of safe water in litres consumed in the project scenario p and supplied by project technology per person per day in year y
$Q_{p,rawboil,y}$	Quantity of raw water boiled in the project scenario p per person per day

The equation used to calculate the emission reductions in line with the Gold Standard TPDDTEC methodology version 3.1 and registered VPA-DD is as follows:

$$BE_{b,y} = B_{p,y} * *((fNRB * EF_{b,fuel,CO2}) + EFb,fuel,non\text{-}CO2) * NCV_{b,fuel}$$

Where:

$BE_{b,y}$	Emissions for baseline scenario b during year y in tCO2e
fNRB	Fraction of biomass used that can be established as non-renewable biomass
$EF_{b,fuel,CO2}$	CO2 emission factor arising from the use of fuels in baseline scenario
$EF_{b,fuel,non\text{-}CO2}$	Non-CO2 emission factor arising from use of fuels in baseline scenario
$NCV_{b,fuel}$	Net calorific value of the fuels used in the baseline

Related results calculated for GS7566 for the period 2021 within this monitoring period is reported below as an example:

$B_{b,y}$ = (1 – 0.149)*(1-0.02)*709,779*0.000473*(7+0)= 1,960 ton/person/day

$BE_{b,y}$ = $B_{b,y}$*((0.72*112)+ 8.692)*0.0156= 2,755 tCO_2e/year

The total safe water consumed in the project scenario is the amount of safe water supplied by the project technology and consumed in the project scenario, plus the amount of raw water boiled after introducing the project technology (respectively represented above as $Q_{p,y}$ + $Q_{p,rawboil,y}$). This total is assumed to be equivalent to the water boiled in the baseline. Even though the total of these two volumes exceed the cap of 7 liters stipulated in the applied TPDDTEC methodology (the page 39 of applied TPDDTEC methodology), the project proponent's claim for emission reductions may however not exceed the cap.

The transparent calculations of the outcomes of SDG 13 (i.e. CO2e reductions) are provided in a separate Excel Spreadsheet uploaded to GS Registry. For the used data/parameters the sections D.1 and D.2 can be referred.

Calculation of baseline for SDG 3, SDG 6 and SDG 12 outcomes

The baseline situation related to the SDG 3, SDG 6 and SDG 12 is estimated based on the results of the Baseline Survey made in the project area in the year 2018.

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

Calculation of project scenario for SDG 13 outcomes

The equation used to calculate the project scenario fuel consumption is calculated in line with the Gold Standard TPDDTEC methodology version 3.1 and registered VPA-DD is as follows:

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

Where:

Bp,y	Quantity of fuel f consumed in project scenario p during the year y in tons
Cj	Percentage of users of project safe water supply who were already in baseline using a non boiling safe water supply
Np,y	Number of person.days consuming water supplied by project scenario p t hrough year y
Wb,y	Quantity of fuel in tons required to treat 1 litre of water using technologies representative of baseline scenario b in year y as per Baseline Water Boiling Test.
$Q_{p,rawboil,y}$	Quantity of raw water boiled in the project scenario p per person per day
$Q_{p,cleanboil,y}$	Quantity of safe water boiled in the project scenario p per person per day in year y

The equation used to calculate the emission reductions in line with the Gold Standard TPDDTEC methodology version 3.1 and registered VPA-DD is as follows:

$PE_{p,y} = B_{p,y} * ((f_{NRB} * EF_{p,fuel,CO2}) + EF_{p,fuel,non\text{-}CO2}) * NCV_{p,fuel}$

Where:

$PE_{p,y}$	Emissions for project scenario p during year y in tCO2e
fNRB	Fraction of biomass used that can be established as non-renewable biomass
$EF_{p,fuel,CO2}$	CO2 emission factor arising from use of the fuels in project scenario
$EF_{p,fuel,non\text{-}CO2}$	Non-CO2 emission factor arising from use of fuels in project scenario
$NCV_{p,fuel}$	Net calorific value of the fuels used in the baseline

Related results calculated for GS7566 for the period 2021 within this monitoring period is reported below as an example:

$B_{p,y}$ = (1-0.02)* 709,779*0.000473*(0+0)=0

$PE_{p,y} = B_{p,y}$ * ((0.72*112)+8.692)*0.0156= 0

The transparent calculations of the outcomes of SDG 13 (i.e. CO2e reductions) are provided in a separate Excel Spreadsheet uploaded to GS Registry. For the used data/parameters the sections D.1 and D.2 can be referred.

Calculation of Project Scenario for SDG 3, SDG 6 and SDG 12 outcomes

The project outcomes of the SDG 3, SDG 6 and SDG 12 were made following the below described approaches[23].

SDG Indicator	Selected parameter	Approach for estimation of the outcome

[23] The calculation of Project Scenario for SDG3 and SDG6 have been updated for both GS6752 and GS7311 to be more accurate and in line with the other projects.

SDG 3 / Indicator 3.9.2	"Number of additional persons using safe water in the project activity compared to the baseline scenario"	The following equation will be used for calculating the outcomes: $P_{safe} = P_y * (1 - C_j) * (1 - X_{boil}) * U_{p,y}$ The more specific explanation is provided below this table. As example it is reported the calculation for GS7566: P_{safe} =6,011*(1-0.2)*(1-0.149)*0.90=4,512 number of persons
	"Frequency of water-borne diseases (like e.g. diarrhea)"	No specific calculation. Annual Usage Survey will study based on the qualitative auto-evaluation of the sample families the frequency of suffering of diarrhea and other water-borne diseases in the project scenario in comparison with the baseline scenario (The sample of project households are asked to evaluate if they experience less, more or the same amount of diarrhea and other water-borne diseases than prior to the project).
SDG 6 / Indicator 6.1.1	"Number of additional persons having access to a safe water source in the project activity compared to the baseline scenario"	The following equation will be used for calculating the outcomes: $P_{access} = P_y * (1 - C_j) * (1 - X_{boil})$ The more specific explanation is provided below this table. As example it is reported the calculation for GS7566: P_{access}=6,011*(1-0.2)*(1-0.149)=5,013 number of persons
SDG 12 / Indicator 12.8.1	"Number of campaigns on water, sanitation and health related issues"	*No specific calculations.* Number and description of the made hygiene campaigns will be reported annually.

E.3. Calculation of leakage

As the leakage risks related to the safe water supply and treatment technologies can be deemed very low, the leakage can be ignored and leakage is expected to be 0. However, to confirm that leakage can be deemed very low, the below described leakage assessment regarding the potential leakage sources (listed in the methodology TPDDTEC, pages 12-13) shall be completed every other year, starting on time for the

first verification in line with the section 2.6 ("Leakage") of the applied TPDDTEC methodology.

a) The displaced baseline technologies are reused outside the project boundary in place of lower emitting technology or in a manner suggesting more usage than would have occurred in the absence of the project.
Not applicable and therefore not counted. In this VPA the baseline technologies are referring to the methodologies used for water boiling which are traditional charcoal stoves and three stone fires. As these baseline methodologies will be continued to be used by the families for cooking activities (even though the project will replace the need for boiling the water for purification purposes), it's not foreseen that the project would lead to the displacement of the baseline technologies outside the project boundary.

b) Non-project users who previously used lower emitting energy sources use the non-renewable biomass or fossil fuels saved under the project activity.
Not applicable and therefore not counted. The energy sources used in the baseline for water boiling are charcoal and firewood. It is very unlikely that users who previously (in the baseline) used for example non-GHG emitting methods like use of liquid chlorine for water purification would switch to boiling drinking water because another 'zero emission' technology is promoted by the project.

c) The project significantly impacts the NRB fraction within an area where other CDM or VER project activities account for NRB fraction in their baseline scenario.
Not applicable and therefore not counted. Due to the small size of the VPA, it's not expected that it will have significant influence on the national NRB fraction.

d) The project population compensates for loss of the space heating effect of inefficient technology by adopting some other form of heating or by retaining some use of inefficient technology.
Not applicable and therefore not counted. It is unlikely that households would had used the boiling of drinking water for space heating. In addition, end-users retain use of the baseline technologies for cooking and the difference in heat effects from no longer boiling water can be considered minimal. Any retaining use of inefficient technology for water boiling will, anyhow, be covered in the results of the water consumption field test (WCFT).

e) By virtue of promotion and marketing of new technology with high efficiency, the project stimulates substitution within households who commonly used a technology with relatively lower emissions, in cases where such a trend is not eligible as an evolving baseline.

Not applicable and therefore not counted. The technologies used in the baseline for water boiling are three stone fires and traditional charcoal stoves with either non-renewable biomass or fossil fuels and/or the end-users are lacking access to safe water. It is very unlikely that users who previously (in the baseline) used for example non-GHG emitting methods like use of liquid chlorine for water purification would switch to boiling drinking water because another 'zero emission' technology is promoted by the project.

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

GS6752

SDG	SDG Impact	Baseline estimate	Project estimate	Net benefit
13	Emissions Reductions	2,061	N/A	1,957
3	Additional persons using safe water in the project activity compared to the baseline scenario	249	1,500	1,188
6	Additional persons having access to a safe water source in the project activity compared to the baseline scenario	249	1,500	1,250
12	Hygiene campaign on water, sanitation and health related issues made in the project area	0	1	1

GS7311

SDG	SDG Impact	Baseline estimate	Project estimate	Net benefit
13	Emissions Reductions	1,725	N/A	1,638
3	Additional persons using safe water in the project activity compared to the baseline scenario	199	1,200	950

6	Additional persons having access to a safe water source in the project activity compared to the baseline scenario	199	1,200	1,000
12	Hygiene campaign on water, sanitation and health related issues made in the project area	0	1	1

GS7566

SDG	SDG Impact	Baseline estimate	Project estimate	Net benefit
13	Emissions Reductions	8,175	N/A	7,765
3	Additional persons using safe water in the project activity compared to the baseline scenario	1,249	6,011	4,762
6	Additional persons having access to a safe water source in the project activity compared to the baseline scenario	998	6,011	5,013
12	Hygiene campaign on water, sanitation and health related issues made in the project area	0	1	1

GS7567

SDG	SDG Impact	Baseline estimate	Project estimate	Net benefit
13	Emissions Reductions	8,169	N/A	7,760
3	Additional persons using safe water in the project activity compared to the baseline scenario	1,248	6,007	4,759
6	Additional persons having access to a safe water source in the project activity compared to the baseline scenario	997	6,007	5,009
12	Hygiene campaign on water, sanitation and health related issues made in the project area	0	1	1

GS10657

SDG	SDG Impact	Baseline estimate	Project estimate	Net benefit
13	Emissions Reductions	8,352	N/A	7,933
3	Additional persons using safe water in the project activity compared to the baseline scenario	999	6,016	4,766
6	Additional persons having access to a safe water source in the project activity compared to the baseline scenario	999	6,016	5,017
12	Hygiene campaign on water, sanitation and health related issues made in the project area	0	1	1

GS10658

SDG	SDG Impact	Baseline estimate	Project estimate	Net benefit
13	Emissions Reductions	6,874	N/A	6,529
3	Additional persons using safe water in the project activity compared to the baseline scenario	848	5,108	4,046
6	Additional persons having access to a safe water source in the project activity compared to the baseline scenario	848	5,108	4,259
12	Hygiene campaign on water, sanitation and health related issues made in the project area	0	1	1

GS10659

SDG	SDG Impact	Baseline estimate	Project estimate	Net benefit
13	Emissions Reductions	8,169	N/A	7,760
3	Additional persons using safe water in the project activity compared to the baseline scenario	997	6,007	4,759
6	Additional persons having access to a safe water source in the project activity compared to the baseline scenario	997	6,007	5,009
12	Hygiene campaign on water, sanitation and health related issues made in the project area	0	1	1

GS10783

SDG	SDG Impact	Baseline estimate	Project estimate	Net benefit
13	Emissions Reductions	9,229	N/A	8,766
3	Additional persons using safe water in the project activity compared to the baseline scenario	1,410	6,786	5,376
6	Additional persons having access to a safe water source in the project activity compared to the baseline scenario	1,127	6,786	5,659
12	Hygiene campaign on water, sanitation and health related issues made in the project area	0	1	1

GS10784

SDG	SDG Impact	Baseline estimate	Project estimate	Net benefit
13	Emissions Reductions	8,470	N/A	8,045
3	Additional persons using safe water in the project activity compared to the baseline scenario	1,261	6,070	4,809
6	Additional persons having access to a safe water source in the project activity compared to the baseline scenario	1,008	6,070	5,062
12	Hygiene campaign on water, sanitation and health related issues made in the project area	0	1	1

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

GS6752

SDG	Values estimated in ex ante calculation of approved PDD for this monitoring period	Actual values[24] achieved during this monitoring period
13	9,646 tCO_2e	1,957 tCO_2e
3	Less people suffering of diarrhoea and other water-borne diseases in the project scenario compared to the baseline scenario[25]	1,188
6	Persons having access to the safe and clean water provided by the project:[26] 4,250 persons	1,251

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

[25] The calculation of Project Scenario for SDG3 and SDG6 have been updated for both GS6752 and GS7311 to be more accurate and in line with the other projects

[26] The calculation of Project Scenario for SDG3 and SDG6 have been updated for both GS6752 and GS7311 to be more accurate and in line with the other projects

12	One hygiene campaign within the first 12 months for each VPA	Hygiene campaign:31/05/2022

GS7311

SDG	Values estimated in ex ante calculation of approved PDD for this monitoring period	Actual values[27] achieved during this monitoring period
13	7,717 tCO_2e	1,638 tCO_2e
3	Less people suffering of diarrhoea and other water-borne diseases in the project scenario compared to the baseline scenario[28]	950
6	Persons having access to the safe and clean water provided by the project:[29] 3,400 persons	1,000
12	One hygiene campaign within the first 12 months for each VPA	Hygiene campaign: 02/06/2022

GS7566

SDG	Values estimated in ex ante calculation of approved PDD for this monitoring period	Actual values[30] achieved during this monitoring period
13	8,307 tCO_2e	7,765 tCO_2e
3	4,503	4,762
6	5,004	5,013

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

[28] The calculation of Project Scenario for SDG3 and SDG6 have been updated for both GS6752 and GS7311 to be more accurate and in line with the other projects

[29] The calculation of Project Scenario for SDG3 and SDG6 have been updated for both GS6752 and GS7311 to be more accurate and in line with the other projects

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

12	One hygiene campaign within the first 12 months for each VPA	Hygiene campaign: 02/06/2022

GS7567

SDG	Values estimated in ex ante calculation of approved PDD for this monitoring period	Actual values[31] achieved during this monitoring period
13	8,307 tCO_2e	7,760 tCO_2e
3	4,503	4,759
6	5,004	5,009
12	One hygiene campaign within the first 12 months for each VPA	Hygiene campaign: 16/06/2022

GS10657

SDG	Values estimated in ex ante calculation of approved PDD for this monitoring period	Actual values[32] achieved during this monitoring period
13	8,307 tCO_2e	7,933 tCO_2e
3	4,503	4,766
6	5,004	5,017
12	One hygiene campaign within the first 12 months for each VPA	Hygiene campaign: 07/06/2022

GS10658

SDG	Values estimated in ex ante calculation of approved PDD for this monitoring period	Actual values[33] achieved during this monitoring period

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

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

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

13	8,307 tCO_2e	6,529 tCO_2e
3	4,503	4,046
6	5,004	4,259
12	One hygiene campaign within the first 12 months for each VPA	Hygiene campaign: 09/06/2022

GS10659

SDG	Values estimated in ex ante calculation of approved PDD for this monitoring period	Actual values[34] achieved during this monitoring period
13	7,442 tCO_2e	7,760 tCO_2e
3	4,503	4,759
6	5,004	5,009
12	One hygiene campaign within the first 12 months for each VPA	Hygiene campaigns: 08/06/2022

GS10783

SDG	Values estimated in ex ante calculation of approved PDD for this monitoring period	Actual values[35] achieved during this monitoring period
13	7,891 tCO_2e	8,766 tCO_2e
3	4,503	5,659
6	5,004	5,659
12	One hygiene campaign within the first 12 months for each VPA	Hygiene campaigns: 29/06/2022

GS10784

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

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

SDG	Values estimated in ex ante calculation of approved PDD for this monitoring period	Actual values[36] achieved during this monitoring period
13	8,307 tCO_2e	8,045 tCO_2e
3	4,503	4,809
6	5,004	5,062
12	One hygiene campaign within the first 12 months for each VPA	Hygiene campaign: 15/06/2022

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

Calculation of Emission Reductions i.e. SDG 13 outcomes

The equation used to calculate the emission reductions in line with the Gold Standard TPDDTEC methodology version 3.1 and registered VPA-DD is as follows:

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

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

$$ER_y = (\Sigma BE_{fuel,b,y} - \Sigma PE_{fuel,p,y}) * U_{p,y} - \Sigma LE_{p,y}$$

Where:

$BE_{b,y}$	Emissions for baseline scenario b during year y in tCO2e
$PE_{p,y}$	Emissions for project scenario p during year y in tCO2e
f_{NRB}	Fraction of biomass used that can be established as non-renewable biomass
$EF_{fuel,CO2}$	CO2 emission factor of the fuel that is substituted or reduced
$EF_{fuel,non-CO2}$	Non-CO2 emission factor arising from use of fuels in baseline scenario
$NCV_{b,fuel}$	Net calorific value of the fuels used in the baseline

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

NCVp,fuel	Net calorific value of the fuels used in the project
ER_y	Emission reduction for total project activity in year y (tCO2e/yr)
$U_{p,y}$	Cumulative usage rate for technologies in project scenario p during year y, based on cumulative installation rate and drop off rate
LEp,y	Leakage from project scenario p in year y (tCO2e/yr)

The transparent calculations of the outcomes of SDG 13 (i.e. CO2e reductions) are provided in a separate Excel Spreadsheet uploaded to GS Registry. For the used data/parameters the sections D.1 and D.2 can be referred.

Calculation of net benefits for SDG 3, SDG 6 and SDG 12 outcomes

Outcomes of SDG 3 regarding the parameter indicating the additional number of persons using safe water thanks to the project activities compared to the baseline scenario (P_{safe}) are calclulated as follows:

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

Where:

P_{safe}	Number of additional persons using safe water in the project activity compared to the baseline scenario
P_y	Number of persons having access to safe water in the project activity
C_j	Expressed as a percentage, the portion of users of the project technology j who in the baseline were already consuming safe water without boiling it
X_{boil}	Percentage of premises that in the absence of the project activity would have used non-GHG emitting technologies like chlorine treatment techniques (if available) in the project boundary
$U_{p,y}$	Cumulative usage rate for technologies in project scenario p during year y, based on cumulative installation rate and drop off rate

Outcomes of SDG 6 regarding the parameter indicating the number of additional persons having access to a safe water source in the project activity compared to the baseline scenario (Pacces) are calculated as follows:

$P_{access} = P_y * (1 - C_j) * (1 - X_{boil})$

Where:

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

Outcomes of SDG 12 regarding the parameter indicating the number of campaigns on water, sanitation and health related issues don't need specific calculation. Please refer to hygiene campaigns reports.

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

Regarding the outcome of SDG 13 "Climate Change Mitigation measured as reduced tCO2e" the real achieved values are higher than the one estimated ex-ante for projects: GS7566, GS7567, GS10657, GS10658, GS10659, GS10783, and GS10784.

The parameters involved in this difference are:

- $W_{charcoal}$:
  (Quantity of charcoal required to boil 1 litre of water using charcoal technologies representatives of baseline scenario b during year y), which was ex-ante estimated conservatively to be 0.1 Kg/l but which was conferment by the latest BWBT to be 0.125 Kg/l (capped value in compliance with BAMG report).
- $EF_{b,non\ CO2}$:
  According to the GS rules, the period starting 01 January 2021 shall use the AR5 GWP value.

SECTION F. SAFEGUARDS REPORTING

No mitigation measures added to the monitoring plan, hence no safeguarding reporting is needed.

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.

No inputs/grievances have been received for this project during this monitoring period.

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

N/A

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

N/A

Revision History

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