



Validation report form

(Version 02.0)

Complete this form in accordance with the "Attachment: Instructions for filling out the validation report form for CDM project activities" at the end of this form.

VALIDATION REPORT

Title of the project activity	Water for Climate Rwanda (GS 6598_GS4GG)
Version number of the validation report	02
Completion date of the validation report	06/02/2019
Version number of PDD to which this report applies	Version: 4.0; Dated: 02/02/2019
Date when PDD was uploaded for global stakeholder consultation	N/A
Project participant(s)	Water Access Rwanda (WAR) mkaarbon safari CO2logic
Host Party	Rwanda
Estimated annual average GHG emission reductions or net removals in the crediting period (tCO₂e)	59,480
SDG Impacts:	1 – SDG 1: No Poverty 2 – SDG 3: Good Health and Well-Being 3 – SDG 5: Gender 4 – SDG 6: Clean Water and Sanitation 5 – SDG 13: Climate
Sectoral scope(s) and selected methodology(ies)	01, 03 and 13 Technologies and practices to displace decentralized thermal energy consumption (TPDDTEC), version 3.1
Name of DOE	Carbon Check (India) Private Limited
Name, position and signature of the approver of the validation report	Amit Anand, CEO 

SECTION A. Executive summary

Purpose and general description

The Project Participant CO2logic has appointed /16/ the DOE, Carbon Check (India) Private Ltd. to perform an independent validation of the Gold Standard Project Activity “Water for Climate Rwanda” in the host country of Rwanda (hereafter referred to as “project activity”). This report summarises the findings of the validation of the project, 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 /01/, the project activity “Water for Climate Rwanda” involves Water Access Rwanda (WAR) together with CO2logic and mkaarbon safari will implement a project to provide safe drinking water to communities in the districts of Rusizi, Ngoma, Rwamagana and Bugesera. The project consists of the repair of damaged and defunct boreholes. Boreholes may be dysfunctional e.g. due to a broken or removed pump or other broken parts like plunger, chain or rising main. The 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 implementation of the project activity.

The project reserves as an option to drill new boreholes in case that this would reveal to be more favourable than rehabilitating the existing defunct boreholes.

The project will reduce 59,480 tonnes of annual CO₂ and 297,398 tonnes of CO₂ during the 5-year 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 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 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 activity “Water for Climate Rwanda” is implemented in four (04) districts of Rwanda which includes Rusizi, Ngoma, Rwamagana and Bugesera.

Scope of the validation

The validation scope is defined as an independent and objective review of the project design document (PDD) and the GS passport. The PDD /01/ is reviewed against the relevant criteria (see above) and decisions by the Gold standard and CDM Executive Board, including the approved baseline and monitoring methodology /B01/. The validation team has, based on the recommendations in the CDM Validation and Verification Standard employed a rule-based approach, focusing on the identification of significant risks for project implementation and the generation of VERs.

The validation is not meant to provide any consulting towards the project participants. However, stated requests for clarifications and/or corrective actions may have provided input for improvement of the project design.

While carrying out the validation, CCIPL determines if the project activity complies with the requirements of the applicability conditions of the selected methodology /B01/, guidance issued by the Gold Standard and also assess the claims and assumptions made in the PDD /01/ without limitation on the information provided by the project participants.

The Validation team confirms the contractual relationship signed /16/ between the DOE, Carbon Check (India) Private Ltd. and the Project Participant. The team assigned to the validation meets the Carbon Check

(India) Private Ltd.'s internal procedures including the UNFCCC/Gold Standard requirements for the team composition and competence. The projects team has conducted a thorough contract review as per UNFCCC and Carbon Check procedures and requirements.

Validation methodology

The validation has been performed as described in the VVS and constitutes the following steps:

- Document review of data and information (PDD /01/ and the relevant documents including the reference to information relating to projects or technologies similar to the proposed project activity and review based on the approved methodology /B01/ being applied and of the appropriateness of formulae and accuracy of calculations).
- Cross checks between information provided in the PDD /01/ and information from other sources.
- Follow up actions for cross checking data and on-site assessment.
- Reference to available information
- Issuance of Validation Report.

Validation Process

The validation consists of the following four phases:

- I. A desk review of the project design documents
 - A review of data and information;
 - Cross checks between information provided in the PDD /01/ and the information from sources with all the necessary means without limitations to the information provided by the project proponent;
 - Upload of the Validation work plan on the GS project registry.
- II. On-site visit and follow-up interviews with the project stakeholders
 - Interviews with the relevant stakeholders in the host country with personnel having knowledge with the project development via telephone, email or direct on-site visits;
 - Cross checking between information provided by interviewed personnel with all necessary means without limitations to the information provided by the project proponent;
- III. Reference to available information's relating to projects or technologies similar projects under validation and review based on the approved methodology /B01/ being applied of the appropriateness of formulae and accuracy of calculations.
- IV. The resolution of outstanding issues and the issuance of the final validation report and opinion.

The report is based on the assessment of the PDD /01/ undertaken through stakeholder consultations, application of standard auditing techniques including but not limited to document reviews, site visit, and stakeholder interviews, review of the applicable/applied methodology /B01/ and its underlying formulae and calculations.

This report contains the findings and resolutions from the validation and a validation opinion on the proposed project thus confirming the project design as document is sound and reasonable and meets the stated requirements and identified criteria.

The validation protocol describes a total of two (02) findings which include:

- 01 (One) Corrective Action Requests (CARs);
- 01 (One) Clarification Requests (CLs);

All findings are closed during the validation process.

Conclusion

Carbon Check (India) Private Ltd. concludes the validation with a positive-opinion that the Project Activity "Water for Climate Rwanda" in Rwanda, as described in the PDD /01/, meets all applicable Gold standard and CDM requirements, relevant methodologies, tools and guidelines.

The selected baseline and monitoring methodology /B01/ is applicable to the project and correctly applied. Carbon Check (India) Private Ltd. therefore recommends the project to the Gold Standard for registration.

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 DOE or outsourced entity)
1.	Team Leader/ Technical Expert/ Validator	IR	Singh	Vikash Kumar	CC IPL
2.	Local Expert	ER	Muganga	Rogers	CC IPL
3.	Technical reviewer	IR	Anand	Amit	CC IPL

Audit Team Experience:

The team composition is linked to the methodology and local experience in the host country.

Vikash Kumar Singh: Qualified lead assessor and internal technical reviewer for offset projects validations and verifications under CDM, VCS and Gold Standard (GS) and actively been involved in the validation and verification or internal technical review of more than 200 GHG offset projects. He is qualified as technical expert for TA 1.2, 3.1, 4.1, 13.1 and 13.2 under CDM SS categorisation. He has undergone extensive training in the validation and verification of carbon offset projects including the accreditation requirements for the VVBs. He has also received accreditation from the California Air Resources Board (ARB) under Executive Order H2-13-174 as a GHG offset lead verifier for carbon offsets projects and is a specialist for the livestock protocol. Currently, he is employed with Carbon Check in the capacity of Compliance Officer. He holds a Bachelor of Science degree in Environment & Water Management and Master of Science degree in Environmental Management. He has been involved in number of GS validation and verification projects (as internal technical reviewer and team leader) for e.g. Up Energy's Improved Cookstove Carbon Project, Uganda with GS reference number GS 1044, Dissemination of Fuel Efficient Biomass Stoves and Water Purification Systems in Tanzania with GS reference number GS 850. He has also attended Several Gold Standard DOE webinar training and also webinar on GS4GG and passed the online examination under GS4GG. He was also involved as validation and verification assessor in the following Gold Standard Projects: GS 1078, GS 1044, GS 976, GS 850, GS 916 PoA (GS 1231 (VPA 01) GS 1029 (VPA 02), GS 1030(VPA 03), GS 1031(VPA 04)and GS 4364.

Rogers Muganga: Is an appointed Local Expert for Rwanda. He has been involved as a local expert in number of CDM projects in Rwanda.

Amit Anand: Qualified lead assessor and internal technical reviewer for offset projects validations and verifications under CDM, VCS and Gold Standard (GS) and actively been involved in the validation and verification or internal technical review of more than 200 offset projects. He is qualified as technical expert for TA 1.2, 3.1, 8.1, 13.1 and 14.1 under CDM Sectoral Scope categorisation. He has a professional experience of more than 12 years in various capacities with organizationa like MITCON, TUV Rheinland, Deloitte and MGM International in the development and validation/verification of carbon offset projects under different market based mechanism. He was also involved in validation and verification the following Gold Standard Projects: GS 1078, GS 976, GS 850, and GS 916 PoA (GS 1231 (VPA 01) GS 1029 (VPA 02), GS 1030(VPA 03), GS 1031(VPA 04).

SECTION C. Means of validation**C.1. Desk review**

List of all documents reviewed or referenced during the validation is provided in Appendix-3.

C.2. On-site inspection

Duration of on-site inspection: 13-16 January 2019				
No.	Activity performed on-site	Site location	Date	Team member
1.	Opening Meeting	Rwanda	13 January 2019	Vikash Kumar Singh (VKS)
2.	Discussion on the following aspects of the project: • Project design and proposed technology to be used • Baseline survey • FNRB calculation • Water boiling test • Baseline Scenarios • Emission Reductions • Environmental Impacts • Implementation schedule with milestones • Management structure with Roles and Responsibilities • Monitoring Plan/Sampling Plan and process to be adopted	Rwanda	13-16 January 2019	Vikash Kumar Singh (VKS)
3.	Following on-site inspections were conducted: • 11 households from the baseline survey were visited and interviewed • 08 households among 22 WBTs were interviewed to confirm that the test were performed by the PP • Sample implemented boreholes (05 number) were visited • Implementation and operation status was reviewed	Rwanda	13-16 January 2019	Vikash Kumar Singh (VKS), Rogers Muganga (RM)
4.	Local stakeholder interviews	Rwanda	13-16 January 2019	Vikash Kumar Singh (VKS), Rogers Muganga (RM)
5.	Discussion on PDD, ER spread-sheet and supporting documents	Rwanda	13-16 January 2019	Vikash Kumar Singh (VKS)

C.3. Interviews

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Thaler	Johann	mkaarbon safari GmbH, consultant	13-16 January 2019	• Project Design • Organisation background • Project Implementation plan • Project start date and Project Location • Project background information • Baseline surveys • Water boiling test • FNRB calculation • Baseline Scenario • Baseline Identification and Additionality • Monitoring and reporting	VKS

					documentation • Qualification and Training • Quality Assurance – Management and operating system • Social and Environmental Impacts • Local Stakeholders meeting process • Compliance with relevant laws • Roles and responsibility • Observations of established practices	
2.	Kwizera	Christelle	Water Access Rwanda	14-16 January 2019	Borehole rehabilitation process, operation, maintenance	VKS, RM
3.	Hirwa	Christian	Water Access Rwanda	14-16 January 2019	Borehole rehabilitation process, operation, maintenance	VKS, RM
4.	de Paul Kabalisa	Vincent	Water Access Rwanda	14-16 January 2019	Borehole rehabilitation process, operation, maintenance	VKS, RM
5.	Nshimyimana	Dieudonne	Water Access Rwanda	14-16 January 2019	Borehole rehabilitation process, operation, maintenance	VKS, RM
6.	Nicole Katese	Christie	Water Access Rwanda	14-15 January 2019	Local Stakeholders consultation, Stakeholders feedback round	VKS, RM
7.	Chantal	Mukashyaka	Stakeholders who attended LSC meeting	14-15 January 2019	Local Stakeholders consultation- Stakeholders Feedback, Grievance mechanism	VKS, RM
8.	Kxngare	Flicience	Stakeholders who attended LSC meeting	14-15 January 2019	Local Stakeholders consultation- Stakeholders Feedback, Grievance mechanism	VKS, RM
9.	Rambert	Bizimana	Stakeholders who attended LSC meeting	14-15 January 2019	Local Stakeholders consultation- Stakeholders Feedback, Grievance mechanism	VKS, RM
10.	Theogene	Shirambere	Stakeholders who attended LSC meeting	14-15 January 2019	Local Stakeholders consultation- Stakeholders Feedback, Grievance mechanism	VKS, RM
11.	Mushimiyimana	Julience	Stakeholders who attended LSC meeting	14-15 January 2019	Local Stakeholders consultation- Stakeholders Feedback, Grievance mechanism	VKS, RM
12.	Cecile	Nyirmubandwa	Stakeholders who attended LSC meeting	14-15 January 2019	Local Stakeholders consultation- Stakeholders Feedback, Grievance mechanism	VKS, RM
13.	Monique	Musawimana	Stakeholders who attended	14-15 January 2019	Local Stakeholders consultation- Stakeholders Feedback, Grievance	VKS, RM

			LSC meeting		mechanism	
14.	Mugubiri	Siriberi	Stakeholders who attended LSC meeting	14-15 January 2019	Local Stakeholders consultation- Stakeholders Feedback, Grievance mechanism	VKS, RM
15	Muhawenayo	Elysee	Stakeholders who attended LSC meeting	14-15 January 2019	Local Stakeholders consultation- Stakeholders Feedback, Grievance mechanism	VKS, RM
16.	Karohura Jean	Pievte	Stakeholders who attended LSC meeting	14-15 January 2019	Local Stakeholders consultation- Stakeholders Feedback, Grievance mechanism	VKS, RM
17.	Nsengiyaremye	Revelien	Stakeholders who attended LSC meeting	14-15 January 2019	Local Stakeholders consultation- Stakeholders Feedback, Grievance mechanism	VKS, RM
18.	Ntizigemana	Innocent	Sample households where WBTs were conducted	14-15 January 2019	Interview to confirm WBTs were conducted	VKS, RM
19.	Habimana	Evaliste	Sample households where WBTs were conducted	14-15 January 2019	Interview to confirm WBTs were conducted	VKS, RM
20.	Ndimurwango	Jacques	Sample households where WBTs were conducted	14-15 January 2019	Interview to confirm WBTs were conducted	VKS, RM
21.	Umumubye gu	Jeannette	Sample households where WBTs were conducted	14-15 January 2019	Interview to confirm WBTs were conducted	VKS, RM
22	Yotamu	Ngizwenayo	Sample households where WBTs were conducted	14-15 January 2019	Interview to confirm WBTs were conducted	VKS, RM
23	Uwamahoro	Florence	Sample households where Baseline surveys	14-16 January 2019	Interview to confirm baseline survey	VKS, RM

			were conducted			
24	Uwimana	Valentine	Sample households where Baseline surveys were conducted	14-16 January 2019	Interview to confirm baseline survey	VKS, RM
25	Mudaherana	Syprien	Sample households where Baseline surveys were conducted	14-16 January 2019	Interview to confirm baseline survey	VKS, RM
26	Uzamukunda	Garatia	Sample households where Baseline surveys were conducted	14-16 January 2019	Interview to confirm baseline survey	VKS, RM
27	Claude Cishhayo	Jean	Sample households where Baseline surveys were conducted	14-16 January 2019	Interview to confirm baseline survey	VKS, RM
28	Uwumukiza	Jacqueline	Sample households where Baseline surveys were conducted	14-16 January 2019	Interview to confirm baseline survey	VKS, RM
29	Ndayishimiye	Beatrice	Sample households where Baseline surveys were conducted	14-16 January 2019	Interview to confirm baseline survey	VKS, RM
30	Mukayiranga	Claudine	Sample households where Baseline surveys were conducted	14-16 January 2019	Interview to confirm baseline survey	VKS, RM
31	Uwumubyezi	Jeannette	Sample households where	14-16 January 2019	Interview to confirm baseline survey	VKS, RM

			Baseline surveys were conducted			
32	Nyieabashumba	Triphonie	Sample households where Baseline surveys were conducted	14-16 January 2019	Interview to confirm baseline survey	VKS, RM
33	Twagirayezu	Annonciatte	Sample households where Baseline surveys were conducted	14-16 January 2019	Interview to confirm baseline survey	VKS, RM

SECTION D. Validation findings

D.1. Description of project activity

Means of validation	Document Review, Interview
Findings	--
Conclusion	The PDD /01/ contains a description, which provides the reader with a clear understanding of the precise nature of the project activity and the technical aspects of its implementation. The location of the project activity is clearly defined in the PDD /01/. Project is a large-scale project and involves repair of damaged and defunct boreholes. The project reserves as an option to drill new boreholes in case that this would be deemed to be more favorable than rehabilitating the existing defunct boreholes. Water Access Rwanda (WAR) together with CO2logic and mkaarbon safari will implement a project to provide safe drinking water to communities in the districts of Rusizi, Ngoma, Rwamagana and Bugesera of Rwanda. The 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 implementation of the project activity. As per the PDD, the project aims to repair/drill and maintain around 50 boreholes, across the 4 districts reducing 59,480 tonnes of annual CO₂ and 297,398 tonnes of CO₂ during the 5 year crediting period. The start date of the project activity is 03/10/2018, that is the date on which the first borehole has been rehabilitated /15/ under this project activity. This is the real action taken by the PP in accordance with the "Glossary of CDM term". The start date of crediting period is 01/03/2019. The length of crediting period is 5 years. The crediting period may be renewed twice in line with the Community Services Activity Requirements. The project activity will encompass different types of boreholes. Any borehole/pump technology can be involved in the project activity. However, it is foreseen that the most common technologies will be of Afridev or India Mark. For some of the boreholes, solar powered pumps may be installed instead of hand-pumps and/or a tap extension may be made available for more people accessing the water point. The rehabilitated/new boreholes will be properly maintained in form of both preventive and corrective maintenance. Water coming from the water points will be periodically tested for E.coli bacteria in order to guarantee safe and clean water at all times.

	It is planned to establish a WASH committee for each borehole. These committees amongst others help to ensure that surroundings of the boreholes are kept clean and protected against animals or vandalism and notify the hand-pump mechanic immediately in case any problem with the borehole occurs. Additionally, there are community mobilizers who remind their peers of good practices to keep water safe and sensitize them on hand wash practices to further reduce instances of waterborne diseases. The design of the project boreholes were assessed through physical site inspection and through the review of documents /01/, /07/. Validation team also interviewed representative of WAR to understand the maintenance of boreholes. Project participant has done BWBT of 22 stoves to calculate average efficiency. Validation team based on review of provided test report and spread-sheet /09/ confirms that the results comply with the 90/30 precision requirement in line with the TPDDTEC methodology.
--	--

D.2. Application of selected baseline and monitoring methodology and selected standardized baseline

D.2.1. Applicability of methodology and standardized baseline

Means of validation	Document Review, Interview
Findings	--
Conclusion	Please refer to the assessment in Appendix 5 of the VR.

D.2.2. Deviation from methodology

Means of validation	Document Review, Interview
Findings	Refer CL-01 and its closure.
Conclusion	The project participant has applied and received a deviation /13/ on the requirements of the methodology Technologies and practices to displace decentralized thermal energy consumption (TPDDTEC), version 3.1/B01/.

D.2.3. Clarification on applicability of methodology, tool and/or standardized baseline

Means of validation	N/A
Findings	--
Conclusion	N/A

D.2.4. Project boundary

Means of validation	Document Review, Interview
Findings	--
Conclusion	The project boundary of the project activity has been identified in accordance with the methodology Technologies and practices to displace decentralized thermal energy consumption (TPDDTEC), version 3.1/B01/. As per the PDD /01/, <i>“The project boundary is the physical, geographical sites of the project technologies, in other words, the physical location of the boreholes and the locations of the households consuming the water within 1 km radius of each borehole. However, in the first two years after the date of project design certification, the 1 km radius criterion is not relevant and the locations of all households consuming the water from the borehole make part of the project boundary.</i> <i>The target area are the locations of the households consuming the water within 1 km radius of each borehole.”</i> All the selected gases and sources as provided in the PDD /01/ are appropriate to the type of project activity in accordance with the Technologies and practices to displace decentralized thermal energy consumption (TPDDTEC), version 3.1 /B01/. The project boundary as identified in the PDD /01/ was also checked and compared with the actual project activity during the site visit and confirmed to be correct. The

	identified boundary and the selected sources and gases are justified for the project activity and have been confirmed by conducting the site visit to check the technology used.
--	--

D.2.5. Establishment and description of baseline scenario

Means of validation	Document Review, Interview
Findings	NA
Conclusion	Validation team confirms that the baseline scenario opted by the project activity /01/ is in accordance with the requirements of the methodology applied methodology, Technologies and practices to displace decentralized thermal energy consumption (TPDDTEC), version 3.1/B01/. Validation team confirms that a baseline survey /06/ has been conducted by the project participant. This baseline survey was assessed by the validation team based on acceptance sampling during the on site inspection.

D.2.6. Demonstration of additionality

Means of validation	Document Review, Interview
Findings	--
Conclusion	Validation team has assessed that as per Community Services Activity Requirements (Version 1.1), paragraph 2.5.2 /B02/: “Projects that meet any of the following criteria are considered as deemed additional and therefore are not required to prove Financial Additionality at the time of Design Certification: (a) Positive list (Annex B) (b) Projects located in LDC, SIDS, LLDC (c) Micro-scale projects Validation team confirms that the project activity meets the criterion (b) “Projects located in LDC, SIDS, LDC” of the section 2.5.2 of the Community Services Activity Requirements since it is located in an LDC¹ - Republic of Rwanda. The Community Services Activity Requirements /B02/ include end-use energy efficiency projects, under which the project activity falls.

D.2.7. Emission reductions

Means of validation	Document Review, Interview						
Findings	--						
Conclusion	According to the applied methodology /B01/, emission reductions /02/ would be calculated as follows: 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: <table> <tr> <td>$B_{b,y}$</td><td>Quantity of fuel consumed in baseline scenario b during the year in tons (L/p/d)</td></tr> <tr> <td>X_{boil}</td><td>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</td></tr> <tr> <td>C_j</td><td>Percentage of users of project safe water supply who were already in baseline using a non boiling safe water supply</td></tr> </table>	$B_{b,y}$	Quantity of fuel consumed in baseline scenario b during the year in tons (L/p/d)	X_{boil}	Percentage of premises that in the absence of the project activity would have used non-GHG emitting technologies like chlorine treatment techniques (if available) in the project boundary	C_j	Percentage of users of project safe water supply who were already in baseline using a non boiling safe water supply
$B_{b,y}$	Quantity of fuel consumed in baseline scenario b during the year in tons (L/p/d)						
X_{boil}	Percentage of premises that in the absence of the project activity would have used non-GHG emitting technologies like chlorine treatment techniques (if available) in the project boundary						
C_j	Percentage of users of project safe water supply who were already in baseline using a non boiling safe water supply						

¹ https://www.un.org/development/desa/dpad/wp-content/uploads/sites/45/publication/ldc_list.pdf

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

The total safe water consumed in the project scenario is the amount of safe water supplied by the project technology and consumed in the project scenario, plus the amount of raw water boiled after introducing the project technology (respectively represented above as $Q_{p,y} + Q_{p,rawboil,y}$). This total is assumed to be equivalent to the water boiled in the baseline. If the total of these two volumes exceed the cap stipulated in the below table (in line with the page 48 of the applied TPDDTEC methodology), the project proponent's claim for emission reductions may not exceed the cap.

Type of Premises	Default value (litres/person/day)	Capped value (litres/person/day)	Applicability	Reference
Full-day premises	4	7	Premises like households etc.	WHO Technical Notes for Emergencies, Technical Note No. 9, Minimum Water Quantity Needed

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 using a non boiling safe water supply
$N_{p,y}$	Number of person.days consuming water supplied by project scenario p through year y
$W_{b,y}$	Quantity of fuel in tons required to treat 1 litre of water using technologies representative of baseline scenario b in year y as per Baseline Water Boiling Test.
$Q_{p,rawboil,y}$	Quantity of raw water boiled in the project scenario p per person per day
$Q_{p,cleanboil,y}$	Quantity of safe water boiled in the project scenario p per person per day in year y

Emission Reductions

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

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

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

	Where: $BE_{b,y}$ Emissions for baseline scenario b during year y in tCO₂e $PE_{p,y}$ Emissions for project scenario p during year y in tCO₂e f_{NRB} Fraction of biomass used that can be established as non-renewable biomass EF_{fuel,CO_2} CO₂ emission factor of the fuel that is substituted or reduced $EF_{fuel,non-CO_2}$ Non-CO₂ emission factor arising from use of fuels in baseline scenario $NCV_{b,fuel}$ Net calorific value of the fuels used in the baseline $NCV_{p,fuel}$ Net calorific value of the fuels used in the project ER_y Emission reduction for total project activity in year y (tCO₂e/yr) $U_{p,y}$ Cumulative usage rate for technologies in project scenario p during year y, based on cumulative installation rate and drop off rate $LE_{p,y}$ Leakage from project scenario p in year y (tCO₂e/yr) The steps taken and the equations and parameters applied in the PDD /01/ to calculate emission reductions comply with the requirements of the selected methodology. The emission reduction calculation is completely traceable and verified by reviewing the ER spread sheet /02/ submitted by the PP.
--	---

D.2.8. Monitoring plan

Means of validation	Document Review, Interview
Findings	--
Conclusion	The project uses the methodology Technologies and practices to displace decentralized thermal energy consumption (TPDDTEC), version 3.1/B01/. All the parameters as listed in the PDD/01/ have to be monitored. The PDD /01/, the responsibilities under monitoring organisation have been provided correctly. The monitoring organization structure for the project has been provided. Based on OSV interview, validation team confirms that the monitoring based on above is appropriate and also inline with the requirements of Technologies and practices to displace decentralized thermal energy consumption (TPDDTEC), version 3.1/B01/. The project proponent must maintain an accurate and complete electronic database for enabling the unique identification of the project water supply systems. It is envisaged that the database will include at least the following information: - Unique identification number of each borehole; - Date of rehabilitation/drilling of each borehole; - GPS location of each borehole; - Model of the pump used for each borehole; - The total number of households and/or people obtaining their water from each borehole. Validation team based on review of PDD /01/ and on-site inspection interview confirms that as per the applied methodology, the project proponent proposes to conduct the following studies for each project scenario: A. Project Non-Renewable Biomass (NRB) Assessment – at least at renewal of crediting period B. Project Survey (PS) of end-user characteristics – completed annually C. Baseline Water Boiling Test (BWBT) - completed at least once

	D. Water Consumption Field Test (WCFT) - completed at least biennially E. On-going Monitoring Studies: Usage rates, leakage, water quality ➤ Water quality testing – completed every quarter ➤ Usage Survey – completed at least annually ➤ Leakage Assessment – completed every other year F. Hygiene Survey – completed annually Validation team confirms that the monitoring plan complies with the requirements of the methodology, Technologies and practices to displace decentralized thermal energy consumption (TPDDTEC), version 3.1/B01/, the monitoring arrangements described in the monitoring plan are feasible within the project design and that the PP is able to implement the described monitoring plan.
--	--

D.3. Duration and crediting period

Means of validation	Document Review, Interview
Findings	--
Conclusion	The implementation status of the project activity has been provided to the validation team. The start date of the crediting period for the project activity is 01/03/2019 /01/. Start date of the crediting, expected operational lifetime and duration of the crediting period, have been provided in the PDD/01/; checked and found appropriate to the validation team.

D.4. Environmental impacts

Means of validation	Document Review, Interview
Findings	NA
Conclusion	No EIA is required for the project activity.

D.5. Local stakeholder consultation

Means of validation	Document Review, Interview
Findings	--
Conclusion	Validation team based on site inspection interviews confirms that the PP carried out a local stakeholder consultation in each of the districts included in the project boundary: (i) Rwamagana: 12/06/2018; (ii) Ngoma: 13/06/2018; (iii) Bugesera: 14/06/2018; and (iv) Rusizi: 19/06/2018. A wide range of different groups of stakeholders have been invited comprising of end-users, leaders of women groups active at district levels, leaders of Youth groups active at district level, heads of villages, national and local policy makers, representatives of Universities in the district, health centre leaders in the district, DNA representative, local NGOs, international development organisations, research institutes, GS representatives and GS international NGO supporters. The key comments made by the local stakeholders were all answered during the local stakeholder consultation meeting and have also been provided in the LSC report /04/. The LSC report /04/ contains evidence for local stakeholder consultation such as Invitation letter, list of attendees, evaluation form filled by the local stakeholders; checked by validation team as the evidence of Local Stakeholder Consultation. 11 local stakeholders who attended the meeting were also interviewed during the

	site visit. Validation team considers the local stakeholder consultation to be adequate for the project activity and that the comments received have been duly taken into account. The Stakeholder Feedback Round started during second week of January 2019 and gave stakeholders for 2 months, a chance to provide comments and raise questions. WAR invited /10/ all participants who attended the LSC meeting for further comments, and also included more stakeholders involved in policy-making and representatives from NGOs working in the region of project. WAR used different invitation methods like Email, phone calls, personal visits as well as provided a hard copy of PDD, LSC report and GS passport at all district's office in Rwamagana, Ngoma, Bugesera and Rusizi. The same was confirmed by the validation team during the on-site inspection. The SFR is still on-going and end date of SFR is 14/03/2019. Furthermore, as per the interviews, validation team confirms that there is a effective continuous consultation/grievance mechanism process so any stakeholders can access, approach and provide feedback to WAR if they want. The grievance register /11/ has been placed in District office as witnessed by the validation team during the on-site inspection. This is deemed appropriate and acceptable to the validation team.
--	--

SECTION E. Internal quality control

The validation report has passed a technical review and quality review before being submitted to the project participant and UNFCCC Executive Board. The technical review was performed by a technical reviewer qualified in accordance with CCIPL's qualification scheme for CDM validation and verification.

Appendix 1. Abbreviations

Abbreviations	Full texts
BAU	Business As Usual
CA	Corrective Action / Clarification Action
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
CAR	Corrective Action Request
CC IPL	Carbon Check (India) Private Ltd.
CER	Certified Emission Reduction
CL	Clarification Request
CO ₂	Carbon Dioxide
CO ₂ e	Carbon Dioxide Equivalent
DR	Document review
DOE	Designated Operational Entities
DVR	Draft Validation Report
EB	CDM Executive Board
EF	Emission Factor
EI	External individual
FA	Final Approval
FAR	Forward Action Request
FVR	Final validation Report
GHG	Greenhouse gas(es)
GS4GG	Gold standard for global goals
I	Interview
IICS	Institutional Improved cook stove
IPCC	Intergovernmental Panel on Climate Change
IR	Internal resource
MW	Mega Watt
PDD	Project Design Document
PP	Project Participant
OSV	On Site Visit
QC/QA	Quality control /Quality assurance
SS	Sectoral Scope
TA	Technical Area
TR	Technical Review
UNFCCC	United Nations Framework Convention on Climate Change
VVS	Validation and Verification Standard

Appendix 2. Competence of team members and technical reviewer



Carbon Check (India) Private Ltd.

Vikash Kumar Singh

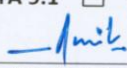
has been qualified as per CCIPL's internal qualification procedures, in accordance with requirements of Accreditation Standard (version 06.0):

For following functions:

Validator	☒	Team Leader	☒	Technical reviewer	☒
Verifier	☒	Technical Expert	☒	Local Expert ¹	☒

In the following Technical Areas:

TA 1.1	☐	TA 3.1	☒	TA 5.2	☐	TA 9.2	☐	TA 13.2	☒
TA 1.2	☒	TA 4.1	☒	TA 8.1	☐	TA 10.1	☐	TA 14.1	☐
TA 2.1	☐	TA 5.1	☐	TA 9.1	☐	TA 13.1	☒		



Mr. Amit Anand
CEO

Date of Approval
24/12/2018

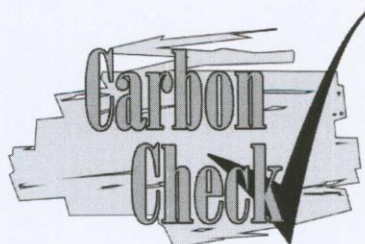
Valid Till
23/12/2019

Revision History of the Document

26/12/2014	Initial Adoption
24/12/2015	Annual Revision
20/01/2016	Interim Revision for office address change
23/12/2016	Annual Revision
24/12/2017	Annual Revision
24/12/2018	Annual Revision

¹ India, South Africa

CARBON CHECK (INDIA) PRIVATE LIMITED
Registered in India: U74930DL2012PTC232495
Regd. Off: 2071/38, 2nd Floor, Naiwala, Karol Bagh, New Delhi - 110005
Corporate off: G 49 & 50, 3rd Floor, Sector - 3, NOIDA (Uttar Pradesh) - 201301
Tel: +91 120 4373114 | URL: www.carboncheck.co.in
e-mail: info@carboncheck.co.in



Carbon Check (India) Private Ltd.

Amit Anand

has been qualified as per CCIPL's internal qualification procedures, in accordance with requirements of Accreditation Standard (version 06.0):

For following functions:

Validator ☒ Team Leader ☒ Technical reviewer ☒
 Verifier ☒ Technical Expert ☒ Local Expert¹ ☒

In the following Technical Areas:

TA 1.1 ☐ TA 3.1 ☒ TA 5.2 ☐ TA 9.2 ☐ TA 13.2 ☐
 TA 1.2 ☒ TA 4.1 ☐ TA 8.1 ☒ TA 10.1 ☐ TA 14.1 ☒
 TA 2.1 ☐ TA 5.1 ☐ TA 9.1 ☐ TA 13.1 ☒

Mr. Vikash Kumar Singh
Compliance Officer

Date of Approval	Valid Till
24/12/2018	23/12/2019

Revision History of the Document	
26/12/2014	Initial Adoption
24/12/2015	Annual Revision
20/01/2016	Interim Revision for office address change
23/12/2016	Annual Revision
24/12/2017	Annual Revision
24/12/2018	Annual Revision

¹ India, South Africa

CARBON CHECK (INDIA) PRIVATE LIMITED
 Registered in India: U74930DL2012PTC232495
 Regd. Off: 2071/38, 2nd Floor, Naiwala, Karol Bagh, New Delhi - 110005
 Corporate off: G 49 & 50, 3rd Floor, Sector - 3, NOIDA (Uttar Pradesh) - 201301
 Tel: +91 120 4373114 | URL: www.carboncheck.co.in
 e-mail: info@carboncheck.co.in

Appendix 3. Documents reviewed or referenced

Ref no.	Reference Document
/01/	PDD, version 04, dated 02/02/2019
/02/	Emission reduction spread sheet corresponding to /01/
/03/	Gold Standard's preliminary review comments on the project
/04/	Gold Standard LSC Report (dated 02/02/2019, version 3.0)- Documents pertaining to local stakeholder consultation
/05/	ODA Declaration by the Project participant.
/06/	Baseline Survey Report
/07/	Records of Implemented bore-hole/hand pumps (as on date). a) Borehole database b) Rehabilitation forms
/08/	Records of Wash Trainings
/09/	Records of water boiling test (WBT): a) Evidence of purchase of new monitoring equipments b) WATER BOILING TEST PROCEDURE_v.1.0 c) Records of water boiling test results
/10/	Records of stakeholders feedback round: a) Invitation sent to the stakeholders for SFR b) SFR comments
/11/	Snap shot of grievance register at district office
/12/	Signed carbon waivers
/13/	Deviation-Request-Form-v3.0_GS6598 FINAL
/14/	a) Preventive/scheduled maintenance calendar of the rehabilitated boreholes b) Preventive_maintenance_Protocol_Vers2
/15/	Proof of project start date (03/10/2018) i.e. the date when the first borehole has been Rehabilitated.
/16/	Contract dated 11/12/2018 between DOE and CO2logic for Validation and verification of the project.

Background documents:

Ref no.	Reference Document
/B01/	Technologies and practices to displace decentralized thermal energy consumption (TPDDTEC), version 3.1
/B02/	Community Services Activity Requirements (version 1.1) under GS4GG https://globalgoals.goldstandard.org/200-gs4gg-community-services-activity-requirements/
/B03/	Evidence of economic, social and environmental safeguard: a) Universal Declaration of Human Rights. Rwanda has ratified many UN Human Rights Conventions : http://www.claiminghumanrights.org/rwanda.html?&L=0 b) Rwanda has ratified ILO Conventions 100 (Equal Remuneration Convention) and 111 (Discrimination (employment and occupation) Convention): http://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:11200:0::NO::P11200_COUNTR_Y_ID:103460 c) All inhabitants of Rwanda may turn to ECOSOC for women's rights violations: http://www.claiminghumanrights.org/rwanda.html?&L=0 d) Rwanda's progressive land ownership policy: http://rema.gov.rw/rema_doc/Policies/National_land_policy_english_version_.pdf e) World Economic Forum's Global Gender Gap Index 2016: http://reports.weforum.org/global-gender-gap-report-2016/rankings/?doing_wp_cron=1527781422.3775660991668701171875 f) Equal Rights Amendment into their respective constitution (Article 9), which guarantees equal gender rights: https://www.ilo.org/dyn/natlex/docs/ELECTRONIC/64236/90478/F238686952/RWA64236.pdf g) Rwanda has ratified the UN Convention against Corruption: https://treaties.un.org/Pages/ViewDetails.aspx?src=IND&mtdsg_no=XVIII-14&chapter=18&clang=en h) Rwanda has ratified many ILO Conventions, amongst others convention 87 (Freedom of Association and Protection of the Right to Organise Convention) and convention 98 (Right to Organise and Collective Bargaining Convention): http://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:11200:0::NO::P11200_COUNTR_Y_ID:103460 i) Rwanda has ratified many ILO Conventions, amongst others convention 29 (Forced Labour Convention) and 105 (Abolition of Forced Labour Convention): http://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:11200:0::NO::P11200_COUNTR_Y_ID:103460 j) Rwanda has ratified ILO Conventions 138 (Minimum Age Convention) and 182 (Worst Forms of Child Labour Convention): http://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:11200:0::NO::P11200_COUNTR_Y_ID:103460 k) Rwanda's most recent policy to charge a minimal fee for water: http://www.mininfra.gov.rw/fileadmin/user_upload/new_upload/NATIONAL_WATER_SUPPLY_POLICY_DECEMBER_2016.pdf
/B04/	a) Rwanda Standard for potable water (RS EAS 12: 2018) b) ISO 9308-1 and ISO 9308-2. ISO 9308-2 https://www.iso.org/standard/52246.html
/B05/	MINIRENA (Ministry of Natural Resources of Rwanda, 2016): Projection Scenario of Supply/Demand of Woody Biomass in Rwanda from 2015 to 2026. Department of Forestry and Nature Conservation (DFNC), Rwanda Natural Resources Authority (RNRA), MINIRENA, Kigali

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

Table 1. CL from this validation

CL ID	01	Section no.		Date:	01/02/2019
Description of CL					
As per the PDD, there a deviation (as approved by the Gold Standard) on the water quality testing. In the context of this deviation, the method of coliform test is unclear to the validation team? PP is requested to clarify.					
Project participant response					Date: 02/02/2019
The PP would like to clarify that E.coli presence/absence water quality tests will be conducted. GS has been informed about those E.coli. presence/absence tests on 17/01/2019 and the revised deviation form was sent to GS. GS approved the presence/absence test method on the same day per Email.					
On another note, the PP would like to clarify that the project start date has been updated to 03/10/2018. The borehole which was rehabilitated on 30/08/2018 had a very low water flow, hence is not worthwhile to be kept in the borehole database. Another borehole in another nearby location will be probably drilled very soon. The first borehole under the project is now the one rehabilitated on 03/10/2018, hence this is deemed to be considered the new project start date.					
Documentation provided by project participant					
E-mail exchange between GS and PP Deviation Request Form PDD, v.4.0, dated 02/02/2019					
DOE assessment					Date: 06/02/2019
Validation team based on the review of email exchange between GS and PP confirm and accept the above clarification by the PP. CL is closed.					

Table 2. CAR from this validation

CAR ID	01	Section no.	--	Date:	01/02/2019
Description of CAR					
Review of LSC report (section F) reveals no information about SFR. PP is requested to address the relevant section of LSC report (on SFR).					
Project participant response					Date: 02/02/2019
The LSC report (in section F) has been updated accordingly and have been provided to the DOE.					
Documentation provided by project participant					
LSC report, dated 02/02/2019, version 3.0					
DOE assessment					Date: 06/02/2019
The LSC report has been revised to reflect the information about SFR. CAR is closed.					

Table 3. FAR from this validation

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

Appendix 5: Methodology Applicability

The project applies the Approved consolidated baseline and monitoring methodology Technologies and practices to displace decentralized thermal energy consumption (TPDDTEC), version 3.1/B01/. Applicability criteria for the baseline methodology /B01/ are assessed by the validation team by means of document review and interview. It is agreed in the validation team's opinion that the project activity fully meets the criteria as described below:

Applicability criteria as per methodology /B02/	Means of Validation
This methodology is applicable to programs or activities introducing technologies and/or practices that reduce or displace greenhouse gas (GHG) emissions from the thermal energy consumption of households and non-domestic premises. The methodology is for project technologies/practices that introduce 'zero emission technology' for safe water, instead of boiling water as a purification technique.	As verified during the on-site inspection and review of PDD /01/, validation team confirms that the project activity consists of the rehabilitation of existing or drilling of boreholes. This technology inline with the applied methodology is considered as new 'zero emission' technology. This reduces GHG emissions by removing the need to boil water as a form of purification before consumption. Furthermore, as confirmed by reviewing the baseline survey /06/ and on-site interviews, the targeted end-users are households which would use non-renewable biomass to boil water as a form of purification or are lacking the access to safe drinking water (suppressed demand) in the absence of this project activity.
The project activity is implemented by a project proponent and can include additional project participants. The individual households and institutions do not act as project participants.	Validation team based on review of PDD /01/ and on-site interview confirms that CO2logic and mkaarbon safari together with the local implementing partner Water Access Rwanda (WAR) will implement the project. The individual households and institutions are not acting as project participants.
The project boundary needs to be clearly identified, and the technologies counted in the project are not included in another voluntary market or CDM project activity (i.e. no double counting takes place). In some cases there maybe 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.	Validation team based on review of PDD /01/ and on-site interview confirms that the project activity is implemented in the districts of Rusizi, Ngoma, Rwamagana and Bugesera, Rwanda. Details about the project location are provided in section A.4 of the PDD. Validation team based on web-research of carbon registries (CDM, GS, VCS) confirms that there are no other borehole projects in the districts where the project intervenes, hence no risk of double counting. Thus it can be confirmed that the project boundary is clearly identified, and the technologies counted in the project are not

	included in another voluntary market or CDM project activity (i.e. no double counting takes place)
Technologies each have a continuous useful energy output of less than 150kW per unit (defines as total energy delivered usefully from start to 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.	Validation team confirms that the borehole technology included in this project does not deliver any thermal energy in the project scenario but displaces the use of non-renewable biomass used for boiling water in the baseline scenario and to provide the safe water for consumers without access to safe drinking water (suppressed demand). Furthermore, Validation team based on review of ER calculation spread sheet /02/ confirms that the useful energy output per single unit in the baseline scenario is less than 150kW.
The use of baseline technology as 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 introduction of the improved technology. For example, whether the existing baseline technology is not surrendered at the time of the introduction of the improved technology, or whether a new baseline technology is acquired and put to use by targeted end users during the project crediting period. The success of the mechanism put into place must therefore be monitored and the approach must be adjusted if proven unsuccessful. If an old technology remains in use in parallel with the improved technology, the corresponding emissions must be accounted for as part of the project emissions.	Validation team based on review of PDD /01/ confirms that project documentation has provided a clear description on Hygiene campaigns including the education of local people on the extensive health and environmental benefits of using safe water supply sources. This would encourage the removal of the old technology. The success of this mechanism will be monitored and adjusted if proven unsuccessful. Furthermore, validation team noted that Water Consumption Field Test also monitors the proportion of end-users that are still boiling water fetched from the borehole in the project scenario and thus provided measure to account for the fuel consumption and the corresponding project emissions in such cases.
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 the project situation, 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 should be informed and notified that they cannot claim for emission reductions from the project. For example, leaflets distributed with the products alerting the end-users to the waiving of their carbon rights in exchange for pricing or the improved technology, which discounts its true cost (waivers forms signed by end- users are another example).	Validation team based on site inspection interview confirms that there exist a legally-binding contractual agreements between the project owner (CO2logic) and the local implementing partner (WAR) as well as CO2logic and mkaarbon safari are in place. As part of this agreement, the ownership and selling rights of the emission reductions resulting from the project activity are clearly defined, defining CO2logic as the entity claiming ownership rights of and selling the emission reductions resulting from the project activity.

	Furthermore, Validation team also review the template carbon waiver agreements /12/ which ensure the transfer of carbon credit ownership from end-users to the project owner CO2logic will be proven with a written assertion signed by the head of the WASH committee on behalf of the communities in which the boreholes are located. PDD also confirms that the end-users will be informed about the transfer of carbon credit ownership through sensitization meetings.
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 related project activities, as defined in the latest version of the Gold standard rules ¹⁴ .	Validation team based on its sectoral scope knowledge confirms that no biomass feedstock will be used in the project situation (i.e. boreholes) and therefore this condition is not applicable.
The water in its improved form should be available within 1 km walking/pedaling distance from the households.	Validation team based on review of PDD confirms that PDD provides provisions to ensure that the households included in this project are located within the 1 km walking/pedaling distance from the respective borehole.
Special attention is required as to the level of GHG emissions arising from production, transport, installation and delivery of the clean water supply or treatment options.	Validation team based on its sectoral scope knowledge confirms that the project activity (i.e. Rehabilitation of existing boreholes/drilling of new boreholes) does not involve any significant GHG emissions arising from production, transport, installation and delivery of clean water supply or treatment options.
Only end users that boil water or are currently using unsafe water are eligible for crediting. Suppressed demand can be applied in instances where inadequate safe water is available or where treatment is not practiced.	Validation team based on review of baseline survey /06/, confirms that the project activity will claim credits only for end-users that boil water or which due to suppressed demand consume inadequate safe water and for which treatment is not practiced.

Appendix 6: Sustainability Validation Report

1. Project type eligibility screen

The proposed project “Water for Climate Rwanda” is a large-scale project implemented in Republic of Rwanda. The project is applying Gold Standard methodology Technologies and practices to displace decentralized thermal energy consumption (TPDDTEC), version 3.1.

The project activity involving the rehabilitation/new drilling of boreholes is eligible under GS according to clause 3.1.1 of the GS4GG Principles and Requirements document. Furthermore, Sub-clause 3.1.1.1 states that ‘A project type is automatically eligible for GS Certification if there are approved GS Activity Requirements and/or GS Impact Quantification Methodologies associated with it or as referenced in GS Product Requirements’. The GS has published the Community Services Activity Requirements which include end-use energy efficiency projects, under which the project activity falls. Hence, the project activity falls under the automatic eligibility list of projects.

Hence, the project is eligible under the Gold Standard.

2. Preliminary review under Gold Standard for the Global Goals

Gold standard has carried out a preliminary review of the project before listing the project. There were no FAR/s during this review by GS and all the findings were closed by the Gold Standard.

3. Sustainable Development Goals (SDG) outcomes

As per the PDD /01/, the relevant SDG targets are:

SDG	Chosen SDG target
Goal 1 – No poverty	1.4. By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance.
Goal 3 – Good health and well being	3.9. By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination.
Goal 5 - Gender	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.
Goal 6 – Clean water and sanitation	6.2. By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations.
Goal 13 - Climate	13.b Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries and small island developing States, including focusing on women, youth and local and marginalized communities

Validation team confirms that the outcome for SDG 13 will be quantified as CO2 emission reductions by applying the GS TPDDTEC methodology. The project proponent has opted

SDG 13 outcome to be certified as 'Certified SDG 13 Impact Statement' allowing the generation of carbon credits (VERs).

As per the PDD, the other SDG impacts of this project activity (SDG 1, SDG 3, SDG 5 and SDG 6) will not be certified as 'Certified Impact Statements' and therefore, for these SDG impacts no specific methodologies for estimation and monitoring will be applied.

4. Safeguarding principle Assessment

According to GS4GG Safeguarding Principles and Requirements document for detailed guidance on carrying out assessment as summarized below:

Safeguarding principles	Assessment questions	Assessment of relevance to the project (Yes/potentially/no)	Justification including mitigation measures	Assessment by the validation team
Social & Economic Safeguarding Principles				
1. Human Rights	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	The project is implemented on the ground by the social enterprise Water Access Rwanda (www.warwanda.com) ² in collaboration with CO2logic and mkaarbon safari, both specialized companies in carbon project development. The project developers take care that the project respect internationally proclaimed human rights and is no complicit in violence or human rights abuses of any kind as defined in the Universal Declaration of Human Rights. Rwanda has ratified many UN Human Rights Conventions. ³	Appropriateness for this safeguarding principle was validated and confirmed through review of /B03/ and OSV interviews with: - Representatives of Project Participant - Local Stakeholders Mitigation measure: N/A
	2. The Project shall not discriminate with regards to participation and inclusion.	No	The project will not discriminate with participation and inclusion as the safe water points can be used by everybody ⁴ .	

² WARwanda is committed to increasing access to clean water for all Rwandan people.

³ <http://www.claiminghumanrights.org/rwanda.html?&L=0>

⁴ Water can be used either for free in the first few months and after having established the WASH

			However, in case that the borehole becomes too crowded and people have to wait for a long time to access water, the project might decide to exclude those households which live more than 1 km from the waterpoint. Anyway, the applied carbon methodology TPDDTEC only allows households to be credited which live within 1 km walking/pedaling distance from the water point.	
2. Gender Equality and Women's Rights <i>Requirement 1</i>	1. The Project shall complete the following gender assessment questions in order to inform Requirements 2-4, below: Is there a possibility that the Project might reduce or put at risk women's access to or control of resources, entitlements and benefits?	No	The project activity doesn't endorse any form of discrimination based on gender. ⁵ Rwanda has ratified ILO Conventions 100 (Equal Remuneration Convention) and 111 (Discrimination (employment and occupation) Convention). ⁵ All inhabitants of Rwanda may turn to ECOSOC for women's rights violations. ⁶ The safe water points can be used by everybody and will therefore not put at risk women's or any other marginalized groups access to or control to water resources. It's not foreseen either any reduction or risk related to any other resource,	Appropriateness for this safeguarding principle was validated and confirmed through review of /B03/ and OSV interviews with: • Representative s of Project Participant • Local Stakeholders Mitigation measure: N/A

committees against payment of a minimal fee. However, the same rules for everybody apply and there is no discrimination with regards to participation and inclusion.

⁵ http://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:11200:0::NO::P11200_COUNTRY_ID:103460

⁶ <http://www.claiminghumanrights.org/rwanda.html?&L=0>

			entitlement or benefit. On the contrary, women/children (being the ones mostly fetching the water) are able to reach the water point at a shorter time since the distance is shorter than before.	
	Is there a possibility that the Project can adversely affect men and women in marginalized or vulnerable communities (e.g., potential increased burden on women or social isolation of men)?	No	It is not either foreseen that the Project would adversely affect men and women in marginalized or vulnerable communities.	
	Is there a possibility that the Project might not take into account gender roles and the abilities of women or men to participate in the decisions/designs of the project's activities (such as lack of time, child care duties, low literacy or educational levels, or societal discrimination)?	No	The Project takes into account gender roles and the abilities of women and men to participate in the decision/designs of the project activities. For example, the stakeholder consultation made in the project design phase included both women and men participating in the consultation meeting. Moreover, for example, the future annual hygiene campaigns will be planned and organized in the way to avoid any discrimination of women or other marginalized groups. In fact, the women's participation will be essential for guaranteeing the success in improving the hygiene. The objective is to reach a 30% minimum participation for either gender for the	

			annual hygiene campaigns.	
	Does the Project take into account gender roles and the abilities of women or men to benefit from the Project's activities (e.g., Does the project criteria ensure that it includes minority groups or landless peoples)?	No	In addition, the design of the hygiene campaigns as well as other project activities will take into account gender roles and the abilities of women and men to participate and benefit from the project activities.	
	Does the Project design contribute to an increase in women's workload that adds to their care responsibilities or that prevents them from engaging in other activities?	No	The project is not contributing to an increase in women's workload or preventing them from engaging in other activities. In fact, the availability of clean water in a reasonable distance is foreseen to reduce women's work load related to water purification, collection of fuel needed for boiling water and caring activities as the risk for water born diseases will be reduced.	
	Would the Project potentially reproduce or further deepen discrimination against women based on gender, for instance, regarding their full participation in design and implementation or access to opportunities and benefits?	No	The project is not foreseen to reproduce or depend discrimination against women. The women will have the same possibilities to access clean and safe drinking water, the hygiene campaigns and for giving feedback regarding the project as any other community member.	
	Would the Project potentially limit women's ability to use, develop and protect	No	The project is not foreseen to limit women's ability to use, develop and protect natural resources. Instead	

	natural resources, taking into account different roles and priorities of women and men in accessing and managing environmental goods and services?		the project gives an easy access to clean and safe drinking water.	
	Is there a likelihood that the proposed Project would expose women and girls to further risks or hazards?	No	It's not either likely that the project activity would expose women or girls to further risks or hazards as the project boreholes are located in quite easily accessible locations and to be reached within a reasonable amount of time. Moreover, the clean/ safe water and improved hygiene are foreseen to improve the conditions of women and girl. The use of a clean/safe water source is voluntarily.	
<i>Requirement 2</i>	2. The Project shall not directly or indirectly lead to/contribute to adverse impacts on gender equality and/or the situation of women. Specifically, this shall include (not exhaustive): 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	The Project 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/ exploitation, violence or human trafficking.	
	Slavery, imprisonment, physical and	No	The Project will not directly or indirectly lead or contribute to	

	mental drudgery, punishment or coercion of women and girls.		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 slavery, imprisonment, drudgery or coercion of women and girls.	
	Restriction of women's rights or access to resources (natural or economic).	No	The project's boreholes can be accessed by everybody. It will not restrict women's rights or access to the safe/clean water points.	
	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	It will not have any impact on women's ownership rights to inherit and own land, homes and other assets. Rwanda's progressive land ownership policy will be applied to everybody irrespective of gender ⁷ .	
Requirement 3	3. Projects shall apply the principles of nondiscrimination, equal treatment, and equal pay for equal work, specifically: Where appropriate for the implementation of a Project, paid, volunteer work or community	No	The Project applies the principles of nondiscrimination and equal treatment and, in fact, the access to clean and safe water is given to everybody.	Appropriateness for this safeguarding principle was validated and confirmed through review of /B03/ and OSV interviews with: - Representatives of Project Participant - Local Stakeholders Mitigation

⁷ http://rema.gov.rw/rema_doc/Policies/National_land_policy_english_version_.pdf

	contributions will be organised to provide the conditions for equitable participation of men and women in the identified tasks/activities.			measure: N/A
	Introduce conditions that ensure the participation of women or men in Project activities and benefits based on pregnancy, maternity/paternity leave, or marital status. [SEP]	No	For rehabilitation, maintenance work and for any other eventual paid or volunteer work 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.	
	Ensure that these conditions do not limit the access of women or men, as the case may be, to Project participation and benefits.	No	Project activities, like using the clean and safe water and participating in the annual hygiene campaigns, are planned in way that the participation of both women and men is guaranteed. There are no limitations on participation or benefiting from the Project depending on the pregnancy, maternity/paternity leave or marital status.	
Requirement 4	4. The Project shall refer to the country's national gender strategy or equivalent national commitment to aid in assessing gender risks. [SEP]	No	The Project will not include any specific gender related risks. Rwanda ranked fifth (!) on the World Economic Forum's Global Gender Gap Index 2016. ⁸ Rwanda has ratified an Equal Rights Amendment into their respective constitution (Article	Appropriateness for this safeguarding principle was validated and confirmed through review of /B03/ and OSV interviews with: - Representative s of Project Participant - Local

1. ⁸ http://reports.weforum.org/global-gender-gap-report-2016/rankings/?doing_wp_cron=1527781422.3775660991668701171875

			9), which guarantees equal gender rights. ⁹ It will be ensured that the project is committed to equal gender rights following article 9 of the constitution.	Stakeholders Mitigation measure: N/A
<i>Requirement 5</i>	5. Based on the Preliminary Review assessment of Requirement 1, above, Gold Standard may require that the Project seek the input of an Expert Stakeholder and to include their recommendations in the Project design. ^[11] _{SEP}	No	Not applicable.	Appropriateness for this safeguarding principle was validated and confirmed through review of /B03/ and OSV interviews with: - Representatives of Project Participant - Local Stakeholders Mitigation measure: N/A
3. Community Health, Safety and Working Conditions	1. The Project shall avoid community exposure to increased health risks and shall not adversely affect the health of the workers and the community.	No	The project activity doesn't expose the community to increased health risks and is not adversely affecting the health of workers and the community. For example, the workers participating in the project activity are not exposed to unsafe or unhealthy work environments as the rehabilitation or maintenance of boreholes or the monitoring activities of the project will not include any hazardous chemicals or other hazardous material.	Appropriateness for this safeguarding principle was validated and confirmed through review of /B03/ and OSV interviews with: - Representatives of Project Participant - Local Stakeholders Mitigation measure: N/A
4. Cultural Heritage, Indigenous Peoples, Displacement and Resettlement	<u>Sites of Cultural and Historical Heritage</u> ^[11] _{SEP} Does the Project Area include sites, structures, or objects with historical,	No	The project activity doesn't include sites, structures or objects with historical, cultural, artistic, traditional or religious values or intangible forms of culture. The	Appropriateness for this safeguarding principle was validated and confirmed through review of /B03/ and OSV

2. ⁹ <https://www.ilo.org/dyn/natlex/docs/ELECTRONIC/64236/90478/F238686952/RWA64236.pdf>

	cultural, artistic, traditional or religious values or intangible forms of culture (e.g., knowledge, innovations, or practices)?		Project will introduce clean and safe water sources in several villages across four districts in Rwanda and it does not require alteration, damage or removal of any historical, artistic, traditional, religious or cultural heritage issues.	interviews with: - Representatives of Project Participant - Local Stakeholders Mitigation measure: N/A
	<u>Forced Eviction and Displacement</u> 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 sources and therefore no physical or economic relocation of people is involved. The use of a clean/safe water source is voluntarily.	
	<u>Land Tenure and Other Rights</u> ^{SEP} 1. Does the Project require any change to land tenure arrangements and/or other rights? 2. For Projects involving land-use tenure, are there any uncertainties with regards land tenure, access rights, usage rights or land ownership?	No	The project doesn't require any change to land tenure arrangements and/or other rights. In case of new drilling of boreholes, as the borehole becomes a public asset for the users, an agreement is reached between the owner of the land where the borehole will be placed and the community at large. This agreement transfers the small piece of land into public ownership of all the residents in the area and allows users to have access to the plot at anytime. The land taken by a borehole is very small and will generally not affect the value of the original landowner's remaining land, rather it will increase the value as the landowner of the	

			remaining land lives nearby the borehole. During this land agreement, a small payment may be given for any crops destroyed in the process of sitting the borehole.	
	<u>Indigenous Peoples</u> Are indigenous peoples present in or within the area of influence of the Project and/or is the Project located on land/territory claimed by indigenous peoples?	No	There are no indigenous people present within the area of influence nor the project is located on territory claimed by indigenous people.	
5. Corruption	1. The Project shall not involve, be complicit in or inadvertently contribute to or reinforce corruption or corrupt Projects.	No	The Project doesn't involve, be complicit in or inadvertently contribute to or reinforce corruption or corrupt Projects. The project is, in fact, implemented on the ground by the social enterprise Water Access Rwanda (WAR) in collaboration with CO2logic and mkaarbon safari. The ethical codes of WAR and other project partners are against corruption. Moreover, Rwanda has ratified the UN Convention against Corruption. ¹⁰	Appropriateness for this safeguarding principle was validated and confirmed through review of /B03/ and OSV interviews with: • Representative s of Project Participant • Local Stakeholders Mitigation measure: N/A
6. Economic Impacts	<u>Labour rights</u> 1. The Project Developer shall ensure that there is no forced labour and that all employment is in compliance with national labour and occupational health and safety	No	The project is implemented on the ground by the social enterprise Water Access Rwanda (WAR) in collaboration with CO2logic and mkaarbon safari. The employees' rights are a cross-	Appropriateness for this safeguarding principle was validated and confirmed through review of /B03/ and OSV interviews with: • Representative

¹⁰ https://treaties.un.org/Pages/ViewDetails.aspx?src=IND&mtdsg_no=XVIII-14&chapter=18&clang=en

	laws, with obligations under international law, and consistency with the principles and standards embodied in the International Labour Organization (ILO) fundamental conventions. Where these are contradictory and a breach of one or other cannot be avoided, then guidance shall be sought from Gold Standard.		cutting issue and respected in all of the projects of WAR and other project partners. Rwanda has ratified many ILO Conventions, amongst others convention 87 (Freedom of Association and Protection of the Right to Organise Convention) and convention 98 (Right to Organise and Collective Bargaining Convention). ¹¹ All employees will work voluntarily for the project, no forced labour is used and all employment is in compliance with national laws and consistence with the principles and standards of the ILO conventions. In fact, Rwanda has ratified many ILO Conventions, amongst others convention 29 (Forced Labour Convention) and 105 (Abolition of Forced Labour Convention). ¹²	s of Project Participant • Representative s of Project Participant • Local Stakeholders Mitigation measure: N/A
	2. Workers shall be able to establish and join labour organisations.	No	The workers are able to establish and join labour organizations.	
	3. Working agreements with all individual workers shall be documented and implemented. These shall at minimum comprise: (a) Working hours (must not exceed 48 hours	No	The working agreements with the individual workers will be documented and implemented and the minimum requirements stated in section 3.6.1. of GS4GG Safeguarding Principles & Requirements	

¹¹ http://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:11200:0::NO::P11200_COUNTRY_ID:103460

¹² http://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:11200:0::NO::P11200_COUNTRY_ID:103460

	per week on a regular basis), AND (b) Duties and tasks, AND (c) Remuneration (must include provision for 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.		(version 1.1) will be respected whenever applicable.	
	4. The Project Developer shall justify that the employment model applied is locally and culturally appropriate.	No	The employment model applied will be also locally and culturally appropriate.	
	5. Child labour, as defined by the ILO Minimum Age Convention is not allowed. The Project Developer shall use adequate and verifiable mechanisms for age verification in recruitment procedures. Exceptions are children for work on their families' property as long as: (a) Their compulsory schooling	No	Moreover, all the possible staff hired has a minimum age of 18. Rwanda has ratified ILO Conventions 138 (Minimum Age Convention) and 182 (Worst Forms of Child Labour Convention). ¹³	

¹³ http://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:11200:0::NO::P11200_COUNTRY_ID:103460

	(minimum of 6 schooling years) is not hindered, AND (b) The tasks they perform do not harm their physical and mental development, AND (c) The opinions and recommendations of an Expert Stakeholder shall be sought and demonstrated as being included in the Project design.			
	6. 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	All the works will be made by using appropriate equipment, training of workers, documentation and reporting of accidents and incidents, and emergency preparedness and response measures.	
	<u>Negative Economic Consequence</u> 1. The Project Developer shall demonstrate the financial sustainability of the Projects implemented, also including those that will occur beyond the Project Certification period.	No	Project activity related costs, like e.g. for rehabilitation, maintenance of the water points, hygiene campaigns, monitoring etc. will be covered by an European company being the investor into the project. The use of the safe and clean water is free for the first few months and once the WASH committees are established, a system of revenue collection will be set-up. This system will be discussed with the district taking into account local	

			context. A monthly minimal usage fee will be collected and somebody stationed at the borehole to make sure that the borehole is not getting harmed. The fee would be used to keep the borehole and its surroundings clean and protected (e.g. through a fence). The fee is in line with Rwanda's most recent policy to charge a minimal fee for water¹⁴. The price setting will be done in consultation with the districts and will make sure that no one is excluded. The safe water supply and the foreseen improved hygiene knowledge via the annual campaigns are assumed to last beyond the Project Certification period.	
	2. The Projects shall consider economic impacts and demonstrate a consideration of potential risks to the local economy and how these have been taken into account in Project design, implementation, operation and after the Project. Particular focus shall be given to vulnerable and marginalised	No	The use of clean and safe drinking water is accessible to everybody and therefore the project benefits can be considered socially-inclusive. Water is pumped manually from the rehabilitated boreholes and operated by the local population. No electricity/fossil fuels have to be used, hence not causing additional costs and can be considered sustainable. There are not	

¹⁴ http://www.mininfra.gov.rw/fileadmin/user_upload/new_upload/NATIONAL_WATER_SUPPLY_POLICY_DECEMBER_2016.pdf, see page 12, which mentions the following: 'Cost recovery and financial sustainability: Operation and maintenance costs of water supply infrastructure shall be borne by the users, in order to ensure sustainable service delivery. Affordability shall be addressed by the choice of appropriate technologies and by enhancing efficiency, not usually by granting subsidies.'

	social groups in targeted communities and that benefits are socially-inclusive and sustainable.		expected any direct economic impact or potential risks to the local economy.	
Environmental & Ecological Safeguarding Principles				
1 – Climate and Energy	<u>Emissions</u> Will the Project increase greenhouse gas emissions over the Baseline Scenario?	No	The project will reduce the GHG emissions as it will be monitored and verified in line with the GS4GG.	Appropriateness for this safeguarding principle was validated and confirmed through review of /B03/ and OSV interviews with: - Representative s of Project Participant - Local Stakeholders Mitigation measure: N/A
	<u>Energy Supply</u> 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	Water is pumped manually from the rehabilitated boreholes and operated by the local population and therefore no electricity/fossil fuels have to be used, hence neither energy nor fuel resources are necessary.	
2. Water	<u>Impact on Natural Water Patterns/Flows</u> Will the Project affect the natural or pre-existing pattern of watercourses, ground-water and/or the watershed(s) such as high seasonal flow variability, flooding potential, lack of aquatic connectivity or water scarcity?	No	The rehabilitated water points will use ground-water but will not negatively affect natural or pre-existing pattern of watercourses, ground-water and/or watersheds.	Appropriateness for this safeguarding principle was validated and confirmed through review of /B03/ and OSV interviews with: - Representative s of Project Participant - Local Stakeholders Mitigation measure: N/A
	<u>Erosion and/or Water Body Instability</u> 1. Could the Project directly or indirectly cause additional erosion and/or water body instability or disrupt the	No NO	The project will not cause additional erosion and/or water body instability of or disrupt the natural pattern of erosion.	

	natural pattern of erosion? If 'Yes' or 'Potentially' proceed to question 2.			
	2. Is the Project's area of influence susceptible to excessive erosion and/or water body instability?	N/A	N/A	
3 – Environment, ecology and land use	<u>Landscape Modification and Soil</u> Does the Project involve the use of land and soil for production of crops or other products?	No	The Project provides safe and clean water and doesn't involve the use of land and soil for production of crops as other projects.	Appropriateness for this safeguarding principle was validated and confirmed through review of /B03/ and OSV interviews with: - Representative s of Project Participant - Local Stakeholders Mitigation measure: N/A
	<u>Vulnerability to Natural Disaster</u> 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	The Project provides supply of safe and clean water and is not susceptible to or will lead to increased vulnerability to any extreme climatic conditions.	
	<u>Genetic Resources</u> Could the Project be negatively impacted by the use of genetically modified organisms or GMOs (e.g., contamination, collection and/or harvesting, commercial development)?	No	The Project provides safe and clean water and doesn't involve / or be negatively impacted by the use of genetically modified organisms or GMOs.	
	<u>Release of pollutants</u> Could the Project potentially result in the release of pollutants to the environment?	No	The Project is not potentially resulting in release of pollutants to the environment.	
	<u>Hazardous and</u>			

	<u>Non-hazardous Waste</u> Will the Project involve the manufacture, trade, release, and/ or use of hazardous and non-hazardous chemicals and/or materials?	No	The Project is not involving the manufacture, trade, release, and/or use of hazardous chemicals and or materials.
	<u>Pesticides & Fertilisers</u> Will the Project involve the application of pesticides and/or fertilisers?	No	The Project doesn't involve the application of pesticides and/or fertilisers.
	<u>Harvesting of Forest</u> Will the Project involve the harvesting of forests?	No	No harvesting of forests is involved.
	<u>Food</u> 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 Project doesn't modify the quantity or nutritional quality of food available.
	<u>Animal husbandry</u> Will the Project involve animal husbandry?	No	The Project doesn't involve animal husbandry.
	<u>High Conservation Value Areas and Critical Habitats</u> 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 project is not located in an area within a high conservation value area or within critical natural habitats. Furthermore, the aim of the project is to reduce the quantity of firewood consumed in the project area for boiling the water (for purifying) which may save the natural resources.
	<u>Endangered Species</u>	No	The project boundary

	1. Are there any endangered species identified as potentially being present within the Project boundary (including those that may route through the area)?		is the physical, geographical sites of the project technologies, in other words, the physical location of the rehabilitated boreholes. There are no endangered species identified as potentially being present the project boundary.	
	2. Does the Project potentially impact other areas where endangered species may be present through transboundary affects?	No	The safe water supply points are not expected either potentially impact other areas where endangered species may be present through transboundary affects.	

In summary, CCIPL has validated and concluded that the DNHA for the project has been conducted appropriately, according to GS4GG requirements, based on accurate information with all the reference sources as indicated in the PDD /01/. Therefore, in CCIPL's opinion the project has no harmful impact according to DNHA.

5. Data and parameters fixed ex-ante

Relevant Indicator	SDG	SDG 13, Climate action
Data/parameter Description	-	Cj Percentage of users of project safe water supply who were already in the baseline using a non-boiling safe water supply
Unit/Value		Percentage /18.8 %
Verified Source of data		Baseline Survey /06/

Assessment	The validation team of the DOE has applied acceptance sampling approach for on-site visits as part of verification of the baseline survey conducted by the PP in accordance with the paragraph 25 of the Standard: Sampling and surveys for CDM project activities and programmes of activities, Version 07.0. In accordance with the paragraph 27 of the sampling standard, acceptance sampling has been chosen by the validation team and accordingly steps listed in paragraph 28 of the sampling standard shall be followed. validation team has opted for AQL of 0.5 % and UQL of 20 %; producer risk of 10 % and consumer risk of 10 % in determining the DOE's sample size. Accordingly, validation team has visited 11 Samples from the PP's sample with acceptance number (c) as 0. No discrepancy was found in PP's baseline survey /06/. Validation team further assessed the baseline survey excel spreadsheet /06/. This review reveals no errors/ inconsistencies. The calculations in the baseline survey excel spreadsheet /06/ were found to be correct.
-------------------	--

Relevant Indicator	SDG	SDG 13, Climate action
Data/parameter Description	-	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.
Unit/Value		Percentage /6.5 %
Verified Source of data		Baseline Survey
Assessment		The validation team of the DOE has applied acceptance sampling approach for on-site visits as part of verification of the baseline survey conducted by the PP in accordance with the paragraph 25 of the Standard: Sampling and surveys for CDM project activities and programmes of activities, Version 07.0. In accordance with the paragraph 27 of the sampling standard, acceptance sampling has been chosen by the validation team and accordingly steps listed in paragraph 28 of the sampling standard shall be followed. validation team has opted for AQL of 0.5 % and UQL of 20 %; producer risk of 10 % and consumer risk of 10 % in determining the DOE's sample size. Accordingly, validation team has visited 11 Samples from the PP's sample with acceptance number (c) as 0. No discrepancy was found in PP's baseline survey /06/. Validation team further assessed the baseline survey excel spreadsheet /06/. This review reveals no errors/ inconsistencies. The calculations in the baseline survey excel spreadsheet /06/ were found to be correct.

Relevant Indicator	SDG	SDG 13, Climate action
Data/parameter Description	-	W _{b,y} - Baseline Water Boiling Test (BWBT)
Unit/Value		Tons/Litre /0.00073277

Verified Source of data	Baseline Water boiling test /09/
Assessment	The validation team of the DOE has applied acceptance sampling approach for on-site visits as part of verification of the baseline survey conducted by the PP in accordance with the paragraph 25 of the Standard: Sampling and surveys for CDM project activities and programmes of activities, Version 07.0. In accordance with the paragraph 27 of the sampling standard, acceptance sampling has been chosen by the validation team and accordingly steps listed in paragraph 28 of the sampling standard shall be followed. validation team has opted for AQL of 0.5 % and UQL of 20 %; producer risk of 10 % and consumer risk of 20 % in determining the DOE's sample size. Accordingly, validation team has visited 08 Samples from the PP's sample with acceptance number (c) as 0. It was confirmed by the households, that WBT /09/ was conducted by the PP. Validation team further assessed the WBT excel spreadsheet /06/. This review reveals no errors/ inconsistencies. The calculations in the WBT excel spreadsheet /06/ were found to be correct.

Relevant Indicator	SDG	SDG 13, Climate action
Data/parameter Description	-	EF _{b,CO2} - CO ₂ emission factor arising from use of fuels in baseline scenario
Unit/Value		tCO ₂ /TJ /112
Verified Source of data		IPCC default value for wood
Assessment		Deemed valid by TPDDTEC Methodology/B01/

Relevant Indicator	SDG	SDG 13, Climate action
Data/parameter Description	-	EF _{b,non-CO2} - CO ₂ emission factor arising from use of fuels in project scenario
Unit/Value		tCO ₂ /TJ /8.692
Verified Source of data		IPCC default value for wood
Assessment		Deemed valid by TPDDTEC Methodology /B01/

Relevant Indicator	SDG	SDG 13, Climate action
Data/parameter Description	-	EF _{p,CO2} - CO ₂ emission factor arising from use of fuels in project scenario
Unit/Value		tCO ₂ /TJ /112
Verified Source of data		IPCC default value for wood
Assessment		Deemed valid by TPDDTEC Methodology /B01/

Relevant Indicator	SDG	SDG 13, Climate action
Data/parameter Description	-	$EF_{p,non-CO_2}$ - Non-CO ₂ emission factor arising from use of fuels in project scenario
Unit/Value		tCO ₂ /TJ /8.692
Verified Source of data		IPCC default value for wood
Assessment		Deemed valid by TPDDTEC Methodology/B01/

Relevant Indicator	SDG	SDG 13, Climate action
Data/parameter Description	-	$f_{NRB,i,y}$ - Non-renewability status of woody biomass fuel in scenario I during the year y
Unit/Value		Fraction /0.8968
Verified Source of data		MINIRENA (Ministry of Natural Resources of Rwanda, 2016): Projection Scenario of Supply/Demand of Woody Biomass in Rwanda from 2015 to 2026. Department of Forestry and Nature Conservation (DFNC), Rwanda Natural Resources Authority (RNRA), MINIRENA, Kigali /B05/
Assessment		The data sources used for the f_{NRB} were also cross checked and it is found that it is latest available data and also from credible source /B05/. The calculation /02/ of the f_{NRB} calculation was checked and found to be correct and thus acceptable to the validation team.

Relevant Indicator	SDG	SDG 13, Climate action
Data/parameter Description	-	$NCV_{b,fuel}$ - Net calorific value of the fuels used in the baseline y
Unit/Value		TJ/ton /0.0156
Verified Source of data		IPCC default value for wood
Assessment		Deemed valid by TPDDTEC Methodology /B01/

Relevant Indicator	SDG	SDG 13, Climate action
Data/parameter Description	-	$NCV_{b,fuel}$ - Net calorific value of the fuels used in the baseline y
Unit/Value		TJ/ton /0.0156
Verified Source of data		IPCC default value for wood
Assessment		Deemed valid by TPDDTEC Methodology /B01/

6. Data and parameters to be monitored

Relevant Indicator	SDG	SDG 13, Climate action
--------------------	-----	------------------------

Data/parameter Description	-	$N_{p,y}$ - Number of person.days consuming water supplied by project scenario p through year y
Unit/Value		Persons.days /10,950,000
Measurement methods, procedures and frequency		As per FT updates- At least biennially
Assessment		This is in accordance with the applied methodology TPDDTEC /B01/ and thus acceptable to the validation team.

Relevant Indicator	SDG	SDG 13, Climate action
Data/parameter Description	-	$Q_{p,y}$ - Quantity of safe water supplied in the project scenario p during the year y, using the “zero or low” emissions’ clean water supply technology
Unit/Value		Litres per person per day (l/person/day) /: 6.3
Measurement methods, procedures and frequency		As per FT updates, Water Consumption Field Test (WCFT) - At least biennially
Assessment		This is in accordance with the applied methodology TPDDTEC /B01/ and thus acceptable to the validation team.

Relevant Indicator	SDG	SDG 13, Climate action
Data/parameter Description	-	$Q_{p,y, rawboil,y}$ - Quantity of raw or unsafe water that is still boiled after installation of the water treatment technology
Unit/Value		Litres per person per day (l/person/day) /: 0.5
Measurement methods, procedures and frequency		As per FT updates, Water Consumption Field Test (WCFT) - At least biennially
Assessment		This is in accordance with the applied methodology TPDDTEC /B01/ and thus acceptable to the validation team.

Relevant Indicator	SDG	SDG 13, Climate action
Data/parameter Description	-	$Q_{p, cleanboil,y}$ - Quantity of safe (treated, or from safe supply) water boiled in the project scenario p, after installation of project technology
Unit/Value		Litres per person per day (l/person/day) /: 0.5
Measurement methods, procedures and frequency		Water Consumption Field Test (WCFT) - At least biennially
Assessment		This is in accordance with the applied methodology TPDDTEC /B01/ and thus acceptable to the validation team.

Relevant Indicator	SDG	SDG 13, Climate action
Data/parameter Description	-	$U_{p,y}$ - Usage rate in project scenario p during year y
Unit/Value		Percentage /: 95

Measurement methods, procedures and frequency	Field survey- Annual usage survey - At least biennially
Assessment	This is in accordance with the applied methodology TPDDTEC /B01/ and thus acceptable to the validation team.

Relevant Indicator	SDG	SDG 13, Climate action
Data/parameter Description	-	LE _{p,y} - Leakage in project scenario p during year y
Unit/Value		tCO ₂ e /year /0
Measurement methods, procedures and frequency		Field survey Baseline and monitoring surveys - At least biennially
Assessment		This is in accordance with the applied methodology TPDDTEC /B01/ and thus acceptable to the validation team.

Relevant Indicator	SDG	SDG 13, Climate action
Data/parameter Description	-	Quality of the treated water
Unit/Value		As appropriate in alignment with QA/QC procedures / Zero Colony Forming Units (CFU) of E.Coli / 100 ml of safe water
Measurement methods, procedures and frequency		As per the local laboratory/hospital procedures or alternatively conducted via field tests like IDEXX presence/absence tests in 100 ml for E. Coli - Quarterly
Assessment		This is in accordance with the applied methodology TPDDTEC /B01/ and thus acceptable to the validation team. Please also refer the approved (by GS) deviation /13/.

Relevant Indicator	SDG	SDG 13, Climate action
Data/parameter Description	-	Hygiene campaigns
Unit/Value		Hygiene campaigns carried out among project technology users. The description of the campaigns is provided in Section B.7.3
Measurement methods, procedures and frequency		Annual hygiene campaigns results
Assessment		This is in accordance with the applied methodology TPDDTEC /B01/ and thus acceptable to the validation team.

Relevant Indicator	SDG	SDG 13, Climate action
Data/parameter Description	-	Capacity/Treatment capacity of the project technology/improved sources
Unit/Value		Litres per day/16,200

Measurement methods, procedures and frequency	A rehabilitated borehole/new borehole can supply in average 16,200 l/day. Hence, the capacity would be sufficient to provide at least 7 l/p/day (cap value) to 2,314 people Once at the time of registration or at inclusion of new technology.
Assessment	This is in accordance with the applied methodology TPDDTEC /B01/ and thus acceptable to the validation team.

Relevant Indicator	SDG	SDG 1, No poverty
Data/parameter Description	-	$Q_{tot,p,y}$ / Total quantity of safe water in litres per year supplied by the rehabilitated/newly drilled boreholes of the project to the communities in year y
Unit/Value		l/y (litres/year) 68,985,000
Measurement methods, procedures and frequency		Water Consumptions Field Test (WCFT) Lists supplied by the WASH committee responsible for the water points Calculated as: $Q_{tot,p,y} = N_{p,y} * Q_{p,y}$ Where $N_{p,y}$ = Number of person.days consuming water supplied by project scenario p through year y $Q_{p,y}$ = Quantity of safe water supplied in the project scenario p during the year y, using the “zero or low” emissions’ clean water supply technology
Assessment		This is in accordance with the applied methodology TPDDTEC /B01/ and thus acceptable to the validation team.

Relevant Indicator	SDG	SDG 3, Good health and well-being
Data/parameter Description	-	$P_{IWBD,y}$ / Proportion of households perceiving less often incidence of water borne diseases like cholera, diarrhea, typhoid fever or Hepatitis A/E since the start of the project in year y
Unit/Value		Fraction /80%
Measurement methods, procedures and frequency		Monitoring Surveys -The measurement of the parameter is based on qualitative information collected during Monitoring Surveys. The end users are asked whether, since the start of the project, incidence of water borne diseases like cholera, diarrhea, typhoid fever or Hepatitis A/E occurs more often, less often among the family members or the situation has not changed./ Annual
Assessment		This is in accordance with the applied methodology TPDDTEC /B01/ and thus acceptable to the validation team.

Relevant Indicator	SDG	SDG 5, Gender
Data/parameter Description	-	$P_{ITEC,y}$ / Proportion of women in households perceiving reduced amount of time and effort spent for collecting water and wood fuel since the start of the project in year y
Unit/Value		Fraction /90%

Measurement methods, procedures and frequency	Monitoring Surveys -The measurement of the parameter is based on qualitative information collected during Monitoring Surveys. The end users are asked whether, since the start of the project, they spent more, less time to collect water and wood fuel or the situation has not changed/ Annual
Assessment	This is in accordance with the applied methodology TPDDTEC /B01/ and thus acceptable to the validation team.

Relevant Indicator	SDG	SDG 5, Gender
Data/parameter Description	-	P _{F, HYG, y} P _{M, HYG, y} / Participation of either gender across all annual hygiene campaigns organized by the project in year y
Unit/Value		Fraction /(i) Female at least 30%; (ii) Male at least 30%
Measurement methods, procedures and frequency		Participation lists - The measurement of the parameter is based on the gender specified for each participant on the participation lists of the annual hygiene campaigns organized in the different villages within the project boundary. / Annual
Assessment		This is in accordance with the applied methodology TPDDTEC /B01/ and thus acceptable to the validation team.

Relevant Indicator	SDG	SDG 6, Clean water and sanitation
Data/parameter Description	-	N _{WASH, y} / Number of organized Water Sanitation and Hygiene trainings in year y
Unit/Value		Number /50 (one training per borehole)
Measurement methods, procedures and frequency		Reports regarding the Water Sanitation and Hygiene trainings - The list of Water Sanitation and Hygiene trainings during the corresponding monitoring period / Annual
Assessment		This is in accordance with the applied methodology TPDDTEC /B01/ and thus acceptable to the validation team.