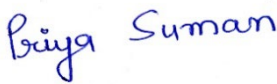



Carbon
 — CHECK —

Validation report form for renewal of crediting period for
 CDM project activities
 (Version 03.0)

BASIC INFORMATION

Title and GS4GG reference number of the project activity	Water for Climate Rwanda GS 6598
Number and duration of the next crediting period	2 nd Crediting Period Duration: 01/03/2024 to 28/02/2029
Version number of the validation report	1.0
Completion date of the validation report	04/03/2024
Version number of PDD to which this report applies	Version – 5.0, dated 04/03/2024
Project participants	Water Access Rwanda (WAR) Mkaarbon safari
Host Party	Republic of Rwanda
Applied methodologies and standardized baselines	Methodology for Emission Reductions from Safe Drinking Water Supply, version 1.0
Mandatory sectoral scopes	3 (TA 3.1)
Conditional sectoral scopes, if applicable	N/A
Estimated amount of annual average GHG emission reductions or GHG removals by sinks in the next crediting period	15,675 tCO ₂ e
Name and UNFCCC reference number of the VVB	Carbon Check (India) Private Ltd., E-0052
Name, position and signature of the approver of the validation report	 Priya Suman, Compliance Officer

SECTION A. Executive summary

Purpose and general description of the Project:

The Project developers CO₂ logic has appointed the VVB, Carbon Check (India) Private Ltd. /11/ to perform an independent validation of the Design Certification Renewal and Design change of the Gold Standard small scale Project Activity "Water for Climate Rwanda" in the host country Republic of Rwanda (hereafter referred to as "project activity"). This report summarises the findings of the validation of the Design Certification Renewal of the project and as well as the design change, performed on the basis of Gold Standard criteria for registration, UNFCCC criteria for the CDM, as well as criteria given to provide for consistent project operations, monitoring and reporting. This report contains the findings and resolutions from the validation and a validation opinion.

As per the PDD, the project activity "Water for Climate Rwanda" consist of repair of damaged and defunct boreholes or the drilling of new boreholes to reduces the need for households to boil water as a means of purification or to consume unsafe water being the scenario prior to implementation of the project activity. The aim of the project activity is to provide safe drinking water to communities in the districts of Rusizi, Ngoma, Rwamagana, Bugesera, Kirehe and Nyagatare.

Project activity will reduce emission reduction of 15,675 tonnes of annual CO₂e during the 5-year renewal crediting period. The project results in reductions of CO₂ emissions that are real, measurable and give long-term benefits to the mitigation of climate change. It is demonstrated that the project activity is not a likely baseline scenario. Emission reductions attributable to the project are hence additional to any that would occur in the absence of the project in accordance with the Gold Standard requirements for additionality.

The purpose of a validation is to have a thorough and independent assessment of the proposed project activity against the applicable Gold standard and CDM requirements, in particular, the project's baseline, monitoring plan and the project's compliance with relevant UNFCCC and Gold standard for Global Goals criteria. These are validated in order to confirm that the project design, as documented, is sound and reasonable and meets the identified criteria. Validation is a requirement for all Gold Standard for Global Goals Voluntary projects and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of voluntary emission reductions (VERs).

Location: The project is implemented in the communities in the districts of Rusizi, Ngoma, Rwamagana, Bugesera, Kirehe and Nyagatare located in the Republic of Rwanda.

Scope of Validation:

The validation scope is to review the updated GS-PDD /01/ against the GS4GG principles and requirements /B02/. Validation of the renewal of crediting period is a requirement and it is seen as necessary to provide assurance about:

- a) Changes in the Project as related to the GS General Eligibility Criteria
- b) Incorporation of any relevant updates to the Gold Standard Requirements
- c) Re-definition of Baseline Scenario and any impact of change on the Eligibility Principles, Criteria and Requirements
- d) Any Gold Standard activity, product and methodology-specific Requirements
- e) Demonstration of Ongoing Financial Need
- f) The impact of new relevant national and/or sectoral policies and circumstances on the baseline;
- g) The correctness of the application of an approved baseline methodology for the determination of the continued validity of the baseline or its update, and the estimation of emission reductions for the applicable crediting period.

Validation process:

Validation is conducted using Carbon Check (India) Private Limited procedures in line with the GS requirements and principles and applying standard auditing techniques. The validation assessment involved a document review of relevant documentation, the interview and/or remote audit assessment

and reporting. Validation is not meant to provide any consultancy toward the project developers. However, stated request for clarifications and/or corrective actions may have provided input for improvement of the project activity.

Conclusion:

Carbon Check (India) Private Limited appointed by CO₂ logic on 02/02/2024 /11/ has performed the validation of the renewal of crediting period and design change of the GS project (GS 6598) 'Water for Climate Rwanda', with regard to the relevant GS principles and requirements /B02/.

In conclusion, it is Carbon Check (India) Private Limited's opinion that the GS project (GS 6598) 'Water for Climate Rwanda' as described in the updated PDD version 5.0 of 04/03/2024, meets all relevant GS requirements and principles /B02/, and correctly applied the baseline and monitoring methodology 'Methodology for Emission Reductions from Safe Drinking Water Supply' version 1.0 /B01/.

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	Interview(s)	Validation findings
1.	Team Leader	IR	Anand	Amit	CC IPL	X	NA	NA	X
2.	Technical Expert	IR	Nifiya J	Jeni Miraclin	CC IPL	X	X	X	X
3.	Local Expert	ER	Emmanuel	Ndahiro	CC IPL	NA	X	X	NA

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

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	C	Indumathi	CC IPL
2.	Approver	IR	Suman	Priya	CC IPL

SECTION C. Means of validation

C.1. Desk/document review

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The updated GS PDD /01/ version 1.0 of 09/02/2024, in particular the applicability of the methodology /B01/, the baseline determination, the estimated emission reductions calculation /02/, the sustainability indicators, were assessed as part of the validation. All documents reviewed or referenced during the validation are listed in Appendix 3.

C.2. On-site inspection

No on-site inspection was conducted. VVB team has checked the site visit requirements in GS requirements and concluded not conduct a site visit for Renewal of Crediting Period as per paragraph 3.2 of the Site Visit and Remote Audit Requirements and Procedures, Version 2.0. Desk Review of the submitted PDD (Version 1.0, dated 09/02/2024) /01/ and the supportive evidence was validated by the VVB.

Sl. No.	Identification of potential risks	Mitigation measures	Risk Mitigated
1.	Project technology and site could not be verified accurately.	During remote interview by means of audio/ video calls (as feasible) and real time photographs and accessing the video monitoring of sites at the time of remote inspection, the location and type of the projects can be checked. A FAR can also be raised to check the actual project implementation during ex-post verification.	☒ Yes ☐ No
2	Project baseline in cases where the pre-project scenario is the baseline.	This risk was mitigated by conducting remote interview via audio/video call with households to validate the baseline.	☒ Yes ☐ No
3	Risk related to additionality of the project not appropriately assessed due to site specific information.	This risk was mitigated by conducting remote interview via audio/video call with CME representatives and Audit/assessment of documents and records by means of remote access, either synchronously (in real time) or asynchronously (when applicable) of the cost analysis documents such as Total capital expenses including extension expenses and Annual operational expenses.	☒ Yes ☐ No
4.	Risk related to assessing the LSC meeting with relevant authorities & with relevant stakeholders.	This risk was mitigated by conducting remote interview via audio/video call with relevant authorities & relevant stakeholders' representatives to validate the LSC procedure.	☒ Yes ☐ No

Duration of remote audit inspection: 23/02/2024 & 26/02/2024				
No.	Activity performed on-site	Site location	Date	Team member
1.	Project activity, technical specifications	Remote Audit	23/02/2024 & 26/02/2024	Jeni Miraclin Nifiya J Ndahiro Emmanuel
2.	Baseline Scenario			
3.	Project Boundary, Applicability of methodology			
4.	Monitoring plan, monitoring, and measuring systems			
5.	Data management and reporting, QA/QC systems			
6.	End user interview			

C.3. Interviews

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Garcia	Carlos	CO ₂ Logic	23/02/2024 & 26/02/2024	Opening meeting, project implementation,	Jeni Miraclin Nifiya J

2.	Kamau	Julius	South Pole Consultant	23/02/2024 & 26/02/2024	operation and maintenance, roles, and responsibilities, Baseline studies, Crediting period, FNRB, baseline scenario, Sampling, project design, Social and Environmental Impacts, Compliance with relevant laws, closing meeting etc.	Ndahiro Emmanuel
3.	Mutabazi	Janvier	Executive Assistant	23/02/2024 & 26/02/2024	Project Implementation, Project description, Sampling, Grievance mechanisms, closing meeting etc	
4.	Kwizera	Christella	CEO, WAR	23/02/2024 & 26/02/2024		
5.	Hategekimana	Vanessa	COO, WAR	23/02/2024 & 26/02/2024		
6.	Tuyizere	Emmanuel	Kirehe, Regional Technician	23/02/2024 & 26/02/2024		
8.	Uwifashije	Adele	Local Stakeholder	26/02/2024	Dates of LSC, project benefits, project overview, grievance system, feedback	
9.	Gasangwa	Ildebrand	Local Stakeholder	26/02/2024		

Sl. no	Last Name	First Name	Date	Affiliation	Audit team member
/01/	Venancie ¹	Nyirahabineza	23/02/2024	Beneficiary	Jeni Miraclin Nifiya J Ndahiro Emmanuel
/02/	Emmanuel	Ngizwenayo	23/02/2024	Beneficiary	
/03/	Martin ²	Uwihanganye	23/02/2024	Beneficiary	
/04/	Console ³	Mukashyaka	23/02/2024	Beneficiary	
/05/	Theogene	Munyamahoro	23/02/2024	Beneficiary	
/06/	Vestine	Nyirahabineza	23/02/2024	Beneficiary	
/07/		Kanyamuhanda	26/02/2024	Beneficiary	
/08/	J Pierre	Nzabondora	26/02/2024	Beneficiary	

C.4. Sampling approach

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PD has proposed simple random sampling plan using 90/10 as confidence/ precision. This is in line with the applied methodology /B01/. The sample size of each parameter is determined following guidelines for Sampling and Surveys for CDM Project Activities and Programme of Activities, version 4.0 (EB86, Annex 4) /B04/.

¹ Daughter: Uzamukunda Aderine was interviewed

² Wife: Nyirahabimana was interviewed.

³ Son: Iradukunfa Samuel was interviewed

In line with the paragraph 26 of the “Standard for Sampling and surveys for CDM Project Activities and Programme of Activities, version 09.0” /B04/, the validation team has applied sampling approach on the baseline survey as part of validation to determine baseline, a representative baseline survey /09/ was conducted by the Project Developer. The validation team has chosen sampling in accordance with paragraph 28 of the “Standard for Sampling and surveys for CDM Project Activities and Programme of Activities, version 09.0” /B04/.

Applying paragraph 39 (c) of the “Standard for Sampling and surveys for CDM Project Activities and Programme of Activities, version 09.0” /B04/, a sample size of 8 households was chosen (with no discrepant records). A sample size of 8 was determined, based on AQL of 1.0% and UQL of 20%; producer risk of 10% and consumer risk of 20% each in determining the VVB’s sample size. Acceptance number (c) thus determined for the sample is 0. However, VVB interviewed 8 samples from the baseline survey done by Project Developer.

The information provided in the baseline survey /09/, has been cross checked during the remote audit /07/. As a part of sampling, the Validation team could confirm the baseline survey data /09/ with no discrepant records. Thus, PD’s set of records has been accepted in line with paragraph 33 of the “Standard for Sampling and surveys for CDM Project Activities and Programme of Activities, version 09.0” /N04/.

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

Area of validation findings	No. of CL	No. of CAR	No. of FAR
Compliance with PDD form	CL 01, CL 02, CL 03, CL 05	CAR 01, CAR 02, CAR 03, CAR 05	-
Application and selection of methodologies and standardized baselines	CL 06	-	-
Validity of original baseline or its update	CL 07	CAR 04, CAR 08	-
Estimated emission reductions or net anthropogenic removals	-	CAR 07, CAR 10	-
Validity of monitoring plan	CL 08	-	-
Crediting period	-	CAR 09	-
Project participants	-	-	-
Specific GS scope on Design Certification Renewal	CL 04	CAR 06, CAR 11	-
Post-registration changes	-	-	-
Stakeholder Consultation	-	-	-
Others (please specify)	-	-	-
Total	08	11	-

SECTION D. Validation findings

D.1. Compliance with PDD form

Means of validation	Desk Review and Interview
Findings	CL 01, CL 02, CL 03, CL 05, CAR 01, CAR 02, CAR 03, CAR 05 was raised and closed satisfactorily. Kindly refer appendix 4 for further information.
Conclusion	CC IPL confirms that the updated version 05.0 of 04/03/2024 /01/ and later versions are prepared using GS PDD template version 01.2 of 14/10/2020 which is the latest available template and completed with relevant information as per the template requirement.

D.2. Application and selection of methodologies and standardized baselines

Means of validation	Desk Review and Interview
Findings	CL 06 was raised and closed satisfactorily. Kindly refer appendix 4 for further information.

Conclusion	The project applied the approved methodology Emission reduction from safe drinking water supply, version 1.0 /B01/. The applicability conditions of the methodology are discussed below: Applicability Condition 1: Eligible household water treatment technologies (HWT), institutional water treatment technologies (IWT), and community level water treatment technologies (CWT) include bleach/chlorine, water filter (ceramic, sand, composite, membrane, etc.), UV disinfection, etc. VVB's Assessment – VVB has confirmed that the project activity does not include the implementation of any purification system, however during remote audit /07/ and review of PDD /01/, validation team confirms that the project activity has carried out WQT /19/ by the water Access Rwanda. Applicability Condition 2: Eligible community water supply technologies (CWS) include new installation of new borehole hand-pumps, borehole hand-pumps rehabilitation, solar powered drinking water pumps, etc. Water pumps powered by fossil-fuel engines are not eligible, with the exception of backup fossil-fuel engines that are used for no more than 10% of operating hours. VVB's Assessment – The validation team based on the review of the PDD /01/ and remote audit /07/ confirms that the project activity involves the rehabilitation of boreholes hand-pumps and solar powered water pumps. PD will provide the operating hours of the back-up fossil fuel and fuel purchase to confirm that the back-up fossil fuel engine is not used more than 10%. Applicability Condition 3: All projects involving CWT and CWS technologies must also include ongoing maintenance and repair of the project technology. VVB's Assessment – The validation team based on review of PDD /01/ and remote audit it is confirmed that the project activity involves rehabilitation of boreholes. A continuous monitoring of system functionality has been implemented by PD with the maintenance records /20/. The same has been cross validated by the VVB. Applicability Condition 4: Where the project involves the rehabilitation of an existing technology, the project developer shall provide evidence that the existing technology is non-operational and that there is no planned maintenance or repair for at least 3 months after the date it became non-operational. VVB's Assessment – The validation team based on review of PDD /01/ and remote audit /07/ confirms that the as per the MoU agreement signed between districts /14/ and the maintenance records /20/ there is no planned maintenance or repair for at least 3 months after the date it become non-operational. Applicability Condition 5: This methodology allows for project activities to include safe water treatment and/or supply technologies implemented for end-users in households, and/or commercial premises such as shops or institutional premises including half or full day/boarding schools, prisons, army camps & refugee camps. VVB's Assessment – The validation team based on review of review of PDD /01/ confirmed that the project activity included community water supply technologies (CWS) only, not in households water treatment technologies (HWT), or Institutional water treatment technologies (IWT). The project activity involves rehabilitation and maintenance of
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borehole pumps as described in section A.3 of the PP. Hence no other treatment technologies is included.

Applicability Condition 6:

In cases where the safe water is retrieved at the CWT or CWS location, the water in its improved form shall be available within a distance of 1 km or less from the end users, as demonstrated by satellite imaging or GPS coordinates of each CWT or CWS location. Alternatively, as a proxy, a total collection time of 30 minutes or less for a round trip, including queuing, using the travel modes of walking or pedaling may be demonstrated (parameter SDWS 1).

VVB's Assessment –

The distance that each household is 1km from the CWS system. This has been confirmed with the usage and project survey /09/ submitted by PD also with the GPS coordinates recorded for each CWS.

Applicability Condition 7:

Project technology performance level (CWT and CWS): For each individual CWT or CWS, it shall be demonstrated at the start of each crediting period with water quality testing reports that the water directly supplied by the project water technology/source achieves both:

i. microbial quality in line with either (i) national standards or guidelines for microbial quality of drinking water, or in the absence of such requirements, (ii) the guideline values for verification of microbial quality from the Guidelines for drinking-water quality (Table 7.10, WHO, 2017); and ii. Compliance with (i) national standards or guidelines on priority chemical contamination and physical and aesthetic aspects, or in the absence of such requirements, (ii) international standards or guidelines on priority chemical contamination and physical and aesthetic aspects.

VVB's Assessment –

The validation team based on the review of PDD /01/ and WQTs /19/ submitted by PD confirms that the technologies included in the project are tested at the beginning of the crediting period to confirm that water supplying communities with safe water is inline with the methodological requirements.

Applicability Condition 8:

The project must conduct annual water hygiene education campaigns for the end-users.

VVB's Assessment –

The validation team based on the review of PDD /01/ and the training records /21/ confirms that the hygiene campaigns are conducted on yearly basis to upgrade water, hygiene and sanitary facilities to be improved in the villages.

Applicability Condition 9:

A project applying this methodology may make SDG claims if relevant monitoring parameter(s) is included in the monitoring plan to demonstrate and confirm the project's contributions to SDGs.

VVB's Assessment –

The validation team based on the review of PDD /01/ confirms that SDG 13, 5, 6 and 8 will be monitored in this project activity and the SDG impacts are calculated to quantify the project impacts on these SDGs.

Carbon Check (India) Private Ltd. hereby confirms that the selected baseline and monitoring methodology has been approved by the CDM Executive Board, and is applicable to the Project, which complies with all the applicability conditions therein and the selected version is valid at the time of submission of the proposed project activity for renewal of crediting period. It is also confirmed that the methodology is correctly applied by comparing it with the actual text of the applicable version of the selected methodology /B01/.

D.3. Validity of original baseline or its update

Means of validation	Desk Review and Interview
Findings	CL 07, CAR 08 was raised and closed satisfactorily. Kindly refer appendix 4 for further information.
Conclusion	As per para 5.1.47 of Gold Standard for global goals principles & requirement /B02/ 'Re-definition of Baseline Scenario' is required at design renewal. The project developer has included the assessment of the validity of the original baseline as per the tool "Assessment of the validity of the original/ current baseline and update of the baseline at the renewal of a crediting period", Version 03.0.1 /B07/. The tool consists of two steps. The first step provides an approach to evaluate whether the current baseline is still valid for the next crediting period. The second step provides an approach to update the baseline in case that the current baseline is not valid anymore for the next crediting period. Step 1: Assess the validity of the current baseline for the next crediting period. Step 1.1: Assess compliance of the current baseline with relevant mandatory national and/or sectoral policies The project activity complies with all the relevant mandatory national and/ or sectoral policies. There is no new national/ sectoral policies/ legislation/ circumstance that could affect the baseline scenario during renewal of crediting period. Therefore, the relevant policies do not impact the original baseline. Step 1.2: Assess the impact of circumstances. The project activity involves rehabilitation or new drilling of boreholes reduces the need for households to boil water as a means of purification or to consume unsafe water being the scenario prior to the implementation of the project activity. There are no new national/sectoral policies/legislation/circumstance that could affect the baseline scenario during the renewal of the crediting period. There is no change observed in this regard and it can be concluded that the baseline scenario in the previous crediting period has not changed in favor of the project activity and due to financial hurdles. Step 1.3: Assess whether the continuation of use of current baseline equipment(s) or an investment is the most likely scenario for the crediting period for which renewal is requested. The baseline scenario identified at the validation of the project activity was the continuation of the current practice without any investment. The continuation of the current practise does not need any further investment. The technical lifetime of the equipment is 25 years verified by the Operation and Management agreement /14/ submitted by PD. A recent baseline survey and fNRB report /08/ has been carried out to justify that the baseline scenario is not impacted during renewal of crediting period and continuation of pre-defined baseline scenario is most likely scenario for the crediting period for which renewal is requested. Step 1.4: Assessment of the validity of the data and parameter VVB based on the review of the registered PDD /03/ and found that there is change in the methodology /B01/. It is observed that as per the GS notification the Methodology for Emission Reductions from Safe Drinking Water Supply, Version 1.0 /B01/ is more appropriate. In this regard all the default values, emission factors and parameters has been updated as per the current methodology in the revised PDD /01/. The data and parameters applied in the revised PDD /01/ is now assessed in detail by VVB in section D.5 and Appendix 5 of this report. Step 2: Update the current baseline and the data and parameters. Step 2.1. Update the current baseline: Since, the existing baseline scenario is still valid, this step is not applicable. Step 2.2. Update the data and parameters:

	As per the Step 1.4, the data and parameters are updated inline to the updated methodology, hence the parameter fNRB and target population characteristics also been revised. PD has derived the fNRB value as per TOOL 30, version 04.02 /08/ and the baseline survey conducted for 102 households /09/ has been submitted to the VVB and found to be appropriate. Finally, it is concluded that the original baseline scenario is valid and assessment is complete as per “Tool for the assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period v3.0.1 /B07/. Carbon Check (India) Private Ltd. concludes that the original baseline is valid and assessment is done as per methodological tool ‘Tool for the assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period v3.0.1’ /B07/. The assessment meets GS4GG Validation and Verification Standard version 1.0 /B06/ and GS4GG principle and requirements /B02/ paragraph 5.1.47. Moreover, the project falls under ‘GS4GG Community Services Activity Requirements’ and Para 4.1.7 of “Community Service Activity Requirement” /B03/ has not made re-assessment of baseline mandatory for CSA project for first renewal.
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D.4. Estimated emission reductions or net anthropogenic removals

Means of validation	Desk Review and Interview
Findings	CAR 07, CAR 10 was raised and closed satisfactorily. Kindly refer appendix 4 for further information.
Conclusion	<u>Emission Reduction:</u> The emission reduction for the project activity is estimated as per the methodology for Emission Reduction from Safe drinking water supply, version 1.0 as follows: $ER_y = BE_y - PE_y - LE_y$ Where: ER_y Emission reductions in year y (t CO₂e/yr) BE_y Baseline emissions in year y (t CO₂e/yr) PE_y Project emissions in year y (t CO₂e/yr) LE_y Leakage emissions in year y (t CO₂e/yr) <u>Baseline Emission:</u> In line with the applied methodology for Emission Reduction from Safe drinking supply, version 1.0 /B01/ the baseline emission is calculated as below: $BE_y = EF_b \times (1 - C_b - X_{cleanboil,y}) \times Q_y \times M_{q,y}$ Where: EF_b Emission factor for the use of fuel to obtain safe water in the baseline (tCO₂e/L) BE_y Baseline emissions from the use of fuel to obtain safe water in the baseline C_b Proportion of project end-users who in the baseline were already using that did not require boiling (%) X_{cleanboil,y} Proportion of project end-users that boil safe water in the project year Q_y Quantity of safe drinking water provided by the project in year y (L) M_{q,y} Modifier for the water quality in year y

The following is used to calculate the EF_b use of fuel to obtain safe water:

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

Where:

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

The specific energy required to boil water using the baseline technology ($SE_{w,b,y}$) is determined as follows, by calculating the energy input required to obtain 1 L of boiling water, including boiling and vaporization losses¹⁶, taking into account default or measured stove efficiency.

$$SE_{w,b,y} = 360.83 / \eta_{wb}$$

Where:

360.83	Default amount of energy required to obtain 1 L of water after 5 minutes using a first principles approach ¹⁷ kJ/l
η_{wb}	Efficiency of the stoves for baseline water boiling (%). Weighted average of different types.

Using the above-mentioned formula the estimated baseline emission is found to be 15,679 tCO₂ for the annual average over the crediting period.

$BE_y = 15,679$ tCO₂ (Annual average over the crediting period).

Project Emission:

In line with the applied methodology for Emission Reduction from Safe drinking water supply, version 1.0 /B01/ the project emission is calculated as below:

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

Where:

PE_y	Project emissions in year y (tCO ₂)
$PE_{ff,p,y}$	Project emissions from fossil fuel use in year y (tCO ₂)
$PE_{ec,p,y}$	Project emissions from electricity use in year y (tCO ₂)

Project emissions from fossil fuel use are determined as follows:

$$PE_{ff,p,y} = \sum P_{p,f,y} \times NCV_f \times EF_f$$

Where:

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

Project emissions from electricity use are not applicable here, as no water point consumes electricity from grid.

	PE_y= 4 tCO₂. <u>Leakage Emission:</u> In line with the applied methodology for Emission Reduction from Safe drinking supply, version 1.0 /B01/ the leakage emission is calculated as below: PD has opted for paragraph 3.8.2.3 of the applied methodology, where leakage investigation will be conducted every two years. LE_y= 0 tCO₂. (Expected) Therefore, the emission reduction achieved as annual average over the crediting period is 15,675 tCO₂e. Carbon Check (India) Private Ltd. confirms, the updated PDD correctly lists assumption and data used by the PD for estimating emission reduction including their references and sources. Source of data and assumptions are correctly quoted and interpreted in the updated PDD. All values used in the updated PDD are considered reasonable in the context of the proposed GS project activity. The baseline methodology and corresponding tools have been correctly applied to calculate project, baseline and leakage emissions, and emission reductions. All estimates of the baseline emissions can be replicated using the data and parameter values provided in the updated PDD /01/.
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D.5. Validity of monitoring plan

Means of validation	Desk Review and Interview
Findings	CL 08 was raised and closed satisfactorily. Kindly refer appendix 4 for further information.
Conclusion	The monitoring plan in the updated PDD is consistent with the latest methodology, for Emission Reduction from Safe drinking supply, version 1.0 /B01/. Validation team confirmed from the document review that the list of parameters including the means of monitoring is described in accordance with the applied methodology. Following are the parameters to be monitored: a) Ongoing water quality indicated as the fraction of the samples that pass microbial quality standard requirements specified in relevant microbial quality standard for drinking water of the host country. In case a national standard is not available, the water quality shall comply with WHO Guideline values for verification of microbial quality i.e., all water directly intended for drinking must not have detectable E.Coli in any 100 ml sample i.e., less than 1 Colony Forming Unit (CFU) of E.Coli /100ml –the parameter shall be monitored annually following water quality testing over a minimum sample size as per the applied methodology. b) Proportion of project end-users that boil safe (treated, or from safe supply) water after installation of project technology in year y- the parameter shall be monitored annually based on the Annual survey as per the applied methodology. c) Monitored quantity of safe water provided by the CWS/ CWT project in year y- -the parameter shall be monitored continuously with the meters installed on the water points. d) Volume of drinking water per person per day for premises type <i>p</i> -the parameter shall be monitored every two years following the water consumption field test as per the applied methodology. e) Number of individuals per premises type <i>p</i> in the project boundary in year y -the parameter shall be monitored annually based on the annual monitoring surveys as per the applied methodology. f) Number of premises type <i>p</i> served by the project in year y - the parameter shall be monitored annually based on the survey of the premises within 1 km distance in the project survey as per the applied methodology.

	g) Days the project technology is operational for end-users in premises p in year y -the parameter shall be monitored annually taking into the account the start and end date of the monitoring period as per the applied methodology. h) Usage rate of the project technology by premises type p during year y- the parameter shall be monitored annually following the field survey as per the applied methodology. i) Quantity of fossil fuel f that is consumed in the project during year y -the parameter shall be monitored continuously based on the fuel invoices and used in the calculation of emission reduction. j) Quantity of electricity that is used by the project during the year y- the parameter shall be monitored continuously based on invoice/ receipt of the grid electricity consumed for pumping water in a standpipe system. k) Leakage emissions during year y -the parameter shall be monitored every two years based on the field survey as per the applied methodology. l) Ratio of the average wage paid to female employees for a specified position, compared to the average wage paid to male employees for the same position- the parameter shall be monitored annually based on the salaries information from the HR department- used in the calculation of SDG 5. m) Population using safely managed drinking water services- the parameter shall be monitored annually based on the end user census- used in calculation of SDG 6. <u>Sampling Plan:</u> PD has opted for random sampling method as discussed in PDD /01/. Out of the boreholes, households will be randomly sampled, complying with the minimum sample size. - Project Survey - Water Consumption Field Test - Water Quality testing - Usage Survey. Thus, the validation team confirms that the monitoring plan and the sampling plan complies with the requirements of the methodology for Emission Reduction from Safe drinking water supply, version 2.0 /B01/, the monitoring plan described are feasible within the project design. The relevant Ex-ante parameters are assessed in the Appendix 05.
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D.6. Validity of the sustainability monitoring plan

Means of validation	Desk Review and Interview										
Findings	No finding was raised.										
Conclusion	Apart from monitoring parameters under SDG 13, parameters pertaining to SDG 5 and SDG 6 are monitored. The monitoring plan of those parameters are discussed below: <table border="1"> <thead> <tr> <th>SDG Indicator</th><th colspan="2">SDG Impact</th><th>Validation Assessment</th></tr> </thead> <tbody> <tr> <td>SDG 5: Gender Equality</td><td>Gender equity</td><td>Wage</td><td> Ratio of the average wage paid to female employees for a specified position, compared to the average wage paid to male employees for the same position. The PD has salaries information from HR department and the samples of pay slip /23/ and the confirmed same by VVB. Hence it is concluded that the indicator is rightly chosen for the project activity and the monitoring is in line with the applied methodology and chosen indicator. </td></tr> </tbody> </table>			SDG Indicator	SDG Impact		Validation Assessment	SDG 5: Gender Equality	Gender equity	Wage	Ratio of the average wage paid to female employees for a specified position, compared to the average wage paid to male employees for the same position. The PD has salaries information from HR department and the samples of pay slip /23/ and the confirmed same by VVB. Hence it is concluded that the indicator is rightly chosen for the project activity and the monitoring is in line with the applied methodology and chosen indicator.
SDG Indicator	SDG Impact		Validation Assessment								
SDG 5: Gender Equality	Gender equity	Wage	Ratio of the average wage paid to female employees for a specified position, compared to the average wage paid to male employees for the same position. The PD has salaries information from HR department and the samples of pay slip /23/ and the confirmed same by VVB. Hence it is concluded that the indicator is rightly chosen for the project activity and the monitoring is in line with the applied methodology and chosen indicator.								

	SDG 6: Clean water and Sanitation	Access to improved source of water	Population using safely managed drinking water services. PD has shared the complete end user census to VVB with annual monitoring frequency. Hence it is concluded that the indicator is rightly chosen for the project activity and the monitoring is in line with the applied methodology and chosen indicator.
	CC IPL confirms that the sustainable development monitoring plan included in the updated PDD /01/ is consistent with the GS principles and Requirements /B02/ and feasible within the project design.		

D.7. Crediting period

Means of validation	Desk Review and Interview
Findings	CAR 09 was raised and closed satisfactorily. Kindly refer appendix 4 for further information.
Conclusion	As per paragraph 5.1.45 of GS4GG Principles and requirements, version 1.2 /B02/ to maintain Gold Standard Certified project status beyond five years, a Project must undergo Design Certification Renewal. The second crediting period for the project starts from 01/03/2024 to 28/02/2029, immediately after the end of the first crediting period (01/03/2019 to 29/02/2024). The project has a technical lifespan of 25 years and has completed only five years. Hence the entire project has life upto end date of second crediting period. Therefore, the project is eligible for second crediting period. CC IPL confirms that the second period is correctly and clearly defined as from 01/03/2024 to 28/02/2029 as per GS rule.

D.8. Project participants

Means of validation	Desk Review and Interview
Findings	No finding raised.
Conclusion	The project developer is CO ₂ logic and project participants is Water Access Rwanda (WAR) and Mkaarbon safari. The same is found mentioned in the updated PDD /01/ which PD has provided. Carbon Check (India) Private Ltd. confirms that the project developers of the project activity is listed in the updated PDD /01/ and this information is consistent with the information provided in the section that contains the contact information for project developers.

D.9. Specific GS scope on design certification renewal

Means of validation	Desk Review and Interview
Findings	CL 09, CAR 06, CAR 11 was raised and closed satisfactorily. Kindly refer appendix 4 for further information.
Conclusion	As per paragraph 5.1.47 of GS4GG principle and requirement /B02/, the 'Design Certification Renewal' scope is assessed as below: a) Changes in the Project as related to the General Eligibility Criteria - There is change in the scale and applied methodology for this project activity which does not impact the project eligibility. The project is still implemented within the same geographic boundary and the contact details, legal ownership of PD still remains inline as per the registered PDD.

	b) Incorporation of any relevant updates to the Gold Standard Requirements - There is no relevant update found to be incorporated for the project during the second crediting period. c) Re-definition of baseline scenario and any impact of change on the eligibility principles, criteria and requirements - The project falls under community services activity and as per para Para 4.1.7 of "Community Service Activity Requirement" /B03/, re-assessment of baseline has been assessed for the baseline by PD following UNFCCC guideline Tool "Assessment of the validity of the original/ current baseline and update of the baseline at the renewal of a crediting period", Version 03.0.1 /B07/ and confirms the baseline scenario remains the same and only the data and parameters are updated with respect to the methodology. d) Any gold standard activity, product and methodology-specific requirement - The project meets community services activity requirements although there is no specific requirement to be met during the renewal of the project. The applied methodology for claiming emission reductions is latest version and conditions as per latest version is justified in the updated PDD /01/. e) Demonstration of ongoing financial need, where relevant-see ongoing financial need. - On- going financial need is discussed for the project during the second crediting period. It is confirmed that the hand pumps supply water without any charge during remote audit /07/ and at 1.25 RWF/litre at the INUMA water kiosks, but not for preventive care, repair and maintenance activities from the regional technician, water quality test. The revenue from the carbon credits covers direct equipment cost as 50% of the total cost is from the hand pump. The revenue from carbon credits is 36% of the revenue of the water kiosks and plays an important share of the total revenue. Hence the project depends on the revenue from the carbon credits and seeks to renew its crediting period for the next 5 years. PD has provided detailed explanation of the same in the revised PDD under section B.5.2. therefore, VVB confirms the OFN for the project during the second crediting period. CC IPL confirms that the project activity is within the required scope of GS principle and requirements which are applicable at design renewal certification.
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D.10. Changes to the project design

Means of validation	Desk Review and Interview
Findings	No findings raised.
Conclusion	In line with paragraph 5.4 of the Design Change Requirements, version 1.1 /B09/ a change in project design has been proposed from the registered project design as below: Details of proposed or actual design change: The project activity involves change in methodology and scale. The methodology of the project has been prior registered under "Technologies and practices to displace decentralized thermal energy consumption (TPDDTEC) version 3.1". As the new methodology "Methodology from Emission Reductions from Safe Drinking Water Supply v1.0" is more appropriate for this type of project, PD has revised the methodology of the project. Also the scale of the project activity has been revised from large scale to small scale in order to apply the suppressed demand baseline scenario with the annual emission reduction not exceeding 60,000 tCO_{2e} Description of the impacts of design change on the following: a. Additionality: VVB based on review of the revised PDD /01/, confirms that the Design change does not have any impact on the additionality. The project continues to be considered as deemed additional, as the project complies to the paragraph 4.1.9 of the GS Community Service Activity Requirement /B03/ and the project activity is located in

Rwanda which is an LDC and therefore does not require to prove financial additionality.

- b. Applicability of methodology and other methodological regulatory documents with which the project activity has been certified:

VVB based on the review of the revised PDD 01//, confirms that the Design change has change in the methodology where the project was registered under “Technologies and practices to displace decentralized thermal energy consumption (TPDDTEC), version 3.1. However, on 03/05/2021, GS has released a new “Methodology from Emission Reductions from Safe Drinking Water Supply”, version 1.0, which is found to be more appropriate and completely applicable for this type of project. Hence the new crediting period has been revised with the new Methodology from Emission Reductions from Safe Drinking Water Supply”, version 1.0, in the revised PDD. PD has conducted a new baseline survey /09/ and has updated the same in the baseline results. Thus, VVB confirms that the project activity hence meets all the applicability condition of the methodology.

- c. Compliance with the monitoring plan of the applied methodology

VVB based on the review of the revised PDD /01/, confirms that the monitoring plan adapted in the revised PDD is inline with the methodology “Methodology for Emission Reductions from Safe Drinking Water Supply”, version 1.0 /B01/ and the same is confirmed by VVB.

- d. The level of accuracy and completeness in the monitoring of the project activity compared with the requirements contained in the registered monitoring plan;

VVB based on the review of the revised PDD /01/, confirms that the level of accuracy and completeness in the monitoring plan adapted in the revised PDD is inline with the methodology “Methodology for Emission Reductions from Safe Drinking Water Supply”, version 1.0 /B01/ and the same is confirmed by VVB.

- e. The scale of the project activity

VVB based on the review of the revised PDD /01/, confirms that the scale of the project is revised from large-scale to small-scale in order to apply the suppressed demand baseline scenario as explained in the methodology “Methodology for Emission Reductions from Safe Drinking Water Supply”, version 1.0 such that the emission reduction of the project activity does not exceed 60,000 tCO₂.

- f. Stakeholder Consultation

VVB based on the review of the revised PDD/01/, records of LSC /06/ and found that PD has organised a LSC on 22/02/2024. PD has submitted the records for LSC /06/ from which it is confirmed to the VVB that the Design change does not have any impact on the Stakeholder.

- g. Sustainable development criteria

VVB based on the review of the revised PDD /01/, confirms that the SDG tools has been applied as per the “SDG Impact Tool” Rule update (14/03/2022), 2.13: the SDG Impact Tool application is mandatory for all new projects submitted for design certification review and renewal after 14/03/2022 and the SDG tool has been applied accordingly in this PDD and the corresponding SDG’s have been included in this PDD, the same is confirmed by VVB.

- h. Safeguarding Assessment

VVB based on the review of the revised PDD /01/, confirms that the Design Change does not have any impact on the Safeguarding Assessment. Since the project activity

	is not affected by design change, the result of the Safeguarding Assessment of the project is expected to be the same. i. Compliance with applicable legislation VVB based on the review of the revised PDD /01/, confirms that the Design change does not have any impact on the legislation. As a result, it confirms that the design change complies with the relevant requirements inline with the GS Design Change Requirement, version 1.0 /B09/.
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D.11. Post-registration changes

Type of Design change	Confirmation (Y/N)	Validation report for Design Changes	
		Version	Completion date
Temporary deviations from the registered monitoring plan, applied methodologies, standardized baselines or other methodological regulatory documents ⁴	N	NA	NA
Corrections	N	NA	NA
Change to the start date of the crediting period	N	NA	NA
Inclusion of a monitoring plan	N	NA	NA
Permanent changes to the registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines, or other methodological regulatory documents	N	NA	NA
Changes to the project design	Y	5.0	04/03/2024
Changes specific to afforestation and reforestation project activities	N	NA	NA

D.12. Stakeholders consultation

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During the RCP stage, the stakeholder consultation /06/ was reinitiated by the PD to take the feedback of the stakeholders on the project till date and on the design change. The reinitiated SFR /06/ round was on 22/02/2024 which has been confirmed with the LSC records /06/ submitted by PD. Feedback were asked from relevant stakeholders. As stated in section (E) of the updated PDD /01/, there were no negative comments received through the feedback and the SFR round. This information is checked and confirmed by the validation team.

SECTION E. Internal quality control

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The final validation report before being submitted to the client is subjected to an independent technical review to confirm that all validation activities has been completed according to the pertinent CCIPL's procedures. The technical review is performed by a technical reviewer(s) qualified in accordance with the CCIPL's qualification procedure.

SECTION F. Validation opinion

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CO₂ logic the PD appointed /11/ the VVB, Carbon Check (India) Private Ltd., (CCIPL) on 02/02/2024 to perform the validation (renewal of crediting period) and Design Change of the GS project (GS 6598) 'Water for Climate Rwanda' in Rwanda.

The validation was performed in accordance with latest GS4GG principles and requirements /B02/, GS4GG, latest version of Validation and Verification Standard /B06/ and related Standards/Guidance

⁴ Other standards, methodologies, methodological tools and guidelines (to be) applied in accordance with the applied(selected) methodologies are collectively referred to as the other (applied) methodological regulatory documents).

and host country criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.

The project will result in reductions of greenhouse gas (GHG) emissions that are real, measurable and give long-term benefits to the mitigation of climate change, as stated in the updated PDD /01/. In the opinion of the validation team, the project meets all relevant GS4GG, UNFCCC, CDM criteria and all relevant host country criteria.

The review of the updated PDD /01/ and the subsequent follow-up interviews /07/ have provided validation team with sufficient evidence to determine the validity of the original baseline. The PDD correctly applies the latest version of the methodology 'Methodology for Emission Reductions Drinking Water Supply' version 1.0 /B01/ and meets all relevant criteria therein. The monitoring arrangements described in the monitoring plan are feasible within the project, and it is validation team's opinion that the project implementer is able to implement the monitoring plan and it is deemed likely that the forecasted emission reductions of 15,675 tCO₂e per year from the project during the second crediting period will be achieved, given that the underlying assumptions do not change.

During the course of validation Eleven (11) CARs, Eight (08) CLs and No FAR were identified on initially submitted revised PDD. All the CLs & CARs have been resolved by project developer.

In summary, it is validation team's opinion that the project "Water for Climate Rwanda" (GS Reference number 6598) meets all relevant GS4GG and UNFCCC requirements for the renewal of the crediting period. Hence CCIPL requests the renewal of the project activity for the second crediting period from 01/03/2024 to 28/02/2029.

Appendix 1. Abbreviations

Abbreviations	Full texts
BE	Baseline Emissions
CDM	Clean Development Mechanism
CEE	Central Environmental Authority
CAR	Corrective Action Request
CC IPL	Carbon Check (India) Private Ltd.
CL	Clarification Request
CO ₂	Carbon Dioxide
CO ₂ e	Carbon Dioxide Equivalent
DR	Desk Review
DOE	Designated Operational Entities
DVR	Draft Validation Report
EB	Executive Board
EF	Emission Factor
ER	External Resource
ER	Emission Reduction
FA	Final Approval
FAR	Forward Action Request
FVR	Final validation Report
GHG	Greenhouse gas(es)
GSF	Gold standard Foundation
GS4GG	Gold standard for Global Goals
I	Interview
IPCC	Intergovernmental Panel on Climate Change
IR	Internal resource
LDC	Least Developed Country
LE	Leakage Emission
PD	Project Developer
PDD	Project Design Document
PE	Project Emission
PP	Project Participant
OSV	On Site Visit
QC/QA	Quality control /Quality assurance
SDG	Sustainable Development Goals
SS	Sectoral Scope
TA	Technical Area
TR	Technical Review
UNFCCC	United Nations Framework Convention on Climate Change
VER	Verified Emission Reduction
VVB	Validation and Verification Body
VVS	Validation and Verification Standard
WCFT	Water Consumption Field Test
WQT	Water Quality Test

Appendix 2. Competence of team members and technical reviewers



Carbon Check (India) Private Limited

Certificate of Competency

Mr. Amit Anand

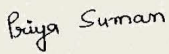
has been qualified as per CCIPL's internal qualification procedures in accordance with the requirements of CDM AS (V7.0), ISO/IEC 14065:2020, ISO/IEC 17029:2019 and other applicable GHG programs:

for the following functions and requirements:

☒ Validator	☒ Verifier	☒ Team Leader	☒ Technical Expert
☒ Technical Reviewer	☐ Health Expert	☐ Gender Expert	☒ Plastic Waste Expert
☒ CCB Expert	☐ Legal Expert	☒ Financial Expert	☐ Environmental, Health and Safety financial matters
☒ SDG+	☒ Social no-harm(S+)	☒ Environment no-harm(E+)	
☒ Local Expert for India and RSA			

in the following Technical Areas:

☒ TA 1.1	☒ TA 1.2	☐ TA 2.1	☒ TA 3.1	☐ TA 4.1
☐ TA 4. n	☐ TA 5.1	☐ TA 5.2	☐ TA 7.1	☒ TA 8.1
☐ TA 9.1	☐ TA 9.2	☐ TA 10.1	☒ TA 13.1	☒ TA 13.2
☒ TA 14.1	☒ TA 15.1	☐ TA 16.1		

Issue Date 5 th December 2023	Expiry Date 31 st December 2024
 Ms. Priya Suman Compliance Officer	 Mr. Sanjay Kumar Agarwalla Technical Director

Revision History of the document:

Revision date	Summary of changes
2022 ¹	Annual revision
Jan 2023	Annual revision
Dec 2023	Change in the template due to revision in TA and function

CCIPL_FM 7.9 Certificate of Competency_V4.0_112023

¹ Please refer to previous version of FM 7.9 for the revision history



Carbon Check (India) Private Limited

Certificate of Competency

Ms. Jeni Miraclin Nifiya J

has been qualified as per CCIPL's internal qualification procedures in accordance with the requirements of CDM AS (V7.0), ISO/IEC14065:2020, ISO/IEC 17029:2019 and other applicable GHG programs:

for the following functions and requirements:

- | | | | |
|--|--|--|---|
| ☒ Validator | ☒ Verifier | ☐ Team Leader | ☒ Technical Expert |
| ☐ Technical Reviewer | ☐ Health Expert | ☐ Gender Expert | ☐ Plastic Waste Expert |
| ☐ CCB Expert | ☐ Legal Expert | ☐ Financial Expert | ☐ Environmental, Health and Safety financial matters |
| ☐ SDG+ | ☐ Social no-harm(S+) | ☐ Environment no-harm(E+) | |
| ☒ Local Expert for India | | | |

in the following Technical Areas:

- | | | | | |
|----------------------------------|--|----------------------------------|--|----------------------------------|
| ☐ TA 1.1 | ☒ TA 1.2 | ☐ TA 2.1 | ☒ TA 3.1 | ☐ TA 4.1 |
| ☐ TA 4. n | ☐ TA 5.1 | ☐ TA 5.2 | ☐ TA 7.1 | ☐ TA 8.1 |
| ☐ TA 9.1 | ☐ TA 9.2 | ☐ TA 10.1 | ☐ TA 13.1 | ☐ TA 13.2 |
| ☐ TA 14.1 | ☐ TA 15.1 | ☐ TA 16.1 | | |

Issue Date

10th January 2023

Expiry Date

31st December 2024

Priya Suman

Ms. Priya Suman
Compliance Officer

Sanjay Agarwalla

Mr. Sanjay Kumar Agarwalla
Technical Director

Revision History of the document:

Revision date	Summary of changes
Jan 2024	Initial Adoption

CCIPL_FM 7.9 Certificate of Competency_V4.0_112023

¹ Please refer to previous version of FM 7.9 for the revision history



Carbon Check (India) Private Limited

Certificate of Competency

Ms. Indumathi C

has been qualified as per CCIPL's internal qualification procedures in accordance with the requirements of CDM AS (V7.0), ISO/IEC14065:2020, ISO/IEC 17029:2019 and other applicable GHG programs:

for the following functions and requirements:

- | | | | |
|--|--|--|---|
| ☒ Validator | ☒ Verifier | ☒ Team Leader | ☒ Technical Expert |
| ☐ Technical Reviewer | ☐ Health Expert | ☐ Gender Expert | ☐ Plastic Waste Expert |
| ☐ CCB Expert | ☐ Legal Expert | ☐ Financial Expert | ☐ Environmental, Health and Safety financial matters |
| ☐ SDG+ | ☐ Social no-harm(S+) | ☐ Environment no-harm(E+) | |
| ☒ Local Expert for India | | | |

in the following Technical Areas:

- | | | | | |
|----------------------------------|--|----------------------------------|---|----------------------------------|
| ☐ TA 1.1 | ☒ TA 1.2 | ☐ TA 2.1 | ☒ TA 3.1 | ☐ TA 4.1 |
| ☐ TA 4. n | ☐ TA 5.1 | ☐ TA 5.2 | ☐ TA 7.1 | ☐ TA 8.1 |
| ☐ TA 9.1 | ☐ TA 9.2 | ☐ TA 10.1 | ☒ TA 13.1 | ☐ TA 13.2 |
| ☐ TA 14.1 | ☐ TA 15.1 | ☐ TA 16.1 | | |

Issue Date
5th December 2023

Expiry Date
31st December 2024

Mr. Sanjay Kumar Agarwalla
Technical Director

Revision History of the document:

Revision date	Summary of changes
2022 ¹	Annual revision
Jan 2023	Annual revision
Dec 2023	Change in the template due to revision in TA and function

CCIPL_FM 7.9 Certificate of Competency_V4.0_112023

¹ Please refer to previous version of FM 7.9 for the revision history

Appendix 3. Documents reviewed or referenced.

No.	Author	Title	References to the document	Provided by PD
/01/	PD	a. Initial PDD- Water for Climate Rwanda b. Revised PDD- Water for Climate Rwanda c. Revised PDD- Water for Climate Rwanda d. Revised PDD- Water for Climate Rwanda e. Final PDD- Water for Climate Rwanda	Version 1.0 dated 09/02/2024. Version 2.0 dated 27/02/2024 Version 3.0 dated 29/02/2024 Version 4.0 dated 01/03/2024 Version 5.0 dated 04/03/2024	☒ ☒ ☒ ☒ ☒
/02/	PD	a. Initial Estimated ER calculation Spreadsheet for RCP b. Final Estimated ER calculation Spreadsheet for RCP	Version 1.0 Version 2.0	☒ ☒
/03/	PD	Registered GS PDD for the project “Water for Climate Rwanda” and validation report	Version 5.4, dated 30/08/2021	☒
/04/	PD	SDG Impact Tool	Version 1.2, dated 15/06/2023	☒
/05/	Water Access Rwanda	Baseline survey report	January 24 th -29 th 2024	☒
/06/	Water Access Rwanda	Stakeholder Consultation Meeting - Invitation - LSC Meeting PPT - Attendance List - Feedback Form - Pictures	February 22 nd 2024	☒
/07/	CCIPL	Onsite Audit Records	23/02/2024 and 26/02/2024	☒
/08/	Cape Climate Collective	fNRB Report and Calculation Sheet	08 February 2024	☒
/09/	PD	Survey records- RCP	Version 0.2, Version 0.3	☒
/10/	GS	ODA Declaration	27/02/2019	☒
/11/	CCIPL	Contract (between CO ₂ logic& CCIPL)	02/02/2024	☒
/12/	Republic of Rwanda	MoU between districts and Water Access Rwanda	04/06/2018 07/10/2020 21/06/2018 04/06/2018	☒

/13/	PD	Research Randomizer	11/01/2024	☒
/14/	Rwamagana District	Operation And Management Agreement- Rwamagana District and Water Access Rwanda	17/01/2024	☒
/15/	PD	Project Water point database	2022	☒
/16/	PD	Baseline survey analysis	28/05/2019	☒
/17/	PD	Sampling of water point	2023	☒
/18/	Water Access Rwanda	Proof of right of VERs/ Carbon Waiver Form- Water Access Rwanda and CO ₂ logic	2018	☒
/19/	Water Access Rwanda	Water Quality Test Records, Accredited lab records, Records of E. coli presence	2022	☒
/20/	Water Access Rwanda	Records of Maintenance	2022	☒
/21/	Water Access Rwanda	WASH training Records	2022	☒
/22/	Water Access Rwanda	Previous Local Stakeholder Consultation	June 2018	☒
/23/	Water Access Rwanda	Sample payslip	2023	☒
/B01/	GS	Methodology for Emission Reductions from Safe Drinking Water Supply	Version 1.0	Publically available
/B02/	GS4GG	Gold Standard for the Global Goals - Principles & Requirements	Version 1.2	Publically available
/B03/	GS4GG	Gold Standard for the Global Goals – Community Service Activity Requirements	Version 1.2	Publically available
/B04/	UNFCCC	Guidelines for Sampling and Surveys for CDM Project activities and Programme of Activities	Version 04.0	Publically available
/B05/	UNFCCC	Standard for Sampling and surveys for CDM project activities and programmes of activities	Version 09.0	Publically available
/B06/	GS4GG	Gold Standard for the Global Goals – Validation and Verification Standard	Version 1.0	Publically available
/B07/	UNFCCC	Methodological tool 11 'Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period'	Version 03.0.1	Publically available
/B08/	Gold Standard Registry	Project view page: GS 6598 SustainCERT Platform (sustain-cert.com)		Publically available
/B09/	GS4GG	Gold Standard for the Global Goals- Design Change Requirement	Version 1.0	Publically available

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

Table 1. CL from this validation (RCP)

CL ID	01	Section no.	D.1	Date: 14/02/2024
Description of CL				
<i>PD shall submit the following:</i> 1. ODA 2. Records of legal Ownership 3. Records of land agreement 4. Proof of rights of VERs/ Carbon Credits 5. Technical specification 6. Stakeholder Feedback Round 7. Training Records 8. Unique ID of the 50 mentioned boreholes 9. Records of start date of the project activity 10. Records of LSC.				
Project developer response				Date: 27/02/2024
1. ODA: 501-ER-T-ODA-Declaration-GS6598_signed 2. Records of legal Ownership: folder <i>MoU with districts</i> 3. Records of land agreement: N/A 4. Proof of rights of VERs/ Carbon Credits: examples of different <i>Carbon Waiver</i> 5. Technical specification: folder <i>MoU with districts</i> and folder <i>Preventive maintenance</i> 6. Stakeholder Feedback Round: folder "Local Stakeholder Feedback Round" 7. Training Records: folder "trainings" with WASH trainings and refresher trainings 8. Unique ID of the 50 mentioned boreholes: spreadsheet <i>2022 W4C MP4 Project Water Point Database-Final</i> 9. Records of start date of the project activity: N/A as RCP 10. Records of LSC. LSC report_Water for Climate Rwanda_v1.0_20180906_reduced for Markit				
Documentation provided by project developer				
1. ODA: 501-ER-T-ODA-Declaration-GS6598_signed 2. Records of legal Ownership: folder <i>MoU with districts</i> 3. Records of land agreement: N/A 4. Proof of rights of VERs/ Carbon Credits: examples of different <i>Carbon Waiver</i> 5. Technical specification: folder <i>MoU with districts</i> and folder <i>Preventive maintenance</i> 6. Stakeholder Feedback Round: folder "Local Stakeholder Feedback Round" 7. Training Records: folder "trainings" with WASH trainings and refresher trainings 8. Unique ID of the 50 mentioned boreholes: spreadsheet <i>2022 W4C MP4 Project Water Point Database-Final</i> 9. Records of start date of the project activity: N/A as RCP 10. Records of LSC. LSC report_Water for Climate Rwanda_v1.0_20180906_reduced for Markit				
VVB assessment				Date: 28/02/2024
<i>PD has submitted the all the above-mentioned documents and the same has been validated by the VVB. Hence the CL is closed.</i>				

CL ID	02	Section no.	D.1	Date: 14/02/2024
Description of CL				
<i>PD shall the evidence/ records for the SDG 6, 8 and 5</i>				
Project developer response				Date: 27/02/2024
<i>The evidences will be submitted at the time of verification. The values have been done based on ex-ante estimations.</i>				
Documentation provided by project developer				

NA	
VVB assessment	Date: 28/02/2024
The records of SDG 6, 8 and 5 are estimated and to be checked at the time of subsequent verification. Hence the CL is closed.	

CL ID	03	Section no.	D.1	Date: 14/02/2024
Description of CL				
1. PD shall mention the footnote in the uppercase. 2. PD shall use the terminology VVB throughout the PDD. 3. In the section A.3 of the PDD, PD shall rectify the formatting issues.				
Project developer response				Date: 27/02/2024
<i>This has been adapted in the PDD.</i>				
Documentation provided by project developer				
PDD				
VVB assessment				Date: 28/02/2024
<i>PD has made all the necessary changes in the revised PDD. Hence the CL is closed</i>				

CL ID	04	Section no.	D.9	Date: 14/02/2024
Description of CL				
<i>In the section A.1.1 (1) of PDD, PD has mentioned large scale GS VER project. Please Clarify.</i>				
Project developer response				Date: 27/02/2024
<i>Section A.1.1 (1) has been clarified and the scale of the project has been modified.</i>				
Documentation provided by project developer				
PDD_v0.4				
VVB assessment				Date: 28/02/2024
<i>PD has revised the section A.1.1 (1) of the PDD and has clarified the scale of the project. Hence the CL is closed.</i>				

CL ID	05	Section no.	D.1	Date: 14/02/2024
Description of CL				
<i>In section A.3 of the PDD, PD has mentioned that water points will be periodically tested for E.coli bacteria. PD shall the appropriate evidence.</i>				
Project developer response				Date: 27/02/2024
<i>Please find the E.Coli tests performed in 2023.</i>				
Documentation provided by project developer				
Folder: Water Quality Test 40. Ecoli				
VVB assessment				Date: 28/02/2024
<i>PD has provided the E.coil test performed in 2023 as appropriate evidence that the water points are tested periodically. Hence the CL is closed.</i>				

CL ID	06	Section no.	D.2	Date: 14/02/2024
Description of CL				
<i>In the section B.2 of the PDD, PD to clarify the following:</i>				
1. Under (b)- If the project does not contain any new installation of hand pumps 2. Records that the only back-up fossil fuel engine used for no more than 10%. 3. Under (d)- Records of maintenance and repair 4. Under (f)- Records/ evidence that all the households included in the project live within 1 km. 5. Under (i)- Records of hygiene campaigns 6. Under (j)- The appropriate justification for the project activity.				
Project developer response				Date: 27/02/2024
<i>All these points have been added to the section B.2 of the PDD</i>				
Documentation provided by project developer				
PDD_v0.4				

VVB assessment	Date: 28/02/2024
<i>In the section B.2 of the revised PDD:</i> 1. PD has included the installation of hand pumps. 2. PD will provide fuel purchase invoices. 3. PD has submitted the records of maintenance and repair 4. PD has submitted the monitoring survey as evidence that the project live within 1 km. 5. PD has submitted WASH campaign records . 6. PD has provided appropriate justification under paragraph (j) of the methodology. VVB has cross checked all the evidence submitted by PD. Hence the CL is closed.	

CL ID	07	Section no.	D.3	Date: 14/02/2024
Description of CL				
<i>In the section B.6.2 of the PDD, PD to submit the following documents:</i> 1. Baseline end-user census 2. Technical reports for the rehabilitations of the water points, as well as MoU with the districts 3. Water Quality Test report 4. Baseline studies- Water sources in the project boundary 5. Records for Expected technical life of project technology <i>The weighted average 14.2% for the weighted average efficiency of the baseline water boiling devices is not traceable. PD to clarify.</i> <i>The value 18.8% for the proportion of project end-users who in the baseline were already using safe water is not traceable. PD to clarify.</i>				
Project developer response				Date: 27/02/2024
<i>: 2023_W4C MP4 Sampling water points user_Sample</i> 1. Baseline end-user census 11. Technical reports for the rehabilitations of the water points, as well as MoU with the districts: Please see MoU and Preventive maintenance documents 2. Water Quality Test report: Please see: Water Quality Test 40. Ecoli 3. Baseline studies- Water sources in the project boundary: See GS6598_W4CR_Baseline survey analysis_v2.0_20190528 4. Records for Expected technical life of project technology: Defined in the MoU signed with the districts <i>The weighted average 14.2% for the weighted average efficiency of the baseline water boiling devices is not traceable: please see the baseline survey spreadsheet where the weighted average is calculated: GS_6598_MS_RCP_V0.3</i> <i>The value 18.8% for the proportion of project end-users who in the baseline were already using safe water is not traceable: please the baseline survey of the first crediting period: GS6598_W4CR_Baseline survey analysis_v2.0_20190528</i>				
Documentation provided by project developer				
GS_6598_MS_RCP_V0.3 GS6598_W4CR_Baseline survey analysis_v2.0_20190528				

VVB assessment	Date: 28/02/2024
<i>In the section B.6.2 of the PDD:</i> 1. PD has submitted the sampling water point as evidence for the baseline end- user census. 2. PD has submitted the reports of rehabilitation and MoU with the districts. 3. PD has submitted the water quality test report. 4. PD has submitted the MoU with districts as evidence for the expected technical lifetime. PD has submitted the appropriate evidence for the weighted average efficiency of the baseline water boiling devices. PD has submitted the appropriate evidence for the proportion of project end-users who in the baseline were already using safe water. Hence the CL is closed.	

CL ID	08	Section no.	D.5	Date: 14/02/2024
Description of CL				
<i>In the section B.7.1 of the PDD, PD shall provide the following:</i> 1. Project survey/ Annual survey 2. Records for the parameter $Q_{m,y}$ 3. Water Consumption field test 4. Records for the parameter $DO_{p,y}$ 5. Field survey records				
Project developer response				Date: 27/02/2024
1. Project survey/ Annual survey: not required for a RCP. The baseline monitoring survey has been provided; 2. Records for the parameter $Q_{m,y}$ not required for a RCP. The capped value has been used in the ER estimation. 3. Water Consumption field test not required for a RCP. Will be submitted for the verification. 4. Records for the parameter $DO_{p,y}$ not required for a RCP. Will be submitted for the verification. 5. Field survey records: please see the monitoring survey				
Documentation provided by project developer				
Field survey record: GS_6598_MS_RCP_V0.3 and 2023_W4C MP4 Sampling water points user_Sample				
VVB assessment				Date: 28/02/2024
The response provided by PD is acceptable and appropriate. Hence the CL is closed.				

Table 2. CAR from this validation (RCP)

CAR ID	01	Section no.	D.1	Date: 14/02/2024
Description of CAR				
The location mentioned in section A.1 of the PDD is not inline with the locations mentioned in section A.2 of the PDD				
Project developer response				Date: 27/02/2024
This has been corrected in Section A.1 of the PDD.				
Documentation provided by project developer				
PDD_v0.4				
VVB assessment				Date: 28/02/2024
PD has revised the section A.1 of the PDD and made inline to the location mentioned in section A.2 of the PDD. Hence the CAR is closed.				

CAR ID	02	Section no.	D.1	Date: 14/02/2024
Description of CAR				
In the section A.1.1 of the PDD, PD shall include a separate table for applicability criteria of Principles & requirements and Community Services Activity Requirements.				
Project developer response				Date: 27/02/2024

<i>Although it is not a requirement from the PDD filling template guidelines, this has been adapted in the PDD.</i>			
Documentation provided by project developer			
<i>PDD_v0.4</i>			
VVB assessment			Date: 28/02/2024
<i>PD has now included a separate table for the applicability criteria of Principles & requirements and Community Services Activity Requirements in the section A.1.1 of the PDD. Hence the CAR is closed.</i>			

CAR ID	03	Section no.	D.1	Date: 14/02/2024
Description of CAR				
<i>The section A.4 and A.5 are not inline with the PDD template filling guide available in the GS website.</i>				
Project developer response				Date: 27/02/2024
<i>Section A4 and A5 have been added as per the PDD template filling guideline.</i>				
Documentation provided by project developer				
<i>PDD_v0.4</i>				
VVB assessment				Date: 28/02/2024
<i>PD has revised the PDD and has made the section A.4 and A.5 inline with the PDD template filling guide available in the GS website. Hence the CAR is closed.</i>				

CAR ID	04	Section no.	D.3	Date: 14/02/2024
Description of CAR				
<i>In the section B.4 of the PDD:</i>				
<i>PD to explain in detail how the current baseline complies with all the relevant mandatory national and/or sectoral policies.</i> <i>PD shall elaborate in detail how the requirement of step 1.3 of TOOL 11, version 3.0.1 is met.</i>				
Project developer response				Date: 27/02/2024
<i>Section B4 has been updated.</i>				
Documentation provided by project developer				
<i>PDD_v0.4</i>				
VVB assessment				Date: 28/02/2024
<i>In the section B.4 of the revised PDD, PD has updated the how the baseline scenario complies with the laws and has elaborated the requirements of step 1.3 of TOOL 11. Hence the CAR is closed.</i>				

CAR ID	05	Section no.	D.1	Date: 14/02/2024
Description of CAR				
<i>The section B.5.1 is not inline with the PDD template filling guideline available in the GS website.</i>				
Project developer response				Date: 27/02/2024
<i>Section B5.5.1. has been updated.</i>				
Documentation provided by project developer				
<i>PDD_v0.4</i>				
VVB assessment				Date: DD/MM/YYYY
<i>PD has revised the PDD and has made the section B.5.1 inline with the PDD template filling guide available in the GS website. Hence the CAR is closed.</i>				

CAR ID	06	Section no.	D.8	Date: 14/02/2024
Description of CAR				
<i>PD shall explain in detail how the requirements of paragraph 4.1.52 of the Principles & Requirements, version 1.2 is met.</i>				
Project developer response				Date: 27/02/2024
<i>Requirements of paragraph 4.1.52 of the Principles and Requirements have been detailed in section B.5.2 of the PDD.</i>				
Documentation provided by project developer				
<i>PDD_v0.4</i>				

VVB assessment	Date: 28/02/2024
<i>PD has revised the section B.5.2 of the PDD and has explained how the requirements of paragraph 4.1.52 of the Principles & Requirements, version 1.2 is met. Hence the CAR is closed.</i>	

CAR ID	07	Section no.	D.4	Date: 14/02/2024
Description of CAR				
<i>In the section B.6.1 of the PDD, PD to mention the project emission and leakage emission that is only applicable for the project activity.</i>				
Project developer response				Date: 27/02/2024
<i>This has been updated in the PDD in section B.6.1</i>				
Documentation provided by project developer				
<i>PDD_v0.4</i>				
VVB assessment				Date: 28/02/2024
<i>In the section B.6.1 of the revised PDD, PD has explained in detail the project emission and leakage emission applicable for the project activity. Hence the CAR is closed.</i>				

CAR ID	08	Section no.	D.3	Date: 14/02/2024
Description of CAR				
<i>In the section B.6.2 of PDD the value applied for Charcoal is not in line with the baseline survey submitted by PD. Also the PD to explain why the value of agricultural waste is not included.</i>				
Project developer response				Date: 27/02/2024
<i>It appears from the baseline survey that some households use different fuel (wood + charcoal and wood + agricultural waste). In order to be conservative, when a household was using both wood and another fuel, it was counted under wood. It was counted under charcoal only if charcoal was the only fuel consumed. It results that only 3 surveyed household were consuming charcoal only (3%) and no household was consuming agriculture waste only (0%).</i>				
Documentation provided by project developer				
<i>PDD_v0.4</i>				
VVB assessment				Date: 28/02/2024
<i>PD has revised the value of charcoal in the revised PDD and the justification provided for not including agricultural waste is acceptable. Hence the CAR is closed</i>				

CAR ID	09	Section no.	D.6	Date: 14/02/2024
Description of CAR				
<i>In the section C.2 of the PDD, PD shall mention the end date of crediting period of the project activity</i>				
Project developer response				Date: 27/02/2024
<i>This has been added in section C.2 of the PDD.</i>				
Documentation provided by project developer				
<i>PDD_v0.4</i>				
VVB assessment				Date: 28/02/2024
<i>PD has revised the section C.2 of the PDD and has mentioned the end date of crediting period for the project activity. Hence the CAR is closed.</i>				

CAR ID	10	Section no.	D.4	Date: 14/02/2024
Description of CAR				
<i>In the ER sheet:</i>				
<i>PD to explain in detail the calculation/ method opted for the calculation of Project emission and leakage emission.</i> <i>PD to provide the summary of ex-ante for the whole crediting period.</i>				
Project developer response				Date: 27/02/2024

1. ER sheet has been updated to explain the calculation methods for Project and Leakage Emissions	
2. A summary of ex-ante emissions has been provided for the whole crediting period.	
Documentation provided by project developer	
PDD Renewal ER v2	
VVB assessment	Date: 28/02/2024
In the revised ER sheet:	
1. PD has explained the detailed method opted for the calculation of Project emission and leakage emission.	
2. PD has provided the summary of ex-ante for the whole crediting period.	
Hence the CAR is closed.	

CAR ID	11	Section no.	D.9	Date: 14/02/2024
Description of CAR				
PD shall explain in detail how the requirements of paragraph 5.1.47 of the Principles & Requirements, version 1.2 is met.				
Project developer response				Date: 27/02/2024
a. Changes in the Project as related to the General Eligibility Criteria: please refer to section A.1.1 of the PDD, where the change of scale is mentioned, as well as the change in the Gold Standard methodology.				
b. Incorporation of any relevant updates to the Gold Standard Requirements/ Please check section A.1.1 of the PDD, where the applicability to the Gold Standard Requirements are described.				
c. Re-definition of Baseline Scenario and any impact of change on the Eligibility Principles, Criteria and Requirements: the baseline scenario is discussed in section B4, and has no impact on Eligibility Principles, Criteria and Requirements.				
d. Any Gold Standard activity, product and methodology-specific Requirements: see section A.1.1 of the PDD				
e. Demonstration of Ongoing Financial need, where relevant: this has been presented in Section B.5.2				
Documentation provided by project developer				
PDD v0.4				
VVB assessment				Date: 28/02/2024
PD has revised the PDD and has explained in detail how the requirements of paragraph 5.1.47 of the Principles & Requirements, version 1.2 is met. Hence the CAR is closed.				

Table 3. FAR from this validation/RCP

FAR ID	XX	Section no.		Date: DD/MM/YYYY
Description of FAR				
NA				
Project participant response				Date: DD/MM/YYYY
Documentation provided by project participant				
VVB assessment				Date: DD/MM/YYYY

Appendix 5. Data and Parameters Fixed Ex-Ante

Relevant SDG Indicator	SDG 13: Climate Action
Parameter	Number of Household per CWT/ CWS
Data unit	- Coordinates of CWT/CWS - Acceptable formats for GPS coordinates include DMS (degrees, minutes and seconds), DMM (degrees and decimal minutes), and DD (decimal degrees) - Number of end-user premises, quantity
Default values used	Average of 135
Purpose of data	Calculation of Emission Reduction
Source of Assessment	Baseline End- user census

Relevant SDG Indicator	SDG 13: Climate Action
Parameter	Project Technology Performance Level
Data unit	NA
Default values used	Ex-ante estimation, Zero Colony Forming Units (CFU) of E.Coli / 100 ml of safe water
Purpose of data	Estimation of Emission Reduction
Source of Assessment	Water Quality Test Report /19/

Relevant SDG Indicator	SDG 13: Climate Action
Parameter	Regulatory framework for Safe water supply
Data unit	NA
Default values used	E.Coli in 100 ml: 0
Purpose of data	Calculation of Emission Reduction
Source of Assessment	National, sub-national and local authorities - Rwanda Standard, East African Standard, Potable Water Specification, EAS 12: 2014 ⁵

Relevant SDG Indicator	SDG 13: Climate Action
Parameter	Water Sources in the project boundary
Data unit	NA
Default values used	Majority use boiling as water treatment. Only 18.8% of the population was using non-boiling water treatment before the project.
Purpose of data	Calculation of Emission Reduction
Source of Assessment	Baseline Studies

Relevant SDG Indicator	SDG 13: Climate Action
Parameter	Stoves Technologies used in the project boundary
Data unit	NA
Default values used	19% ICS 77% three stones 3% Other conventional cookstoves using woody biomass 1% Other fossil fuel conventional system
Purpose of data	Calculation of Baseline Emission
Source of Assessment	Baseline Survey /09/

Relevant SDG Indicator	SDG 13: Climate Action
Parameter	Expected technical life of project technology
Data unit	Years

⁵ https://www.mininfra.gov.rw/fileadmin/user_upload/Mininfra/Documents/Water_and_Sanitation_docs/2_Rural_Drinking_Water_Quality_Framework.pdf

Default values used	25
Purpose of data	Calculation of Emission Reduction
Source of Assessment	Water Access Rwanda is responsible for the rehabilitation and maintenance of the boreholes, and guarantee its functioning in the MoU signed with the districts. WAR “commits to maintain the ownership for the waterpoints and mini-grids with its own funding for a period of 25 years from each system commissioning”. This is specified in the MoU’s signed with the districts /14/.

Relevant SDG Indicator	SDG 13: Climate Action
Parameter	X_f , The proportion of each different cooking fuel f used in the project boundary by end-users
Data unit	Percentage of fuel f use in target population
Default values used	Wood: 97.06% Charcoal: 2.94%
Purpose of data	Calculation of Emission Reduction
Source of Assessment	Baseline Survey /09/

Relevant SDG Indicator	SDG 13: Climate Action
Parameter	EF_{b,f,CO_2} , CO ₂ emission factor from use of fuels
Data unit	tCO ₂ /TJ
Default values used	For wood and charcoal, the following defaults derived from the IPCC shall be applied: Wood: 112 tCO ₂ /TJ Charcoal: 165.22 tCO ₂ /TJ (includes charcoal production emissions)
Purpose of data	Calculation of Emission Reduction
Source of Assessment	IPCC Default value

Relevant SDG Indicator	SDG 13: Climate Action
Parameter	Non-CO ₂ emission factor from use of fuels, in case the baseline fuel is biomass or charcoal
Data unit	tCO ₂ /TJ
Default values used	AR5 GWP - Wood: 9.46 tCO ₂ e/TJ - Charcoal: 44.83 tCO ₂ e/TJ (includes production emissions of CH ₄ and N ₂ O)
Purpose of data	Calculation of Emission Reduction
Source of Assessment	IPCC Default value

Relevant SDG Indicator	SDG 13: Climate Action
Parameter	η_{wb} , Weighted average efficiency of the baseline water boiling devices. Calculate the weighted average of the water boiling efficiency in the project boundary using the proportion of different stove types used and the stove efficiencies.
Data unit	Percentage
Default values used	Weighted Average is 14.2%
Purpose of data	Calculation of Emission Reduction
Source of Assessment	- Three-stone fire or a conventional system for woody biomass lacking improved combustion air supply mechanism and flue gas ventilation system, that is without either a grate or a chimney: default efficiency 10%. - Other conventional systems using woody biomass: default efficiency 20%.

	- Improved cookstoves: manufacturer specification, or if not available, default efficiency 30%. - Fossil fuel combusting system: manufacturer specification, or if not available, following the testing procedure described below. The default value may be applied to calculate the weighted average.
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Relevant SDG Indicator	SDG 13: Climate Action
Parameter	$f_{nrb,f,y}$, Fractional non-renewability status of woody biomass fuel during year y , as the baseline fuel is biomass or charcoal .
Data unit	Percentage
Default values used	92.23%
Purpose of data	Calculation of Emission Reduction
Source of Assessment	The result of the fNRB calculation has been cross checked with the report "Calculation of the fraction of non- renewable biomass (fnrb), CDM Tool 30 EB 115 Annex 22 v4.0 2022" by Seed Ecology and cape Climate Collective in 2024 /08/.

Relevant SDG Indicator	SDG 13: Climate Action
Parameter	C_b , Proportion of project end-users who in the baseline were already using safe water, either from an improved water source, or from a water treatment method other than boiling.
Data unit	Percentage
Default values used	18.8
Purpose of data	Calculation of Emission Reduction
Source of Assessment	Baseline Survey /09/

Relevant SDG Indicator	SDG 13: Climate Action
Parameter	$EF_{wood\ CO_2}$, Emission factor of fossil fuel f
Data unit	tCO ₂ /TJ
Default values used	112
Purpose of data	Calculation of Emission Reduction
Source of Assessment	IPCC Default value

Relevant SDG Indicator	SDG 13: Climate Action
Parameter	$EF_{non-wood\ CO_2}$, Emission factor of fossil fuel f
Data unit	tCO ₂ /TJ
Default values used	8.69
Purpose of data	Calculation of Emission Reduction
Source of Assessment	IPCC Default value