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

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

GS ID of Programme	GS7591
Title of Programme	International Programme for Safe Water Access and Efficient Cookstoves
Version of POA-DD applicable to this monitoring report	V7
Name and GS ID of fully Validated CPA/VPAs (i.e. non compliance check)	GivePower Kenya Solar Water Farms (GS10987)

Key Project Information

GS ID (s) of Project (s)	GS10987
Title of the project (s) covered by monitoring report	GivePower Kenya Solar Water Farms
Version number of the PDD/VPA-DD (s) applicable to this monitoring report	9
Version number of the monitoring report	Version 8
Completion date of the monitoring report	29/07/2022
Date of project design certification	09/08/2021
Date of Last Annual Report	22/12/2021
Monitoring period number	MP1
Duration of this monitoring period	01/09/2020 to 31/12/2021
Project Representative	Thomas Devesa, CO2balance UK Ltd
Host Country	Republic of Kenya
Activity Requirements applied	☒ Community Services Activities ☐ Renewable Energy Activities ☐ Land Use and Forestry Activities/Risks & Capacities ☐ N/A
Methodology (ies) applied and version number	TPDDTEC v3.1
Product Requirements applied	☒ GHG Emissions Reduction & Sequestration ☐ Renewable Energy Label ☐ N/A

Table 1 - Sustainable Development Contributions Achieved

Sustainable Development Goals Targeted	SDG Impact	Amount Achieved	Units/ Products
SDG 3 Good Health and Wellbeing	Number of additional persons consuming safe water in the project activity compared to the baseline scenario	15,047	Additional people consuming safe water
SDG 5 Gender Equality	Reduction in time spent collecting firewood per day	No Data	Hours
SDG 6 Clean Water and Sanitation	Number of additional persons having access to safe water in the project activity compared to the baseline scenario	17,961	Additional people with access to safe water
SDG 13 Climate Action	Emissions Reductions	15,535	VERs

Table 2 – Product Vintages

		Amount Achieved
Start Dates	**End Dates**	**GS VERs**
01/09/2020	31/12/2020	3,085
01/01/2021	31/12/2021	12,450

SECTION A. DESCRIPTION OF PROJECT

A.1. General description of project

With a population of 50 million, 41% of Kenyans do not have access to safe drinking water[1]. Open water sources are highly susceptible to contamination. The rural population especially rely on boiling water to ensure a potable supply.

The project aims to reach peri-urban to rural communities on the coast of Kenya. People's fuel use is typically related to their income and location with a typical mix between using wood fuel and charcoal on inefficient three stone fires and inefficient traditional charcoal stoves to purify drinking, cleaning and washing water. This process results in the release of greenhouse gas emissions from the combustion of fuels – this can be avoided if a technology that does not require fuel (wood or fossil) supplies clean water desired by households. The communities involved in the project are all low to middle income in areas with salty groundwater across coastal Kenya. Water access varies by community and income level, with a large market for unpotable water. This results in communities collecting water from unsafe sources such as rivers, streams, lakes, unprotected springs and open wells.

GivePower Foundation have developed a revolutionary solar-powered clean water solution. The containerized solar-powered desalination units provide sustainable and scalable safe water supply.
There are two different models of solar desalination plant that have been in use during the monitoring period: the MAXI and Mobi^{+}.

1 https://www.unicef.org/kenya/water-sanitation-and-hygiene

Figure 3. Photograph example of the GivePower MAXI plant.

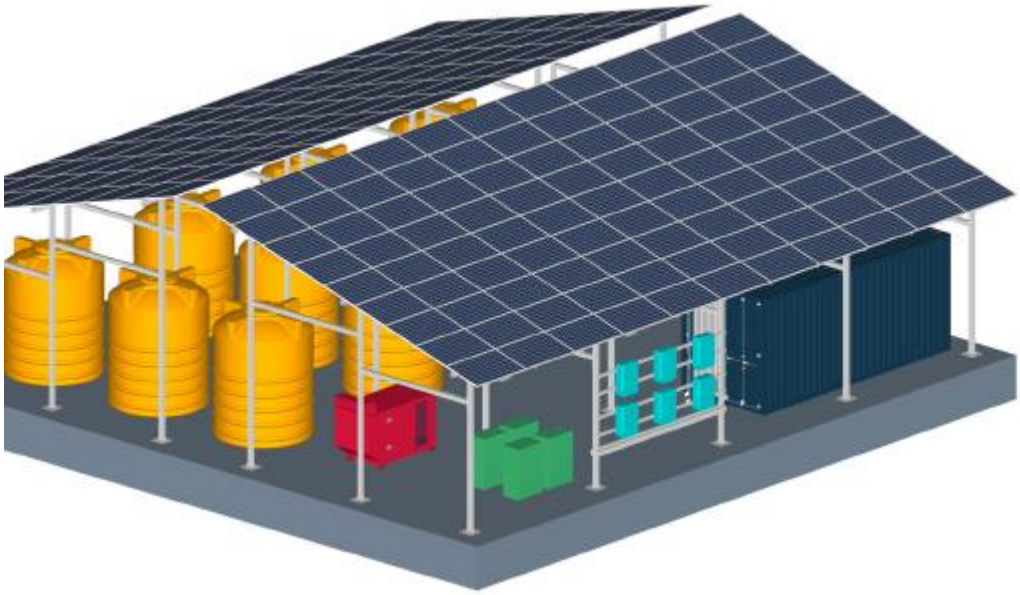


Figure 4. Digital drawing of GivePower MAXI plant.

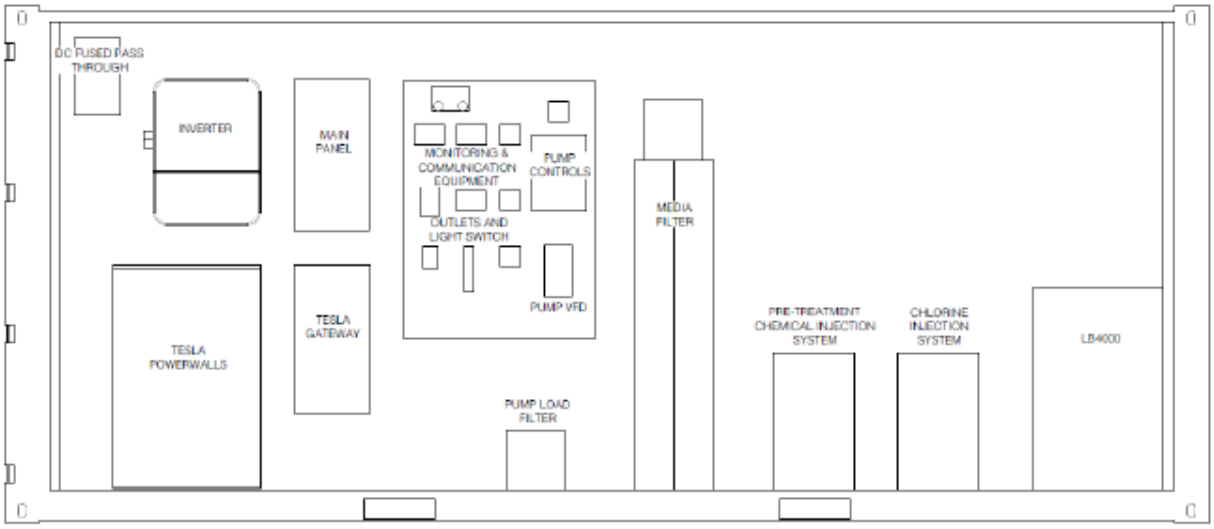


Figure 5. Mobi+ schematic.

Technical Specifications:

Model	**MAXI**	**Mobi+**
Treatment Capacity (litres per day)	75,000	15,000
Water storage capacity (litres)	60,000 (potable) 20,000 (raw)	10,000
Operational Power requirements (kW of solar energy)	50	7.7
Energy storage capacity (kWh)	135	27
Targeted water consumption (litres per person per day)	10-15	10-15
Maximum targeted population to serve	20,000	4,250
Expected Lifespan	20 years	20 years

A.2. Location of project

Below are details of the physical location to allow unique identification of the project. The project boundary lies in the coastal region of Kenya, within which solar desalination plants could be installed. This project boundary is clearly indicated below.

The target area and the fuel collection area are defined as being contained within the project boundary, with the outer limits of the project boundary being clearly defined below. As the majority of beneficiaries that collect or buy their wood fuel and charcoal do so locally, the wood fuel collection area and charcoal collection area and target area are considered the same.

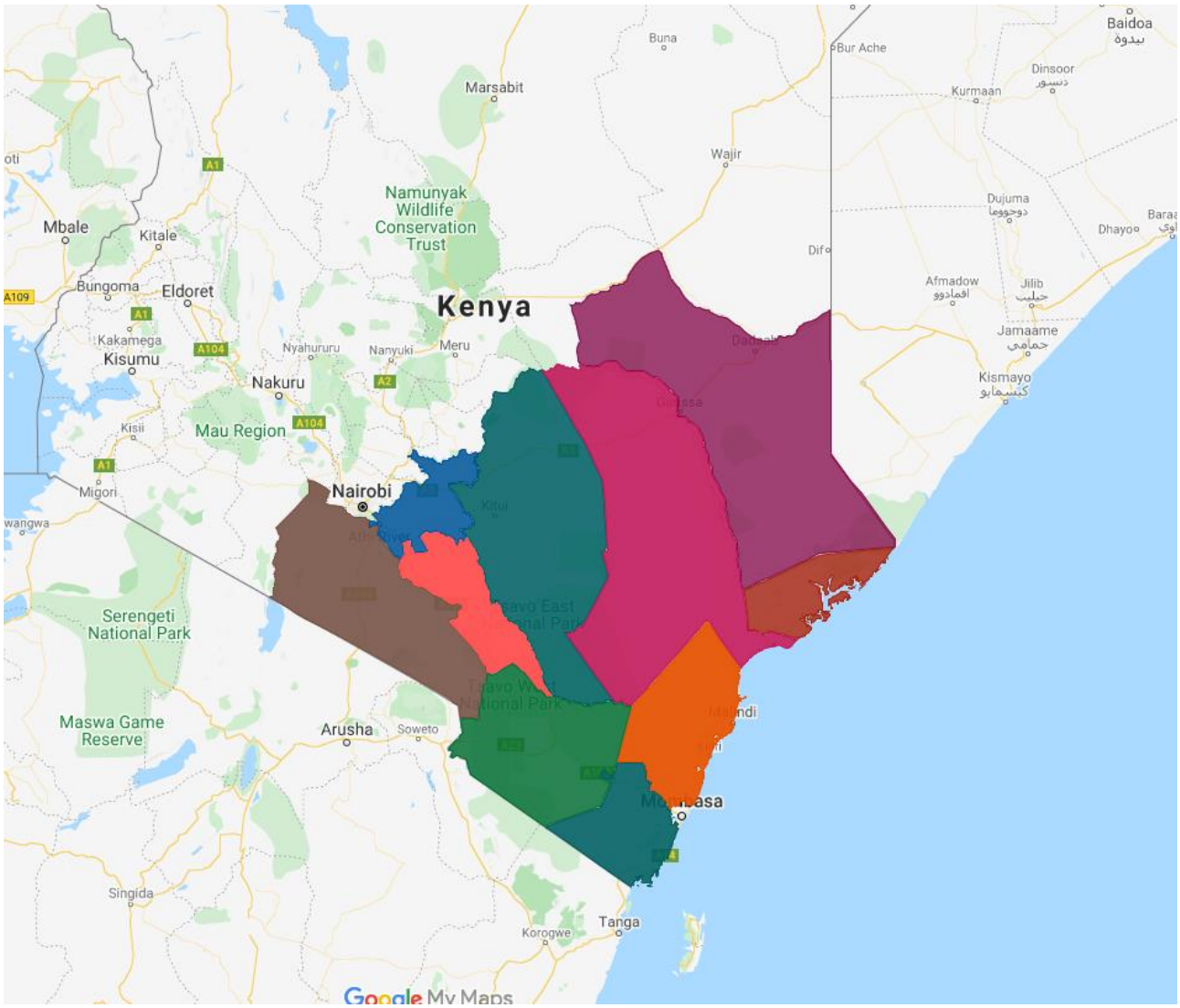


Figure 1. Project Boundary.

Project Area Extremities		
	Latitude	Longitude
North	0.95092	39.4953
South	-4.71569	39.37513
East	-1.65802	41.56236
West	-4.71569	39.37513

Each project technology included in the project for the monitoring period has the following GPS coordinates.

Plant ID	Latitude	Longitude
MAXI 1	-4.083603	39.66408
MAXI 2	-3.9954026337	39.7086165205
MOBI+ 1	-2.27047	37.82081

A.3. Reference of applied methodology

This project utilises the Gold Standard Methodology 'Technologies and Practices to Displace Decentralized Thermal Energy Consumption V3.1'.

A.4. Crediting period of project

The date of rehabilitation was used as the start date of operation. It was conservatively assumed that the first day of crediting is not counted and the crediting period begins the following day after the borehole is rehabilitated. The length of the crediting period is to be 5 years, twice renewable totalling 15 years as per the approved PDD.

Please find the start dates for the projects below (Crediting Period begins the following day):

Project ID	**Start Date**	**Crediting Period Start Date**	**Crediting Period End Date**
GS10987	31/08/2020	01/09/2020	31/08/2025

SECTION B. IMPLEMENTATION OF PROJECT

B.1. Description of implemented project

The project partner, GivePower, supports the provision of safe water, using photovoltaic cells to power desalination technology, to thousands of households in coastal Kenya. By providing safe water, the project ensures that households consume less firewood and charcoal during the process of water purification and as a result there is a reduction of carbon dioxide emissions from the combustion process.

GivePower Foundation have installed 3 solar desalination plants for this monitoring period, summary given below. Technology types are consistent with the registered Project Design Document.

Plant ID	Technology	Community	Project Inclusion Date
MAXI 1	MAXI	Likoni	31/08/2020
MAXI 2	MAXI	Bamburi	28/06/2021
MOBI+ 1	MOBI+	Makindu	20/07/2021

MAXI 1 and MAXI 2 have been functioning well for the duration of the monitoring period. MOBI+ 1 however was taken offline on 19/10/2021 and will not be included in the project moving forward from this date. Information on the quantity of water sold in the project has been provided for the monitoring period.

B.1.1. Forward Action Requests

FAR ID 01: As per para 2.1.1 of COVID 19: Interim Measures /28/, project developer may postpone physical stakeholder consultation meetings and the Stakeholder Feedback Round (SFR) for Gold Standard project/POA/VPAs until the COVID-19 situation eases. CME/CPA implementer need to carry out the physical stakeholder consultation meeting and SFR at a later stage as soon as the situation allows.
The Local Stakeholder Consultation was postponed due to COVID and carried out when it was safe to do so on 22nd March 2022, in line with section 2.1.1 of the COVID 19: Interim Measures

B.2. Post-Design Certification changes

Changes to the certified design of the project are detailed below.

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

Deviation submitted relating to the usage survey was submitted and decision made on 09/09/2021. Usage rate has been set at 90%.

A second Deviation Request Form was submitted on 24/11/2021 and decision made on 14/12/2021. It covered inability to complete the monitoring plan from the VPA-DD, for the parameters below. Also included is the decision reached:

- $LE_{p,y}$. Conservative approach of 5%
- $U_{py,}$. Conservative approach of 90%
- $Q_{p,cleanboil,y}$. Assumption of 0 accepted
- $T_{p,y}$. No SDG 5 claim accepted
- Hygiene Campaign. To be performed as soon as country situation allows
- $Q_{p,rawboil,y}$. Alternative monitoring arrangements have not been applied during the non-conforming period. This is because page 49 of TPDDTEC v3.1 states "For the project scenario, projects are allowed to use the default values for water consumption... If the default values are used then (Qp,y + Qp,rawboil,y) in equation 11 [of TPDDTEC v3.1] can be replaced with the default value". The value of Qp,rawboil,y is therefore zero.

Water Quality Testing

The test for Q1 2021 for MAXI 1 was missed. As a result, the average failure rate for the project has been applied to the quarter. This approach is deemed conservative as the project technology specifications and staff monitoring procedures ensure reliable safe water production.

B.2.2. Corrections

Table 1 (page 3) of this monitoring report – under SDG Impacts column, the definition of SDG 3 has been corrected from "Number of additional persons having access to safe water in the project activity compared to the baseline scenario" to "Number of additional persons consuming safe water in the project activity compared to the baseline scenario". This reflects the different definitions between SDG 3 and SDG 6 as previously they had the same definition which was incorrect.

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

N/A

SECTION C. DESCRIPTION OF MONITORING SYSTEM APPLIED BY THE PROJECT

Covid-19 has impacted the delivery of the monitoring plan for the project during this monitoring period.

The project's approved PDD states that Hygiene Campaigns were to be conducted once Covid-19 situation had eased. These Hygiene Campaigns would then be used to collect lists of people for the purpose of annual monitoring.
The latest Covid-19 rules in Kenya still prohibit "all public… gatherings"[2]. This means it has not been possible to follow the monitoring plan, to date.

The following monitored parameters, from approved monitoring plan, have not been monitored in this monitoring period. Instead, a deviation was submitted, decisions of which are found under section B.2.1 of this Monitoring Report.

- $T_{p,y}$
- $Q_{p,cleanboil,y}$
- $Q_{p,rawboil,y}$
- Hygiene campaigns
- $LE_{p,y}$
- $U_{p,y}$

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

Installation Record

The installation record includes the following information:

- Date of installation
- GPS location of the technology
- Quantity of plants installed
- The total volume of water being sold by each plant

2 https://www.gov.uk/foreign-travel-advice/kenya/coronavirus

- Mode of use: commercial/domestic

The total number of people using the safe water produced by the project has been determined through the quantity of water sold, divided by the default value for Qp,y; 4 litres per person per day.

Operationality

A comprehensive maintenance programme is required in order to guarantee a consistent supply of pure water from the solar desalination plants that have been installed. Daily checklists are in place as standard practice. Also, the solar desalination plants contain consumable parts that require periodic replacement. All maintenance is conducted by trained local GivePower Foundation employees and will endure the activity of the project. If any issues are discovered and the appropriate repairs can be conducted. During the monitoring period, no serious issues were raised using this approach. Sales databases showed days of no sales made. These were classified as days of non-operationality for the purpose of calculating emissions reductions. In addition, water quality test failure days were classified as days of non-operationality for purposes of project technology day calculation and are included in the table below.

Plant ID	Technology	Community	Days of non-operationality
MAXI 1	MAXI	Likoni	34
MAXI 2	MAXI	Bamburi	36
Mobi+ 1	Mobi+	Makindu	73

Carbon Rights Transfer

After the point of technology installation, a Carbon Transfer Form (CTF) has been signed and uploaded to our database stating that the rights to the carbon credits will lie with GivePower Foundation. The site manager of the project technology has signed a CTF on behalf of all users thereof. Each desalination plant site has contact information available for users to contact the project.

Ongoing Monitoring Studies

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

- **Water consumption field test** Default figures as per the methodology have been used of 4 litres per person per day.

- **Quality of the treated water** – Quarterly water quality test results have been submitted. The parameters used to assess the water quality are in line with Kenyan standards for potable water and all parameters will be shown to be within levels considered acceptable for domestic human consumption. Kenyan standards for potable water are provided by the Kenya Bureau of Standards (KEBS)[3].

SECTION D. DATA AND PARAMETERS

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

SDG13

Data/parameter	$EF_{b,co2}$
Unit	tCO_2/TJ
Description	CO_2 emission factor arising from use of wood fuel in baseline scenario
Source of data	Calculated from IPCC defaults; Volume 2: 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Chapter 2, Table 2.5
Value(s) applied	112 – see GS Methodology
Choice of data or Measurement methods and procedures	Deemed valid by Methodology
Purpose of data	Calculation of baseline emissions
Additional comment	-

3 KS EAS 12:2018

Data/parameter	$EF_{b,co2}$ Charcoal
Unit	tCO_2/TJ
Description	CO_2 emission factor arising from use of charcoal in baseline scenario
Source of data	Calculated from IPCC defaults; Volume 2: 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Chapter 2, Table 2.5
Value(s) applied	336 – see GS Methodology
Choice of data or Measurement methods and procedures	Deemed valid by Methodology
Purpose of data	Calculation of baseline emissions
Additional comment	A wood to charcoal ratio of 3 has been applied, in line with IPCC guidelines: https://www.ipcc-nggip.iges.or.jp/public/gl/guidelin/ch1ref3.pdf page 1.46

Data/parameter	$EF_{b,non\ co2}$
Unit	tCO_2e/TJ
Description	Non-CO_2 (CH_4 and N_2O) emission factor arising from use of wood fuel in baseline scenario
Source of data	IPCC Default emissions factor – https://www.ipcc-nggip.iges.or.jp/public/gp/bgp/2_2_Non-CO2_Stationary_Combustion.pdf GWP – https://www.ghgprotocol.org/sites/default/files/ghgp/Global-Warming-Potential-Values%20%28Feb%2016%202016%29_1.pdf
Value(s) applied	9.460 (2021)

<table>
<tr><td></td><td>8.692 (2020)</td></tr>
<tr><td>Choice of data or Measurement methods and procedures</td><td>Deemed valid by Methodology
<table>
<tr><th colspan="5">2021</th></tr>
<tr><td>Gas</td><td>Default Emissions factor (kg_gas/TJ_{NCV})</td><td>GWP of gas</td><td>Default Emissions factor (kg_CO₂e/TJ_{NCV})</td><td>Default Emissions factor (t_CO₂e/TJ_{NCV})</td></tr>
<tr><td>CH₄</td><td>300</td><td>28</td><td>8,400</td><td>8.4000</td></tr>
<tr><td>N₂O</td><td>4</td><td>265</td><td>1,060</td><td>1.060</td></tr>
<tr><td></td><td></td><td></td><td>Total</td><td>9.460</td></tr>
<tr><th colspan="5">2020</th></tr>
<tr><td>Gas</td><td>Default Emissions factor (kg_gas/TJ_{NCV})</td><td>GWP of gas</td><td>Default Emissions factor (kg_CO₂e/TJ_{NCV})</td><td>Default Emissions factor (t_CO₂e/TJ_{NCV})</td></tr>
<tr><td>CH₄</td><td>300</td><td>25</td><td>7,500</td><td>7.5000</td></tr>
<tr><td>N₂O</td><td>4</td><td>298</td><td>1,192</td><td>1.1920</td></tr>
<tr><td></td><td></td><td></td><td>Total</td><td>8.692</td></tr>
</table></td></tr>
<tr><td>Purpose of data</td><td>Calculation of emission reductions</td></tr>
<tr><td>Additional comment</td><td>-</td></tr>
</table>

Data/parameter	$EF_{b,non\ co2}$ Charcoal
Unit	tCO_2e/TJ
Description	Non-CO_2 (CH_4 and N_2O) emission factor arising from use of charcoal in baseline scenario
Source of data	IPCC Default emissions factor – https://www.ipcc-nggip.iges.or.jp/public/gp/bgp/2_2_Non-CO2_Stationary_Combustion.pdf GWP –

	https://www.ghgprotocol.org/sites/default/files/ghgp/Global-Warming-Potential-Values%20%28Feb%2016%202016%29_1.pdf
Value(s) applied	26.076 (2020) 28.38 (2021)
Choice of data or Measurement methods and procedures	Deemed valid by Methodology
Purpose of data	Calculation of emission reductions
Additional comment	A wood to charcoal ratio of 3 has been applied, in line with IPCC guidelines: https://www.ipcc-nggip.iges.or.jp/public/gl/guidelin/ch1ref3.pdf page 1.46

Data/parameter	$EF_{p,co2}$
Unit	tCO_2/TJ
Description	CO_2 emission factor arising from use of wood fuel in project scenario
Source of data	Volume 2: 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Chapter 2, Table 2.5
Value(s) applied	112
Choice of data or Measurement methods and procedures	Deemed valid by Methodology
Purpose of data	Calculation of emission reductions
Additional comment	-

Data/parameter	$EF_{p,co2}$ Charcoal
Unit	tCO_2/TJ

Description	CO_2 emission factor arising from use of charcoal in project scenario
Source of data	Volume 2: 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Chapter 2, Table 2.5
Value(s) applied	336
Choice of data or Measurement methods and procedures	Deemed valid by Methodology
Purpose of data	Calculation of emission reductions
Additional comment	For charcoal, a wood to charcoal ratio of 3 has been applied, in line with IPCC guidelines: https://www.ipcc-nggip.iges.or.jp/public/gl/guidelin/ch1ref3.pdf page 1.46

Data/parameter	$EF_{p,non\ co2}$
Unit	tCO_2e/TJ
Description	Non-CO_2 (CH_4 and N_2O) emission factor arising from use of wood fuel in project scenario
Source of data	IPCC Default emissions factor – https://www.ipcc-nggip.iges.or.jp/public/gp/bgp/2_2_Non-CO2_Stationary_Combustion.pdf GWP – https://www.ghgprotocol.org/sites/default/files/ghgp/Global-Warming-Potential-Values%20%28Feb%2016%202016%29_1.pdf
Value(s) applied	9.460 (2021) 8.692 (2020)
Choice of data or Measurement methods and procedures	Deemed valid by Methodology

	2021 Gas | Default Emissions factor (kg_gas/TJ_{NCV}) | GWP of gas | Default Emissions factor (kg_CO_2e/TJ_{NCV}) | Default Emissions factor (t_CO_2e/TJ_{NCV}) CH_4 | 300 | 28 | 8,400 | 8.4000 N_2O | 4 | 265 | 1,060 | 1.060 **Total** | **9.460** **2020** Gas | Default Emissions factor (kg_gas/TJ_{NCV}) | GWP of gas | Default Emissions factor (kg_CO_2e/TJ_{NCV}) | Default Emissions factor (t_CO_2e/TJ_{NCV}) CH_4 | 300 | 25 | 7,500 | 7.5000 N_2O | 4 | 298 | 1,192 | 1.1920 **Total** | **8.692**
Purpose of data	Calculation of emission reductions
Additional comment	-

Data/parameter	$EF_{p,non\ co2}$ Charcoal
Unit	tCO_2e/TJ
Description	Non-CO_2 (CH_4 and N_2O) emission factor arising from use of charcoal in project scenario
Source of data	IPCC Default emissions factor – https://www.ipcc-nggip.iges.or.jp/public/gp/bgp/2_2_Non-CO2_Stationary_Combustion.pdf GWP – https://www.ghgprotocol.org/sites/default/files/ghgp/Global-Warming-Potential-Values%20%28Feb%2016%202016%29_1.pdf
Value(s) applied	26.076 (2020) 28.38 (2021)

Choice of data or Measurement methods and procedures	Deemed valid by Methodology
Purpose of data	Calculation of emission reductions
Additional comment	A wood to charcoal ratio of 3 has been applied, in line with IPCC guidelines: https://www.ipcc-nggip.iges.or.jp/public/gl/guidelin/ch1ref3.pdf page 1.46

Data/parameter	NCV_b
Unit	TJ/ton
Description	Net calorific value of the wood fuel used in the baseline
Source of data	IPCC Default emissions factor
Value(s) applied	0.0156
Choice of data or Measurement methods and procedures	Deemed valid by Methodology
Purpose of data	Calculation of emission reductions
Additional comment	-

Data/parameter	NCV_b Charcoal
Unit	TJ/ton
Description	Net calorific value of the charcoal used in the baseline
Source of data	IPCC Default emissions factor
Value(s) applied	0.0295

Choice of data or Measurement methods and procedures	Deemed valid by Methodology
Purpose of data	Calculation of emission reductions
Additional comment	-

Data/parameter	NCV_p
Unit	TJ/ton
Description	Net calorific value of the wood fuel used in the project
Source of data	IPCC Default emissions factor
Value(s) applied	0.0156
Choice of data or Measurement methods and procedures	Deemed valid by Methodology
Purpose of data	Calculation of emission reductions
Additional comment	-

Data/parameter	NCV_p Charcoal
Unit	TJ/ton
Description	Net calorific value of the charcoal used in the project
Source of data	IPCC Default emissions factor
Value(s) applied	0.0295
Choice of data or Measurement methods and procedures	Deemed valid by Methodology
Purpose of data	Calculation of emission reductions

Additional comment	-

Data/parameter	$f_{NRB,i,y}$
Unit	Fractional non-renewability
Description	Non-renewability status of woody biomass fuel in scenario i during year y
Source of data	Calculated in line with CDM Tool 30 EB 108 Annex 11 v3.0 2020
Value(s) applied	0.92
Choice of data or Measurement methods and procedures	Calculation using CDM Tool 30 EB 108 Annex 11 v3.0 yielded an fNRB of 97%. For conservativeness, the project is using the lower now expired default value of 0.92 found here: https://cdm.unfccc.int/DNA/fNRB/index.html
Purpose of data	Calculation of emission reductions
Additional comment	-

Data/parameter	$W_{b,y}$
Unit	T/litre
Description	Quantity of wood fuel that is used to treat 1 litre of water in the baseline scenario b during year y
Source of data	Default value
Value(s) applied	0.0004
Choice of data or Measurement methods and procedures	Default values as per TPDDTEC v3.1 will be used rather than conducting a full baseline water boiling test
Purpose of data	Calculation of emission reductions

Additional comment	-

Data/parameter	$W_{p,y}$
Unit	T/litre
Description	Quantity of wood fuel that is used to treat 1 litre of water in the project scenario b during year y
Source of data	Default value
Value(s) applied	0.0004
Choice of data or Measurement methods and procedures	Default values as per TPDDTEC v3.1 will be used rather than conducting a full baseline water boiling test
Purpose of data	Calculation of emission reductions
Additional comment	-

Data/parameter	$W_{b,y}$ Charcoal
Unit	T/litre
Description	Quantity of charcoal that is used to treat 1 litre of water in the baseline scenario b during year y
Source of data	Default value
Value(s) applied	0.0001
Choice of data or Measurement methods and procedures	Default values as per TPDDTEC v3.1 will be used rather than conducting a full baseline water boiling test
Purpose of data	Calculation of emission reductions
Additional comment	-

Data/parameter	$W_{p,y}$ Charcoal
Unit	T/litre
Description	Quantity of charcoal that is used to treat 1 litre of water in the project scenario b during year y
Source of data	Default value
Value(s) applied	0.0001
Choice of data or Measurement methods and procedures	Default values as per TPDDTEC v3.1 will be used rather than conducting a full baseline water boiling test
Purpose of data	Calculation of emission reductions
Additional comment	-

Data/parameter	Cj
Unit	Percentage
Description	Portion of users of project safe water supply who were already in baseline using a non-boiling safe water supply
Source of data	Baseline Study
Value(s) applied	7%
Choice of data or Measurement methods and procedures	Deemed valid by Methodology
Purpose of data	Calculation of emission reductions
Additional comment	-

Data/parameter	Xboil Non-Suppressed Demand

Unit	Percentage
Description	Percentage of premises that in the absence of the project activity would have used non-GHG emitting technologies like chlorine treatment techniques (if available) in the project boundary,.
Source of data	Baseline study. Credible literature, studies, survey, reports, relevant to the project target area
Value(s) applied	17.4%
Choice of data or Measurement methods and procedures	Suppressed demand will be determined through a set of questions in the project survey that establish the method households use to purify their water, if any, and how they would choose to purify if they were not subject to monetary and access barriers. This is in line with the Gold Standard principles of suppressed demand outline in annex 2. A fixed suppressed demand baseline has been opted for, however, in the event the project surveys show a substantial change in fuel use characteristics, a new baseline shall be conducted.
Purpose of data	Calculation of emission reductions
Additional comment	-

SDG 3

Data/parameter	$P_{b,\ boil}$
Unit	Percentage
Description	Percentage of persons boiling water in the baseline
Source of data	Baseline Survey
Value(s) applied	24.6%
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	Determination of number of persons boiling water in the baseline

Additional comment	-

SDG 5

Data/parameter	$Tb_{,y}$
Unit	Hours
Description	Time spent collecting water per household per day prior to project
Source of data	Baseline survey
Value(s) applied	2.4
Choice of data or Measurement methods and procedures	Measured by question on time spent collecting firewood in the baseline survey.
Purpose of data	Calculation of SDG 5
Additional comment	-

D.2. Data and parameters monitored

SDG 3

Data / Parameter	P_y
Unit	Number
Description	Number of persons having access to safe water from the project activity
Source of data	Water point Project Database; Default Values
Value(s) applied	21,459
Measurement methods and procedures	Data on total volumes of water produced and sold during the monitoring period by project technologies will be divided by the value for Qp,y.

Monitoring frequency	Annual
QA/QC procedures	Data will be cross-checked with other associated data records regarding water production and sale. Sales data is recorded using a point-of-sale platform. Water production data is recorded using water meters. Meter data contains gaps caused by issues with non-recording and internet connection. The gaps result in variance between production and sales data. Variance between sales and production records is used to adjust treatment capacity calculations with the most conservative value being used. For this monitoring period, variance was 0.41% and so treatment capacity was adjusted accordingly.
Purpose of data	To measure the additional persons with access and provision to safe water in the project scenario, which will positively impact good health and wellbeing, as well as access to clean water and sanitation.
Additional comment	-

SDG 5

Data / Parameter	$T_{p,y}$
Unit	Hours
Description	Project time spent collecting water per household per day.
Source of data	Project survey
Value(s) applied	No Data
Measurement methods and procedures	Established through questions in the project survey on a representative sample of the end users.
Monitoring frequency	Annual
QA/QC procedures	-
Purpose of data	To measure the % decrease in hours spent collecting water and firewood, a responsibility falling

	disproportionately on women, as an indicator of reduced time poverty of women.
Additional comment	Parameter was not able to be monitored during this monitoring period. No SDG 5 claims are being made this monitoring period.

SDG 6

Data / Parameter	$Q_{p,cleanboil,y}$
Unit	Litres per person per day
Description	Quantity of safe water boiled in the project scenario p during the year y using the zero or low emissions clean water supply technology
Source of data	Deviation
Value(s) applied	0
Measurement methods and procedures	Approved Assumption
Monitoring frequency	Annual
QA/QC procedures	
Purpose of data	Emission reduction calculations
Additional comment	Boiled water consumed for drinking, cooking and basic personal hygiene considered safe for human consumption prior to boiling. This is assumed from the stated water source.

Data / Parameter	$Q_{p,rawboil,y}$
Unit	Litres per person per day
Description	The raw unsafe water that is still boiled after installation of the water treatment technology
Source of data	Methodological default
Value(s) applied	0

Measurement methods and procedures	Methodological default
Monitoring frequency	Annually
QA/QC procedures	
Purpose of data	Emission reduction calculations
Additional comment	-

Data / Parameter	Quality of Treated Water
Unit	Parameters as per national standards
Description	Performance of the treatment technology
Source of data	Laboratory Tests
Value(s) applied	

ID	WQT Date	Notes
MAXI 1	09/06/2020	
	10/07/2020	
	03/11/2020	
	24/06/2021	
	30/07/2021	
	19/10/2021	pH fail
	01/11/2021	pH pass
MAXI 2	12/02/2021	
	23/06/2021	pH fail
	25/06/2021	pH pass
	07/07/2021	
	21/10/2021	pH fail
	19/11/2021	pH pass
Mobi+ 1	17/11/2016	
	06/01/2021	

Measurement methods and procedures	The water quality will be tested in line with national standards in Kenya. The water samples will be taken at source by the testing body.
Monitoring frequency	Quarterly
QA/QC procedures	All Project Technologies include daily water treatment system checklists for staff to complete. This includes checking chlorine injection tanks, backwashing filters, checking filter pressures and checking quality of outputted water.

	At least four tests each year conducted by an accredited laboratory. MAXI 1 did not complete a WQT during Q1 2021. As a result, the project's average WQT failure rate has been applied to the quarter. Period of time between any fail and subsequent pass is removed from ER claims.
Purpose of data	Criteria of methodology
Additional comment	Water is tested in accredited laboratories. Tested water is collected from source. Mobi+ 1 first test was conducted before commissioning of the site in order to determine aquifer water quality properties.

Data / Parameter	Hygiene campaigns
Unit	Outcome of WASH meetings
Description	Hygiene campaigns carried out among project technology users
Source of data	Annual hygiene campaign results
Value(s) applied	No Data
Measurement methods and procedures	WASH Report
Monitoring frequency	Annual
QA/QC procedures	Sharing and checking of meeting pictures and participants lists.
Purpose of data	In accordance with TPDDTEC v3.1 methodology
Additional comment	Parameter was not able to be monitored during this monitoring period. Hygiene campaigns will commence once COVID-19 situation eases and conducting gatherings is deemed safe.

SDG 13

Data / Parameter	$LE_{p,y}$
Unit	tCO2e per year
Description	Leakage in project scenario p during year y.
Source of data	Deviation
Value(s) applied	5%
Measurement methods and procedures	Conservative Assumption
Monitoring frequency	Biennial
QA/QC procedures	
Purpose of data	Emission reduction calculations
Additional comment	-

Data / Parameter	$N_{p,y}$ [Wood]
Unit	Project Technology Days
Description	Number of persons consuming water supplied by project scenario p through year y
Source of data	Project Database
Value(s) applied	1,606,570
Measurement methods and procedures	Sum of the total number of people using each project technology multiplied by the number of days crediting each project technology earns in this monitoring period
Monitoring frequency	Continuous
QA/QC procedures	Calculations are double-checked
Purpose of data	Emission reduction calculations
Additional comment	Household lists of users including details for the main contact from the household

Data / Parameter	Np,y [Charcoal]
Unit	Project Technology Days
Description	Number of persons consuming water supplied by project scenario p through year y
Source of data	Project Database
Value(s) applied	4,819,709
Measurement methods and procedures	Sum of the total number of people using each project technology multiplied by the number of days crediting each project technology earns in this monitoring period
Monitoring frequency	Continuous
QA/QC procedures	Calculations are double-checked
Purpose of data	Emission reduction calculations
Additional comment	Household lists of users including details for the main contact from the household

Data / Parameter	$U_{p,y}$
Unit	Percentage
Description	Usage rate in project scenario p through year y
Source of data	Deviation
Value(s) applied	90%
Measurement methods and procedures	Conservative assumption
Monitoring frequency	Annual
QA/QC procedures	
Purpose of data	Emission reduction calculations
Additional comment	-

Data / Parameter	$Q_{p,y}$
Unit	Litres per person per day
Description	Quantity of safe water supplied in the project scenario p during the year y using the zero or low emissions clean water supply technology
Source of data	Default value
Value(s) applied	4
Measurement methods and procedures	Default value
Monitoring frequency	N/A
QA/QC procedures	
Purpose of data	Emission reduction calculations
Additional comment	-

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

Data/Parameter	Value obtained in this monitoring period	Value obtained last monitoring period
P_y	21,459	N/A
$T_{p,y}$	No Data	N/A
$Q_{p,cleanboil,y}$	0	N/A
$Q_{p,rawboil,\ y}$	0	N/A
Quality of Treated Water	Pass	N/A
Hygiene campaigns	No Data	N/A
$LE_{p,y}$	5%	N/A
$N_{p,y}$ [Wood]	1,606,570	N/A
$N_{p,y}$ [Charcoal]	4,819,709	N/A
$U_{p,y}$	90%	N/A
$Q_{p,y}$	4	N/A

D.4. Implementation of sampling plan

The solar desalination plants included in the project rely on water resellers to reach communities. For example, roughly 10-15 jerrycans per day are sold to customers who visit the solar desalination plants directly. The resellers are independent entrepreneurs who are not GivePower Foundation employees. The project cannot and should not enforce the collection of user lists on water resellers. In addition, directly recording information from customers at their homes could cause harm to the reputation of GivePower Foundation. The project therefore intended to collect user lists via the WASH gatherings implemented once Covid-19 situation in the host country enables. However, persistent regulations against holding large gatherings in the host country meant that WASH gatherings could not be completed for the monitoring period. As a result, user lists have not been collected for the sampling plan and a deviation request submitted for the project. No sampling for parameters was conducted in this monitoring period.

Monitored parameters and their inputs that were successfully monitored during this monitoring period are detailed below.

Installation Record

A comprehensive installation record details the following information:

- Date of installation
- GPS location of the technology
- Quantity of plants installed
- The total volume of water being sold by each plant
- Mode of use: commercial/domestic

The installation record will be backed up electronically, with original documentation being stored in a centralised location.

Project Database

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

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

Water Consumption Field Test

The project has opted to use default values for parameters monitored by the WCFT.

Quality of the treated water

All technologies included in the project have provided quarterly water quality test results in line with the national water quality test standard, apart from MAXI 1 for Q1 2021. As a result, the average failure rate from the project has been applied to the quarter in order to conservatively account for the missing test. Both project technology specifications and staff monitoring procedures ensure a consistent supply of safe water so this approach is justifiable. Kenyan standards for potable water are provided by the Kenya Bureau of Standards (KEBS)[4].

SECTION E. CALCULATION OF SDG IMPACTS

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

SDG 3 (Good Health and Wellbeing)

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

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

15,047 = 21,459 * (1-0.07) * (1-0.246)

Where:

4 KS EAS 12:2018

P_{safe}	Number of additional persons having access to safe water in the project activity compared to the baseline scenario.
P_y	Number of persons having access to safe water in the project activity.
C_j	Expressed as a percentage, the portion of users of the project technology j who in the baseline were already consuming safe water without boiling it.
$P_{b,boil}$	Percentage of persons boiling water for purification in the baseline scenario.

SDG 5 (Gender Equality)

Women and girls perform the majority of unpaid domestic work[5]. This leaves them with less time to rest, study and realise their economic potential, leaving them in time poverty. Regarding time, women are poorer than men as unpaid domestic duties, such as collecting firewood and water, must be added to their market productive work, making time much scarcer[6]. Women are widely recognised as being principally responsible for natural resource collection[7]

These trends demonstrate that reducing the amount of firewood required by households has the potential to reduce the time poverty of women, because the time burden of collecting firewood, which falls disproportionately on women, will be reduced. The decrease per household in time spent gathering firewood will be taken as a proxy contribution towards the SDG target.

The overall reduction in time spent collecting firewood by the project activity are then calculated as follows:

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

5 UN (2017) 'Progress towards the Sustainable Development Goals (E/2017/66)'. Available at https://unstats.un.org/sdgs/files/report/2017/secretary-general-sdg-report-2017--EN.pdf

6 Charmes, J 'A Review of Empirical Evidence on Time Use in Africa from UN-Sponsored Surveys', in Word Bank (2006) 'Gender, Times Use, and Poverty in Sub-Saharan Africa'. World Bank Working Paper No. 73

7 Nankhuni (2004) 'Environmental Degradation, Resource Scarcity and Children's Welfare in Malawi: School Attendance, School Progress, and Children's Health

Not monitored in this monitoring period

Where:

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

SDG 6 (Clean Water and Sanitation)

The outcome for SDG 6 is quantified as the additional number of persons having access to safe water in the project activity compared to the baseline scenario (Paccess). The number of persons using each solar desalination plant is determined in the sensitization process during the installation. The percentage of users who already had access to a safe water source will be determined through the baseline survey. Calculations are as follows (parameters from sections B.6.3 and B.7.1 of the VPA-DD will be applied):

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

Where:

P_{access}	Number of additional persons having basic access to safe water in the project activity compared to the baseline scenario.
P_y	Number of persons having access to safe water in the project activity.
C_j	Expressed as a percentage, the portion of users of the project technology j who in the baseline were already consuming safe water without boiling it.
$U_{p,y}$	Usage rate in project scenario p during year y

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 ($BE_{b,y}$)

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

Wood:
2020
831 = 477 * ((0.92 * 112) + 8.692) * 0.0156
2021
3,355 = 1912 * ((0.92 * 112) + 9.46) * 0.0156

Charcoal:
2020
3,540 = 358 * ((0.92 * 336) + 26.076) * 0.0295
2021
14,277 = 1434 * ((0.92 * 336) + 28.38) * 0.0295

Where:

BEb,y	Emissions for baseline scenario b during the year y in tCO2e
Bb,y	Quantity of fuel consumed in baseline scenario b during year y, in tons, as per by-default factors
fNRBy	Fraction of biomass used during year y for the considered scenario that can be established as non-renewable biomass

NCVb,fuel Net calorific value of the fuel that is substituted or reduced (IPCC default for wood fuel, 0.0156 TJ/ton)

$EFb_{,fuel,co2}$ CO2 emission factor of the fuel that is substituted or reduced. 112 tCO2/TJ for Wood/Wood Waste

$EFb_{,fuel,nonco2}$ Non-CO2 emission factor of the fuel that is substituted or reduced

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

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

Outcomes for SDG 3 (Good Health and Wellbeing)

The outcome for SDG 3 is quantified as the additional number of persons consuming safe water in the project activity compared to the baseline scenario (Psafe). The number of persons using each project technology is determined from the sales database and default values for litres of water used per day. The percentage of users who were already consuming safe water in the baseline without boiling it (Cj) is determined through the baseline survey and deducted. Additionally, the percentage of users who consumed safe water by boiling it in the baseline (Pb, boil) is deducted.

Calculations are as follows:

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

15,047 = 21,459 * (1 – 0.07) * (1 – 0.246)

Where:

Psafe Number of additional persons having access to safe water in the project activity compared to the baseline scenario.

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

Cj	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.
Pb, boil	Percentage of persons boiling water for purification in the baseline scenario.

Outcomes for SDG 5 (Gender Equality) are calculated as follows:

No data was collected in the project scenario for the project scenario parameter $T_{p,y}$. As a result there is no outcome for SDG 5 during this monitoring period.

Outcomes for SDG 6 (Clean Water and Sanitation) are calculated as follows:

The outcome for SDG 6 is quantified as the additional number of persons having access to safe water in the project activity compared to the baseline scenario (Paccess). The number of persons using each solar desalination plant is determined using the sales database for the project and default values for litres per person per day supplied by the methodology. The percentage of users who already had access to a safe water source will be determined through the baseline survey. Calculations are as follows (parameters from sections B.6.3 and B.7.1 of the VPA-DD will be applied):

$$Paccess = Py * (1 - Cj) * Up,y$$
$$17,961 = 21,459 * (1 - 0.07) * 0.90$$

Where:

Paccess	Number of additional persons having access to safe water in the project activity compared to the baseline scenario.
Py	Number of persons having access to safe water in the project activity.
Cj	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.
Up,y	Usage rate in project scenario p during year y

Outcomes for SDG 13 (Climate Action) are calculated as follows:

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

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

Where:

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

And:

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

Where:

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

And:

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

Wood fuel emissions reductions:

Total Emission Reductions			
Baseline Fuel Use (Bby)			
Portion using safe water	Cj	fraction	7%
Person Days	Nj,y		1,606,570
Fuel to treat 1 litre of water using baseline tech	Wb,y	T/L	0.00040
Quantity safe water litres consumed in project scenario supplied by project technology	Qb,y	L/pd	4.0
Quantity of raw water boiled in addition to project technology water	Qb, raw, y	L/pd	0
Quantity fuel consumed in baseline scenario	Bb,y	T	2390
Project Fuel Use (Pby)			
Portion of safe users	Cj	fraction	7%
Person Days	Nj,y		1,606,570
Fossil fuel required to treat 1 litre for water in project scenario	Wp,y	T/L	0.0004000
Quantity of raw water boiled in addition to project tech water	Qp, raw, y	L/pd	0
Quantity of safe water boiled	Qp, cleanboil, y	L/pd	0
Quantity of fuel consumed in project scenario per HH	Bp,y	T	0
Constants			
NRB	NRB	Fraction	0.92
Emissions factor fuel (co2)	EFb,fuel,co2	tCO2/TJ	112
Emissions factor fuel (non-co2)	EFb, fuel, non-co2	TCO2/TJ	9.46
Net calorific value of fuel	NCV,b,fuel	TJ/T	0.0156
Emissions Reductions			
Baseline emissions per year	BEb,y	tCO2/y	4,186
Project emissions per year	PEp,y	tCO2/y	0
Usage rate	Up,y	fraction	90%
Leakage	LEp,y	tCO2/y	5%
Total Emission Reductions	Ery	tCO2/y	3578
Suppressed Demand Assessment			
Percentage of suppressed demand users			93.70%
Percentage of **non**-suppressed demand users	Xboil	Percentage	17.40%
Emission Reductions Corrected for Suppressed Demand	**Ery**	**tCO2/y**	**2954**
Capped Emission Reductions		**tCO2/y**	**2954**

Wood Total Capped ERs for Monitoring Period 1	
Emissions Reductions	
2020	**586**
2021	**2,368**
Total ERs for MP1	**2,954**

Charcoal emissions reductions:

Total Emission Reductions			
Baseline Fuel Use (Bby)			
Portion using safe water	Cj	fraction	7%
Person Days	Njy		4,819,709
Fuel to treat 1 litre of water using baseline tech	Wb,y	T/L	0.00010
Quantity safe water litres consumed in project scenario supplied by project technology	Qb,y	L/pd	4.0
Quantity of raw water boiled in addition to project technology water	Qb, raw, y	L/pd	0
Quantity fuel consumed in baseline scenario	Bb,y	T	1792
Project Fuel Use (Pby)			
Portion of safe users	Cj	fraction	7%
Person Days	Njy		4,819,709
Fossil fuel required to treat 1 litre for water in project scenario	Wp,y	T/L	0.0001000
Quantity of raw water boiled in addition to project tech water	Qp, raw, y	L/pd	0
Quantity of safe water boiled	Qp, cleanboil, y	L/pd	0
Quantity of fuel consumed in project scenario per HH	Bp,y	T	0
Constants			
NRB	NRB	Fraction	0.92
Emissions factor fuel (co2)	EFb,fuel,co2	tCO2/TJ	336
Emissions factor fuel (non-co2)	EFb, fuel, non-co2	TCO2/TJ	28.38
Net calorific value of fuel	NCV,b,fuel	TJ/T	0.0295
Emissions Reductions			
Baseline emissions per year	BEb,y	tCO2/y	17,817
Project emissions per year	PEp,y	tCO2/y	0
Usage rate	Up,y	fraction	90%
Leakage	LEp,y	tCO2/y	5%
Total Emission Reductions	Ery	tCO2/y	15232
Suppressed Demand Assessment			
Percentage of suppressed demand users			93.70%
Percentage of non-suppressed demand users	Xboil	Percentage	17.40%
Emission Reductions Corrected for Suppressed Demand	**Ery**	**tCO2/y**	**12581**
Capped Emission Reductions		**tCO2/y**	**12581**

Charcoal Total Capped ERs for Monitoring Period 1	
Emissions Reductions	
2020	**2,499**
2021	**10,082**
Total ERs for MP1	**12,581**

Total emissions reductions:

Total Capped ERs for Monitoring Period 1	
Emissions Reductions	
2020	**3,085**
2021	**12,450**
Total ERs for MP1	**15,535**

E.3. Calculation of leakage

The potential sources of leakage listed in the methodology have been investigated, and addressed below:

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

In all cases the baseline technologies displaced are traditional technologies; these have little to no market value. Their distribution throughout Kenya as a whole is already established - which means the potential for displacement is minimal as traditional baseline technologies will not be reused outside the project boundary. This leakage source can therefore be discounted.

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

There is no evidence to suggest significant (if any) use of renewable energy for purifying water in the project region as found in the Baseline Water Surveys. As solar purification devices are not used, renewable energy used for purifying water would likely be animal dung or crop residues which will be used due to ease of availability/proximity to the home rather than due to a shortage of wood fuel, therefore it is an independent factor. This leakage source can therefore be discounted.

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

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

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

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

e) By virtue of promotion and marketing of new technology with high efficiency, the project stimulates substitution within households who commonly used a

technology with relatively lower emissions, in cases where such a trend is not eligible as an evolving baseline.
The project removes the need to boil water to purify. Therefore, the point regarding efficiency is null and this leakage source can be discounted.

Overall, because the project survey was unable to be completed a conservative 5% leakage score has been assigned. Leakage values are 188.37tco2 for wood and 801.765tco2/year for charcoal, totalling 990.135tco2.

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

SDG	SDG Impact	Baseline estimate	Project estimate	Net benefit
13	Emission reductions	22,003	0	15,535
3	Number of additional persons having access to safe water in the project activity compared to the baseline scenario	6,412	21,459	15,047
5	Reduction in time spent collecting firewood per day	2.40	No Data	No Data
6	Number of additional persons having access to safe water in the project activity compared to the baseline scenario	3,498	21,459	17,961

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[8] achieved during this monitoring period
13	Ex-ante Emission Reductions per VPA: 79,890 tCO2e[9]	Actual Emission Reductions of: 15,535 tCO2e
3	Number of additional persons having access to safe water in the project activity compared to the baseline scenario: 62,775	Number of additional persons having access to safe water in the project activity compared to the baseline scenario: 15,047
5	Reduction in time spent collecting firewood per day**:** 0.5 hours	No Data
6	Number of additional persons having access to safe water in the project activity compared to the baseline scenario: 75,330	Number of additional persons having access to safe water in the project activity compared to the baseline scenario: 17,961

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

SDG 3: Good Health and Well-Being

In ex ante calculations, user numbers are based on estimations regarding the number of technologies included in a VPA and the number of users per technology. The

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

9 Figure based on 486 day monitoring period, with ERs capped at 60,000 tCO2e/y.

remaining parameters, Cj and Pb,boil, in the calculation use baseline project survey data and are fixed ex ante, as found in Section D.1. of the MR.

SDG 5: Gender Equality
The parameter Tb,y is estimated using the baseline project survey and is fixed ex ante (Section D.1. of the MR). In order to estimate the reduction in time spent collection firewood (TRy), the ex ante calculations assumed a 0.5 hour reduction for Tp,y. This parameter is planned to be monitored annually in the project survey.

SDG 6: Clean Water and Sanitation
In ex ante calculations, user numbers are based on estimations regarding the number of technologies included in a VPA and the number of users per technology. A 90% usage rate is assumed ahead of monitoring surveys taking place. The remaining parameter, Cj, is fixed ex ante, as found in Section D.1. of the MR.

SDG 13: Climate Action
The ex ante calculations for SDG 13 use a mix of baseline monitored parameters, methodology caps and figures assumed ahead of data collection. The Usage rate is estimated at 90% in the ex antes and ER calculations. Functionality days were estimated to be 95% in the ex antes. For the project we are using the sales database to inform the number of days non-operational.

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

For SDG 3, in the project scenario there was an additional 15,047 people consuming safe water. This is due to the project providing safe water sources as determined by quarterly water quality tests. The ex-antes estimated an additional 62,775 people however, the project has not reached full scale in MP1. Each project technology impacts positively towards SDG 3 good health and wellbeing.

Time spent collecting firewood was not able to be quantified during this monitoring period due to disruptions to the monitoring plan caused by Covid-19 and associated host country regulations.

In ex ante calculations, 75,330 people are calculated as having additional access to safe water in the project scenario. However, this value is based on a full VPA. In MP1

17,961 people are calculated to have additional access to safe water compared to the baseline scenario. The difference is solely due to the number of technologies assumed in ex antes and realised in the project scenario. Positive contributions to SDG 6 are achieved nonetheless.

For SDG 13, the ex-ante estimation was 60,000 emission reductions per year per VPA. This value assumed the VPA was filled to capacity with project technologies. In MP1, the number of technologies was not enough to fill the VPA, hence 15,535 emissions reductions are claimed.

SECTION F. SAFEGUARDS REPORTING

1. Corruption

Water pricing is transparently communicated with local users and no issues have arisen in relation to this.

Continuous grievance mechanisms are in place for people to voice concerns relating to corruption, among other issues. Each technology has contact information for the project present and GivePower conduct a regular community engagement programme where stakeholders can voice concerns. No grievances have been reported during the monitoring period.

2. Land Tenure

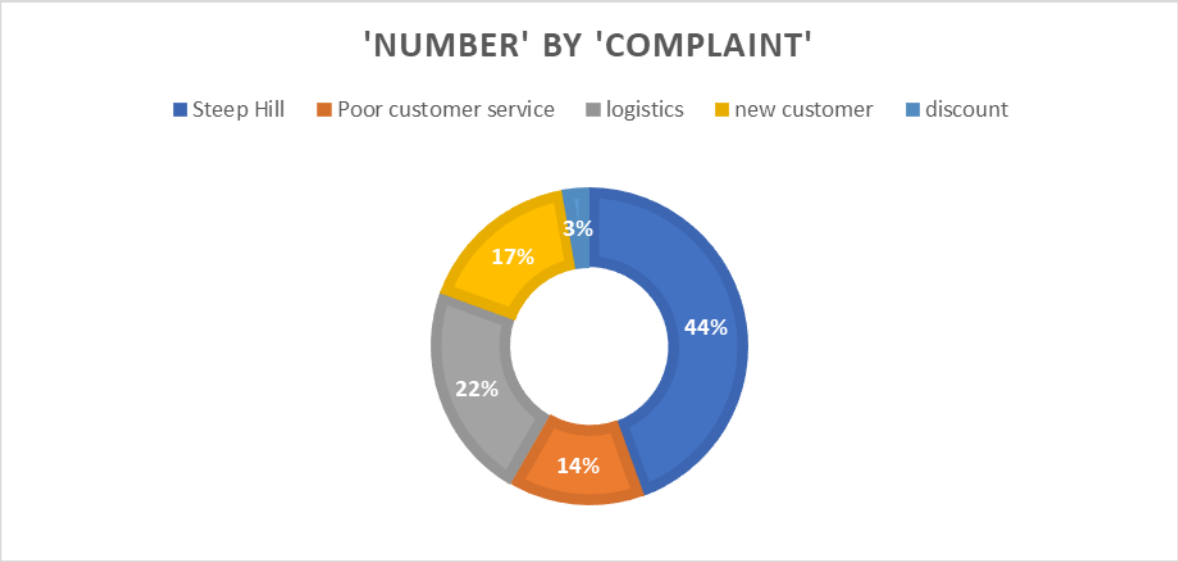
All project technologies have secured land tenure rights in advance of their installation.

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.

Names and contact details have been removed for privacy. Below is the full list and summary of comments received.

S/No	FEEDBACK
1	Our site is far from his customers or where he stays
2	Our site is far from his customers or where he stays
3	Claims to be given a discount by his current supplier
4	New customer has never bought our water
5	New customer will consider buying our water
6	Our site is far from his customers or where he stays
7	Hill complaints
8	Hill complaints
9	Poor customer service
10	Poor customer service
11	Hill complaints
12	Hill complaints
13	Hill and logistics complaints
14	Complains of favourism of tuktuk customers over mkokoteni
15	Poor customer service
16	Hill complaints
17	Logistics complaints
18	Logistics complaints
19	Hill and Logistics complaints
20	New customer has never bought water from
21	Hill complaints
22	Logistics complaints
23	Hill complaints
24	New customer has never bought water from us
25	Poor customer service
26	New customer has never bought water from us
27	Hill complaints
28	Poor customer service
29	Hill complaints
30	Hill and poor customer service complaints
31	Hill complaints
32	Hill complaints
33	New customer has never bought water from us
34	Says he will just return
35	Hill complaints
36	Hill complaints
37	Hill complaints



Responses/mitigations are presented for each group:

Steep Hill

The team hired a casual labourer who helps the customers push the carts past the steep section of the road.

Poor Customer Service

The site manager investigated the complaints, apologized to the affected customers, and re-trained the team on how best to handle the customers.

Discount

The price was adjusted down from Ksh 12.5 per Litre to Ksh 10 per Litre.

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 contest or dispute has arisen with the project.

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