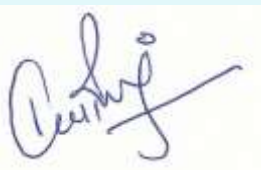


**Validation report form for inclusion of voluntary
project activities
Gold Standard for Global Goals**

BASIC INFORMATION

Title and GS reference number of the programme of activities (PoA)	GS10959: Safe Water Programme in Africa and Asia	
Version number of the validation report	4.0	
Completion date of the validation report	29/03/2022	
Title and reference number of each VPA to be included	VPA Ref. no.	Title
	GS 11098	GS10959 VPA01 Safe Water Project in Rwanda I
	GS 11133	GS10959 VPA02 Safe Water Project in Rwanda II
	GS 11134	GS10959 VPA03 Safe Water Project in Rwanda III
	GS 11135	GS10959 VPA 04 Safe Water Project in Rwanda IV
	GS 11136	GS10959 VPA 05 Safe Water Project in Rwanda V
	GS 11137	GS10959 VPA 06 Safe Water Project in Rwanda VI
Version numbers of the VPA-DDs to which this report applies	VPA 01: Version 8.0 VPA 02: Version 8.0 VPA 03: Version 8.0 VPA 04: Version 8.0 VPA 05: Version 8.0 VPA 06: Version 8.0	
Applied methodologies and standardized baselines for each CPA	VPA no.	Applied methodologies
	VPA 01	Technologies and Practices to Displace Decentralized Thermal Energy Consumption (Version 3.1)
	VPA 02	
	VPA 03	
	VPA 04	
	VPA 05	
	VPA 06	

Sectoral scopes for each CPA	VPA no.	Sectoral scopes (indicate mandatory and conditional sectoral scopes)
	VPA 01	Sectoral Scope: 3
	VPA 02	
	VPA 03	
	VPA 04	
	VPA 05	
	VPA 06	
Coordinating/managing entity (CME)	Guangzhou Iceberg Environmental Consulting Services Co., Ltd.	
Host Parties	Rwanda	
Estimated SDG Impacts	SDG 13: 58,480 VERs SDG 3: 18.45% SDG 5: 44.44% SDG 6: 32,726	
Name of the VVB	Earthood Service Private Limited	
Name, position and signature of the approver of the validation report	 Dr. Kaviraj Singh Managing Director	

SECTION A. Executive summary

The purpose of the VPAs is to provide clean water by the borehole method. With the help of local NGO & the VPAs Implementer Rwandaise pour le Développement Endogène (ARDE), GS11098 (VPA 01), GS11133 (VPA 02), GS11134 (VPA 03), GS11135 (VPA 04), GS 11136 (VPA 05) & GS 11137 (VPA 06) will maintain 30-100 boreholes in Southern Province of Rwanda under each VPA. In case the water quality from the maintained borehole is not viable, the CME with the help of a local NGO, Association Rwandaise pour le Développement Endogène (ARDE) will provide chemical disinfectant to ensure the water quality is within the water standard of the host country of Rwanda. These VPAs focus on reduction of biomass fuel-based purifying techniques which are inefficient and the technology and measure that will provide access to clean water requirements of the applied methodology TPDDTEC Version 3.1/5/.

The VPAs are being submitted to GS4GG for inclusion and the Coordinating/managing entity of the PoA is Guangzhou Iceberg Environmental Consulting Services Co., Ltd.

Parameter	Validated information
GS ID of the VPAs to be included	GS11098 (VPA 01), GS11133 (VPA 02), GS11134 (VPA 03), GS11135 (VPA 04), GS 11136 (VPA 05) & GS 11137 (VPA 06)
Title of the VPAs	GS10959 VPA01 Safe Water Project in Rwanda I GS10959 VPA02 Safe Water Project in Rwanda II GS10959 VPA03 Safe Water Project in Rwanda III GS10959 VPA 04 Safe Water Project in Rwanda IV GS10959 VPA 05 Safe Water Project in Rwanda V GS10959 VPA 06 Safe Water Project in Rwanda VI
Methodology applied	GS TPDDTEC v3.1
Crediting period	5 years, Renewable

These VPAs aim at the availability of clean drinking water to the people of Rwanda by the Borehole method or if borehole is not viable then chemical disinfectant will be provided in the Southern Province of Rwanda implemented by Guangzhou Iceberg Environmental Consulting Services Co., Ltd. The households in Rwanda traditionally use non-renewable biomass non-renewable biomass to purify the water. Thus, baseline for this Project is the amount of non-renewable biomass consumption in the absence of project activity to boil the water for drinking purposes.

Installation of first unit under the VPAs-01-06 will be decided at the time of implementation of the VPAs. The certification cycle of the VPAs is considered as 15 years, which is in line with the crediting period under Community Services Activity Requirements ver 1.2. The start date and length and type of the crediting period is also consistent with the PoA description in PoA-DD/04/.

Each VPA i.e., GS11098 (VPA 01), GS11133 (VPA 02), GS11134 (VPA 03), GS11135 (VPA 04), GS 11136 (VPA 05) & GS 11137 (VPA 06) envisage an annual GHG emission reduction of 58,480 tCO₂e under SDG 13, 18.45 % reduction in the incidence of waterborne illness under SDG3, 44.44% reduction in time spent to fetch and purify water by women and girls under SDG5 and provision of safe water to 32,726 local residents under SDG 6 over the crediting period respectively.

Scope of Validation

The scope of the services provided by Earthood Services Private Limited is to perform validation of the VPAs GS11098 (VPA 01), GS11133 (VPA 02), GS11134 (VPA 03), GS11135 (VPA 04), GS 11136 (VPA 05) & GS 11137 (VPA 06) under the PoA. The scope of validation is to assess the claims and assumptions made in the VPA-DDs against the GS4GG criteria and UNFCCC's CDM, including but not limited to GS4GG Programme of Activities Requirements ver. 1.2/2/, Community Services Activity Requirements ver 1.2/3/, applied methodology TPDDTEC version

3.1/5/, GS4GG Principle & Requirements ver.1.2/1/, GHG Product Requirements/8/, GHG emissions reductions sequestration and product requirements v2/27/ and CDM PS for PoA version 3.0/14/, CDM VVS for PoA /7/version 3.0.

Validation Process

The validation process is undertaken by the validation team that involves the following:

1. The desk review of documents and evidence submitted by the project participant in the context of GS4GG criteria along with the reference CDM rules and guidelines issued by CDM EB,
2. A remote audit to assess the baseline practices followed by interviews with CME and the VPA Implementers,
3. Reporting audit findings concerning clarifications and non-conformities and the closure of the findings, as appropriate,
4. Preparing a draft validation report for the inclusion of VPA complying with the Gold Standard requirements.

An independent Technical Review team reviews the validation report prepared by the validation team. The final validation report that is accepted by Technical Reviewer is then approved on behalf of Earthood Services Private Limited and processed further as per GS4GG procedures.

Conclusion

The review of the VPA DDs, supporting documentation and subsequent follow-up actions have provided Earthood with sufficient evidence to determine the fulfilment of stated criteria. Earthood is of the opinion that the VPAs titled "GS10959 VPA01 Safe Water Project in Rwanda I, GS10959 VPA02 Safe Water Project in Rwanda II, GS10959 VPA03 Safe Water Project in Rwanda III, GS10959 VPA 04 Safe Water Project in Rwanda IV, GS10959 VPA 05 Safe Water Project in Rwanda V and GS10959 VPA 06 Safe Water Project in Rwanda VI" as described in the final VPA DD/9/ meet all relevant requirements of GS4GG, meets host country i.e., Rwanda criteria and has correctly applied the methodology GS TPDDTEC v3.1/5/for application to safe drinking water via borehole maintenance and chemical disinfection. Therefore, the VPAs are being recommended to GS4GG for request for inclusion.

SECTION B. Validation team, technical reviewer and approver

B.1. Validation team member

No	Role	Type of resource	Last name	First name	Affiliation (e.g., name of central or other office of VVB or outsourced entity)	Involvement in			
						Desk/document review	On-site inspection*	Interviews	Validation findings
1.	Team Leader and Meth. Expert	IR	Mahala	Deepika	Central office	Y	N	Y	Y
2.	Validator(old)	IR	Sahni	Rahi	Central office	Y	N	Y	Y

3.	Technical, Meth Expert (TA3.1)	IR	Mahala	Deepika	Central office	Y	N	Y	Y
4.	Local Expert (Rwanda)	EI	Uwimana	Olivier	Central office	Y	N	Y	Y

*Remote Audit was conducted because of Covid as described in detail under section C.2 of this report.

B.2. Technical reviewer and approver of the validation report

No.	Role	Type of resource	Last name	First name	Affiliation (e.g.name of central or other office of VVB or outsourced entity)
1.	Technical reviewer	IR	Garg	Shreya	Central office
2.	Expert to TR	IR	Garg	Shreya	Central office
3.	Approver	IR	Singh	Kaviraj	Central office

SECTION C. Means of validation

C.1. Desk/document review

The validation of the Voluntary Project Activities (VPAs) is performed primarily as a document review of the VPA design documents for VPAs GS11098 (VPA 01), GS11133 (VPA 02), GS11134 (VPA 03), GS11135 (VPA 04), GS 11136 (VPA 05) & GS 11137 (VPA 06) /9/, SDG Outcome Calculation sheet/28/, fNRB calculation sheet/44/, the baseline survey forms/30/ and independent research on several platforms. The cross checks between information provided in the VPA-DD/9/s and information from sources other than those used, if available, the validation team's sectoral or local expertise and, if necessary, independent background investigations. The complete list of documents/evidence assessed by validation team is included under Appendix 3

C.2. On-site inspection

Duration of on-site inspection: NA				
No	Activity performed on-site	Site location	Date	Team member

During the current validation, the on-site visit was not possible due to the outbreak of COVID-19 global pandemic and Rwanda which is the host country of the VPAs was facing increased number of cases at the time of validation assessment was being carried out/26/. The Indian Government has several restrictions on international travel due to global pandemic Covid-19. Although international travel is allowed to some extent on a case-to-case basis, the Coronavirus-induced suspension of scheduled international flights has been extended till 31/07/2021 by Directorate General of Civil Aviation (DGCA)/26/ which hindered the validation team to plan a physical onsite assessment.

It is important to note that the GS4GG has provided alternative measures relating to mandatory on-site visits for VVBs audits which includes the following:

If site visit cannot be postponed due to significant impact of delaying the site visit on VVB and/or project developer due to timeline/commitment as per validation/verification or GS-VERs delivery agreement, VVB may replace mandatory on-site visits with remote audits. Therefore, in this validation due to the commitment of the project developer as per the delivery timeline, the site-visit could not be postponed, and the on-site visit was replaced by remote audit.

The remote audit included the interviews with the CME representatives and the CPA implementers. The VVB also interviewed the end-users on sampling basis as discussed under section C.3. of this report.

C.3. Interviews

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Han	Jin	Iceberg, China	09/07/2021	Program design, Baseline scenario, ex-ante and monitored parameters	Deepika Mahala, Rahi Sahni, Olivier Uwimana
2.	Bao	Ji	CME representative	09/07/2021	Monitoring plan, baseline scenario, technical description, Additionality, Project boundary, Ex-ante and Ex-post parameters	Deepika Mahala, Rahi Sahni, Olivier Uwimana
3.	Baziranike nde	B. David	VPA Implementer, ADRE	09/07/2021	Program design, Baseline scenario, ex-ante and monitored parameters	Deepika Mahala, Rahi Sahni, Olivier Uwimana
4.	Kayonga	David	VPA Implementer, ADRE	09/07/2021	Monitoring plan, baseline scenario, technical	Deepika Mahala, Rahi Sahni,

					description, Additionality, Project boundary, Ex-ante and Ex- post parameters	Olivier Uwimana
End-users:						
1.	Brimungu	Emanuel	Baseline user	09/07/2021	VVB baseline survey	Deepika Mahala, Rahi Sahni, Olivier Uwimana
2.	Ntihabose	Samuel	Baseline user	09/07/2021	VVB baseline survey	Deepika Mahala, Rahi Sahni, Olivier Uwimana
3.	Niyonagira	Jofephine	Baseline user	09/07/2021	VVB baseline survey	Deepika Mahala, Rahi Sahni, Olivier Uwimana
4.	Bisengimana	Eulade	Baseline user	09/07/2021	VVB baseline survey	Deepika Mahala, Rahi Sahni, Olivier Uwimana
5.	NWSHIMI YMANA	Fostpha	Baseline user	09/07/2021	VVB baseline survey	Deepika Mahala, Rahi Sahni, Olivier Uwimana
6.	HABDRUG IRA	Bosco Phoste	Baseline user	09/07/2021	VVB baseline survey	Deepika Mahala, Rahi Sahni, Olivier Uwimana
7.	UWITIJE	Valens*	Baseline user	09/07/2021	VVB baseline survey	Deepika Mahala, Rahi Sahni, Olivier Uwimana
8.	Niragire	Florence	Baseline user	09/07/2021	VVB baseline survey	Deepika Mahala, Rahi Sahni, Olivier Uwimana
Local Stakeholders						
9.	Mutezimana	Christine	WATSAN Officer, Ruhango District	25/03/2022	LSC meeting and SFR	Deepika Mahala
10.	UWITIJE	Valens*	Village leader	25/03/2022	LSC meeting and SFR	Deepika Mahala
11.	Bisengimana	Eulade*	Village leader	25/03/2022	LSC meeting and SFR	Deepika Mahala

*They were also LSC participant. The people were interviewed again for questions related to LSC on 25/03/2022

Type of questions asked by the Team member

No.	Questions asked by Team Leader to baseline users
1.	Number of people in the household
2.	Baseline water source
3.	Baseline water purification method
4.	Suppressed water purification method
5.	Baseline cookstove type
6.	Fuel type
7.	Baseline waterborne illness incidences
8.	Baseline time taken to fetch water
9.	Effect of season on fuel source and type
10.	Fuel price
11.	Percentage of women involved in the process of fetching and purifying water

C.4. Sampling approach

CME Approach:

CME will follow sampling procedures given in Technologies and Practices to Displace Decentralized Thermal Energy Consumption (TPDDTEC), version 3.1/5/ for determining the sample size of each parameter. A confidence precision of 90/10 or 90/30 will be ensured by CME for meeting the annual/biennial monitoring criteria. The CME will follow 95/10 confidence precision if across VA sampling is done. The sampling approach undertaken by CME is duly explained under section B.7.2 of the VPA-DDs/9/, which has been assessed by the validation team and found to be correct and in-line to the standard /13/.

For baseline scenario:

The CME has conducted baseline survey as per the applied methodology/5/. The CME has picked up random sampling during from 08/06/2021 to 15/06/2021. Sample size of 120 was picked as the group size is more than 1,000, in line with the requirements in the applied methodology/5/. The sampling plan considered 6 communities with 20 households randomly from the communities in Southern Province of Rwanda/66//67/. The value of parameter C_j , X_{boil} , I_b , T_b , baseline stove type and fuel type (firewood) were determined through baseline survey.

VVB's Sampling approach:

The Sampling and surveys for CDM project activities and programmes of activities (Version 9.0) /13/ states under paragraph 28 that "When the project participants or the coordinating/managing entity have applied a sampling approach, the VVB may apply acceptance sampling as described in the steps indicated in paragraphs 29–38 below as part of validation/verification activities".

Since the CME has determined the value of ex-ante parameters C_j , X_{boil} , I_b , T_b , baseline stove type, fuel type through sampling for baseline end-users, the validation team will conduct acceptance sampling in line with paragraph 30 and 31 of the sampling standard version 9.0/13/.

As per para 39 of the sampling standard version 9.0/13/, "A VVB may select a different sample size than the one indicated in paragraph 32 above either by choosing a different value for the consumer risk and producer risk (e.g., 20 per cent for the consumer risk) when applying acceptance sampling or by using another approach, if any of the following conditions apply:

(a) The estimated volume of annual GHG emission reductions of the project activity or the PoA being verified is equal to or less than 100,000 t CO₂eq.;

- (b) The security conditions in the project region prevents inspection of many samples (eg. conflict zones); or
- (c) The project activity or the PoA is located in a least developed country or a host party with 10 or fewer registered CDM project activities at the end of the monitoring period being verified.”

The PoA is located in Rwanda, which is an LDC (<https://unfccc.int/topics/resilience/workstreams/national-adaptation-programmes-of-action/ldc-country-information>). Thus, the validation team can choose a different sample size than one indicted in para 32 of the sampling standard/13/.

The validation team selected random sample of CME’s sampled records to check the acceptability (or otherwise) of the data for each such record with CME’s sample records and determined if the CME’s sample records meet the requirements.

The verification team selected the sample size as 8 households with 3 households extra as backup for the purpose of remote on-site inspection to check the acceptability of CME’s sampling results or otherwise.

Sample Size: (Per region)

PoA Ref no. (RCP)	AQL	UQL	Producer Risk	Consumer Risk	Sample Size; Min	Acceptance No.
GS 10959	0.5%	20%	10%	20%	8	0

The Validation team covered a total of 8 samples and observed a few typographical errors elated to erroneous reporting of data from the baseline survey forms into the baseline survey calculation sheet. CAR#03 and CAR#04 were raised to point out the inconsistencies between the baseline survey forms and the SDG calculation sheet. However, all the inconsistencies reported were individual errors and it has now been ensured that all the data is now consistent between the baseline survey forms and SDG calculation sheet. There were no material errors identified that might have resulted in the overestimation of the SDG impacts.

C.5. Clarification requests (CLs), corrective action requests (CARs) and forward action requests (FARs) raised

Areas of validation of compliance	No. of CL	No. of CAR	No. of FAR
Proposed VPAs and corresponding generic VPAs	-	-	-
Compliance with VPA-DD form	-	-	-
General description of the VPAs	CL#01, CL#03	-	FAR#03, FAR#06
Assessment of the eligibility of the VPAs under Gold Standard	CL#02, CL#04	CAR#01	FAR#02
Application of methodologies and standardized baselines	-	-	-
Reference of methodologies and standardized baselines	-	-	-
Project boundary, sources and GHGs	-	-	-
Baseline scenario	-	-	-
Ongoing financial need	-	-	-
Prior consideration	-	-	-
Demonstration of additionality	-	-	-
SDG outcome assessment	-	-	-
Data and parameters	-	CAR#02, CAR#03, CAR#04	FAR#01
Estimation of SDG impacts or net anthropogenic removals	-	-	-
Equations and parameters applied to calculate SDG impacts	-	-	-
Ex ante calculation of SDG impacts or net anthropogenic GHG removals	-	-	-
Start date, crediting period type and duration	-	-	-
Environmental impacts	-	-	-
Local stakeholder consultation (Interviews)	-	-	FAR#05
Sustainability Assessment	-	-	-
Safeguarding principles assessment	-	-	FAR#04
Gender Sensitive requirements	-	-	-
FAR from this validation			FAR#01-05
Total	04	04	10

SECTION D. Validation findings

D.1. Proposed CPAs and corresponding generic VPAs

VPA title and reference number	Version number of the VPA-DD	Host Party	Version number of the PoA-DD into which the VPA is included
GS10959 VPA01 Safe Water Project in Rwanda I GS11098	8.0	Rwanda	Version 5.0
GS10959 VPA02 Safe Water Project in Rwanda II GS11133	8.0	Rwanda	Version 5.0
GS10959 VPA03 Safe Water Project in Rwanda III GS11134	8.0	Rwanda	Version 5.0
GS10959 VPA 4 Safe Water Project in Rwanda IV GS11135	8.0	Rwanda	Version 5.0
GS10959 VPA 5 Safe Water Project in Rwanda V GS 11136	8.0	Rwanda	Version 5.0
GS10959 VPA 6 Safe Water Project in Rwanda VI GS 11137	8.0	Rwanda	Version 5.0

D.2. Compliance with VPA-DD form

Means of validation	The VPA DDs/9/ have been prepared using the applicable version of GS VPA-DD, i.e., version 1.1/10/. It has been checked from the GS website that the form used is the appropriate and applicable for the VPA. Each section of the VPA-DD/9/ was also checked with the guidelines stated in the form/10/ and found to be fulfilling it.
Findings	None.
Conclusion	The VPA-DDs /9/ are found to comply with the applicable form with all the sections filled are in line to the form guidelines.

D.3. General description of the VPAs

Means of validation	The VPAs to be included in the PoA involve the maintenance of 30-100 boreholes in Southern Province of Rwanda. The VPAs will provide clean drinking water to locals which will be maintained by Association Rwandaise pour le Développement Endogène (ARDE)/50/ & if water quality requirements are not met, chemical disinfection will be provided. The CME of the VPAs is Guangzhou Iceberg Environmental Consulting Services Co., Ltd. There are 6 VPAs that are to be included in the host country of Rwanda. The geographical boundary of VPA is confined to Rwanda. The VPAs takes forward the same goal as that of the PoA under which they seek inclusion. There are 6 VPAs included and implemented under the PoA are as follows: GS10959 VPA01 Safe Water Project in Rwanda I GS10959 VPA02 Safe Water Project in Rwanda II GS10959 VPA03 Safe Water Project in Rwanda III GS10959 VPA 04 Safe Water Project in Rwanda IV GS10959 VPA 05 Safe Water Project in Rwanda V GS10959 VPA 06 Safe Water Project in Rwanda VI
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The most used hand pumps in these VPAs are India Mark II Hand Pump, India Mark V Hand Pump and Afridev Hand Pump. India Mark II Hand Pump is a conventional lever action handpump & follows the IS 9301. It is considerably resistant to corrosion as Pump head, body and handle are of cast iron, pump rods are of mild steel, Plunger and check valve are of brass. This pump has a pump head, pump stand and a handle of galvanised steel. The down hole components exist of a brass lined cast iron cylinder with a foot valve and a plunger of brass. The Afridev reciprocating type hand pump has been specially designed by SKAT-HTN (Swiss Centre for Development Cooperation in Technology and Management), and The India Mark V hand pump incorporates the latest R & D in hand pump technology. Both works on similar principle. The key information related to the technologies to be installed has been confirmed from the manufacturer's specifications/33//62//63/.

Technology:

The type systems distributed under the VPAs are as follows:

Description of India Mark II Hand Pump/33/

Component	Description
Pump Head	Fabricated throughout from hot dipped galvanized mild steel components for corrosion protection with tri-leg pedestal design
Handle	Pre-greased ball bearings are provided at the handle
Pump Rods	Option of 10mm electro galvanized mild steel or stainless-steel rods in standard 3m lengths with screwed couplings
Rising Main	Option of 1.25"GI for closed cap cylinders" and 2"GI/UPVC for VLOM 2" open top cap cylinders supply in 3m lengths; PVC drop pipes require rod and pipe centralisers to prevent wear damage.
Pump Cylinder	2.5(65mm) diameter Standard cylinder with brass liner, cast iron closed end caps and double nitrile rubber plunger seals
Lifetime	20 years
Number of persons can be served	1,000-1,500

Description of India Mark V Hand Pump/62/

Specification	Capacity
Stroke Length	175 mm
Open Top Cylinder	65mm

Number of persons can be served	1,000-1,500
Lifetime	20 years

Description of Afridev Hand Pump /62/

Specification	Capacity
Pump Rod Length	3m
Cylinder Diameter	50-65mm
Number of persons can be served	1,000-1,500
Lifetime	20 years

The water supplied by the borehole is generally considered to be clean because it is filtered through many layers of chalk or sand and in case the quality is not found to be satisfactory, the water can be further disinfected with chlorine. As per the manufacturer's specifications/33/ of the India Mark II Hand, is certified with IS 9301 and it is to be properly maintained to ensure safe drinking water to the community with less than 1500 persons and maximum 300 households. The boreholes will be distributed & maintained by CME & ADRE.

The CME will place disinfectant dispensers near the maintained boreholes and in case the water quality does not meet the stipulated requirements, the end-users will then be given water disinfectants from the dispensers for ensuring a standard quality of water. The information about placement and person in-charge has been added by the CME.

The CME has provided specification of the disinfectant to confirm that the capacity of water disinfectant dispenser is 5-25L. Moreover, it was explained by the CME that each end users obtain water in 20L jerrycans and a cap of 15ml would be applied for each jerrycan. The monitoring plan has provision for water quality test to be done every quarter as per the requirement of the applied methodology during which borehole with low quality of water would be identified and disinfectant would be administered.

Implementation status:

The date installation of first borehole GS11098 (VPA 01), GS11133 (VPA 02), GS11134 (VPA 03), GS11135 (VPA 04), GS 11136 (VPA 05) & GS 11137 (VPA 06) is yet to be decided which will determine the start date and start date of crediting period of the VPA. The crediting cycle length is 5 years and type of the crediting period is renewal twice for the VPAs, as per Paragraph 4.1.40 of Principles & Requirements (Version 1.2)/1/.

The VPAs cover an estimated annual GHG emission reduction of 58,480 tCO₂e under SDG 13, 18.45% reduction in the incidence of waterborne illness under SDG3, 44.44% reduction in time spent to fetch and purify water by women and girls under SDG5 and provision of safe water to 32,726 local residents under SDG 6 /28/ /29/over the crediting period.

No-ODA

	The VPA is not being funded by any Annex-I party which could be verified through the no ODA declaration provided by CME to the validation team/15/. <u>Grievance Mechanism:</u> According to GS4GG principle and requirements v1.2/1/ para 4.1.28, "If the Consultation is conducted after the start date, the Project Developer shall provide further explanation of how comments received during the consultation are taken into account and implement a Grievance Mechanism in line with the Stakeholder Consultation & Engagement Requirements." CME has established the grievance mechanism at the PoA level, and the following means can be used by the stakeholders to submit their grievances: 1. ed@socialaid.org.bd 2. baoji@icebergchina.com 3. Contact numbers There is also an Expression process book placed at various places to enable the stakeholders to submit their grievances/feedback. All the details related to the management system and the grievance mechanism were confirmed from the CME representatives during the remote audit conducted on 09/07/2021/17/.
Findings	CL#01, CL#03, FAR#03 and FAR#06 were raised and resolved.
Conclusion	The validation team confirms that the information provided is complete and correct concerning the description of technology(ies) and/or measures to be used, the description is as per the registered VPA DD and is following the GS4GG principles and requirement/1/ including a description of the purpose of the VPA and explanation how the VPA will reduce GHG emissions. The validation team confirms that: 1. The validation team has conducted a thorough and independent assessment of the implementation of the included VPA against the GS4GG principles and requirements. 2. The validation team has assessed both quantitative and qualitative information on GHG emission reduction or net anthropogenic GHG removals provided in the programme documentation. 3. The validation team has assessed that the implementation and operation of the registered PoA and included VPA, and the steps taken to report GHG emission reductions or net anthropogenic GHG removals comply with the relevant GS4GG principles and requirements. 4. The validation team has assessed that the data collection system meets the requirements of the registered monitoring plan as per the applied methodologies, the applied standardized baselines and the other applied methodological regulatory documents. 5. The coordinating/managing entity has addressed the FARs identified during the validation or previous verification(s). Please refer to appendix 4. Thus, the implementation of the VPA is meeting the requirements of VVS for PoA version 3.0/7/ and GS4GG Principles and Requirements v1.2/1/.

D.3.1. Assessment of the eligibility of the VPA under Gold Standard

Means validation	of	Paragraph 3 of the GS4GG Principles and Requirements/1/ includes the general criteria that applies to all the projects seeking Gold Standard
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Certification. The demonstration of the VPA meeting the eligibility criteria of the PoA DD has been represented below:

Applicability Criteria as per Gold Standard	Justification from CME	Means of Validation
a. Geographical boundaries of VPAs consistent with the geographical boundary of the PoA	Locations of boreholes in the database (including geographical coordinates) will be checked to confirm that all the boreholes are located in Southern Province of Rwanda.	The aim of the VPAs is provide safe drinking water to the communities and institutions in Rwanda as declared by CME under Section A.2 of the PoA-DD/4/ and confirmed from the geo coordinates of the baseline users/29/ as cross-checked against https://www.latlong.net/ and this is in line with para 3.1.1 (d) of Community Service Activity Requirements (Version 1.2)/3/. Since the VPAs falls under the category of 'WASH' contributing to climate change mitigations and adaptations benefits, the VPAs is eligible to be included under GS4GG. This is in accordance with GS4GG Principles and Requirements paragraph 3.1.1 (a)/1/.
b. Conditions to avoid double accounting of GHG emission reductions or net anthropogenic GHG removals	1. GS registry has been checked to confirm that the VPA exclusively belongs to the PoA 2. VPA databases, maintenance records, donation and carbon transfer agreements will be checked, and field investigation has been conducted to confirm that there is no double accounting for GHG emission reductions.	The project is located in Southern Province of Rwanda and is confirmed by the VVB during the remote survey conducted on 09/07/2021/17/. This is in accordance with GS4GG Principles and Requirements paragraph 3.1.1 (b)/1/. The various carbon registries have been checked by the Validation team to confirm that the VPA exclusively belong to the PoA. Furthermore, a

		3. Declaration of no double counting check issued by CME has been provided to the VVB 4. Each borehole will be identified with unique GPS coordinates of its location and a unique serial which enables the unique identification of the borehole to be part of this VPA.	declaration/24/ has been provided by the CME confirming about the provision to eliminate double counting. At the time of implementation, each borehole will be assigned a unique serial ID to enable the identification of the borehole belonging to the VPAs. The unique number will be physically engraved in the boreholes.
	c. Conditions to confirm that VPAs are neither registered as project activities with other offset schemes, included in other registered PoAs, nor the project activities that have been deregistered	1. GS, CDM and VCS registries have been checked to confirm that the VPA is neither registered as project activity with other offset scheme, included in another registered PoA, nor the project activity that has been deregistered. 2. Declaration of independence from existing GS project/PoA has been provided by the CME	The VPAs registered under the PoA is unique and is not registered under any other registries which was confirmed from an independent research conducted on the various carbon registries like CDM, VCS and GS. 2. The independence of the project is verified by the declaration of independence from existing Gold Standard Project and Programme of Activities provided by the CME/24/
	d. Specification of the technology/measure	Specification of hand pump used in the VPA has been provided. Specifications of water disinfectants which may be used in the future have also been provided. Field investigation has been conducted to confirm related information.	Each borehole that will be maintained during these VPAs is uniquely identified & is GPS co-ordinated which was confirmed from the baseline survey data where a unique borehole number and GPS coordinates were captured for each borehole. In any case where the standard of water is not met, there will be specific water disinfectant will be provided to meet the set standard/31/ This is in accordance with GS4GG Principles and

			Requirements paragraph 3.1.1 (c)/1/.
	e. Conditions to check the start dates through documentary evidence	The date of the maintenance of the first borehole under the VPA will be checked to confirm the start date.	The first date of the installation of boreholes will be the date of the commencement of the project which is yet to be decided. This is in accordance with GS4GG Principles and Requirements paragraph 3.1.1 (d)/1/.
	f. Conditions to ensure compliance with the applicability of the applied methodologies, the applied standardized baselines and the other applied methodological regulatory documents	All the conditions have been checked.	All the conditions of applicability of baselines & methodologies have been explained in Section D.4 below.
	g. Conditions to ensure that VPAs meet the requirements for demonstration of additionality	The VPA is additional because it is a community service project and located in a least developed country-Rwanda ¹	The project location is in Southern Province of Rwanda. h which is an LDC/40/ therefore this is in accordance with GS4GG Principles and Requirements paragraph 3.1.1 (f)/1/. The CME has provided a sample sworn statement template/36/ which will be used as evidence to prove that the existing boreholes were completely abandoned and not operational and also for “there is no planned maintenance or repair”. For now, the VPA is not implemented yet however after the implementation these letters will be obtained water management committees which will ensure there planned maintenance for borehole in the 3months after it became non-operational.

¹<https://unctad.org/topic/vulnerable-economies/least-developed-countries/list>

	h. Conditions to ensure no diversion of official development of assistance	Declaration about no diversion of official development assistance from Annex I Parties to the VPA by the CME has been provided.	The purpose of the project is clean drinking water in Southern Province of Rwanda. The CME has provided with an ODA declaration/15/ that shows that no diversion of funds took place. This is in accordance with GS4GG Principles and Requirements paragraph 3.1.1 (g)/1/.
	i. Target group, and where applicable, distribution mechanism	Maintenance records and agreements will be provided to prove that the target group is communities using boreholes maintained by the project activities	Baseline survey forms have been checked and the sales database/29/ will be checked after implementation to confirm the end users are the communities of Southern Province of Rwanda. This is in accordance with GS4GG Principles and Requirements paragraph 3.1.1 (h)/1/.
	j. Conditions related to sampling requirements for the PoA	The sampling plan of the VPA-DD has been checked to confirm that it meets requirements of Standard for "Sampling and surveys for CDM project activities and programme of activities" (Version 09.0) and "Guideline for Sampling and surveys for CDM project activities and programmes of activities" (Version 04.0) as well as the applied methodology.	Since all the VPAs are of similar nature and lie in the same province of Rwanda, the CME will conduct cross VPA sampling and follow the guidelines of Sampling and surveys for CDM project activities and programme of activities" (Version 09.0)/13/ & Guidelines for sampling and surveys for CDM project activities and programmes of activities" (Version 04.0)/32/.

	k. Conditions to ensure that VPAs that will be included meet the small-scale or microscale thresholds and remain within those thresholds throughout the crediting period	The VPA-DD and emission reductions calculation sheet have been checked to confirm that the emission reductions generated by the VPA are fewer than 60kt CO ₂ e annually.	According to ER sheets/28, VPA-DDs/9/ the total emission is for each VPA is 58,480 tCO ₂ e that qualifies it as a microscale project.
	l. Conditions to confirm that technologies in the VPAs are eligible	It has been confirmed through field investigation conducted by CME & ARDE that all the borehole maintained by the project activities are using hand pumps. Chemical disinfection will be applied if the project implementer finds that water quality cannot meet the requirements in the future	The manufacturer's specifications /33/ were checked for the technology related details to be distributed under the VPAs.
	m. Conditions to be met by each VPA regarding SDG outcomes assessment	Section B.6 of the VPA-DD has been checked to confirm that the requirements for SDG outcomes assessment in "Principle and Requirements (Version 1.2)" and "Programme of Activity Requirements" are met.	SDG outcomes /28/regarding the Conditions applicable to this VPA is explained below in Section E.2
	n. Conditions to be met by each VPA regarding safeguarding principles	Section D.1 and Appendix 1 of the VPA-DD have been checked to confirm that the requirements for safeguarding principles in "Principle and Requirements (Version 1.2)", "Programme of Activity	The safeguarding principles with is explained below in Section E.1.

		Requirements (Version 1.2)" and "Safeguarding Principles and Requirements (Version 1.2)" are met.	
	o. Conditions to be met for retroactive VPAs	Not applicable as a regular VPA	This is not applicable as it a regular VPA.
	p. Conditions to be met for CER labelling	Not applicable	Not applicable
	q. Conditions to be met in multi-country PoAs	The CME has provided a VPA-DD for each country considered at the time of PoA registration.	The VPAs are based in Rwanda, and separate VPA-DDs have been provided for each VPA.
	fNRB	Reference for fNRB calculation has been provided in the fNRB form of Section B.6.2.	Detailed assessment of the parameter is done under section D.8.1. of this report.
	Wb,y	Reference for Wb,y calculation has been provided in the Wb,y form of Section B.6.2.	Detailed assessment of the parameter is done under section D.8.1 of this report.
	Water treatment capacity	Specifications of the hand pumps applied in the VPA which are provided by technology manufacturer or seller have been provided.	Capacity of the technology was confirmed through manufacturer's specification/33,62,63/.
	The demonstration of the VPA meeting the eligibility criteria of the Gold Standard Principles and Requirements and Community Service Activity Requirements has been represented below:		
	Applicability Criteria as per Gold Standard	Justification from CME	Means of Validation
	Types of Project	The VPA is a water, sanitation and hygiene (WASH) project. It provides safe water. It can be verified by site visit. Therefore, the project activity is also a community service activity as per	The aim of the VPAs is provide safe drinking water to the communities and institutions in Rwanda as declared by CME under Section A.2 of the PoA-DD/4/

		Paragraph 3.1.1(d) of Community Service Activity Requirements (Version 1.2).	
	Location of Project	The VPA is located in Southern Province of Rwanda.	confirmed from the geo coordinates of the baseline users/29/ as cross-checked against https://www.latlong.net/ and this is in line with para 3.1.1 (d) of Community Service Activity Requirements (Version 1.2)/3/
	Project Area, Project Boundary and Scale	The project area is the communities that use the boreholes maintained by the project activity. The project boundary is the boundary of communities that use the boreholes maintained by the project activity. The estimated annual emission reductions of the VPA are 58,480 tCO₂e, which is less than 60,000 tCO₂e. As a result, the VPA is a type III small-scale project activity, which results in emission reductions of fewer than or equal to 60 kt CO₂e annually. So suppressed demand scenario is applied when establishing a baseline as per Paragraph 4.1.10 of Principle and Requirements (Version 1.2).	Assessed in detail under section D.5. of this report.
	Avoiding Double Counting	Each borehole maintained by the VPA will have a unique serial number to ensure that double	The project is located in Southern Province of Rwanda and is confirmed by the VVB during the remote survey conducted on 09/07/2021/17/. This is

		counting will not occur. Moreover, the geographic coordinates of boreholes will be provided. The registries of Gold Standard, VCS and CDM have been checked to confirm that the VPA is not included in any other voluntary or compliance standards programme as well as the project area does not overlap with that of another Gold Standard and other voluntary or compliance standard programme of a similar nature. The CME will continuously check the registries to confirm this point. Rwanda does not have any plan for emission reduction cap. The VPA will not generate any emissions to be traded under an emission reduction cap.	in accordance with GS4GG Principles and Requirements paragraph 3.1.1 (b)/1/. The various carbon registries have been checked by the Validation team to confirm that the VPA exclusively belong to the PoA. Furthermore, a declaration/24/ has been provided by the CME confirming about the provision to eliminate double counting. At the time of implementation, each borehole will be assigned a unique serial ID to enable the identification of the borehole belonging to the VPAs. The unique number will be physically engraved in the boreholes.
	Host Country Requirements	The VPA is in compliance with related legal, environment, ecological and social regulations of Rwanda, such as National Water	The implementation will be done in line National Water Supply P policy of Rwanda.

		Supply Policy of Rwanda 2, which has been checked by the CME.	
	Contact Details	The related information of CME and all project participants have been provided in the Appendix 2 of the VPA-DD.	Appendix 2 of the VPA DD was checked and found to be correct.
	Legal Ownership	The legal ownership will be confirmed by carbon transfer agreement signed between CME and users.	The CME has provided sample CTF/18/ to confirm the transfer legal owner.
	Other rights	There is no dispute or contested right about any aspect of the VPA.	There is no such aspect observed in the VPAs.
	Official Development Assistance (ODA) Declaration	No ODA has been or will be diverted for the implementation of the VPA. The declaration has been provided.	The purpose of the project is clean drinking water in Southern Province of Rwanda. The CME has provided with an ODA declaration/15/
	Suppressed Demand	Since the VPA is a small-scale project, a suppressed demand scenario has been developed when establishing a baseline according to the applied methodology.	Assessed in detail under section D.6. of this report.
For CSA projects in line with para 4.1.9 of the GS4GG Community services activity requirements, Version 1.2, PP does not need to demonstrate ongoing financial need. The section is not applicable.			
Findings	CL#02, CL#04, CAR#01 and FAR#02 were raised and resolved.		
Conclusion	The VVB has accepted and validated the general eligibility criteria that applies to all VPAs seeking Gold Standard Certification. The eligibility of the VPAs is found to be valid in accordance with the section 3.1.1 of GS4GG principles and requirements version 1.2/1/.		

D.4. Application of methodologies and standardized baselines

D.4.1. Reference to methodologies and standardized baselines

Means of validation	The methodology applied for the VPAs is Technologies and Practices to Displace Decentralized Thermal Energy Consumption (TPDDTEC)/5/ version 3.1. The applicability conditions of the methodology TPDDTEC version 3.1/5/ are validated below:		
	Applicability Criteria as per methodology	Justification from CME	Assessment
	The project boundary needs to be clearly identified, and the technologies counted in the project are not included in any other voluntary market or CDM project activity (i.e., no double counting takes place). In some cases, there may be another similar activity within the same target area. Project proponents must therefore have a survey mechanism in place together with appropriate mitigation measures so as to prevent any possibility of double counting.	The VPAs is located in Southern Province, Rwanda. The project boundary is the boundary of communities that use the boreholes maintained by the project activity. Each borehole consisted in the VPA will have a unique serial number to ensure that double counting will not occur. The registries of Gold Standard, VCS and CDM have been checked to confirm that the VPA is not included in any other voluntary market or CDM project activity as well as the project area does not overlaps with that of another Gold Standard and other voluntary or compliance standard programme of a similar nature.	The VPAs aim at distributing & maintaining of boreholes in Southern Province, Rwanda. According to the section 2 of TPDDTEC version 3.1/5/ It was confirmed from the review of the other project database of CDM and GS that the VPAs are not included in any other voluntary market or CDM PA. Thus, this criterion is applicable.
	The technologies each have continuous useful energy outputs of less than 150kW per unit (defined as the total useful energy delivered from start to	The VPAs is to provide safe water through boreholes. The baseline scenario is that NRB	The technology that was distributed under the VPA will have the

	end of operation of a unit divided by time of operation). For technologies or practices that do not deliver thermal energy in the project scenario but only displace thermal energy supplied in the baseline scenario, the 150kW threshold applies to the displaced baseline technology.	is used to boil water as means of water purification in the absence of the project activity. Therefore, the project technology just displaces thermal energy supplied in the baseline scenario rather than delivers thermal energy. According to the default value from "Application of TPDDTEC Methodology to Safe Water Supply Projects", 0.4Kg of wood is used for boiling 1L of water in 10 minutes. The NCV of wood is 15,600 KJ/Kg. The total energy output is $0.4\text{Kg} \times 15,600 \text{ KJ/Kg} \div 600\text{s} = 10.4\text{KW}$, which is less than 150KW.	capacity limited to less than 150 kW per unit as per point 2 of section 1, of TPDDTEC version 3.1/5/
	Using the baseline technology as a backup or auxiliary technology in parallel with the improved technology introduced by the project activity is permitted as long as a mechanism is put into place to encourage the removal of the old technology (e.g., discounted price for the improved technology) and the definitive discontinuity of its use. The project documentation must provide a clear description of the approach chosen and the monitoring plan must allow for a good understanding of the extent to which the baseline technology is still in use after	The use of baseline technology, using NRB to boil water as means of water purification will be monitored in the monitoring plan. The emissions generated will be accounted for project emissions. More details are provided in Section B.6 and B.7.	VPAs aims at disseminating and maintaining boreholes to provide clean drinking water to locals of Rwanda. In case the quality of water is not up to standard, chemical disinfection will be provided by CME. So, the end users will not have to resort to

	the introduction of the improved technology.		boiling water for purification. However, the use of baseline technology will be duly monitored in the VPAs as well thereby enabling the estimation of the project emissions. This is according to point 3 of section 1, of TPDDTEC version 3.1/5/
	The project proponent must clearly communicate to all project participants the entity that is claiming ownership rights of and selling the emission reductions resulting from the project activity. For technology producers and the retailers of the improved technology or the renewable fuel in use, this must be communicated by contract or clear written assertions in the transaction paperwork. If the claimants are not the project technology end users, the end users will need to be informed and notified that they cannot claim for emission reductions from the project.	A full explanation was given to the representatives of the villages where the VPAs are located. Since the CME will undertake the cost for borehole maintenance, the ownership of the emission reductions generated from the VPAs will be transferred to the CME. Donation and carbon transfer agreements were signed between the CME and the representatives of the villagers.	The sample end-user carbon transfer agreement/18/ was checked and confirmed that the rights of ownership of VERs will be transferred from the beneficiary to CME and this is according to point 4 of section 1, of TPDDTEC version 3.1/5/
	Project activities making use of a new biomass feedstock in the project situation (e.g., shift from non-renewable to green charcoal, plant oil or renewable biomass briquettes) must comply with relevant Gold Standard specific requirements for biomass	Not applicable as the VPAs reduces the usage of biomass for water boiling rather than uses a new biomass feedback.	Not Applicable

	related project activities, as defined in the latest version of the Gold Standard rules. If the biomass feedstock is sourced from a dedicated plantation, the criteria must apply to both plantations established for the project activity AND existing plantations that were established in the context of other activities but will supply biomass feedstock.		
	Adequate evidence is supplied to demonstrate that indoor air pollution (IAP) levels are not worsened compared to the baseline, and greenhouse gases emitted by the project fuel/stove combination are estimated with adequate precision. The project fuel/stove combination may include instances in which the project stove is a baseline stove.	The VPAs provides safe water through boreholes thus it reduces water boiling for households and improves indoor air quality.	VPAs aim at providing clean drinking water to locals of Rwanda through borehole maintenance. In case the quality of water is not up to standard, chemical interventions will be provided by CME. The indoor air quality will improve due to the introduction of VPAs in the project boundary according to point 5.a. of section 1, of TPDDTEC version 3.1/5/.
	Records of renewable fuel sales may not be used as sole parameters for emission reduction calculation but may be used as data informing the equations in section 2.0 of this methodology. These records need to be correlated to data on distribution and	The emission reduction calculation will be based on the number of persons using the project technology, amount of fuel used to boil water and the amount of safe	VPAs provide clean drinking water to locals of Rwanda through the process of borehole maintenance.

	results of field tests and surveys confirming (a) actual use of the renewable fuel and usage patterns (such as average fraction of non-renewable fuels used in mixed combustion or seasonal variation of fuel types), (b) GHG emissions, (c) evidence of CO levels not deteriorating (d) any further factors effecting emission reductions significantly.	water consumed. Therefore, there is no renewable fuel sold in the VPAs.	In case the quality of water is not up to standard, chemical interventions will be provided by CME. There is no sale of renewable fuel involved under the VPAs. According to point 5.b. of section 1, of TPDDTEC version 3.1/5/.
	The Methodology is for project technologies and practices that introduce a new zero emission technology for safe water, instead of boiling water as a purification technique. Technologies include gravity household water filters, borehole pumps and their repair/maintenance/operation, ultraviolet radiation treatment, chlorine tablets, etc.	The VPAs maintains hand pump-drive boreholes to provide safe water. Chemical disinfection will be applied in case that water quality cannot meet the requirements after borehole maintenance. Both of the above technologies are zero emission technologies for safe water.	VPAs aim at setting up boreholes & maintaining it to provide clean drinking water to locals of Rwanda. In case the quality of water is not up to standard, chemical disinfection will be provided by CME. According to paragraph 1 of Annex 3 of TPDDTEC version 3.1/5/.
	Special attention is required to as to the level of GHG emissions arising from production, transport, installation and delivery of the clean water supply or treatment options. This is applicable to all technologies encompassed within this methodology. Whenever such emissions are expected to be material (5% or more of the overall emissions), these must	Materials used in the VPAs will be transported from Kigali. The distance is 30 KM. The diesel consumption for heavy truck is 0.41L/km and the density of diesel is 0.85Kg/L while the emission factor of diesel is 74.1t CO₂e/TJ and the net	In case the quality of water is not up to standard, chemical interventions will be provided by CME. The CME has justified applying the

	be accounted for in the project situation as part of the project emissions. In the baseline situation, the project proponent has the option to take them into account, or to neglect them altogether.	calorific value is 0.043TJ/t. So, the emission is 0.56t CO₂e ($0.41\text{L/km} \times 500\text{km} \times 0.85\text{Kg/L} \div 1000\text{Kg/t} \times 0.043\text{TJ/t} \times 74.1\text{t CO}_2\text{e}$), which is much less than 5% of the emission reductions and negligible.	values of a heavy load truck to calculate the level of GHG emissions arising from transportation of materials correctly and since the emission is less than 5%, it is considered negligible. That aligns with para 4 of annex 3 of TPDDTEC version 3.1/5/
	The water in its improved form should be available within 1km walking/pedalling distance from the households. There is a two-year grace period (from date of registration) for any households falling outside of the distance. However, once this period is over these households would not be in the emission reduction calculation.	After grace period, no emission reductions will be taken into account for households outside of 1km walking distance of the boreholes maintained by the VPAs.	It has been confirmed by the CME that there will no emission reduction claims made after the grace period of 2 years for the households lying outside of 1 km walking distance of the boreholes maintained by the VPA. This has been confirmed from the sample sworn statement which will be a declaration provided by the Chairman of the local government to the ARDE representative

			confirming that the households lie within 1 Km of the maintained borehole/36/ That aligns with paragraph 5 of annex 3 of TPDDTEC version 3.1/5/
	Only end-users boiling water or currently using unsafe water are eligible for crediting.	Only end-users boiling water or current using unsafe water will be account for number of persons consuming safe water supplied by the VPAs. Related questions are raised in the questionnaire.	Only the end users that are currently boiling water or drinking unsafe water will be accounted for in calculations. This requirement was confirmed during the VVB remote survey/41/ wherein all the sampled baseline users reported that they are either drinking unsafe water or boiling the water using non-renewable biomass. That aligns with paragraph 6 of annex 3 of TPDDTEC version 3.1/5/
Findings	None.		
Conclusion	The validation team confirms that the VPAs i.e., VPA 01 -06 meet all the applicability conditions of the applied methodology /5/.		

D.5. Project boundary, sources and GHGs

Means of validation	The project boundary basically defines the physical and geographical boundary of the project facility, and it is well defined in the VPA-DD/9/ (section B3). The project boundary includes the point location of boreholes to provide clean drinking water to locals of Southern Province
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	of Rwanda. Therefore, the project boundary covers all the points of borewells beneficiaries in all the locations. The project boundary is clearly defined in the VPA-DD/9/ as per the methodology/5/. Emissions sources included in the project boundary have been appropriately included in the VPA-DDs. CO₂, CH₄ and N₂O emissions due to use of non-renewable biomass in the traditional stove for baseline scenario (for all the project sites) and the project scenario has reduced emissions, thus CO₂, CH₄ and N₂O GHGs are included. This is in line with Equation 13 of Annex 3 of the applied methodology/5/, where non-CO₂ emission factor of fuels (EF_{b,fuel,nonCO2}) is taken into consideration.
Findings	None.
Conclusion	The project boundary, sources and GHGs have been determined in line with the applied methodology/5/.

D.6. Baseline scenario

Means of validation	The baseline scenario in the VPAs is same as the one set at PoA level. CME has applied an approved baseline and methodology TPDDTEC Version 3.1/5/ which is approved under GS4GG programme. These VPAs involve setting up boreholes & maintaining it to provide clean drinking water to locals of Rwanda. In case the quality of water is not up to standard, chemical interventions will be provided by CME. When the borehole maintenance is complete, water samples from boreholes will be sent to local accredited lab for testing. Thereafter, water testing will be conducted quarterly and sent to local accredited lab for testing. This is in line with Section A3.3 E of Annex 3 of the applied methodology and included as a monitored parameter "Quality of the treated water" If the water quality of a borehole cannot meet the related standard in any test illustrated above, chemical disinfection will be applied for improving water quality. According to the applied methodology, the baseline scenario is that NRB is used to boil water as means of water purification in the absence of the project activity. According to WHO, although Rwanda with a small population of 11.5 million, it faces problems as 31 percent of their population, or 3.4 million, lack access to clean water and about 3,000 children die each year from diarrhoea caused by a lack of access to safe water and an inadequate sanitation/59/. Baseline survey was applied to calculate baseline emissions. Since local residents do not have enough budget to buy firewood for water boiling, suppressed demand is applied in the small scale VPAs when establishing the baseline scenario as per the applied methodology/5/. A remote survey was conducted by the VVB to confirm that all the baseline users do not have access to clean drinking water and resort to boiling practices to purify the water. Most of the users reported that they often travel long distances and spend around 1-2 hours on an average in a day fetching and purifying water. The CME has considered emissions from burning of firewood(NRB) in both baseline scenario and project scenario. The VPA DDs were also checked to confirm that the implementation will be In compliance with the National Water supply policy of Rwanda/61/.
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	The VVB has checked various published information verify the baseline study report and application of suppressed demand: a) https://www.unicef.org/rwanda/water-sanitation-and-hygiene In Rwanda, only 57 per cent of the population access safe drinking water that is within 30 minutes of their home. When children spend time collecting water, it often keeps them out of school. This is an issue especially for girls, who are often expected to take on the majority of household tasks. b) 53% RURAL ACCESS TO BASIC WATER SERVICES: : https://www.waterforpeople.org/rwanda/ c) most people living in rural areas drink untreated water and burn firewood on open stoves to cook their meals. After neonatal disorders, pneumonia and diarrheal disease are the two leading killers of children under five years of age in Rwanda. Unsafe drinking water is the leading cause of diarrheal disease. https://theconversation.com/lessons-from-rwanda-on-tackling-unsafe-drinking-water-and-household-air-pollution-125405 d) With 5.1 million people still lacking clean water in Rwanda https://www.wateraid.org/where-we-work/rwanda e) 36 percent of homes in Kigali, taps deliver clean water https://globalpressjournal.com/africa/rwanda/rwandans-struggle-tap-water-dries-capital-city/ The above report clearly indicates that DHS report indicating 72.3% of the country has access to improved water source does not depict the real picture of water crisis the country is going through. It is not the true representative of the water condition in the country. The PP has selected only such regions where the boreholes have failed to deliver clean water to the end users and the poverty-stricken end users cannot spend on quality of water. Thus, the application of suppressed scenario was found to be acceptable. The assessment team has reviewed the VPA-DD/9/ in line with the applied methodology/5/ and it is confirmed that the CME has correctly identified the baseline scenario.
Findings	None
Conclusion	The validation team based on the description provided above with regard to the assessment of the requirements confirms that: (a) All the assumptions and data used by the project participants are listed in the VPA-DDs/9/ and or its annexures, including their references and sources; (b) All documentation used is relevant for establishing the baseline scenario and correctly quoted and interpreted in the VPA-DDs/9/. (c) Assumptions and data used in the identification of the baseline scenario are justified appropriately, supported by evidence and can be deemed reasonable.

	(d) Relevant national and/or sectoral policies and circumstances are considered and listed in the VPA-DDs/9/. (e) The approved baseline methodology has been correctly applied to identify the most plausible baseline scenario and the identified baseline scenario reasonably represents what would occur in the absence of the proposed PoA. The validation team confirms that it has taken other steps and other sources of information used to cross-check the information contained in the PoA-DD/04/, wherever applicable, as listed above.
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D.7. Demonstration of Additionality

Means of validation	Applicability conditions	Justification by the Project proponent	Means of validation
	Specify the methodology or activity requirement or product requirement that establish deemed additionality for the proposed project (including the version number and the specific paragraph, if applicable).	According to Paragraph 4.1.9(b) of Community Service Activity Requirements (Version 1.2), community service projects located in LDC SIDS and LLDC are considered as additional and therefore are not required to prove financial additionality at the time of design certification.	VPAs aims at setting up boreholes & maintaining it to provide clean drinking water to locals of Rwanda, which falls under LDC list of UNCTAD/40/. Therefore, in accordance with Paragraph 4.1.9(b) of Community Service Activity Requirements (Version 1.2)/3/, the VPAs are not required to demonstrate additionality.
	Describe how the proposed project meets the criteria for deemed additionality.	The VPAs is additional because it is a community service project and located in a least developed country-Rwanda.	VPAs aims at setting up boreholes & maintaining it to provide clean drinking water to locals of Rwanda. In case the quality of water is not up to standard, chemical interventions will be provided by CME./31/. Since the VPAs will be operated in an LDC i.e., Rwanda/40/ and is a community service project/3/, the applied criterion is applicable. The CME has provided a sample sworn statement

			template/36/ which will be used as evidence to prove that the existing boreholes were completely abandoned and not operational and also for “ there is no planned maintenance or repair ” . For now, the VPA is not implemented yet however after the implementation these letters will be obtained water management committees which will ensure there planned maintenance for borehole in the 3months after it became non-operational
Findings	No findings		
Conclusion	The VPA was found to be additional.		

D.7.1. Ongoing financial need

Means validation of	For CSA projects in line with para 4.1.9 of the GS4GG Community services activity requirements, Version 1.2, PP does not need to demonstrate ongoing financial need. The section is not applicable.
Findings	No findings.
Conclusion	Not applicable.

D.7.2. Prior consideration

Means validation of	Not applicable since this is a regular project in accordance with paragraph 4.1.42 of GS4GG Principles and Requirements/1/.
Findings	No findings.
Conclusion	Not applicable.

D.8. SDG outcome assessment

Means validation of	The monitoring plan in the PoA-DD/04/ is correctly applied to the PoA. The monitoring plan has been found to be in compliance with the requirements of the applied methodology TPDDEC Version 3.1 /5/.			
	Sustainable Development Goals Targeted	Most relevant SDG Target	SDG Impact Indicator (Proposed or SDG Indicator)	VVB Assessment
	13 Climate Action (mandatory)	Promote mechanisms for raising capacity	Reduce emission from water boiling by non-	The reduction in the use of NRB to boil the

		for effective climate change-related planning and management in least developed countries and small island developing states, including focusing on women, youth and local and marginalized communities.	renewable biomass in a LDC country - Rwanda	unsafe water will result in emission reductions and eventually reduce the effects of Climate change in an LDC like Rwanda.
	3 Ensure healthy lives and promote well-being for all at all ages	By 2030, end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, water-borne diseases and other communicable diseases	Reduce the incidence of waterborne illness within the project area	By implementing these VPAs, the quality of lives of the people of Rwanda will improve significantly as fewer people will fall sick due to poor quality of water/31/.
	5Achieve gender equality and empower all women and girls	5.4: Recognize and value unpaid care and domestic work through the provision of public services, infrastructure and social protection policies and the promotion of shared responsibility within the household and the family as nationally appropriate	Reduce the time spent to fetch and purify water by women and girls	The proximity of each installed borehole will decrease the amount of time women & girls of the community set aside to fetch water & then purify it for consumption and hence will give them an equal opportunity for progress. Each VPA will monitor the Time spent to fetch and purify water by women and girls per household per day in the project scenario during

				year y under SDG 5 to estimate the total reduction in time for fetching and purifying water after the implementation of the VPAs.
	6 Ensure availability and sustainable management of water and sanitation for all	6.b: Support and strengthen the participation of local communities in improving water and sanitation management	Provide safe water to local residents	The access of multiple boreholes will give all the locals of Southern Province, Rwanda safe & clean water for daily consumption.
Findings	None			
Conclusion	The SDGs chosen by CME are accurate & the monitoring of all the parameter align with the methodology of TPDDTEC version 3.1/5/			

D.8.1. Data and parameters:

Means of validation	The monitoring plan in the PoA-DD/04/ is correctly applied to the PoA. The monitoring plan has been found to be in compliance with the requirements of the applied methodology TPDDTEC Version 3.1 /5/. The values of ex-ante parameter and monitored parameters can be found in the table given below. Parameter(s) fixed ex-ante:			
	Relevant SDG Indicator	Parameter	Value in VPA-DD	Assessment
	SDG 13	Percentage of users of project safe water supply who were already in baseline using a non-boiling safe water supply; C _j	0.83%	The value for this parameter has been applied as 0.83% and it has been obtained through sampling survey as per the applied methodology as well as "Standard: Sampling and surveys for CDM project activities and programmes of activities (Version 09.0)"/13/ and "Guidelines for sampling and surveys for CDM

				project activities and programmes of activities (Version 04.0)/32/. The applied value has been cross-checked from the SDG data recording sheet for baseline survey/29/ and each parameter value was further cross-checked for consistency against the baseline survey forms/30/.
	SDG 13	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; X_{boil}	0	The value for this parameter has been applied as 0 and it has been obtained through sampling survey as per the applied methodology as well as "Standard: Sampling and surveys for CDM project activities and programmes of activities (Version 09.0)/13/ and "Guidelines for sampling and surveys for CDM project activities and programmes of activities (Version 04.0)/32/. The applied value has been cross-checked from the SDG data recording sheet for baseline survey/29/ and each parameter value was further cross-checked for consistency against the baseline survey forms/30/.
	SDG 13	Quantity of wood fuel or fossil fuel required to boil 1 litre of water using technologies representatives of baseline scenario b during year y; $W_{b,y}$	0.0004 t/L	The value for this parameter is 0.0004 t/L which is the default value as per para 2.1.2. of Application of TPDDTEC Methodology to Safe Water Supply Projects/42/.

				The baseline survey done by CME and checked through acceptance sampling by VVB confirmed that baseline fuel type is fuelwood only.
	SDG 13	Quantity of wood fuel or fossil fuel required to boil 1 litre of water using technologies representatives of project scenario p during year y; $W_{p,y}$	0.0004 t/L	The value for this parameter is 0.0004 t/L which is the default value as per para 2.1.2. of Application of TPDDTEC Methodology to Safe Water Supply Projects/42/. If the Project activity fails, the end users would continue to boil water. Since, the end users were using wood fuel in baseline, they are expected to consume same in the project scenario.
	SDG 13	Fraction of biomass used that can be established as non – renewable biomass in the baseline scenario b during year y; $f_{NRB,b,y}$	0.9682	The value of this parameter has been applied as 0.9682 which has been calculated using CDM Tool 30 “Calculation of the fraction of Non-renewable Biomass” (Version 03.0)/43/. The calculations have been verified from the fNRB calculation sheet/44/. The values of the various parameters to calculate fNRB was sourced from 2019 Refinement to IPCC 2006/51/, Global Forest Resources Assessment 2020 Rwanda/52/, Global Forest Resources Assessment 2015/53/

				Forest Product Conversion Factors 2020/54/ and FAOSTAT on Forest Production and Trade/55/. The data from all the sources was checked and found to be consistent and reliable.
	SDG 13	CO ₂ emission factor of fuels used in the baseline scenario; $EF_{b,fuel,co2}$	112 tCO ₂ /TJ	The value of this parameter has been applied as 112 tCO ₂ /TJ which is the default value from the IPCC default value for Wood: IPCC 2006 Guidelines for National Greenhouse gas Inventories/56/.
	SDG 13	Non CO ₂ emission factor of fuels used in the baseline scenario; $EF_{b,fuel,non\ co2}$	9.46 tCO ₂ /TJ	As observed from the baseline survey, wood is the only source of fuel used, therefore, according to IPCC default value for Wood: IPCC 2006 Guidelines for National Greenhouse gas Inventories/56/, the default emission factor of CH ₄ and N ₂ O for stationary combustion is 0.3t/TJ and 0.004t/TJ. Also, as per IPCC Climate Change 2014/60/, the global warming potential of CH ₄ and N ₂ O is 28 and 265 respectively. $EF_{b,non\ co2} = 0.3 \times 28 + 0.004 \times 265 = 9.46 \text{ tCO}_2/\text{TJ}$
	SDG 13	Net calorific value of the fuels used in the baseline; $NCV_{b,fuel}$	0.0156 TJ/ton	The value of this parameter has been applied as 0.0156 TJ/ton which is the default value from the IPCC default value for Wood: IPCC 2006 Guidelines for National Greenhouse gas Inventories/56/.
	SDG 13	Fraction of biomass used that can be established as non -	0.9682	The value of this parameter has been

		renewable biomass in the project scenario p during year y, $f_{NRB,p,y}$		applied as 0.9682 which has been calculated using CDM Tool 30 "Calculation of the fraction of Non-renewable Biomass" (Version 03.0)/43/. The calculations have been verified from the f_{NRB} calculation sheet/44/. The values of the various parameters to calculate f_{NRB} was sourced from 2019 Refinement to IPCC 2006/51/, Global Forest Resources Assessment 2020 Rwanda/52/, Global Forest Resources Assessment 2015/53/ Forest Product Conversion Factors 2020/54/ and FAOSTAT on Forest Production and Trade/55/. The data from all the sources was checked and found to be consistent and reliable.
	SDG 13	CO ₂ emission factor of fuels used in the project scenario; $EF_{p,fuel,co2}$	112 tCO ₂ /TJ	The value of this parameter has been applied as 112 tCO ₂ /TJ which is the default value from the IPCC default value for Wood: IPCC 2006 Guidelines for National Greenhouse gas Inventories/56/.
	SDG 13	Non-CO ₂ emission factor of fuels used in the project scenario; $EF_{p,fuel,non\ co2}$	9.46 tCO ₂ /TJ	The value of this parameter has been applied as 9.46 tCO ₂ /TJ which is the default value from the IPCC default value for Wood: IPCC 2006 Guidelines for National Greenhouse gas Inventories/56/.
	SDG 13	Net calorific value of the fuels used in the	0.0156 TJ/ton	The value of this parameter has been

		project scenario; $NCV_{p,fuel}$		applied as 0.0156 TJ/ton which is the default value from the IPCC default value for Wood: IPCC 2006 Guidelines for National Greenhouse gas Inventories/56/.
	SDG 3	Waterborne illness incidence in the baseline scenario; I_b	38.45%	The value for this parameter has been applied as 38.45% and it has been obtained through sampling survey as per the applied methodology as well as "Standard: Sampling and surveys for CDM project activities and programmes of activities (Version 09.0)"/13/ and "Guidelines for sampling and surveys for CDM project activities and programmes of activities (Version 04.0)"/32/. The applied value has been cross-checked from the SDG data recording sheet for baseline survey/29/ and each parameter value was further cross-checked for consistency against the baseline survey forms/30/.
	SDG 5	Time spent to fetch and purify water by women and girls per household per day in the baseline scenario; T_b	0.9 hours	The value for this parameter has been applied as 0.9 and it has been obtained through sampling survey as per the applied methodology as well as "Standard: Sampling and surveys for CDM project activities and programmes of activities (Version 09.0)"/13/ and "Guidelines for sampling

and surveys for CDM project activities and programmes of activities (Version 04.0)/32/. The applied value has been cross-checked from the SDG data recording sheet for baseline survey/29/ and each parameter value was further cross-checked for consistency against the baseline survey forms/30/.

Data and parameters to be monitored:

Relevant SDG Indicator	Parameter	Value in VPA-DD	Frequency	Assessment
SDG 13	Quantity of safe water in litres consumed in the project scenario p and supplied by project technology per person per day $Q_{p,y}$	7 Litres per person per day	At least biennially	The CME has applied the value as per Section A3.2 of the applied methodology which sets a cap of 7 for full-day premises. It will be determined by water consumption field test in monitoring periods through sampling survey as per the applied methodology as well as "Standard: Sampling and surveys for CDM project activities and programmes of activities (Version 09.0)/13/" and "Guidelines for sampling and surveys for CDM project activities and programmes of activities (Version

					04.0)/32/". Since the cap value for full-day premises is 7, so, CME will choose the smaller value between the cap value and the value from test for conservativeness. The applied frequency and calculation method is in line with the applied methodology/5/.
	SDG 13	Quantity of raw or unsafe water that is still boiled after installation of the water treatment technology; $Q_{p,rawboil,y}$	0 Litres per person per day	At least biennially	The CME has applied the value as per judgement and through other projects of similar nature. CME envisages that people will not consume raw water as the hand pump will render clean water. So, a value of 0 is used for assumption and the actual value will be determined by water consumption field test in monitoring periods through sampling survey as per the applied methodology as well as "Standard: Sampling and surveys for CDM project activities and programmes of activities (Version 09.0)/13/" and "Guidelines for sampling and surveys for CDM

					project activities and programmes of activities (Version 04.0)/32/". The applied frequency and calculation method is in line with the applied methodology/5/.
	SDG 13	Quantity of safe (treated, or from safe supply) water boiled in the project scenario p, after installation of project technology; $Q_{p, \text{cleanboil}, y}$	0 Litres per person per day	At least biennially	The CME has applied the value as per judgement and through other projects of similar nature. CME envisages that people will not consume raw water as the hand pump will render clean water. So, a value of 0 is used for assumption and the actual value will be determined by water consumption field test in monitoring periods through sampling survey as per the applied methodology as well as "Standard: Sampling and surveys for CDM project activities and programmes of activities (Version 09.0)/13/" and "Guidelines for sampling and surveys for CDM project activities and programmes of activities (Version 04.0)/32/". The

					applied frequency and calculation method is in line with the applied methodology/5/.
	SDG 13	Performance of the treatment technology – less than 1 Colony Forming Unit (CFU) of E.Coli / 100 ml of safe water – in unqualified rate; Quality of treated water	0	Quarterly	The CME has applied the value as per judgement and through other projects of similar nature. It will be determined by water consumption field test in monitoring periods through sampling survey as per the applied methodology as well as "Standard: Sampling and surveys for CDM project activities and programmes of activities (Version 09.0)/13/" and "Guidelines for sampling and surveys for CDM project activities and programmes of activities (Version 04.0)/32/". The applied frequency and calculation method is in line with the applied methodology/5/.
	SDG 13	Usage rate in project scenario p during year y; $U_{p,y}$	100	Annually	The CME has applied the value as per judgement and through other projects of similar nature. After installation, all the hand pumps are expected to be functional so the

					CME's assumption of 100% is realistic. However, the actual value will be monitored through the monitoring surveys at the time of implementation. It will be determined by usage survey in monitoring periods through sampling survey as per the applied methodology as well as "Standard: Sampling and surveys for CDM project activities and programmes of activities (Version 09.0)/13/" and "Guidelines for sampling and surveys for CDM project activities and programmes of activities (Version 04.0)/32/". The failure days of the boreholes will be monitored for determining usage rate. The applied frequency and calculation method is in line with the applied methodology/5/.
	SDG 13	Number of person.days consuming water supplied by project scenario p	11,451,000	At least biennially	Sum of the total number of people using boreholes in the VPAs (33,000 each) multiplied by the number of

		through year y ; $N_{p,y}$			days in year y (347 days). These two data will be determined in water consumption field test and project survey during monitoring periods. The applied frequency and calculation method is in line with the applied methodology/5/. The CME plans to distribute 30-100 boreholes in the host country under each VPA. Considering that minimum 30 is distributed and 1000 people get water from each maintained borehole, a revised value of 33,000 has been applied in the ER sheet. The value of parameter $N_{p,y}$ is validated through the technical specifications provided by the CME "12-India Mark II Specification" which indicated that the handpumps can serve 1000-1500 people. Thus, it was confirmed that the hand pumps have capacity to cater above 1000 people. The hand pumps installed are generally for public use than private use and can provide water supply to as many
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					people in the vicinity as possible. The statements provided by the CME regarding the population density and average number of people were checked from source and found to be correct. Thus, the CME's approach for 1,000 per people consuming water is an accurate and realistic assumption. Moreover, the parameter will be determined through water consumption field test during the verification with a monitoring frequency of biennial. In order to be more precise, the CME has considered the failure days in $N_{p,y}$ rather than $U_{p,y}$. The CME will monitor the failure days of boreholes and use it to calculate $N_{p,y}$. In the ex-ante estimation, the CME has used 347 days instead of 365 days.
	SDG 13	Leakage in project scenario p during year y; $LE_{p,y}$	0 tCO _{2e} per year	Biennially	The result is 0 and the details are Leakage from project scenario p during year y; the applied value 0 as per section. The applied frequency and calculation

					method is in line with the applied methodology/5/.
	SDG 3	Waterborne illness incidence in the project scenario during year y ; $I_{p,y}$	20%	At least biennially	The value is taken at 20%. The CME has applied the value as per judgement and through other projects of similar nature. It will be determined by project survey in monitoring periods through sampling survey as per the applied methodology as well as "Standard: Sampling and surveys for CDM project activities and programmes of activities (Version 09.0)/13/" and "Guidelines for sampling and surveys for CDM project activities and programmes of activities (Version 04.0)/32/". The applied frequency and calculation method is in line with the applied methodology/5/.
	SDG 5	Time spent to fetch and purify water by women and girls per household per day in the project scenario during year y ; $T_{p,y}$	0.5 hour	At least biennially	The value is 0.5 The CME has applied the value as per judgement and through other projects of similar nature. The same parameter was also confirmed from the end-users during the

					baseline remote survey. It will be determined by project survey in monitoring periods through sampling survey as per the applied methodology as well as "Standard: Sampling and surveys for CDM project activities and programmes of activities (Version 09 .0)"/13/ and "Guidelines for sampling and surveys for CDM project activities and programmes of activities (Version 04.0)"/32/. The applied frequency and calculation method is in line with the applied methodology/5/.
	SDG 6	Number of persons consuming water within the project area during year y; $P_{p,y}$	33,000	At least biennially	The value is as 33,000 which is an estimated target of the number of people to be catered by the each VPA. The applied frequency and calculation method is in line with the applied methodology/5/.
	SDG 6	Hygiene campaigns carried out among project technology users to make the users be	-	Annually	Hygiene campaigns carried out among project technology users to make the users be aware of water safety. Data will be stored in the

		aware of water safety			annual hygiene campaign reports. The applied frequency and calculation method is in line with the applied methodology/5/.
	-	Safety of water disinfectants used in the VPA	-	Annually	The CME will annually check that Water disinfectants used in the VPA obtain international or domestic certificate, such as CE certificate, US FDA certificate or Rwanda national authority's certificate.
The assessment team confirmed that the monitoring parameters are sufficient to calculate the emission reductions in accordance with the methodology. The parameters will be calculated or measured as mentioned above section. The validation team confirms that list of parameters identified by the CME and as mentioned in the PDD/04/are in line with the monitoring methodology and SDG monitored parameters will be assessed on the basis of monitoring frequency mentioned. Sampling Plan: The target population for VPA: All boreholes maintained by the VPA and households consuming safe water provided by the VPA Sampling method and size: The CME will conduct across VPA sampling with confidence-precision, 95/10 in line with "Standard: Sampling and surveys for CDM project activities and programmes of activities (Version 09 .0)" and "Guidelines for sampling and surveys for CDM project activities and programmes of activities (Version 04.0). As per the applied methodology, the following guidelines will be applied to calculate the sample size: Group size < 300: Minimum sample size 30 or population size, whichever is smaller. Group size 300 to 1,000: Minimum sample size 10% of group size; Group size > 1,000: Minimum sample size 100.					

	Parameter to be monitored: a) C_j b) X_{boil} c) I_b d) T_b e) Q_{p,y} f) Q_{p,rawboil,y} g) Q_{p,cleanboil,y} h) U_{p,y} i) I_{p,y} j) T_{p,y} k) Water Quality Implementation plan: The CME will conduct surveys and project field test through hardcopy questionnaires, face to face interview and telephone interview as per the applied methodology. The design of monitoring plan and completion of MR would be done by the CME while for conducting the surveys and field tests and providing training CME will cooperate with local NGO, Association Rwandaise pour le Développement Endogène (Hereinafter referred to as "ARDE").
Findings	CAR#02, CAR#03, CAR#04 and FAR#01 were raised and resolved.
Conclusion	The SDGs chosen by CME are accurate & the monitoring of all the parameter align with the methodology of TPDDTEC version 3.1/5/

D.9. Estimation of SDG impacts or net anthropogenic removals

D.9.1. Equations and parameters applied to calculate SDG impacts

Means of validation	The VPAs applies methodology, for boreholes. The methodological choices have been explained below: The applied methodology TPDDTEC version 3.1/5/ defines the methodological steps to determine the project emissions, baseline emissions, leakages and anthropogenic emissions by the proposed project activity. (1) SDG 13: Baseline Scenario Fuel Consumption Calculation $B_{b,y} = (1 - X_{boil}) * (1 - C_j) * N_{p,y} * W_{b,y} * (Q_{p,y} + Q_{p,rawboil,y})$ Where: B_{b,y} Quantity of fuel consumed in baseline scenario b during the year in tons 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 technology 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
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$W_{b,y}$ Quantity of fuel in tons required to treat 1 litre of water using technologies representative of baseline scenario b in year y
 $Q_{p,y}$ Quantity of safe water in litres consumed in the project scenario p and supplied by project technology per person per day.
 $Q_{p, \text{rawboil},y}$ Quantity of raw water boiled in the project scenario p per person per day

X_{boil} , C_j and $N_{p,y}$ are determined by baseline survey; $W_{b,y}$ uses default value; $Q_{p,y}$ and $Q_{p, \text{rawboil},y}$ are determined by water consumption field test.

Project Scenario Fuel Consumption Calculation

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

Where:

$B_{p,y}$ Quantity of fuel consumed in project scenario p during the year y in tons

C_j Percentage of users of project technology 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

$W_{p,y}$ Quantity of fuel in tons required to treat 1 litre of water using technologies representative of baseline scenario b in year y

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

$Q_{p,\text{cleanboil},y}$ Quantity of safe water boiled in the project scenario p per person per day in year y

C_j and $N_{p,y}$ are determined by baseline survey; $W_{p,y}$ is equal to $W_{b,y}$ since the same water boiling technology is applied in the baseline and project scenarios as per the baseline and project surveys; $Q_{p,\text{rawboil},y}$ and $Q_{p,\text{cleanboil},y}$ are determined by project water consumption field test.

Emission Reductions

$$BE_{b,y} = B_{b,y} * ((f_{\text{NRB},b,y} * EF_{b,\text{fuel},\text{CO}_2}) + EF_{b,\text{fuel},\text{non-CO}_2}) * \text{NCV}_{b,\text{fuel}}$$

$$PE_{p,y} = B_{p,y} * ((f_{\text{NRB},p,y} * EF_{p,\text{fuel},\text{CO}_2}) + EF_{p,\text{fuel},\text{non-CO}_2}) * \text{NCV}_{p,\text{fuel}}$$

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

Where:

$BE_{b,y}$ Baseline emissions during year y

$PE_{p,y}$ Project emissions during year y

$B_{b,y}$ Quantity of fuel consumed in baseline scenario b during the year in tons

$B_{p,y}$ Quantity of fuel consumed in project scenario p during the year y in tons

$f_{NRB,b,y}$	Fraction of biomass used that can be established as non-renewable biomass in baseline scenario b during year y
$f_{NRB,p,y}$	Fraction of biomass used that can be established as non-renewable biomass in project scenario p during year y
$EF_{b,fuel,CO_2}$	CO ₂ emission factor of fuels used in the baseline scenario
$EF_{b,fuel,non-CO_2}$	Non-CO ₂ emission factor of fuels used in the baseline scenario
$EF_{p,fuel,CO_2}$	CO ₂ emission factor of fuels used in the project scenario
$EF_{p,fuel,non-CO_2}$	Non-CO ₂ emission factor of fuels used in the project scenario
$NCV_{b,fuel}$	Net calorific value of fuels used in the baseline scenario
$NCV_{p,fuel}$	Net calorific value of fuels used in the project scenario
ER_y	Overall emission reductions achieved by the project activity during year y
$U_{p,y}$	Cumulative usage rate for technologies in project scenario p during year y, based on cumulative installation rate and drop off rate
$LE_{p,y}$	Leakage from project scenario p during year y
f_{NRB} , $EF_{b,fuel,CO_2}$, $EF_{b,fuel,non-CO_2}$, $EF_{p,fuel,CO_2}$, $EF_{p,fuel,non-CO_2}$, $NCV_{b,fue}$ and $NCV_{p,fuel}$ are determined by literature; $U_{p,y}$ is determined by project survey; $LE_{p,y}$ is determined by baseline and project surveys.	

(2) SDG 3

The outcome of SDG 3 is quantified as the reduction of waterborne illness incidence compared to baseline scenario, which is calculated as follows:

$$I_{r,y} = I_b - I_{p,y}$$

Where:

$I_{r,y}$ Reduction of waterborne illness incidence in year y

I_b Waterborne illness incidence in the baseline scenario

$I_{p,y}$ Waterborne illness incidence in the project scenario during year y

I_b is determined by baseline survey while I_y is determined by project survey.

(3) SDG 5

The outcome of SDG 5 is quantified as percentage reduction of time spent to fetch and purify water by women and girls, which is calculated as follows:

$$T_{r,y} = (T_b - T_{p,y})/T_b$$

Where:

	$T_{r,y}$ Percentage reduction of time spent to fetch and purify water by women and girls per household per day in year y T_b Time spent to fetch and purify water by women and girls per household per day in the baseline scenario $T_{p,y}$ Time spent to fetch and purify water by women and girls per household per day in the project scenario during year y T_b is determined by baseline survey while $T_{p,y}$ is determined by project survey. (4) SDG 6 The outcome of SDG 6 is quantified as number of persons consuming safe water supplied by the project activity, which is calculated as follows: $P_y = P_{p,y} * (1 - C_j) * U_{p,y}$ Where P_y Number of persons consuming safe water supplied by the project activity during year y C_j Percentage of users of project technology who were already in baseline scenario using a non-boiling safe water supply $P_{p,y}$ Number of persons consuming water within the project area during year y $U_{p,y}$ Cumulative usage rate for technologies in project scenario p during year y C_j is determined by baseline survey while $P_{p,y}$ and $U_{p,y}$ are determined by project survey.
Findings	None
Conclusion	The methodological choices are justifiable and appropriate as per GS4GG requirements. All the values applied, and calculations are reviewed from the SDG calculation sheet/28/, baseline survey sheet/29/ and FNRB calculation sheet/44/ and were found to be acceptable by the assessment team.

D.9.2. Ex ante calculation of SDG impacts or net anthropogenic GHG removals

Means validation of	The VPAs apply methodology TPDDTEC version 3.1/5/; for boreholes in Bangladesh, to provide clean drinking water. The methodological choices have been explained below: The applied methodology TPDDTEC version 3.1/5/ defines the methodological steps to determine the project emissions, baseline emissions, leakages and anthropogenic emissions by the proposed project activity. Baseline emissions are calculated 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:
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$B_{b,y}$ Quantity of fuel consumed in baseline scenario b during the year in tons

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; the applied value is 0.83% as per section B.6.2.

C_j Percentage of users of project safe water supply who were already in baseline scenario using a non-boiling safe water supply; the applied value is 0 as per section B.6.2.

$N_{p,y}$ Number of person.days consuming water supplied by project scenario p through year y; the applied value is 11,451,000

$W_{b,y}$ Quantity of fuel in tons required to treat 1 litre of water using technologies representative of baseline scenario b in year y; the applied value is 0.0004

$Q_{p,y}$ Quantity of safe water in litres consumed in the project scenario p and supplied by project technology per person per day; the applied value is 7
 $Q_{p,rawboil,y}$ Quantity of raw water boiled in the project scenario p per person per day; ; the applied value is 0

As a result, $B_{b,y} = 31,797$ t

Project Scenario Fuel Consumption Calculation

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

Where:

$B_{p,y}$ Quantity of fuel f consumed in project scenario p during the year y in tons

C_j Percentage of users of project safe water supply who were already in baseline scenario using a non-boiling safe water supply; the applied value is 0.83%

$N_{p,y}$ Number of person.days consuming water supplied by project scenario p through year y; the applied value is 11,451,000

$W_{p,y}$ Quantity of fuel in tons required to treat 1 litre of water using technologies representative of baseline scenario b in year y; the applied value is 0.0004

$Q_{p,rawboil,y}$ Quantity of raw water boiled in the project scenario p per person per day; the applied value is 0

$Q_{p,cleanboil,y}$ Quantity of safe water boiled in the project scenario p per person per day in year y; the applied value is 0

As a result, $B_{p,y} = 0$

Emission Reductions

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

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

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

Where:

	$BE_{b,y}$	Baseline emissions during year y
	$PE_{p,y}$	Project emissions during year y
	$B_{b,y}$	Quantity of fuel consumed in baseline scenario b during the year in tons; the applied value is 31,797 as per calculation in this section above;
	$B_{p,y}$	Quantity of fuel consumed in project scenario p during the year y in tons; the applied value is 0 as per calculation in this section above;
	$f_{NRB,b,y}$	Fraction of biomass used that can be established as non-renewable biomass in baseline scenario b during year y; the applied value is 0.9682
	$f_{NRB,p,y}$	Fraction of biomass used that can be established as non-renewable biomass in project scenario p during year y; the applied value is 0.9682
	$EF_{b,fuel,CO_2}$	CO ₂ emission factor of fuels used in the baseline scenario; the applied value is 112
	$EF_{b,fuel,non-CO_2}$	Non-CO ₂ emission factor of fuels used in the baseline scenario; the applied value is 9.46
	$EF_{p,fuel,CO_2}$	CO ₂ emission factor of fuels used in the project scenario; the applied value is 112
	$EF_{p,fuel,non-CO_2}$	Non-CO ₂ emission factor of fuels used in the project scenario; the applied value is 9.46
	$NCV_{b,fuel}$	Net calorific value of fuels used in the baseline scenario; the applied value is 0.0156
	$NCV_{p,fuel}$	Net calorific value of fuels used in the project scenario; the applied value is 0.0156
	ER_y	Overall emission reductions achieved by the project activity during year y
	$U_{p,y}$	Cumulative usage rate for technologies in project scenario p during year y, based on cumulative installation rate and drop off rate; the applied value is 100%
	$LE_{p,y}$	Leakage from project scenario p during year y; the applied value 0
Findings	None	
Conclusion	The formulae and approach used for ex ante calculation of baseline emissions has been correctly presented and implemented as per methodology TPDDTEC Version 3.1/5/. They have been given consistently within the ER sheet/28/ and VPA-DD/9/.	

D.10. Start date, crediting period type and duration

Means validation of	According to GS4GG Principles and Requirements version 1.2 para 4.1.40/1/, "For distributed technology projects, the start date is the date of implementation of the first unit under the project". VPAs 01-06 have the crediting period of 5 years renewable twice. The expected VPA start date and expected start date of the crediting period of GS11098 (VPA 01), GS11133 (VPA 02), GS11134 (VPA 03), GS11135 (VPA 04), GS 11136 (VPA 05) & GS 11137 (VPA 06) is 01/05/2022 which will be the date of installation of the first unit. The expected certification cycle of the VPA is 15 years.
Findings	No findings
Conclusion	The lifetime and crediting period of the VPAs lies within the crediting period of the PoA and is in accordance with GS4GG Principles and Requirements/1/.

D.11. Environmental impacts

Means validation of	EIA is not required.
Findings	Not Applicable
Conclusion	Not Applicable

D.12. Stakeholder consultation

Means validation of	Guangzhou Iceberg Environmental Consulting Services Co., Ltd. with local NGO Association Rwandaise pour le Développement Endogène (ARDE) held a consultation with End-users, who were invited for a meeting on 03/09/2021 to implement six borehole maintenance projects in Southern province of Rwanda. The duration of the project will be 15 years and will be a small-scale project with less than 60,000 tCO _{2e} . The CME invited all the categories of stakeholders as mentioned in GS4GG Stakeholder consultation requirements. Both physical meeting and feedback round were conducted to solicit feedback from the stakeholders. The project will provide clean water for local communities by no less than 100 boreholes. CME initiated stakeholder feedback round 06/10/2021/19/ which will be concluded by 05/12/2021. The CME has shared a public link for all the stakeholders to record their comments and a detailed stakeholder consultation report including all the invitation list has also been submitted by the CME. There were no negative comments received from the stakeholder consultation rounds and all the queries or concerns raised by the stakeholder were satisfactorily resolved by the CME.
Findings	FAR#05 was raised and resolved.
Conclusion	The stakeholder consultation held on 03/09/2021 in Rwanda providing insight to the VPA that is expected to be implemented from 01/05/2022. During the consultation, the scale and duration of the project were confirmed and accepted by end-users as small scale and 15 years respectively. And minimum of 100 boreholes will be maintained or installed by CME. Reports were shared with VVB./69/

SECTION E. Sustainability Assessment
E.1. Safeguard principles assessment

Assessment Questions/ Requirements	Justification of Relevance (Yes/pot	How Project will achieve Requirements through design, management or risk mitigation.	Assessment team's Opinion/ justification for the mitigation measure
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	entially/n o)		
1. The Project Developer and the Project shall respect internationally proclaimed human rights and shall not be complicit in violence or human rights abuses of any kind as defined in the Universal Declaration of Human Rights	No	1. Rwanda has ratified many UN Human Rights Conventions. The CME and the VPA will respect related laws of Republic of Rwanda and will not lead to violations of human rights or discrimination of any kind.	The CME and the VPAs have to respect related laws of Republic of Rwanda and will not lead to violations of human rights or discrimination of any kind. Rwanda has ratified UN Human Rights Conventions/49/.
2. The Project shall not discriminate with regards to participation and inclusion	No	The VPA is set up to include people of all genders, races, religions, educational backgrounds or any other aspects. The VPA will not discriminate with regards to participation and inclusion as the safe water supply is free to be used for everybody.	The VPAs are about access to clean drinking water it will not discriminate with regards to participation and inclusion for both men & women. This is in line with the Gender equality and HR policy of the company/34/.
3. The Project shall not directly or indirectly lead to/contribute to adverse impacts on gender equality and/or the situation of women a. Sexual harassment and/or any forms of violence against women – address the multiple risks of gender-based violence, including sexual exploitation or human trafficking.	No	1.(a) The VPA will not directly or indirectly lead or contribute to adverse impacts on gender equality or the situation of women. In fact, the access to clean and safe water are foreseen to improve the general conditions of women and not to lead to any risk of contributing issues like sexual harassment, sexual exploitation, violence, human trafficking	The VPAs will not directly or indirectly lead or contribute to adverse impacts on gender. The access to clean and safe water are foreseen to improve the general conditions of women and not to lead to any risk of contributing issues like sexual harassment, sexual exploitation, violence, human trafficking. This is in line with the Gender equality and HR policy of the company/34/.
b. Slavery, imprisonment, physical and mental drudgery, punishment or coercion of women and girls.	No	1.(b) The VPA will not directly or indirectly lead to/contribute to slavery, imprisonment, physical and mental drudgery, punishment or coercion of women and girls. In contrast, the VPA will contribute to health and well-being of women and girls.	The VPAs are about access to clean drinking water & the VPAs will not directly or indirectly lead to/contribute to slavery, imprisonment, physical and mental drudgery, punishment or coercion of women and girls. This is in line with the Gender equality and HR policy of the company/34/.

c. Restriction of women's rights or access to resources (natural or economic).	No	1.(c) Boreholes are usually located in the public place of villages for everyone to use. No one can restrict women to access or control the natural resources. The VPA will benefit to local community regardless of gender. All inhabitants of Rwanda may turn to Committee on Economic, Social and Cultural Rights of the United Nations for women's rights violations.	The VPAs will benefit to local community regardless of gender. Boreholes are usually located in the public place of villages for everyone to use. No one will restrict women to access or control the natural resources.
d. Recognise women's ownership rights regardless of marital status – adopt project measures where possible to support to women's access to inherit and own land, homes, and other assets or natural resources.	No	1.(d) The VPA will not have any impact on women's ownership rights to inherit and own land, homes and other assets. Bangladesh's progressive land ownership policy will be applied to everybody irrespective of gender.	The VPAs will not have any impact on women's ownership rights to inherit and own land, homes and other assets. The VPAs are about access to clean drinking water and will follow Rwanda law of Land ownerships/57/ which registers and administers land ownership in Rwanda.
Principle 2: Gender Equality			
2. Projects shall apply the principles of non-discrimination, equal treatment, and equal pay for equal work a. Where appropriate for the implementation of a PoA/VPA, paid, volunteer work or community contributions will be organised to provide the conditions for equitable participation of men and women in the identified tasks/activities.	No	2.(a) For maintenance work and any other eventual paid or volunteer work in the VPA, the principle of the equal pay for equal work will be applied and organized in way to provide the conditions for equitable participation of men and women.	The VPAs are about access to clean drinking water, for maintenance work or volunteer work in the VPAs, the principle of the equal pay for equal work will be applied and organized in way to provide the conditions for equitable participation of men and women. The borehole maintenance will reduce the time and effort needed by women to fetch and purify the water for their families. So, the VPAs do not involve and is not complicit in any form of discrimination based on gender difference in line with the National Gender

			Policy/48/. This is also in line with the Gender equality and HR policy of the company/34/.
b. Introduce conditions that ensure the participation of women or men in Project activities and benefits based on pregnancy, maternity/paternity leave, or marital status.	No	2.(b) The VPA applies the principles of non-discrimination and equal treatment. Pregnancy or marital status does not affect the ability of a person to engage in the VPA.	The VPAs are about access to clean drinking water the VPAs applied the principles of non-discrimination and equal treatment. Pregnancy or marital status does not affect the ability of a person to engage in the VPAs/48/.
c. Ensure that these conditions do not limit the access of women or men, as the case may be, to VPA participation and benefits.	No	2.(c) Equal participation of women and men in the VPA activities, like using the clean and safe water and participating in the annual hygiene campaigns, is guaranteed.	The VPAs are about access to clean drinking water & Equal participation of women and men in the VPAs activities, like using the clean and safe water and participation in the annual hygiene campaigns.
3. The Project shall refer to the country's national gender strategy or equivalent national commitment to aid in assessing gender risks	No	3. Rwanda has ratified an Equal Rights into their respective constitution (FUNDAMENTAL HUMAN RIGHTS), The VPA will abide by the national gender strategy. So, the VPA does not involve and is not complicit in any form of discrimination based on gender difference.	The VPAs are about access to clean drinking water & The VPAs will abide by the national gender strategy. So, the VPAs does not involve and is not complicit in any form of discrimination based on gender difference. in line with the National Gender Policy/48/.
4. (Where required) Summary of opinions and recommendations of an Expert Stakeholder(s)	No	4. Not applicable as no opinion or recommendation is received from expert stakeholder.	NA as no recommendation were received.
Principle 3: Community Health, Safety and Working Conditions			
5. The Project shall avoid community exposure to increased health risks and shall not adversely affect the health of the workers and the community	No	5. The project activities do not pose risks to the health of the community. In fact, the VPA will reduce the risk of water borne illness for local communities and indoor air pollution caused by boiling water for	Local communities will benefit from clean and safe water. The project activities do not pose risks to the health of the community the VPAs will reduce the risk of water borne illness for local communities and indoor

		purification. Local communities will benefit from clean and safe water.	air pollution caused by boiling water for purification
Principle 4.1 Sites of Cultural and Historical Heritage			
6. Does the Project Area include sites, structures, or objects with historical, cultural, artistic, traditional or religious values or intangible forms of culture?	No	6. There are no sites, structures, or objects with historical, cultural, artistic, traditional or religious values or intangible forms of culture in the Project Area.	The VPAs involves dissemination of boreholes to locals in Southern Province, Rwanda Thus, it does not include sites, structures, or objects with historical, cultural, artistic, traditional or religious values or intangible forms of culture
Principle 4.2 Forced Eviction and Displacement			
7. Does the Project require or cause the physical or economic relocation of peoples (temporary or permanent, full or partial)?	No	The project activity consists of introducing clean and safe water and therefore no physical or economic relocation of people is involved.	The VPAs involves dissemination boreholes to Southern Province of Rwanda. Thus, it does not lead to physical or economical relocation of peoples.
Principle 4.3 Land Tenure and Other Rights			
8. Does the Project require any change, or have any uncertainties related to land tenure arrangements and/or access rights, usage rights or land ownership?	No	The VPA rehabilitates existing boreholes that have been in place for many years. No changes to land tenure arrangements and/or rights are required.	The VPAs involves dissemination boreholes & rehabilitates existing boreholes that have been in place for many years in Southern District, Rwanda. Thus, it does not have any uncertainties related to land tenure arrangements and/or access rights, usage rights or land ownership and it was confirmed from the CME and VPA implementer agreement that the ownership of the VPAs is with Guangzhou Iceberg Environmental Consulting Services Co., Ltd./50/
Principle 4.4 Indigenous People			
9. Are indigenous peoples present in or within the area of influence of the Project and/or is the Project located on	No	There are no indigenous people present within the area of influence of the VPA. The VPA is not located on territory	The VPAs will not be located on territory claimed by indigenous people. no indigenous people present within the Project area.

land/territory claimed by indigenous peoples?		claimed by indigenous people.	
Principle 5 Corruption			
10. The Project shall not involve, be complicit in or inadvertently contribute to or reinforce corruption or corrupt Projects	No	The VPA does not involve or inadvertently contribute to or reinforce or is not complicit in any corruption. Bangladesh has ratified the UN Convention against Corruption which the VPA will obey.	The VPAs involves dissemination boreholes to Southern Province of Rwanda, VPAs are not involved or will contribute to corruption. Rwanda have Ratified UN Convention against corruption/46/ & VPAs will follow.
Principle 6.1 Labour Rights			
1. The Project Developer shall ensure that all employment is in compliance with national labour occupational health and safety laws and with the principles and standards embodied in the ILO fundamental conventions	No	1. The CME follows the labour laws and policies of Rwanda. Rwanda has ratified many ILO Conventions, including convention 87 (Freedom of Association and Protection of the Right to Organise Convention), convention 98 (Right to Organise and Collective Bargaining Convention), convention 29 (Forced Labour Convention) and 105 (Abolition of Forced Labour Convention).	The VPAs follows the labour laws and policies of Rwanda and Rwanda has also ratified various ILO conventions to ensure that all the employment is within ILO fundamental conventions. /58/.
2. Workers shall be able to establish and join labour organisations	No	2. The CME does not restrict workers to be able to establish or join Labour organisations.	The VPAs puts no constraints / limitation on employees to form a union.
3. Working agreements with all individual workers shall be documented and implemented and include: a. Working hours (must not exceed 48 hours per week on a regular basis), AND b. Duties and tasks, AND c. Remuneration (must include provision for	No	3. The CME does not hire local employees. The CME will supervise local partners to follow the labour laws of Rwanda about the employees' working hours, remuneration, annual leave and so on. All employees of the CME's local partners will work voluntarily and attend trainings on health & safety. The employment	The VPAs will not hire local employees. The CME will supervise local partners to follow the labour laws of Rwanda about the employees' working hours, remuneration, annual leave in line with its Gender equality and HR policy/34/. The employment model related to the VPAs will be

payment of overtime), AND d. Modalities on health insurance, AND e. Modalities on termination of the contract with provision for voluntary resignation by employee, AND f. Provision for annual leave of not less than 10 days per year, not including sick and casual leave.		model related to the VPA will be also locally and culturally appropriate.	also locally and culturally appropriate.
4. No child labour is allowed (Exceptions for children working on their families' property requires an Expert Stakeholder opinion)	No	4. The age of all the staffs hired by local partners of the CME will be checked through ID cards to make sure that no one is below 18. Rwanda has ratified ILO Conventions 182 (Worst Forms of Child Labour Convention) which the CME and all its local partners will obey.	The CME does not promote / or is complicit in child labour the age of all the staffs hired will be checked through ID cards to make sure that no one is below 18. All the laws of the land will be obeyed by VPAs & local implementers. This is in line with the Gender equality and HR policy of the company/34/.
5. The Project Developer shall ensure the use of appropriate equipment, training of workers, documentation and reporting of accidents and incidents, and emergency preparedness and response measures	No	5. All the work will be done by appropriate equipment with properly trained workers. Emergency preparedness and response measures have been set up and all the accidents and incidents will be recorded and reported.	It was confirmed from the CME representative and the VPA implementer that workers are provided with appropriate equipment, training and the accidents and incidents documentation is maintained, and the emergency preparedness and response measures is in place. This is in line with the Gender equality and HR policy of the company/34/.
Principle 6.2 Negative Economic Consequences			
1. Does the project cause negative economic consequences during and after project implementation?	No	1.a) At the beginning, the CME will provide fund to cover the operation cost of the VPA including expenditures beyond the project certification cycle, e.g., maintenance of	At the beginning, the CME will provide fund to cover the operation cost of the VPAs including expenditures beyond the project certification cycle, e.g., maintenance of

		boreholes, hygiene campaigns and monitoring. After the successful sale of carbon credits generated from the VPA, the carbon market will provide financial sustainability of the VPA. 1.b) The VPA provides clean and safe water free for everybody and therefore the VPA benefits local communities. The VPA has positive economic benefit due to less expenditure on firewood for water boiling and more job opportunities for borehole maintenance.	boreholes, hygiene campaigns and monitoring. After the successful sale of carbon credits generated from the VPAs, the carbon market will provide financial sustainability of the VPAs. The VPAs has positive economic benefit due to less expenditure on firewood for water boiling and more job opportunities for borehole maintenance.
Principle 7.1 Emissions			
Will the Project increase greenhouse gas emissions over the Baseline Scenario?	No	GHG emissions will be reduced through replacing water purification using firewood with access to safe water.	GHG emissions will be reduced through replacing the need to water purification using firewood with access to clean water.
Principle 7.2 Energy Supply			
Will the Project use energy from a local grid or power supply (i.e., not connected to a national or regional grid) or fuel resource (such as wood, biomass) that provides for other local users?	No	The VPA will reduce consumption of biomass through the reduced need to boil water. Safe water will be supplied by boreholes with hand pumps thus the VPA will not use energy from a local grid or power supply.	The VPAs reduces GHG emissions by reducing the consumption of biomass to boil water will not be a necessity. VPAs will not require energy supply.
Principle 8.1 Impact on Natural Water Patterns/Flows			
Will the Project affect the natural or pre-existing pattern of watercourses, groundwater and/or the watershed(s) such as high seasonal flow variability, flooding potential, lack of aquatic connectivity or water scarcity?	No	The VPA does not impact natural water patterns and flows. It uses existing aquifers and does not affect the volume of water consumed by villagers.	The VPAs involves dissemination boreholes in Southern Province, Rwanda. It will utilize the already existing aquifers. Thus, it will not affect the natural or pre-existing pattern of water courses, ground water and/ water shed such as high seasonal flow variability, flooding potential, lack of

			aquatic connectivity or water scarcity
Principle 8.2 Erosion and/or Water Body Instability			
Could the Project directly or indirectly cause additional erosion and/or water body instability or disrupt the natural pattern of erosion?	No	The water is taken from existing boreholes that are rehabilitated mainly for domestic use. The VPA will not cause additional erosion and/or water body instability or disrupt the natural pattern of erosion.	The VPAs shall result in reduction in demand of biomass fuel in the region putting less pressure on forests for deforestation and will hence indirectly avoid erosion associated with tree cutting/ felling. The water drawn will be mostly for domestic use.
Principle 9.1 Landscape Modification and Soil			
Does the Project involve the use of land and soil for production of crops or other products?	No	The VPA provides safe and clean water and does not involve use of land and soil for production or crops or other products.	The VPAs involves dissemination of boreholes in Southern Province, Rwanda. Thus, it does not involve the use of land and soil for production of crops or other products
Principle 9.2 Vulnerability to Natural Disaster			
Will the Project be susceptible to or lead to increased vulnerability to wind, earthquakes, subsidence, landslides, erosion, flooding, drought or other extreme climatic conditions?	No	This VPA does not have any impacts that may affect vulnerability to these natural disasters.	The VPAs involves dissemination of boreholes in Southern Province of Rwanda Thus, it will not lead to increased vulnerability to wind, earthquakes, subsidence, landslides, erosion, flooding, drought or other extreme climatic conditions
Principle 9.3 Genetic Resources			
Could the Project be negatively impacted by or involve genetically modified organisms or GMOs (e.g., contamination, collection and/or harvesting, commercial development, or take place in facilities or farms that include GMOs in their processes and production)?	No	The VPA is not relevant to the use of genetically modified organisms or GMOs since it is a borehole maintenance project.	The VPAs involves dissemination of boreholes in Southern Province of Rwanda Thus, it will not be impacted by the GMOs.
Principle 9.4 Release of pollutants			
Could the Project potentially result in the release of pollutants to the environment?	No	The purpose of the VPA is to provide clean water for community residents through boreholes. The	The VPA involves dissemination boreholes in Southern Province of Rwanda . Thus, it will lead

		VPA is not potentially resulting in release of pollutants to the environment.	to reduction if GHG emissions and reduce the release of pollutants.
Principle 9.5 Hazardous and Non-hazardous Waste			
Will the Project involve the manufacture, trade, release, and/ or use of hazardous and non-hazardous chemicals and/or materials?	Potential	If water quality cannot meet the requirements after borehole maintenance, chemical disinfection will be applied. So, water disinfectants containing chlorine may be used in the VPA.	The VPAs involves dissemination boreholes in Southern Province of Rwanda. The CME has provided CE certificate/64/ and Rwanda Standard Board Certificate/65/ for the water disinfectants used under the VPA.
Principle 9.6 Pesticide and Fertilizers			
Will the Project involve the application of pesticides and/or fertilizers?	No	No pesticides and/or fertilisers will be used in the VPA.	The VPAs involves dissemination boreholes in Southern Province of Rwanda. Thus, it will not lead to application of pesticides and/or fertilisers
Principle 9.7 Harvesting of Forests			
Will the Project involve the harvesting of forests?	No	The VPA reduces the consumption of firewood, therefore having a positive impact on forest conservation	The VPAs does not involve harvesting of forests. The VPAs shall result in reduction in demand of biomass fuel in the region putting less pressure on forests for deforestation and will hence indirectly avoid erosion associated with tree cutting/ felling.
Principle 9.8 Food			
Does the Project modify the quantity or nutritional quality of food available such as through crop regime alteration or export or economic incentives?	No	The VPA does not have any expected effects on modification of the quantity or nutritional quality of food available such as through crop regime alteration or export or economic incentives.	The VPAs involves dissemination boreholes in Southern Province of Rwanda Thus, the VPAs will have no impact on the nutritional quality of food available.
Principle 9.9 Animal Husbandry			
Will the Project involve animal husbandry?	No	The VPA does not involve animal husbandry.	The VPAs involves dissemination boreholes in Southern Province of Rwanda. It is a safe drinking water project. Thus, it does not involve animal husbandry.

Principle 9.10 High Conservation Value Areas and Critical Habitats			
Does the Project physically affect or alter largely intact or High Conservation Value (HCV) ecosystems, critical habitats, landscapes, key biodiversity areas or sites identified?	No	The VPA will not cause any risk to HCV ecosystems, critical habitats, landscapes, key biodiversity areas or sites identified. In fact, the VPA benefits biodiversity of forest by reducing the use of firewood for water boiling.	The VPAs involves dissemination boreholes in Southern Province of Rwanda. The placements of such boreholes will not be near HCVs, critical habitats etc. So, no impact on key biodiversity.
Principle 9.11 Endangered Species			
Are there any endangered species identified as potentially being present within the Project boundary (including those that may route through the area)? AND/OR Does the Project potentially impact other areas where endangered species may be present through transboundary affects?	No	There are no endangered species identified as potentially being present within the project boundary. The VPA is not expected to potentially impact other areas where endangered species may be present through transboundary affects.	The VPAs involves dissemination boreholes in Southern Province of Rwanda it will be near residential areas so no issues with the presence of endangered species into the project boundary.

E.2. Gender Sensitive requirements

Means of validation	Question	Justification provided by CME	VVB Assessment
	Question 1 - Explain how the project reflects the key issues and requirements of Gender Sensitive design and implementation as outlined in the Gender Policy?	The VPA aims to be gender sensitive in design without excluding marginalized members of society. The VPA seeks to promote gender equality at all levels. The implemented activities including the stakeholder consultation as well as the future implementation of the project activities take into the account gender roles and the abilities of women and men to participate in the decision/designs of the project activities. For the majority of households in Rwanda, water fetching, fuel collection and purification activities are handled by	The VPAs are about access to clean drinking water & The VPAs will abide by the national gender strategy. The VPAs include women at every step and do not promote gender disparity in any manner. The borehole maintenance will reduce the time and effort needed by women to fetch and purify the water for their families. So, the

		women. In fact, the availability of clean water in a reasonable distance is foreseen to reduce women's workload related to water purification, collection of fuel needed for boiling water and caring activities as the risk for water borne diseases. It can be further expected that sexual harassment and violence happening during fuel collection and water fetching activities may be reduced. Hence, largely women will benefit from the project activity.	VPA's do not involve and is not complicit in any form of discrimination based on gender difference in line with the National Gender Policy/48/.
	Question 2 - Explain how the project aligns with existing country policies, strategies and best practices	Project activities are in line with the goals of Rwanda national policies. Rwanda has ratified an Equal Rights Amendment into their respective constitution, which guarantees equal gender rights. The project activities take into the account national policies, in fact the aim is to improve the conditions of the local women and girls by providing access to clean and safe water.	The VPAs align with the goals of Rwanda with respect to equal rights and they also align with the National Gender Policy /48/ which eliminates gender disparity.
	Question 3 - Is an Expert required for the Gender Safeguarding Principles & Requirements?	National Council of Women committee members were invited to attend the stakeholder consultation including discussion on Safeguarding Principles & Requirements. No other expert is required for the Safeguarding Principles & Requirements.	Due to the current scenario of Covid-19, the stakeholder consultation has been postponed as public meetings & international travels are restricted. But once the situation improves, CME with ADRE will host the Stakeholder consultation and invite National Council of Women.
	Question 4 - Is an Expert required to assist with Gender issues at the Stakeholder Consultation?	Members of women organizations were invited to attend the stakeholder consultation. No other expert is required to assist with Gender issues at the Stakeholder Consultation.	Due to the current scenario of Covid-19, the stakeholder consultation has been postponed as public meetings & international travels are

			restricted. But once the situation improves, CME with ADRE will host the Stakeholder consultation and invite National Council of Women.
Findings	No findings.		
Conclusion	The Validation team confirms that the VPAs comply with the GS4GG Gender Equality guidelines and requirements.		

SECTION F. Internal quality control

A draft inclusion report prepared by validation team is reviewed by an independent technical review team (one or more members) to confirm whether all the internal procedures established and implemented by ESPL were duly complied with and such opinion/conclusion was reached in an objective manner that complies with the applicable GS4GG rules/requirements. The technical review team is collectively required to possess the technical expertise of all the technical area/sectoral scope the project activity relates to. All team members of the technical review team are independent of the validation team.

During the technical review process, additional findings may be identified, or the closed-out findings may be opened, which needs to be satisfactorily resolved before the request for issuance is submitted to UNFCCC. The independent technical reviewer may either approve the report as such or reject/return the same in such case providing the comments/findings/issues that need to be resolved by the verification team. The decision taken by the Technical Reviewer is final and is authorized by the Managing Director on behalf of Earthood Services Private Limited.

SECTION G. Validation opinion

Earthood Services Private Limited (Earthood) has performed a Gold Standard (GS4GG) validation and inclusion of the "GS11098 (VPA 01), GS11133 (VPA 02), GS11134 (VPA 03), GS11135 (VPA 04), GS 11136 (VPA 05) & GS 11137 (VPA 06)". The validation and inclusion were performed on the basis of rules and requirements defined by Gold Standard and UNFCCC, as appropriate.

The review of the PoA-DD, VPA-DD, supporting documents and subsequent follow-up actions (independent research of information) has provided Earthood with sufficient evidence to determine the fulfilment of stated criteria.

The VPAs will lead to access of clean water to people of Southern Province of Rwanda. The project results in reduction of CO₂e emissions that are real, measurable and give long-term benefits to the mitigation of climate change. It is demonstrated that the project is not a likely baseline scenario and the emission reductions attributable to the project are, hence, additional to any that would occur in the absence of the proposed GS programme of activities.

The emission reductions (average) from the GS11098 (VPA 01), GS11133 (VPA 02), GS11134 (VPA 03), GS11135 (VPA 04), GS 11136 (VPA 05) & GS 11137 (VPA 06) are estimated to be 58,480 tCO₂e/year, 18.45 % reduction in the incidence of waterborne illness under SDG3, 44.44% reduction in time spent to fetch and purify water by women and girls under SDG5 and provision of safe water to 32,726 local residents under SDG 6 over the selected 5 years of renewable crediting period respectively. The emission reduction forecast has been checked, and it is deemed likely that the stated amount is achievable given that the underlying assumptions do not change.

The monitoring plan explained in VPA-DDs is in compliance with the registered PoA DD. It adequately provides for the ex-post monitoring of the project's emission reductions and sustainable indicators as defined in GS PoA-DD. The monitoring arrangements described in the monitoring plan are feasible within the project design and it is Earthood's opinion that Guangzhou

Iceberg Environmental Consulting Services Co., Ltd. shall be able to implement the monitoring plan.

In summary, "GS11098 (VPA 01), GS11133 (VPA 02), GS11134 (VPA 03), GS11135 (VPA 04), GS 11136 (VPA 05) & GS 11137 (VPA 06) " as described in the VPA-DDs 01 – 06 and, meets all relevant GS requirements and correctly applies the baseline and monitoring methodology TPDDTEC v3.1. Therefore, Earthood requests the inclusion of GS11098 (VPA 01), GS11133 (VPA 02), GS11134 (VPA 03), GS11135 (VPA 04), GS 11136 (VPA 05) & GS 11137 (VPA 06) under the registered PoA Safe Water Programme in Africa and Asia as GS VPAs.

Appendix 1. Abbreviations

Abbreviations	Full Texts
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
CL	Clarification Request
CME	Coordinating / Managing Entity
CO ₂	Carbon dioxide
CO ₂ e	Carbon dioxide equivalent
VPA	Voluntary Project Activity
VPA DD	Voluntary Project Activity Design Document
DNA	Designated National Authority
DO	Distribution Organisation
DRB	Demonstrably renewable woody biomass
EB	CDM Executive Board
EIA	Environmental Impact Assessment
FAO	Food and Agriculture organization
FAR	Forward Action Request
GHG	Greenhouse gas(es)
ICS	Improved Cook Stoves
IPCC	Intergovernmental Panel on Climate Change
LAF	Leakage Adjustment Factor
LSC	Local Stakeholder Consultation
NRB	Non-Renewable Biomass
PA	Project Activity
PoA	Programme of Activities
PoA DD	CDM Programme of Activities Design Document
UID	Unique Identification number
ISO	Indian Standard Organization
VVB	Verification and Validation Body

Appendix 2. Competence of team members and technical reviewers

Competence Statement	
Name	Deepika Mahala
Country	India
Education	M. Sc. (Environmental Management), GGSIP University B.Sc. Hons. (Chemistry), Sri Venkateshwar College, DU
Experience	5 Years +
Field	Climate Change
Approved Roles	
Team Leader	YES
Validator	YES
Verifier	YES

Methodology Expert	ACM0002, AMS.I.D., AMS.I.A, AMS.III.AV, AMS.II.G		
Local expert	YES (India)		
Financial Expert	NO		
Technical Reviewer	YES		
TA Expert	YES (TA 1.2 & TA 3.1)		
Reviewed by	Shreya Garg	Date	15/04/2021
Approved by	Anshika Gupta	Date	15/04/2021

Competence Statement			
Name	Rahi Sahni		
Education	M.Sc Environment Science and Technology, Bharati Vidyapeeth University, Pune		
Experience	6 months		
Field	Climate Change and Environment		
Approved Roles			
Team Leader	NO		
Validator	Yes		
Verifier	Yes		
Methodology Expert	NO		
Local expert	NO		
Financial Expert	NO		
Technical Reviewer	NO		
TA Expert	NO		
Reviewed by	Shreya Garg	Date	09/04/2020
Approved by	Anshika Gupta	Date	09/04/2020

Competence Statement	
Name	Shreya Garg
Country	India
Education	M.Sc. (Climate Science & Policy), TERI University
Experience	6 Years +
Field	Climate Change
Approved Roles	
Team Leader	YES
Validator	YES
Verifier	YES
Methodology Expert	AMS.I.A., AMS.I.C., AMS.I.D., AMS.I.F., AMS.II.D., AMS.II.G., AMS.II.J., AMS.III.AV., ACM0002, ACM0012
Local expert	YES (India)
Financial Expert	NO

Technical Reviewer	YES		
TA Expert	YES (TA 1.2, TA 3.1)		
Reviewed by	Abhishek Mahawar	Date	01/03/2018
Approved by	Ashok Gautam	Date	01/03/2018

Name	Olivier Uwimana		
Education	Bachelor’s in Applied Mathematics		
Experience	4+ years		
Field	Statistics		
Approved Roles			
Team Leader	No		
Validator	No		
Verifier	No		
Methodology Expert	No		
Local expert	Yes (Rwanda)		
Financial Expert	No		
Technical Reviewer	No		
TA Expert	No		
Reviewed by	Shreya Garg	Date	19/08/2019
Approved by	Anshika Gupta	Date	19/08/2019

Appendix 3. Documents reviewed or referenced

S.No	Author	Title	References to the document	Provider
1.	GS4GG	Principles and requirements for GS4GG	Version 1.2	Others
2.	GS4GG	Gold Standard Programme of Activities Requirements,	Version 1.2	Others
3.	GS4GG	Community Services Activity Requirements	Version 1.2 Dated Oct 2019	Others
4.	Guangzhou Iceberg Environmental Consulting Services Co., Ltd.	PoA-DD	Version 5 dated 15/09/2021	CME
5.	Gold standard	TPDDTEC	Version 3.1.	Others

6.	GS4GG	GS4GG Stakeholder consultation and engagement requirements	Version 1.2 Dated Oct 2019	Others
7.	UNFCCC	Standard: CDM VVS PoA	Version 3.0	Others
8.	GS4GG	GHG Product Requirements	Version 2.0	
9.	Guangzhou Iceberg Environmental Consulting Services Co., Ltd.	VPA-DDs (GS11098 (VPA 01), GS11133 (VPA 02), GS11134 (VPA 03), GS11135 (VPA 04), GS 11136 (VPA 05) & GS 11137 (VPA 06))	Version 8.0 14/03/2022	CME
10.	GS4GG	GS4GG VPA-DD Template	Version 1.1	Others
11.	UNFCCC	Standard: CDM PCP	Version 3.0	Others
12.	GS4GG	GS4GG Covid-19 Interim Measures	Version 3.0	Others
13.	UNFCCC	Standard for Sampling and surveys for CDM project Activities	Version: 9.0	CME
14.	UNFCCC	Standard: CDM PS for PoA	Version 3.0	Others
15.	Guangzhou Iceberg Environmental Consulting Services Co., Ltd.	ODA Declaration	Dated: 30/04/2021	CME
16.	UNFCCC	Standard for Sampling and surveys for CDM project Activities	Version: 9.0	Others
17.	Guangzhou Iceberg Environmental Consulting Services Co., Ltd.	VVB remote survey	Dated: 09/07/2021	CME
18.	Guangzhou Iceberg Environmental Consulting Services Co.	Sample carbon transfer agreement between and end-users	-	CME
19.	Guangzhou Iceberg Environmental Consulting Services Co.	Evidence for Initiation of Feedback round	-	CME
20.	IPCC	2006 IPCC default values	2006	Others
21.	ESPL	PoA Validation report	20/07/2021	Others
22.	Guangzhou Iceberg Environmental Consulting Services Co.	Double counting Declaration	23/06/2021	CME
23.	Guangzhou Iceberg	Declaration showing this project as no new registration	23/06/2021	CME

	Environmental Consulting Services Co.			
24.	Guangzhou Iceberg Environmental Consulting Services Co.	Declaration showing this project is implemented independently.	23/06/2021	CME
25.	Rwanda Biomedical Centre	https://www.rbc.gov.rw/index.php?id=745	Last accessed: 20/07/2021	Others
26.	Department of Foreign Affairs	https://www.dfa.ie/travel/travel-advice/a-z-list-of-countries/rwanda/	Last accessed: 20/07/2021	Others
27.	Gold Standard	GHG emissions reductions sequestration and product requirements	Version 2.0 Dated April 2021	Others
28.	Guangzhou Iceberg Environmental Consulting Services Co.	SDG outcome sheet/ER sheet	Corresponding to the VPA-DDs	CME
29.	Guangzhou Iceberg Environmental Consulting Services Co.	Data recording sheet for baseline survey	Corresponding to the VPA-DDs	CME
30.	Guangzhou Iceberg Environmental Consulting Services Co.	Baseline survey Forms	Several	CME
31.	WHO	Rwanda Water Standard	-	Others
32.	UNFCCC	Guidelines for sampling and surveys for CDM project activities and programmes of activities	Version 4.0	
33.	D&S and Startech	Manufacturer's specifications (India Mark II and Startech Water Disinfectant brochure)	-	CME
34.	Guangzhou Iceberg Environmental Consulting Services Co.	Gender equality and human resource policy	May 2020	CME
35.	UN Human Rights Office of the High Commissioner	https://www.ohchr.org/en/countries/asiaregion/pages/bdindex.aspx	Last accessed: 09/07/2021	CME
36.	Guangzhou Iceberg	Sample sworn agreement	-	CME

	Environmental Consulting Services Co.			
37.	National Gender Policy	https://www.migeprof.gov.rw/fileadmin/user_upload/Migeprof/Publications/Guidelines/Revised_National_Gender_Policy-2021.pdf	Last accessed: 09/07/2021	CME
38.	UN treaty Collection	https://treaties.un.org/Pages/ViewDetails.aspx?src=IND&mtsg_no=XVIII-14&chapter=18&clang=en	Last accessed: 09/07/2021	CME
39.	International Labour Organization: Ratifications for Rwanda	https://www.ilo.org/dyn/normlex/en/f?p=1000:11200:0::NO:11200:P11200_COUNTRY_ID:103500	Last accessed: 09/07/2021	CME
40.	UNCTAD	https://unctad.org/topic/least-developed-countries/list	Last accessed: 15/07/2021	Others
41.	ESPL	VVB Remote survey checklist	16/06/2021	Others
42.	GS4GG	Application of TPDDTEC Methodology to Safe Water Supply Projects	03/05/2021	Others
43.	UNFCCC	CDM Tool 30 "Tool 30 "Calculation of the fraction of Non-renewable Biomass	Version 3.0	Others
44.	Guangzhou Iceberg Environmental Consulting Services Co.	fNRB calculation sheet	-	CME
45.	ILO	Rwanda Labor Law	2018	Others
46.	UN	UN Convention against corruption	2003	Others
47.	UN	UN Declaration on the rights of Indigenous people	2001	Others
48.	Government of Rwanda	National Gender Policy	2011	Others
49.	UN	UN Human Rights Conventions	2006	Others
50.	Guangzhou Iceberg Environmental Consulting Services Co. and ARDE	Signed agreement between CME and VPAI	10/10/2020	CME
51.	IPCC	2019 Refinement to IPCC 2006	2019	Others
52.	FAO	Global Forest Resources Assessment 2020 Rwanda	2020	Others
53.	FAO	Global Forest Resources Assessment 2015	2015	Others
54.	FAO	Forest Product Conversion Factors 2020	2020	Others

55.	FAOSTAT	FAOSTAT on Forest Production and Trade (http://www.fao.org/faostat/en/#data/FO)	-	Others
56.	IPCC	IPCC 2006 Guidelines for National Greenhouse gas Inventories	2006	Others
57.	Government of Rwanda	Rwanda land ownership law	2005	Others
58.	ILO	Convention 87 (Freedom of Association and Protection of the Right to Organise Convention), Convention 98 (Right to Organise and Collective Bargaining Convention), convention 29 (Forced Labour Convention) and 105 (Abolition of Forced Labour Convention)	Several	Others
59.	WHO	A Clean 5 Gallons a Day Keeps the Doctor Away: The Water Crisis in Kenya and Rwanda	2014	Others
60.	IPCC	IPCC Fifth Assessment Report: Climate Change 2014	2014	Others
61.	Ministry of Infrastructure Rwanda	National Water supply policy of Rwanda (https://rura.rw/fileadmin/Documents/Water/Laws/NATIONAL_WATER_SUPPLY_POLICY__DECEMBER_2016.pdf)	2016	Others
62.	Davis & Shirtliff	Manufacture's Specification (India Mark V Hand Pump)	-	CME
63.	Davis & Shirtliff	Manufacture's Specification (Afridev Hand Pump)	-	CME
64.	ISET	CE Certificate	06/04/2020	CME
65.	RSB	Rwanda Standard Board Test Certificate for water disinfectants	24/12/2019	CME
66.	CME	Sampling of boreholes	-	CME
67.	CME	Sampling of Households	-	CME
68.	CME	Registered GS Safe water projects in Rwanda	-	CME
69.	CME	Stakeholder Consultation Report - Rwanda	06/12/2021	CME

Appendix 4. Clarification requests, corrective action requests and forward action requests

Table 1. Remaining FARs from GS4GG Preliminary review

FAR ID	01	Section no.	D.8.1	Date	01/07/2021
Description of FAR					

Please make sure that PD can supply supporting data for all parameters in time for validation/design review. This includes and is not limited to: ER spreadsheets, individual study calculations, survey results etc.

Project participant response	Date : 03/07/2021
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Supporting documents, including SDG outcomes calculation form, baseline survey forms and baseline survey data recording forms, have been sent to the VVB for validation.

Documentation provided by project participant

SDG outcomes calculation form
Baseline survey forms
Baseline survey data recording form

VVB assessment	Date: 14/07/2021
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The CME has provided all the supporting documents like SDG outcomes calculation form, Baseline survey forms, Baseline survey data recording form and fNRB calculation at the validation stage.

FAR#01 closed.

FAR ID	02	Section no.	D.3.1.	Date : 01/07/2021
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Description of FAR

The PD shall submit 'Carbon Transfer Form' in order to confirm on the full and uncontested legal ownership of the carbon rights produced by the project at the time of validation.

Project participant response	Date : 03/07/2021
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The carbon transfer agreement has been sent to the VVB for validation to confirm on the full and uncontested legal ownership of the carbon rights produced by the VPA.

Documentation provided by project participant

Carbon transfer agreement

VVB assessment	Date: 14/07/2021
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A sample carbon transfer agreement form has been submitted by the CME which confirms that the carbon rights will be waived off from the end-users and transferred to the CME after the project implementation.

FAR#02 closed.

FAR ID	03	Section no.	D.3	Date : 01/07/2021
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Description of FAR

Please update Figure 1 to highlight Rwanda more clearly, and the current shape is easy to be misunderstood.

Project participant response	Date : 03/07/2021
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Figure 1 of the VPA DD has been revised to show Rwanda and Southern Province more clearly.

Documentation provided by project participant

VPA-DD

VVB assessment	Date: 14/07/2021
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The revised VPA-DD has been submitted by the CME to depict Rwanda and the southern province more clearly.

FAR#03 closed.

FAR ID	04	Section no.	E.1	Date : 01/07/2021
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Description of FAR

A more detailed summary of economic, social and environmental impacts of the project shall be provided in the Local Stakeholder Consultation Report (LSCR) and will be checked by the VVB at the time of validation.

Project participant response	Date : 04/07/2021
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A more detailed summary of economic, social and environmental impacts of the VPA has been provided in Section A.3 of the LSCR. The summary is based on safeguarding principles assessment and SDG outcomes assessment.

Documentation provided by project participant

Local Stakeholder Consultation Report

VVB assessment	Date: 14/07/2021
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The CME has now provided a detailed summary of economic, social and environmental impacts related to the safeguarding principles under Section A.3 of the Draft Local stakeholder consultation report.
FAR#04 closed.

FAR ID	05	Section no.	D.12	Date : 01/07/2021
Description of FAR				
As the stakeholder consultation has not been carried out (due to COVID-19) and has been currently postponed, hence the filled stakeholder consultation report shall be submitted and shall be checked at the time of validation. Especially, the PD shall describe in LSCR as how the stakeholder feedback round has been carried out for the project activity. Whether all the stakeholders invited to the first stakeholder consultation would be invited for further comments during stakeholder feedback round. It shall be checked during the validation whether the SFR followed all the relevant GS4GG rules/guidelines. Hence all the relevant information shall be included in the Consultation report.				
Project participant response				Date : 04/07/2021
The stakeholder consultation meeting was postponed again due to the new lockdown policy started from 23/06/2021 in Rwanda. As per Paragraph 2.1.1 of "COVID-19: Interim Measures (Version 4)", the stakeholder consultation meeting will be held once the lockdown is finished. The stakeholder feedback round was started on 18/05/2021 and will be finished on 17/07/2021. The related information was publicized on http://www.icebergchina.com/contents/86/233.html for public consultation. All the invitees of stakeholder consultation meeting were invited for stakeholder feedback round. The related information has been provided in Section E.2 of the local stakeholder consultation report.				
Documentation provided by project participant				
Local stakeholder consultation report				
VVB assessment				Date: 14/07/2021
The stakeholder consultation meeting could not be conducted due to several Covid related restrictions in Rwanda. However, in line with para 2.1.1 of "COVID-19: Interim Measures (Version 4)", "The 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 initiated a stakeholder feedback round on 18/05/2021 which will be concluded by 17/07/2021. The CME has shared a public link for all the stakeholders to record their comments and a detailed stakeholder consultation report including all the invitation list has also been submitted by the CME. It was confirmed during the remote audit that the LSC shall be conducted as soon as the Covid situation eases in Rwanda.				
FAR#05 closed.				

FAR ID	06	Section no.	D.3	Date : 01/07/2021
Description of FAR				
The operational lifetime shall be justified with relevant evidence, which shall also be checked at the time of validation.				
Project participant response				Date : 04/07/2021
The lifetimes of the hand pump, water disinfectant and water disinfectant dispenser have been stated in Section A.3 of the VPA-DD. The specifications of the hand pump, water disinfectant and water disinfectant dispenser (the bucket) have been provided to the VVB.				
Documentation provided by project participant				
VPA-DD The specifications of the hand pump, water disinfectant and water disinfectant dispenser (the bucket)				
VVB assessment				Date: 14/07/2021
The lifetime of both the disinfectant bucket (15 years) and the chemical disinfectant (24 months) has been cross-checked from the manufacturer's specifications submitted by the CME.				
FAR#06 closed.				

Table 2. CL from this verification

CL ID	01	Section no.	D.3	Date	01/07/2021
Description of CL					
The VPA-DDs mention Guangzhou Iceberg Environmental Consulting Services Co., Ltd. As the VPA Implementer. However, according to Section B.7.3. of VPA-DD "ARDE is in charge of the implementation of the monitoring plan and reporting to the CME. The executive director of ARDE is responsible for supervising the whole monitoring procedure". CME shall clarify the role of Association Rwandaise pour le Développement Endogène (ARDE) in the implementation of the VPAs.					
Project participant response					Date : 05/07/2021
ARDE is also VPA implementer. The Key project information and Appendix 2 of the VPA-DD have been revised.					
Documentation provided by project participant					
VPA-DD					
VVB assessment					Date : 14/07/2021
The CME has now confirmed that Rwandaise pour le Développement Endogène (ARDE) is a VPA Implementor for the VPA 01-06 and a countersigned contractual agreement has also been checked to confirm the role assigned to Rwandaise pour le Développement Endogène (ARDE) in implementing the activities of the VPAs. CL#01 closed.					

CL ID	02	Section no.	D.3.1.	Date	01/07/2021
Description of CL					
For the provision "Conditions to avoid double accounting of GHG emission reductions or net anthropogenic GHG removals", CME shall clarify if the GPS coordinates will be captured, and a unique serial number will be provided to each maintained borehole in order to ensure tracking of double counting in the future.					
Project participant response					Date : 05/07/2021
Each borehole will be identified with unique GPS coordinates of its location and a unique serial which enables the unique identification of the borehole to avoid double counting. The related content has been added in Section A.1.1 of the VPA-DD.					
Documentation provided by project participant					
VPA-DD					
VVB assessment					Date : 14/07/2021
For the provision to avoid double counting, it has been confirmed that the GPS coordinates shall be captured during the verification of VPAs included in the PoA and a unique serial number shall be provided to each borehole for proper identification and elimination of double counting. CL#02 closed.					

CL ID	03	Section no.	D.3	Date	01/07/2021
Description of CL					
The VPA-DDs under Section A.3 mention "The lifespan of the water disinfectant dispenser is 5 years". CME shall clarify how this lifetime is determined since the submitted specification for the disinfectant mentions the shelf life to be 24 months.					
Project participant response					Date : 05/07/2021
The lifespan of the most representative water disinfectant is 24 months while that of water disinfectant dispenser (the bucket) is 15 years. The specification of the most representative water disinfectant dispenser (the bucket) has been provided to the VVB. The related content has been revised in Section A.3 of the VPA-DD.					
Documentation provided by project participant					
VPA-DD The specification of the water disinfectant dispenser (the bucket)					
VVB assessment					Date : 14/07/2021

It has now been clarified from the manufacturer's specifications that the operational lifetime of the disinfectant bucket is 15 years and that of the chemical disinfectant is 24 months. Section A.3 of the revised VPA-DD has been updated accordingly to capture this information. CL#03 is now closed.

CL ID	04	Section No.	D.3.1	Date : 27/07/2021
Description of CL				
The VPA-DDs mention "Chemical disinfection will be applied in case that water quality cannot meet the requirements after borehole maintenance through water quality test conducted by local accredited lab. The CME shall clarify how it will check water is not up to water quality standard at the time of installation? How will this be monitored for all the hand pumps?				
Project participant response				Date : 28/07/2021
After maintenance of boreholes, water samples from boreholes will be sent to local accredited lab for testing. Then every quarter water samples will be sent to local accredited lab for testing. These are in line with Section A3.3 E of Annex 3 of the applied methodology (Page 51) and stated in "Quality of the treated water" Form in Section B.7.1 of the VPA-DD. If the water quality of a borehole cannot meet the related standard in any test illustrated above, chemical disinfection will be applied for improving water quality. The related contents have been revised in Section A.1 and A.1.1 of the VPA-DD.				
Water samples will be collected from boreholes through hand pumps installed in the boreholes as per "Water quality standard" part in Section A3.3 E of Annex 3 of the applied methodology (Page 52). Sampling will be applied during this process as per Section B.7.2 of the VPA-DD.				
Documentation provided by project participant				
X				
VVB assessment				Date: 28/07/2021
It has now been clarified that when the borehole maintenance is complete, water samples from boreholes will be sent to local accredited lab for testing. Thereafter, water testing will be conducted quarterly and sent to local accredited lab for testing. This is in line with Section A3.3 E of Annex 3 of the applied methodology and has also been included as a monitored parameter "Quality of the treated water". If the water quality of a borehole fails to meet the related standard in any test illustrated above, chemical disinfection will be applied for improving water quality.				
CL#04 is now closed.				

Table 3. CAR from this verification

CAR ID	01	Section no.	D.3.1.	Date : 01/07/2021
Description of CAR				
1. The submitted VPA-DD for VPA 01-06 do not have any information related to VPA Eligibility criteria under GS4GG as mandated under paragraph 3.1.1 of GS4GG Principles and Requirements. 2. No information has been provided under Appendix II of the VPA-DDs for the entity "Association Rwandaise pour le Développement Endogène (ARDE)".				
Project participant response				Date : 06/07/2021
1. The related content has been added in Section A.1.1 of the VPA-DD. 2. The information of ARDE has been added in Appendix II of the VPA-DD				
Documentation provided by project participant				
VPA-DD				
VVB assessment				Date: 14/07/2021

1. Section A.1.1 of the VPA-DD has now been updated to include information related VPA Eligibility criteria under GS4GG as mandated under paragraph 3.1.1 of GS4GG Principles and Requirements.
2. Appendix II of the VPA-DD has been updated to include contact information for the VPAI Association Rwandaise pour le Développement Endogène (ARDE)".
CAR#01 closed.

CAR ID	02	Section no.	D.8.1.	Date :	01/07/2021
Description of CAR					
CME has applied an fNRB default value of 0.98 for the VPAs to be included in Rwanda. However, the CDM source used for the value refers to an obsolete document which is no longer valid. Furthermore, the default value provided under https://cdm.unfccc.int/DNA/fNRB/index.html , also expired on 20/05/2017. The CME shall clarify how the applied value is justified.					
Project participant response					Date : 05/07/2021
The CME used latest data to re-calculate the fNRB as per CDM Tool 30 "Calculation of The fraction of Non-renewable Biomass" (Version 03.0). The related calculation process and reference documents have been sent to the VVB for validation. The related part has been revised in Section B.6.2 of the VPA-DD.					
Documentation provided by project participant					
VPA-DD fNRB calculation form Supporting documents for fNRB calculation					
VVB assessment					Date: 14/07/2021
The CME has now updated the calculation for fNRB using CDM Tool 30 "Calculation of the fraction of Non-renewable Biomass" (Version 03.0) and applied the values of parameters from the latest vintages. The approach followed by the CME is in line with "Calculation of the fraction of Non-renewable Biomass" (Version 03.0) and if found to be correct. CAR#02 closed.					

CAR ID	03	Section No.	D.8.1.	Date :	15/07/2021
Description of CAR					
Following inconsistencies were reported during the remote audit conducted on 09/07/2021: 1. The baseline user Niragire Florence (Borehole number: 2; household number: 83) mentioned that the baseline water source is Borehole and could not exactly mention about the source of borehole water. The response has been recorded as "river/lake" in the baseline survey form. 2. The baseline user "Uwitije Valens (Borehole number 272; household number: 5) mentioned there are 5 members in the family. However, the same response has been recorded as 7 in the baseline survey form.					
Project participant response					Date : 20/07/2021
1. We confirmed with Niragire Florence that she sometimes fetches water from a borehole in a neighbouring village (which is more than 1 km from her home), sometimes from a river. So, we have revised the baseline survey form and data recording form accordingly. Although the applied methodology does not indicate if the water source is safe or not in this case, we take it into account for C_j due to conservativeness. So, the VPA-DD and SDG outcomes calculation form have been revised accordingly. 2. The data and I_b have been revised accordingly in VPA-DD, baseline survey form, data recording form and SDG outcomes calculation form.					
Documentation provided by project participant					
VPA-DD Baseline Survey Form Data Recording Form SDG Outcomes Calculation Form					
VVB assessment					Date: 25/07/2021

1. The VPA-DD and SDG outcome calculation sheet has now been revised to make the information of the baseline user Niragire Florence (Borehole number: 2; household number: 83) consistent with observations during RSV.

2. The VPA-DD and SDG outcome calculation sheet has now been revised to make the information of The baseline user "Uwitije Valens (Borehole number 272; household number: 5) consistent with observations during RSV.

The inconsistencies observed between the RSV observations and the baseline survey forms affected the values for the SDG impacts, but these were individual typographical errors and it has been ensured that the data is free from errors.

CAR#03 is now closed.

CAR ID	04	Section No.	D.8.1.	Date :	15/07/2021
Description of CAR					
Following inconsistencies were observed between the Date recording form and the baseline survey sheet provided:					
1. Cell No. B116-The HH number is inconsistent with the Survey form. As per survey form it should be 114 but it is given as 144 in the excel sheet. 2. Cell No. B7, B8- There is repetition of the same household number (27 & 30) under different person name. Please review the cell no. (B7 & B25) AND (B8 & B26) 3. Please review the comments mentioned in the excel sheet under cell: AN103, AH103, AN104, AJ104, AJ106, AN107, AM113, AN113, AH121, AJ121, AH122 4. Please review all the values mentioned in the given cell number along the row. AH105, AH108, AH109, AH110, AH112, AH116, AH114, AH115, AH117, AH118, AH119 and AH120					
Project participant response					Date :
1. Cell No. B116-The HH number has been corrected as per the survey form. 2. Household No. 27 and 30 were both chosen during sampling for Borehole No. 2 (with 156 households) and 69 (with 173 households). The related sampling process has been provided as evidence. 3. Cell AN103, AH103, AN104, AJ104, AJ106, AN107, AM113, AN113, AH121, AJ121 and AH122 have been corrected as per the baseline survey form. I_b and T_b have also been revised accordingly. 4. Cell AH105, AH108, AH109, AH110, AH112, AH116, AH114, AH115, AH117, AH118, AH119 and AH120 have been corrected as per the baseline survey form. I_b has also been revised accordingly.					20/07/2021
Documentation provided by project participant					
VPA-DD Data Recording Form SDG Outcomes Calculation Form Sampling Process for Borehole No.2 and 69.					
VVB assessment					Date:
1. Cell No. B116-The HH number is now consistent with the Survey form. 2. It has now been confirmed from sampling evidence that both Household No. 27 and 30 were both chosen during sampling for Borehole No. 2 (with 156 households) and 69 (with 173 households) 3. The comments mentioned in the excel sheet under cell: AN103, AH103, AN104, AJ104, AJ106, AN107, AM113, AN113, AH121, AJ121, AH122 have been taken into consideration and the values have been revised accordingly. 4. All the values mentioned in the given cell number along the row. AH105, AH108, AH109, AH110, AH112, AH116, AH114, AH115, AH117, AH118, AH119 and AH1 have been reviewed and revised accordingly. The inconsistencies observed between the SDG calculation sheet and the baseline survey forms affected the values for the SDG impacts, but these were individual typographical errors and it has been ensured that the data is free from errors. CAR#04 is now closed.					25/07/2021

Table 4. FAR from this verification

FAR ID	01	Section No.		Date :	DD/MM/YYYY
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Description of FAR	
During the verification the VVB shall check that the emission reductions are not claimed for the case when the borehole water is used for any other purpose than the above stated consumption (limited to drinking, cooking and basic personal hygiene).	
Project participant response	Date : DD/MM/YYYY
X	
Documentation provided by project participant	
X	
VVB assessment	Date: DD/MM/YYYY
X	

FAR ID	02	Section No.		Date : 29/03/2022
Description of FAR				
The PD shall submit all 'Carbon Transfer Form' in order to confirm on the full and uncontested legal ownership of the carbon rights produced by the project at the time of verification.				
Project participant response				Date : DD/MM/YYYY
X				
Documentation provided by project participant				
X				
VVB assessment				Date: DD/MM/YYYY
X				

FAR ID	03	Section No.		Date : 29/03/2022
Description of FAR				
The PP is requested to submit all the " <i>Donation and carbon transfer agreements</i> " and evidence that the people who signed the agreements were authorized by the whole communities during verification.				
Project participant response				Date : DD/MM/YYYY
X				
Documentation provided by project participant				
X				
VVB assessment				Date: DD/MM/YYYY
X				

FAR ID	04	Section No.		Date : 29/03/2022
Description of FAR				
The project developer shall conduct the physical stakeholder consultation meetings when the COVID-19 situation eases.				
Project participant response				Date : DD/MM/YYYY
X				
Documentation provided by project participant				
X				
VVB assessment				Date: DD/MM/YYYY
X				

FAR ID	05	Section No.		Date : 29/03/2022
Description of FAR				
The PP is requested to provide the evidence for monitoring of number of actual users for each borehole. The PP shall monitor the accessibility of local people to all nearby boreholes from the proposed project and other existing boreholes.				
Project participant response				Date : DD/MM/YYYY

X	
Documentation provided by project participant	
X	
VVB assessment	Date: DD/MM/YYYY
X	