



Verification and certification report form for Gold Standard project activities

BASIC INFORMATION

Title and GS reference number of the project activity	GS ID: GS5125 Eritrea Community Boreholes
Scale of the project activity	☒ Large-scale ☐ Small-scale
Version number of the verification and certification report	03
Completion date of the verification and certification report	30/04/2024
Monitoring period number and duration of this monitoring period	03 01/03/2021 - 30/08/2022(including both the days)
Version number of the monitoring report to which this report applies	05
Crediting period of the project activity corresponding to this monitoring period	22/09/2016 – 21/09/2023 (including both the days)
Project representative(s)	CO2balance
Host Party	State of Eritrea
Applied methodologies and standardized baselines	Technologies and Practices to Displace Decentralized Thermal Energy Consumption Version 2
Mandatory sectoral scopes	03/3.1
Conditional sectoral scopes, if applicable	-
Estimated amount of GHG emission reductions or GHG removals for this monitoring duration in the registered PDD	429,826 tCO ₂ e/y
Certified amount of GHG emission reductions or GHG removals for this monitoring period	119,250 tCO ₂ e
SDG Impacts:	1. SDG 6: Clean water and sanitation 2. SDG 3: Good health and wellbeing 3. SDG 5: Gender Equality 4. SDG 13: Climate Action
Name and UNFCCC reference number of the VVB	E-0052: Carbon Check (India) Private Ltd.
Name, position and signature of the approver of the verification and certification report	<i>Baiya Suman</i>

SECTION A. Executive summary

Carbon Check (India) Private Ltd. (CC IPL) is performing the third periodic verification of the GS project “Eritrea Community Boreholes” (GS project id: GS 5125) for the period 01/03/2021 - 30/08/2022 (inclusive of both the dates). The PA will stimulate the installation of domestic safe water systems using borehole to the households within State of Eritrea. The start date of the project activity is 21/09/2016.

According to the GS-PD /B03/ & MR /01/, the project activity “Eritrea Community Boreholes” the overall objective of the Project activity is to contribute to the achievement of the Sustainable Development Goals (SDGs) under SDG 3, SDG 5, SDG 6 and SDG 13 by providing safe water, the project will ensure that households consume less firewood during the process of water purification and as a result there shall be a reduction of carbon dioxide emissions from the reduction of combustion of fire wood.

This report summarises the findings of the verification of the project, performed on the basis of Gold Standard for global goals (GS4GG) /B02/, as well as criteria given to provide for consistent project operations, monitoring and reporting and the subsequent decisions by the Gold Standard. Verification is required for all registered GS project activities intending to confirm their achieved emission reductions and proceed with request for issuance of VERs. This report contains the findings and resolutions from the verification and a certification statement for the verified emission reductions.

Verification is the periodic independent review and ex-post determination of both quantitative and qualitative information by a Validation & Verification body (VVB), of the monitored reductions in GHG emissions under SDG 13 including the achievement of other SDGs mentioned above that have occurred as a result of the project activity during the defined monitoring period.

Certification is the written assurance by a Validation & Verification body (VVB) that, during a specific period, a project activity achieved the emission reductions as verified.

The objective of this verification was to verify and certify achievement of SDGs reported for the “Eritrea Community Boreholes” in the host country “State of Eritrea” for the period 01/03/2021 - 30/08/2022 (including both the days).

The purpose of verification is to review the monitoring results and verify that the monitoring methodology was implemented according to the monitoring plan and monitoring data and used to confirm the reductions in anthropogenic emissions by sources, is sufficient, definitive and presented in a concise and transparent manner. CC IPL’s objective is to perform a thorough, independent assessment of the registered project activity.

In particular, the monitoring plan, monitoring report and the project’s compliance with relevant GS and Host Party criteria are verified in order to confirm that the component project has been implemented in accordance with the previously registered project design and conservative assumptions, as documented. It is also confirmed if the monitoring plan is in compliance with the registered GS-PD/B03/ and the approved monitoring methodology /B01/.

Scope:

The scope of the verification is:

- To verify the project implementation and operation with respect to the registered GS-PD/B03/
- To verify the implemented monitoring plan with the registered GS-PD/B03/ and applied baseline and monitoring methodology /B01/.
- To verify that the actual monitoring systems and procedures are in compliance with the monitoring systems and procedures described in the monitoring plan.
- To evaluate the GHG emission reduction data and express a conclusion with a reasonable level of assurance about whether the reported GHG emission reduction data is free from material misstatement.
- To verify that reported GHG emission data is sufficiently supported by evidence.

The verification shall ensure that the reported emission reductions /02/ are complete and accurate in order to be certified.

Verification process:

The verification comprises a review of the monitoring report /01/ over the monitoring period from 01/03/2021 - 30/08/2022 (including both days) and based on the registered GS-PD/B03/ as part of the monitoring parameters and monitoring plan, emission reduction calculation spreadsheet /02/, monitoring methodology /B01/, and all related evidence provided by project participants.

On-site interviews and inspections are also performed as part of the verification process.

Conclusion:

The verification team assigned by the Validation & Verification body (VVB) concludes that the monitoring report /01/, meet all relevant requirements of the Gold Standard as per the requirements of GS4GG /B02/. The verification has been conducted in-line with the GS4GG requirements.

The project activity was correctly implemented according to the selected monitoring methodology /B01/, monitoring plan and the registered GS-PD/B03/. The monitoring system was installed, maintained in a proper manner, while collected monitoring data allowed for the verification of the amount of achieved GHG emission reductions. The following table provides the resulted emission reduction from the project as verified through the document review and on-site interviews by the verification team.

Vintage	VER (tCO₂e)
01/03/2021 – 31/12/2021	66,589 tCO ₂ e
01/01/2022– 30/08/2022	52,661 tCO ₂ e
Total for the monitoring period	119,250 tCO ₂ e

CC IPL as a Validation & verification body (VVB) is therefore pleased to issue a positive verification opinion expressed in the section F of this report.

SECTION B. Verification team, technical reviewer and approver

B.1. Verification team member

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of VVB or outsourced entity)	Involvement in			
						Desk/document review	On-site inspection	Interviews	Verification findings
1.	Team Leader / Verifier / Technical Expert	IR	Mathew	Vijay	CC IPL	X	X	X	X
2.	Trainee Assessor	IR	T A	Stefimol	CC IPL	X	NA	NA	X
3.	Local Expert	ER	Michael	Mehreteab	CC IPL	NA	X	X	NA

B.2. Technical reviewer and approver of the verification and certification report

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of VVB or outsourced entity)
1.	Technical reviewer	ER	Chakraborty	Shivaji	CC IPL
2.	Approver	IR	Suman	Priya	CC IPL

SECTION C. Means of verification

C.1. Desk/document review

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The verification was performed based on the review of the Monitoring report /01/ and the supporting documentation. This process included review of data and information presented to verify their completeness and review of the monitoring plan and monitoring methodology /B01/. Documents reviewed or referenced during the verification are listed in Appendix 3 below.

C.2. On-site inspection

Onsite physical audit has been performed. The Team leader has conducted the on-site inspection and in particular the acceptance sampling.

Furthermore, VVB has considered the Site Visit and Remote Audit Requirements and Procedures, version 2.0/B06/ for conducting the onsite visit in accordance with the requirements provided in the §3.1.1(b) of the Site Visit and Remote Audit Requirements and Procedures, version 1.0/B06/.

C.3. Interviews

PP has conducted the baseline project survey and usage survey at the time of validation process of the Project Activity and got it registered with GS standard. VVB has cross checked and assessed the project survey and usage survey conducted by PP on the basis of random sampling in line with CDM sampling standards. The verification team confirms that the baseline survey conducted by PP is correct and only end users that boil water is currently using unsafe water are considered for VER.

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
/01/	Berhe	Ngsti Adhanom	Village-Dbarwa	25/11/2023	Technical description of project, Location of project, Baseline discussion.	Vijay Mathew, Mehreteab Michael
/02/	Temelso	Hiwet Goytom	Village-Dbarwa	25/11/2023	Technical description of project, Location of project, Baseline discussion.	Vijay Mathew, Mehreteab Michael
/03/	Hayle	Trhas Kbreab	Village-Adiquala	25/11/2023,	Technical description of project.	Vijay Mathew, Mehreteab Michael
/04/	Mogos	Grway Sitaom	Village-Adiquala	25/11/2023,	Technical description of project, Monitoring Plan discussion, Local Stakeholder Consultation	Vijay Mathew, Mehreteab Michael
/05/	Weldege	Hayelom Tesema	Village-Adiquala	25/11/2023		Vijay Mathew, Mehreteab Michael
/06/	Gebremed hn	Ngsti Tsegay	Village-Maiaini	26/11/2023	Local Stakeholder Consultation	Vijay Mathew, Mehreteab Michael
/07/	Temelso	Habte Tsegay	Village-Maiaini	26/11/2023	Technical description of project, Location of project, Monitoring Plan discussion.	Vijay Mathew, Mehreteab Michael
/08/	Nguse	Kflemaryam	Village-Maiaini	26/11/2023	Technical description of project, Location of	Vijay Mathew, Mehreteab

		Weldemary am			project.	Michael
/09/	Zecarias	Tesfai	VITA	26/11/2023	Project Design Organisation background Project Implementation plan, Project start date, Project Location Project background information, Baseline surveys, WCFT, Baseline Scenario Baseline Identification and Additionality Monitoring and reporting, documentation Qualification and Training Quality Assurance- Management and operating system Social and Environmental Impacts Compliance with relevant laws Roles and responsibility	Vijay Mathew, Mehreteab Michael
/10/	Yemane	Tesfai	VITA	26/11/2023	Project Design Organisation background Project Implementation plan, Project start date, Project Location Project background information, Baseline surveys, WCFT, Baseline Scenario Baseline Identification and Additionality Monitoring and reporting, documentation Qualification and Training Quality Assurance- Management and operating system Social and Environmental Impacts Compliance with relevant laws Roles and responsibility	Vijay Mathew, Mehreteab Michael
/11/	Eyasu	Simret	VITA	26/11/2023	Project Implementation and operation, Grievance handling. Maintenance	Vijay Mathew, Mehreteab Michael
/12/	Misghina	Kibrom	Water authority official	26/11/2023	Project Implementation and operation, Management and operating system Social and Environmental Impacts Compliance with	Vijay Mathew, Mehreteab Michael

					relevant laws Roles and responsibility	
/13/	Weldetinse	Zere	Water authority official	26/11/2023	Project Implementation and operation, Management and operating system Social and Environmental Impacts Compliance with relevant laws Roles and responsibility	Vijay Mathew, Mehreteab Michael

A single borehole is used by multiple households. Hence more than one HH is interviewed for a single borehole.

During the onsite visit VVB has asked the following questions but not limited to the following to the users.

- Confirmed the user details like name, house number, name of household head, etc.
- The frequency of collection of water from source during rainy season as well as dry season.
- What will you use this water for?
- On the days that you use the project boreholes, how many containers of water do you fill each day from boreholes in the dry season and the rainy season?
- Has any borehole you use been non-functional anytime in the last 12 months?
- What is your main source of drinking water in the wet season and the dry season?
- Where is the water collected from and how long does it take to go there, get water and come back?
- How many trips did that person make in the last week?
- How many hours per day is water supplied on average?
- What is the reason for not making your water safe for drinking, food washing and basic personal hygiene?

C.4. Sampling approach

As the target population is homogeneous, PP has proposed cross sampling using 90/30 as confidence/precision. This is in line with the applied methodology TPDDTEC version 2 /B01/. The sample size for each parameter is determined following guidelines for Sampling and Surveys for CDM Project activities and Programme of Activities Ver. 4.0 (EB86, Annex 4) /B04-b/.

In line with paragraph 26 of the Sampling and surveys for CDM project activities and programmes of activities/B04-a/, the verification team has applied acceptance sampling approach through on-site interviews on the monitoring survey as part of verification. The project participant had applied sampling approach to the survey /03,04/, conducted by the representatives of project participant. The sample size calculation and randomizer used for selection of samples has been provided to the verification team. The households have been selected using the random number generator.

The verification team has chosen acceptance sampling in accordance with paragraph 28 of the Sampling and surveys for CDM project activities and programmes of activities, Version 09.0 /B04-a/.

Eritrea falls under the least developed country, under the UNFCCC website as per list of March 2018¹, Hence applying paragraph 39 (c) and table 2 of the Sampling and surveys for CDM project activities and programmes of activities, version 09 /B04-a/, a sample size of 12 households was chosen (with no discrepant records). A sample size of 12 was determined, based on an AQL of 0.5% and UQL of 20%; producer risk 5% and consumer risk of 20 % each in determining the VVB's sample size Acceptance number (c) thus determined for the sample is 0. VVB interviewed 12 samples from the baseline survey done by project participants.

The information provided in the monitoring survey, has been cross checked during the Onsite visit. As a part of acceptance sampling, the Verification team could confirm the monitoring survey data with no discrepant records. The sample calculation was undertaken by the PD by using the CDM guidelines by using the 90/30 confidence/precision and the results of sampling were tested for the actual confidence/precision, it was observed that the results met the desired confidence/precision. Hence, verification team confirms that PP's survey/sampling records to be acceptable in line with the § 33 of the Sampling and surveys for CDM project activities and programmes of activities, version 09 /B04-a/.

Parameter	Verification approach	Population (for VVB's sample)	VVB's Sample Size
Usage surveys	ASP	150	12
Project Survey Analysis	ASP	150	12
Water Consumption Field Test	ASP	60	12

The details of the sample interviewed are listed in section C.3 (under the list of interviewed persons). No discrepancy was found in any of the 12 samples and thus c=0, i.e., no discrepant records were observed. Thus, PP's set of records has been accepted in line with §33 of the Sampling and surveys for CDM project activities and programmes of activities (version 09.0) /B04-a/. For the impact parameters, questionnaire was prepared and was used during the survey by the PP. During the on-site interviews, the verification team cross-checked these sample documents, and no discrepancies were found in the impact parameters as well. Furthermore, the training & competency of the personnel, who conducted such test were checked. They were also interviewed to ensure that the process, method used, and their competency to confirm such standardised test were appropriately applied. The sampling technique to draw such samples were found adequate and the sample collectors were found competent to perform such task.

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

The VVB has raised 05 clarifications (CLs) and 03 corrective action requests (CARs) are raised. Detail list of findings as provided in Appendix 4 of this document.

SECTION D. Verification findings

D.1. Remaining forward action requests from validation and/or previous verifications

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This is the third verification and no FARs were raised during the second verification.

D.2. Compliance of the project implementation and operation with the registered project design document

Means of verification	Document Review, Interview
Findings	CAR 02, CL 01 were raised, and the findings are closed. Please refer appendix 04 for details.

¹ <https://unfccc.int/topics/resilience/workstreams/national-adaptation-programmes-of-action/ldc-country-information>

Conclusion	Verification team confirms that the latest available version of the monitoring report template has been used and the MR is in compliance with the monitoring report form and related monitoring report template guide. As verified from on-site interview the audit team confirm the project implementation and operation complies with the project design document /B03/. The starting date of operation is 21/09/2016 (First Repair Confirmation form which is a part of Signed transfer of carbon rights) Verification team has checked the Repair Confirmation Form /09/ and found the start date to be consistent. The project boundary in the registered GS-PD/B03/ is in line with the actual project boundary. CC IPL confirms that the project boreholes systems are operational through on-site visits and interviews with end users. Each borehole system has a unique identification number that was provided in the end user agreement and are correct according to the project database. Each borehole is also physically marked with its unique identification number. Along with the serial number, the boreholes technology, end username, address, commissioning date etc. had also been noted which were found to be consistent on ground. It is noted that no changes have been observed or identified, that may impact the additionality. No addition of component nor extension of technology, no addition nor removal of project sites, no change of values of the actual operational parameter relevant to determination of emission reductions which are within the control of the PP; no change has been observed or identified that may impact the scale of the project activity or applicability of baseline and monitoring methodology Technologies and Practices to Displace Decentralized Thermal Energy Consumption Version 3.1. /B01/. All 163 boreholes are rehabilitated. A well setup feedback mechanism is available for each boreholes. There is a continuous input/grievance mechanism in place for beneficiaries to be able to give feedback on the project. To facilitate such activities, the Grievance Expression Process Book /08/ has been placed in Vita offices in State of Eritrea. During the interview, the location of the placement of Grievance Expression Process Book /08/ was found to be appropriate as it is central to the project areas and easily accessible. Field staffs Vita field staff have not received any feedback during this monitoring period from the borehole users on damage or breaking of boreholes therefore it can be assumed that the project is running as planned. It was confirmed that no feedback was received during the monitoring period. PP has submitted the training records /12/ during the verification to confirm that that staff are trained in order to conduct the WASH trainings to the community people. This has been verified by the VVB. Verification team based on review of MR /01/ and provided evidence, CTF /07/ confirms that the households/end users relinquish their right of carbon credits. The proposed project activity is neither not registered under any other GHG or non-GHG Program. The VVB has checked the publicly available sources viz. CDM², VERRA-VCS³, iREC⁴. Furthermore, the water boreholes implemented under the project is uniquely identified, thus avoiding any potential double counting /16/. As verified through document review and on-site interviews, the project implementation and operation, all physical features of the project comply with the project design document /B03/. Verification team has checked the information in the monitoring report /01/ and compared it against the registered GS-PD/B03/ and found to be consistent.
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² <https://cdm.unfccc.int/Projects/projsearch.html>

³ <https://registry.terra.org/app/search/VCS/All%20Projects>

⁴ <https://www.irecstandard.org/>

	Verification team confirms that: a) The project activity is implemented as per registered GS-PD/B03/. b) The actual operation of the proposed project activity is in line with the registered/revised GS-PD /B03/. c) It has reviewed the registered GS-PD /B03/ including the monitoring plan, the applied monitoring methodology and found that the final MR/01/ for this monitoring period is in line with all the above-mentioned documents. Verification team of CCIPL based on review of records and on-site interviews confirms that a robust and effective grievance addressal mechanism is in place and however, no grievances were reported during the monitoring period. In summary, the monitoring period is reasonable, and the operation of the project activity is in accordance with the registered/revised GS-PD /B03/.
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D.3. Post-registration changes

D.3.1. Temporary deviations from the registered monitoring plan, applied methodologies, standardized baselines or other methodological regulatory documents⁵

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During the current monitoring period, a temporary deviation was applicable. The Annual Monitoring was carried out outside of the annual frequency requirement. During MP3, 01/03/2021 to 30/08/2022 (including both days), the annual monitoring was carried out in April 2022 instead of October 2021. The backlog of field activities also had an impact on the quarterly WQTs. The sample of WQTs scheduled to be carried out in Q3 2021 were instead carried out in Q1 2022. However, all boreholes included passed and successfully met the requirements of the standard for drinking water to be deemed safe for consumption. A deviation request for was submitted, and the same was approved by Gold Standard on 28/07/2023 /11/.

D.3.2. Corrections

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Not applicable

D.3.3. Changes to the start date of the crediting period

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Not applicable

D.3.4. Inclusion of a monitoring plan

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Not applicable

D.3.5. Permanent changes from registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines or other methodological regulatory documents

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The Wp,y value has changed for the previous monitoring period and will remain as a permanent change. Prior to this change used a measured baseline value obtained from the Baseline Water Boiling Test. However, as per GS SWS Grievance Review, the updates to the parameters means a cap was introduced which has been applied to this project considering the firewood required to boil 1 litre of water for 10 minutes using a three stone fire (0.4 kg/L).

Updates have been made to parameter EF (Non-CO₂ (CH₄ and N₂O emission factor arising from use of wood fuel in baseline scenario) with previous AR4 values applied to 2020 vintage, but as new rule update came into force on 01/01/2021, 2021 vintage have been calculated with the updated AR5 value in the corresponding parameter box which is found OK.

⁵ Other standards, methodologies, methodological tools and guidelines (to be) applied in accordance with the applied(selected) methodologies are collectively referred to as the other (applied) methodological regulatory documents).

D.3.6. Changes to the project design

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Not applicable

D.3.7. Changes specific to afforestation and reforestation project activities

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Not applicable

D.4. Compliance of the registered monitoring plan with applied methodologies, applied standardized baselines, and other applied methodological regulatory documents

Means of verification	Document Review, Interview
Findings	CL 05 was raised, and the findings are closed. Please refer appendix 04 for details.
Conclusion	The verification team has checked the actual monitoring plan against the registered monitoring plan and monitoring methodology /B01/ and applicable tools. Furthermore, the verification team has checked monitoring system by means of comparison with the information given in the monitoring plan and monitoring methodology. The monitoring plan is completely in accordance with the approved methodology /B01/ applied by the registered GS-PD/B03/. The monitoring plan along with sampling & survey of the boreholes for baseline as well as the project case is described in the registered PDD /B03/. During the verification all relevant monitoring parameters (as listed in the PDD /B03/)have been verified with regard to the appropriateness of the applied measurement / determination method, the correctness of the values applied for ER calculation, the accuracy, and applied QA/QC measures

D.5. Compliance of monitoring activities with the registered monitoring plan

D.5.1. Data and parameters fixed ex ante or at renewal of crediting period

Means of verification	Document Review, Interview
Findings	CAR 01 was raised and the findings are closed. Please refer appendix 04 for details.
Conclusion	Verification team confirms that the data and parameters fixed ex ante are in compliance with the registered GS-PD/B03/ and monitoring plan. Please refer to the Annex 1.

D.5.2. Data and parameters monitored

Means of verification	Document Review, Interview
Findings	CAR 03, CL 02 and CL 03 were raised, and the findings were closed. Please refer Appendix 04 for details.
Conclusion	The verification team confirms that the data and parameters monitored are in compliance with the registered GS-PD/B03/ and the monitoring plan. It is confirmed that the verification team assessed the data / information flow from the point of monitoring to emission reduction calculation and found no gap in the same. Please refer to the Annex 2.

D.5.3. Implementation of sampling plan

Means of verification	Document Review, Interview
Findings	No finding raised
Conclusion	According to the Sampling and surveys for CDM project activities and programmes of activities /B04-a/ and related guidelines /B04-b/ the sampling plan

	was determined at the time of project registration and applied during the monitoring period. Sampling method: The project proponent has elected to cross-sample technologies per region across all its homogenous boreholes located within Zoba Debub, Zoba Maekel and Zoba Anseba. In the current monitoring period, cross-sampled technologies are from the Zoba Debub region only. The sample size is determined by the requirement to achieve 90/30 precision, in line with the methodology for annual survey. Sampling approaches may follow the Guideline "Sampling and surveys for CDM project activities and programme of activities" /B04-b/ for calculation of sample size. a) Data to be collected: $Q_{p,y}$ and $Q_{p,rawboil,y}$ Implementation plan: Completed prior to first verification and then biennially after first verification. b) Data to be collected: Quality of the treated water Implementation plan: Water Quality Tests (WQTs) will be conducted quarterly with a sample size using the 90/10 precision rule. c) Data to be collected : Number of persons consuming water supplied by project scenario p through year y. Implementation plan: Sum of the total number of people using each borehole in the project multiplied by the number of crediting days each borehole earns in this monitoring period. The total number of households using each borehole will be determined through information supplied by our partner. Using this method, the total number of people using each borehole will be known, and hence a figure for person days can be calculated. All monitoring tasks will be selected at random. Actual implementation: - Sampling method: Acceptance sampling method has been adopted by the VVB during the onsite verification audit. The sample size included all households and was randomly sampled from a list of all the project boreholes system in the project for each state separately. The sampling frame is homogenous within itself, with respect to service level, established ex-ante baseline and user characteristics. PP has determined target sample size to be 12: The total sample size has been derived using equation para 12 of appendix 1, EB 86 Annex 4, Guidelines for Sampling and Surveys for CDM Project activities and Programme of Activities Ver. 4.0. /B04-b/. The expected parameter values (mean, standard deviation and proportion) have been taken as per para 12 of appendix 1, EB 86 Annex 4 /B04/.
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D.6. Compliance with the calibration frequency requirements for measuring instruments

Means of verification	Document Review, Interview
Findings	NA
Conclusion	N/A since there is no monitoring equipment which require calibration as per the monitoring plan. The monitoring consists of reviewing the documents and on-site interviews. The verification team confirms that the monitoring tasks, such as usage surveys, water consumption field tests, water quality tests, annual hygiene campaign results, and leakage usage surveys, are carried out by the Vita Project team. Vita's project team was trained in household energy research and surveying. During the interview, this was confirmed. As a result, the verification team confirms the project team's credibility and competence.

D.7. Assessment of data and calculation of emission reductions or net removals

D.7.1. Calculation of baseline GHG emissions or baseline net GHG removals by sinks

Means of verification	Document Review, Interview
Findings	NA
Conclusion	Baseline Emission: $BE_{b,y} = B_{b,y} * ((fNRB_y * EF_{b,fuel,co2}) + EF_{b,fuel,nonco2}) * NCV_{b,fuel}$ Where: $BE_{b,y}$: - Emissions for baseline scenario b during the year y in tCO_{2e}

	$B_{b,y}$: - Quantity of fuel consumed in baseline scenario b during year y, in tons, as per by-default factors. $fNRB_y$: - Fraction of biomass used during year y for the considered scenario that can be established as non-renewable biomass $NCV_{b,fuel}$: - Net calorific value of the fuel that is substituted or reduced (IPCC default for wood fuel, 0.0156 TJ/ton) $EF_{b,fuel,co2}$: - CO₂ emission factor of the fuel that is substituted or reduced. 112 tCO₂/TJ for Wood/Wood Waste $EF_{b,fuel,nonco2}$: - Non-CO₂ emission factor of the fuel that is substituted or reduced The baseline GHG reduction $BE_{b,y} = 125,527 \text{ tCO}_2/\text{y}$
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D.7.2. Calculation of project GHG emissions or actual net anthropogenic GHG removals by sinks

Means of verification	Document Review, Interview
Findings	No finding raised
Conclusion	Project Emission: $PE_{p,y} = B_{p,y} * ((fNRB_y * EF_{p,fuel,co2}) + EF_{p,fuel,nonco2}) * NCV_{p,fuel}$ Where: $PE_{p,y}$: - Emissions for project scenario p during the year y in tCO_{2e} $B_{p,y}$: - Quantity of fuel consumed in project scenario p during year y, in tons, as derived from the statistical analysis conducted on the data collected during the project performance field tests (cases when no baseline performance field test are performed, e.g. by-default baseline factors). The value of $B_{p,y}$ is equal to zero as the Quantity of raw or unsafe water that is still boiled after installation of the water treatment technology and Quantity of safe water boiled in the project scenario p during the year y using the zero or low emissions clean water supply technology are zero. $fNRB_y$: - Fraction of biomass used during year y for the considered scenario that can be established as non-renewable biomass $NCV_{p,fuel}$: - Net calorific value of the project fuel (see NCV for wood fuel on page 19 of chapter 1, volume 2 of the IPCC report (accessible at: https://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_1_Ch1_Introduction.pdf).(IPCC default for wood fuel, 0.0156 TJ/ton). This is equal to the baseline fuel NCV in projects which use the same fuel. $EF_{p,fuel,co2}$: - CO₂ emission factor of the project fuel. This is equal to the baseline fuel EF in projects which use the same fuel, 112 tCO₂/TJ for Wood/Wood Waste $EF_{p,fuel,nonco2}$: - Non-CO₂ emission factor of the project fuel. This is equal to the baseline fuel EF in projects which use the same fuel. Project Emission (PE) = 0 tCO_{2e}

D.7.3. Calculation of leakage GHG emissions

Means of verification	Document Review, Interview
Findings	No finding raised

Conclusion	A leakage investigation shall be conducted every two years using relevant survey methods that can be combined with monitoring surveys as is applicable. The project is not marketing efficient technology, it is eliminating the need for a fuel-based technology to deliver pure water. Hence the leakage source is discounted and the leakage for the project is zero. Verification team has checked the assessment for all these potential sources of leakage in the monitoring report and verified that there are no leakage emission.
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D.7.4. Summary calculation of GHG emission reductions or net anthropogenic GHG removals by sinks

Means of verification	Document Review, Interview
Findings	No finding raised
Conclusion	Outcomes for SDG 3 – Good Health & Wellbeing: Calculations are as follows: $HAPR_y = ((P_{b,y} - P_{p,y}) / P_{b,y}) * U_{p,y}$ Where: $HAPR_y$ Total reduction in Household Air Pollution for project activity in year y (%) $P_{b,y}$ Quantity of fuel that is consumed in the baseline scenario b during year y (kg/household-day) $P_{p,y}$ Quantity of fuel that is consumed in the project scenario p during year y (kg/household-day) $U_{p,y}$ Usage rate in project scenario p during year y $P_{b,y} = W_{b,y} * Q_{p,y}$ Where: $W_{b,y}$ Quantity of wood fuel or fossil fuel required to boil 1 litre of water using technologies representative of baseline scenario b during year y $Q_{p,y}$ Quantity of safe water supplied in the project scenario p during year y, using the “zero or low” emissions’ clean water supply technology Baseline estimate: 0% reduction in exposure to Household Air Pollution due to boiling water Project estimate: 95% reduction in exposure to Household Air Pollution due to no longer boiling water Outcomes for SDG 5 – Gender Equality: $TR_y = T_{b,y} - T_{p,y}$ Where: TR_y Total reduction time spent collecting firewood for project activity in year y (hours) $T_{b,y}$ Baseline time spent collecting firewood per household per day (hours) $T_{p,y}$ Project time spent collecting firewood per household per day (hours)

Baseline estimate: 1.74 hours spent collecting firewood per household per day
 Project estimate: 0.58 hour spent collecting firewood per household per day

Outcomes for SDG 6 – Safe Water & Sanitation:

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

Where:

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

Baseline estimate: 0 people with access to safe water
 Project estimate: People with access to safe water:46,742

Outcomes for SDG 13 – Climate Action

As the baseline fuel and the project fuel are the same and the baseline emission factor and project emission factor are considered the same, the overall GHG reductions achieved by the project activity is calculated using equation 1 of the methodology and baseline emissions are not calculated separately.

CO2 emission reductions are the indicator to demonstrate that the project has raised capacity for effective climate change-related planning and management. This outcome is measured using the emission reduction calculations. The baseline indicators are detailed in Section D.1 and are as follows:

When the baseline fuel and the project fuel are the same and the baseline emission factor and project emission are considered the same, the overall GHG reductions achieved by the project activity in year y are calculated as follows:

$$ER_y = \sum_{b,p} (N_{p,y} * U_{p,y} * P_{p,b,y} * NCV_{b, fuel} * (f_{NRB,b,y} * EF_{fuel, CO2} + EF_{fuel, nonCO2})) - \sum LE_{p,y}$$

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

Where:

$\sum_{b,p}$: - Sum over all relevant (baseline b/project p) couples
 $N_{p,y}$: - Cumulative number of project technology-days included in the project database for project scenario p against baseline scenario b in year y
 $U_{p,y}$: - Cumulative usage rate for technologies in project scenario p in year y, based on cumulative adoption rate and drop off rate revealed by usage surveys (fraction)
 $P_{p,b,y}$: - Specific fuel savings for an individual technology of project p against an individual technology of baseline b in year y, in tons/day, as derived from the statistical analysis of the data collected from the field tests
 $f_{NRB,b,y}$: - Fraction of biomass used in year y for baseline scenario b that can be established as non-renewable biomass (drop this term from the equation when using a fossil fuel baseline scenario)
 $NCV_{b,fuel}$: - Net calorific value of the fuel that is substituted or reduced (IPCC default for wood fuel, 0.0156 TJ/ton)

EF_{b,fuel,CO2} : - CO₂ emission factor of the fuel that is substituted or reduced. 112 tCO₂/TJ for Wood/Wood Waste, or the IPCC default value of other relevant fuel
 EF_{b,fuel,nonCO2} : - Non-CO₂ emission factor of the fuel that is reduced
 LE_{p,y} : - Leakage for project scenario p in year y (tCO₂e/yr)

As mentioned in section D.7.1, D.7.2 and D.7.3 above, the resulted emission reduction for the monitoring period is 119,250 tCO₂e.

Baseline Emissions:

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

$$125,527 = 68,134 * ((0.97*112)+9.46)*0.0156$$

Where:

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

$$68,134 = (1-0) * 24,333,885 * 0.0004 * (7+0)$$

Where:

N_{j,y} Number of person days consuming water supplied by project scenario p through year y

C_j Expressed as a percentage, the portion of users of the project technology j who in the baseline were already consuming safe water without boiling it. Premises with a piped water supply can be excluded from the C_j factor when it can be clearly demonstrated that the piped water supply is not a clean water source. Prior to registration, the water quality of the piped water supply should be established as unsafe by carrying out water quality testing over a representative period of time or by referring to relevant third party studies for the target area. Premises with a piped water supply that boil water or would have boiled water (suppressed demand situation) in the baseline situation are in such cases eligible and can be included in the calculation of baseline emissions from boiling water. PP shall carry out baseline surveys to demonstrate that premises do actually boil water or would indeed have boiled water to make it safe for use.

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

Q_{p,y} Quantity of safe water in litres consumed in the project scenario p and supplied by project technology per person per day

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

W_{b,y} Quantity of fuel in tons required to treat 1 litre of water using technologies representative of baseline scenario b during the project year y, as per Baseline Water Boiling Test

Project Emissions

As the baseline fuel and the project fuel are the same and the baseline emission factor and project emission factor are considered the same, the

overall GHG reductions achieved by the project activity is calculated using equation 1 of the methodology and project emissions are not calculated separately.

CO₂e emission reductions are the indicator to demonstrate that the project has raised capacity for effective climate change-related planning and management. The emissions reductions for the current monitoring period can be found in the corresponding Emission reductions excel document submitted with this monitoring report and in section E.4 below.

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

$$PE_{p,y} = 0 * ((0.97*112) + 9.46) * 0.0156$$

Leakage Emissions

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

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

In all cases the baseline technologies displaced are three stones; these have no market value and are not a product as such. There is nothing limiting the use of three stone cooking across the country (the technology is lowest rung on the energy ladder and the price is zero), which is why this cooking method is so widespread. In any case the primary purpose of these three rocks is for cooking so they will not be replaced/displaced in their entirety as a result of this project - which means they will not be reused outside the project boundary. This leakage source can therefore be discounted.

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

c) The project significantly impacts the NRB fraction within an area where other CDM or VER project activities account for NRB fraction in their baseline scenario. As the majority of participants collect wood from within the project boundary, it is not expected that the NRB in other areas will be affected.

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

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

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

This project is not marketing efficient technology; it is eliminating the need for a fuel-based technology to deliver pure water. Lower emission technology substitution within households is therefore not possible and this leakage source can therefore be discounted.

Therefore, a value of 0 is applied for leakage.

	Hence, a total verified emission reductions achieved during the monitoring period are 119,250 tCO ₂ e
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D.7.5. Comparison of actual GHG emission reductions or net anthropogenic GHG removals by sinks with estimates in registered PDD

Means of verification	Document Review, Interview		
Findings	NA		
Conclusion	The ex-ante estimate value of the emission reductions for the monitoring period as per the registered GS-PD/B03/ is 429,826 tCO ₂ e and the actual emission reductions achieved for the monitoring period is 119,250 tCO ₂ e.		
	SDG	Values estimated in ex ante calculation of approved PDD	Actual values achieved during this monitoring period
	SDG 13 Climate Action	429,826 tCO ₂ e/y	119,250 tCO ₂ e
	SDG 5 Gender Equality	0.5 hours (At least 0.5 hours per trip per household time saved)	1.16 hours (Time spent collecting firewood has increased during this monitoring period by 1.16 hours)
	SDG 3 Good health and well-being	80% (reduction in exposure to household air pollution due to boiling water)	95% (reduction in exposure to household air pollution due to boiling water)
	SDG 6 Clean water and sanitation	55,074 total people having access to safe water	44,405 (Additional people with access to safe water)
The emission reduction calculations provided in the spreadsheet /02/ have been verified to be correct and in line with the registered GS-PD/B03/.			

D.7.6. Remarks on difference from estimated value in registered PDD

Means of verification	Document Review, Interview
Findings	NA
Conclusion	The ex-ante estimates value of the emission reductions for the monitoring period as per the registered GS-PD /B03/ is 429,826 tCO₂e and the actual emission reductions achieved for the monitoring period is 119,250 tCO₂e. For SDG 13, since actual emission reduction is lower than the estimated value, Positive contributions to SDG have still been made and so no analysis has been done, this is acceptable to the verification team. For other SDG parameters, PD has provided justification in the Monitoring report and assessment of the same is provided below: - SDG 3: The actual value does not exceed the estimated value, due to an increase of the project Usage rate compared to the Transition Annex estimates which is deemed appropriate and thus acceptable to the VVB. - SDG 5: The actual value, the time saved on collecting firewood each day is more than estimated. Since this is a positive impact, it is deemed appropriate and thus acceptable to the VVB. - SDG 6: Due to BAMG changes, Additional people with access to safe water have decreased in actual scenario, than the estimated value. There have still been constructive contributions made to the SDG and hence accepted by the VVB.

SECTION E. Internal quality control

The final verification report passed a technical review before being submitted to the Gold Standard. The technical review is performed by a technical reviewer qualified in accordance with CCIPL's qualification scheme for GS validation and verification.

SECTION F. Verification/Certification opinion

Carbon Check (India) Private Ltd. (CC IPL) has performed the 3rd periodic verification of the registered GS Project Activity "Eritrea Community Boreholes".

The verification team assigned by the VVB concludes that the project activity as described in the GS-PD/B03/ and the Monitoring report /01/ meets all relevant requirements of the Gold Standard. The verification has been conducted in-line with the GS4GG requirements project activities /B02/.

Verification methodology and process

The Verification team confirms the contractual relationship signed /15/ between the VVB, Carbon Check (India) Private Ltd. and the Project Participant. The team assigned to the verification meets the CCIPL's internal procedures including the UNFCCC/GS requirements for the team composition and competence. The verification team has conducted a thorough contract review as per UNFCCC and CCIPL's procedures and requirements.

The verification has been performed as per the requirements described in the GS4GG and constitutes the review and completion of the following steps:

- Reviewing the GS-PD /B03/, including the monitoring plan and the corresponding validation report /B03/;
- Desk review of the MR /01/ and other relevant documents including documents related to the project activities in emission reductions;
- Review of the applied monitoring methodology "Technologies and Practices to Displace Decentralized Thermal Energy Consumption" Version 2 /B01/;
- On-site inspection (25/11/2023- and 26/11/2023)
- Resolution of CARs and CLs raised during this verification
- Resolution of FARs raised during previous verification
- Issuance of Verification Report

The project activity was correctly implemented according to selected monitoring methodology /B01/, monitoring plan and the registered GS-PD /B03/. The monitoring system was installed, maintained in a proper manner, while collected monitoring data allowed for the verification of the amount of achieved GHG emission reductions. Through the document review, the verification team confirms that the project activity has resulted in the 119,250 tCO₂e emission reductions during the reported monitoring period /01/.

This statement covers verification period from 01/03/2021 - 30/08/2022 (including both the dates).

The VVB has raised 05 clarifications and 03 corrective action requests, all of which are raised and closed successfully.

The VVB considers necessary to give reasonable assurance that reported GHG emission reductions were calculated correctly on the basis of the approved baseline and monitoring methodology and the monitoring plan contained in the registered GS-PD/B03/ are fairly stated.

The VVB, hereby certifies that the project activity, achieved emission reductions by sources of GHG equal to 119,250 tCO₂e equivalent and all monitoring requirements have been fulfilled and is substantiated by an audit trail that contains evidence and records.

Vintage	VERs (tCO ₂)
01/03/2021 – 31/12/2021	66,589 tCO ₂ e

01/01/2022– 30/08/2022	52,661 tCO ₂ e
Total for the monitoring period	119,250 tCO₂e

Appendix 1. Abbreviations

Abbreviations	Full texts
ASP	Acceptance Sampling Plan
BE	Baseline Emissions
CA	Corrective Action/ Clarification Action
CER	Certified Emission Reduction
CAR	Corrective Action Request
CC IPL	Carbon Check (India) Private Ltd.
CDM	Clean Development Mechanism
CH ₄	Methane
CL	Clarification Request
CO ₂	Carbon Dioxide
CO _{2e}	Carbon Dioxide Equivalent
CTF	Carbon Transfer Form
DVR	Draft Verification Report
EB	CDM Executive Board
EF	Emission Factor
FA	Final Approval
FAR	Forward Action Request
FVR	Final Validation Report
GHG	Greenhouse gas(es)
GW/h	Giga Watt Hour
GWP	Global Warming Potential
HH	Household
IPCC	Intergovernmental Panel on Climate Change
LE	Leakage Emissions
MP	Monitoring Period
MR	Monitoring Report
NA	Not Applicable
OSV	On Site Visit
PE	Project Emissions
PP(s)	Project Participant(s)
PRC	Post registration change
PS	Project Survey
PTD	Project Technology Days
QC/QA	Quality Control/ Quality Assurance
RCF	Repair Confirmation Form
TA	Technical Area
TR	Technical Review
UNFCCC	United Nations Framework Convention on Climate Change
US	Usage Survey
VER	Verified Emission Reduction
VVS	Validation and Verification Standard
VVB	Validation & Verification body
WCFT	Water Consumption Field Test
WBT	Water Boiling Test
WQT	Water Quality Test

Appendix 2. Competence of team members and technical reviewers



Carbon Check (India) Private Limited

Certificate of Competency

Mr. Vijay Mathew

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

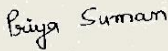
for the following functions and requirements:

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

in the following Technical Areas:

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

Issue Date	Expiry Date
5 th December 2023	31 st December 2024



Ms. Priya Suman
Compliance Officer



Mr. Sanjay Kumar Agarwalla
Technical Director

Revision History of the document:

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

CCIPL_FM 7.9 Certificate of Competency_V4.0_112023
¹ Please refer to previous version of FM 7.9 for the revision history



Carbon Check (India) Private Limited

Certificate of Competency

Mehreteab Michael Yemane

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

for the following functions and requirements:

- | | | | |
|---|--|--|---|
| ☐ Validator | ☐ Verifier | ☐ Team Leader | ☐ Technical Expert |
| ☐ Technical Reviewer | ☐ Health Expert | ☐ Gender Expert | ☐ Plastic Waste Expert |
| ☐ SDG+ | ☐ Social no-harm(S+) | ☐ Environment no-harm(E+) | ☐ CCB Expert |
| ☐ Financial Expert | ☒ Local Expert for Eritrea | | |

in the following Technical Areas:

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

Issue Date
22nd May 2023

Expiry Date
21st May 2024

Mr. Vikash Kumar Singh
Compliance Officer

Mr. Amit Anand
CEO



Carbon Check (India) Private Limited

Certificate of Competency

Mr. Shivaji Chakraborty

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

for the following functions and requirements:

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

in the following Technical Areas:

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

Issue Date

5th December 2023

Expiry Date

31st December 2024

Priya Suman

Ms. Priya Suman
Compliance Officer

Sanjay Agarwalla

Mr. Sanjay Kumar Agarwalla
Technical Director

Revision History of the document:

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

CCIPL_FM 7.9 Certificate of Competency_V4.0_112023

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

Appendix 3. Documents reviewed or referenced

S. No.	Document
/01/	a. Monitoring Report (Version 5.0 Dated 25/04/2024),
/02/	a. Emission reduction calculation spread sheet (Version 1) • GS 5125 Summary • GS 5125 PTD's • GS 5125 HH List • GS 5125 Project Survey • GS 5125 ER calcs • GS 5125 Usage Survey • GS5125 WASH training participants list
/03/	Project Survey PS, Debub LS – final • PS 002, dated 26/04/2022 • PS 095, dated 26/04/2022 • PS 108, dated 26/04/2022 • PS 053, dated 28/04/2022 • PS 084, dated 28/04/2022
/04/	Usage Survey US Debub, LS – final • US ZD080 – 26/04/2022 • US ZD222 – 28/04/2022 • US ZD254 - 27/04/2022 • US ZD 198 -26/04/2022 • US ZD 213- 28/04/2022
/05/	Water Quality Test of villages of Zoba Debub (Ministry land water and environment, water resources department), WQT Q1 2021 WQT Q2 2021 WQT Q3 2021 WQT Q4 2021
/06/	Baseline Survey
/07/	Carbon Transfer Form- between Village Administrator and CO2balance From 2021
/08/	Grievance Log- book
/09/	RCF Report

/10/	Baseline Water Boiling Test
/11/	Deviation request Form
/12/	Training records- Community training records
/13/	WCFT Survey
/14/	Borehole ID's Details
/15/	Contract Details- CCIPL and CO2balance
/16/	Declaration of no double counting

Background Documents

Ref no.	Reference Document
/B01/	Technologies and Practices to Displace Decentralized Thermal Energy Consumption Version 2
/B02/	a. GS4GG Principles & Requirements (version 1.2) b. GS4GG Safeguarding principles & requirements, version 2.1 c. GS4GG Programme of activity requirements, version 2.1 d. GS4GG Community services activity requirements, version 1.2
/B03/	Registered GS-PD, Version 9 dated 12/11/2019 and corresponding Validation Report
/B04/	Standards: a. Sampling and surveys for CDM project activities and programmes of activities, version 09.0 b. Guidelines for Sampling and Surveys for CDM Project activities and Programme of Activities Ver. 4.0. c. CDM validation and verification standard for project activities, version 03.0
/B05/	IPCC 2006, volume 2, chapter 2 https://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_2_Ch2_Stationary_Combustion.pdf
/B06/	GS-Site Visit and Remote Audit Requirements and Procedures, version 2.0 Site Visit and Remote Audit Requirements and Procedures – V2.0 (goldstandard.org)
/B07/	IPCC Default emissions factor, EFDB Emission Factor Database.
/B08/	IPCC Default emissions factor: Non-CO ₂ Emissions from Stationary Combustion.
/B09/	Rule Update- Application of TPDDTEC methodology to safe water supply. Publication date: 30/06/2022- GS website.
/B10/	Weblink: 1. http://cdm.unfccc.int/ 2. https://www.goldstandard.org
/B11/	Template guide for filling out Gold Standard for the Global Goals- Monitoring Report (Version 1.1)

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

Table 1. FARs from this verification

There is no FAR raised from this verification.

Finding	FAR XX		
Classification	☐ CAR	☐ CL	☐ FAR
Description of finding (VVB)	NA		
Corrective Action or clarification #1 (PP shall write a detailed and clear corrective action or further information for clarification as per finding)			
VVB Assessment #1 The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and VVB assessments (#2, #3, etc.) shall be added.			
Conclusion Tick the appropriate checkbox	☐ To be checked during the next periodic verification ☐ Outstanding finding (not closed) ☐ The finding is closed		

Table 2. CARs from this verification

Finding	CAR 01		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding (VVB)	In section B.2.4. of MR_MP3, PP has provided that the Wp,y value has changed for third monitoring period and will remain as a permanent change. However, the Wp,y value has been changed in the second monitoring period itself and the same has been mentioned in MR_MP2. Hence, PP is requested to correct the statement or provide clarity on the same		
Corrective Action or clarification #1 (PP shall write a detailed and clear corrective action or further information for clarification as per finding)	PP has corrected the statement. Revised MR has been submitted.		
VVB Assessment #1 The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and	The revision is found to be appropriate and hence, the CAR 01 is closed.		

VVB assessments (#2, #3, etc.) shall be added.	
Conclusion Tick the appropriate checkbox	☐ To be checked during the next periodic verification ☐ Outstanding finding (not closed) ☒ The finding is closed

Finding	CAR 02		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding (VVB)	The information on actual operation of project with relevant dates are to be mentioned in the MR. PP is requested to provide the same.		
Corrective Action or clarification #1 (PP shall write a detailed and clear corrective action or further information for clarification as per finding)	PP has updated the MR.		
VVB Assessment #1 The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and VVB assessments (#2, #3, etc.) shall be added.	The PP has updated the MR with the mentioned changes and hence, CAR 02 is closed.		
Conclusion Tick the appropriate checkbox	☐ To be checked during the next periodic verification ☐ Outstanding finding (not closed) ☒ The finding is closed		

Finding	CAR 03		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding (VVB)	1) The name and description of parameter, "The raw of unsafe water that is still boiled after installation of the water treatment technology", is not inline between ER and MR. PP is requested to correct it. 2) The unit, description, source of data of parameter "Np,y" , is not consistent between ER sheet, MR and the methodology PP is requested to ensure the details of all the parameters provided in the monitoring plan of MR and ER sheet is consistent with methodology.		
Corrective Action or clarification #1 (PP shall write a detailed and clear corrective action or further information for clarification as per finding)	1) PP has updated the ER's to be in line with the MR. 2) PP has changed the ER's to be line with the MR. The MR is in line with the PDD.		
VVB Assessment #1 The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and	PP has updated the documents, and the revisions are found to be appropriate. Hence, CAR 03 is closed.		

VVB assessments (#2, #3, etc.) shall be added.	
Conclusion Tick the appropriate checkbox	☐ To be checked during the next periodic verification ☐ Outstanding finding (not closed) ☒ The finding is closed

Table 3. CL from this verification

Finding	CL 01		
Classification	☐ CAR	☒ CL	☐ FAR
Description of finding (VVB)	The pump restoration dates are not clear. Hence, PP is requested to provide clarity on the same.		
Corrective Action or clarification #1 (PP shall write a detailed and clear corrective action or further information for clarification as per finding)	PP has updated the MR.		
VVB Assessment #1 The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and VVB assessments (#2, #3, etc.) shall be added.	PP has revised the MR with the mentioned changes and hence, CL 01 is closed		
Conclusion Tick the appropriate checkbox	☐ To be checked during the next periodic verification ☐ Outstanding finding (not closed) ☒ The finding is closed		

Finding	CL 02		
Classification	☐ CAR	☒ CL	☐ FAR
Description of finding (VVB)	1) PP is requested to provide the reporting procedure of Water Quality Tests that have been done. 2) PP needs to clarify that the WQT is in-line with WHO standards or with any other National standards		
Corrective Action or clarification #1 (PP shall write a detailed and clear corrective action or further information for clarification as per finding)	1) The lab tests are run by the official water resource department, and they have approved the results of the test. See 'WQTs LS MP3' in original submission which shows results have been signed off by the Ministry land water and environment – water resources department. 2) The parameters used to assess the water quality are tested in line with Eritrea Health Bureau Standards for potable water. The Eritrean standards are based on the WHO standards.		
VVB Assessment #1 The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and VVB assessments (#2, #3, etc.) shall be added.	The justifications are found to be appropriate and hence, CL 02 is closed		

Conclusion Tick the appropriate checkbox	☐ To be checked during the next periodic verification ☐ Outstanding finding (not closed) ☒ The finding is closed
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Finding	CL 03		
Classification	☐ CAR	☒ CL	☐ FAR
Description of finding (VVB)	For the monitoring parameter, "Quality of Treated Water" (under section D.2 of the MR), it has been mentioned that all boreholes are tested at least once per year. However, in section c, it is mentioned that Water Quality Tests (WQTs) will be conducted quarterly with a sample size using the 90/10 precision rule. PP is requested to provide clarity on the monitoring frequency.		
Corrective Action or clarification #1 (PP shall write a detailed and clear corrective action or further information for clarification as per finding)	PP confirms that the WQT's are tested annually and on a sampling basis each quarter, using 90/10 confidence precision: each quarter 49 BHs are tested. Therefore, each borehole is tested at least once per year, and some are tested more than once. However, for this monitoring period there was a deviation request for the WQT sampling in Q3 2021. Please see 'DEV_389' and review the deviation request against the WQT's. PD has also shared the six random samples for the WQT's.		
VVB Assessment #1 The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and VVB assessments (#2, #3, etc.) shall be added.	The deviation requested form and WQT's samples has been verified by the VVB. Hence, CL 03 is closed.		
Conclusion Tick the appropriate checkbox	☐ To be checked during the next periodic verification ☐ Outstanding finding (not closed) ☒ The finding is closed		

Finding	CL 04		
Classification	☐ CAR	☒ CL	☐ FAR
Description of finding (VVB)	In the document provided as supportive for WASH trainings, the training details of villagers in villages, Senafe and Maimine are not there. PP is requested to provide for the training details of the villagers in the mentioned villages		
Corrective Action or clarification #1 (PP shall write a detailed and clear corrective action or further information for clarification as per finding)	The lists for Senafe and Maimine were provided in the original submission. Please see excel document 'WASH Training Participants mix of MS and LS'.		
VVB Assessment #1 The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and VVB assessments (#2, #3, etc.) shall be added.	The sae has been crosschecked by the VVB and found appropriate and hence, CL 04 is closed.		
Conclusion Tick the appropriate checkbox	☐ To be checked during the next periodic verification ☐ Outstanding finding (not closed) ☒ The finding is closed		

Finding	CL 05
Classification	☐ CAR ☒ CL ☐ FAR
Description of finding (VVB)	PP is requested to provide the list of total beneficiaries associated with the water pumps for the whole monitoring period.
Corrective Action or clarification #1 (PP shall write a detailed and clear corrective action or further information for clarification as per finding)	This was provided in the original submission. Please see 'HHs List August 2022 Confidential' for the list of total beneficiaries.
VVB Assessment #1 The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and VVB assessments (#2, #3, etc.) shall be added.	The list of total beneficiaries has been provided in the mentioned ER sheet and VVB has confirmed the same. Hence, CL 05 is closed.
Conclusion Tick the appropriate checkbox	☐ To be checked during the next periodic verification ☐ Outstanding finding (not closed) ☒ The finding is closed

Table 4. Remaining FAR from validation and/ or previous verification

Finding	FAR xx
Classification	☐ CAR ☐ CL ☐ FAR
Description of finding (VVB)	NA
Corrective Action or clarification #1 (PP shall write a detailed and clear corrective action or further information for clarification as per finding)	
VVB Assessment #1 The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and VVB assessments (#2, #3, etc.) shall be added.	
Conclusion Tick the appropriate checkbox	☐ To be checked during the next periodic verification ☐ Outstanding finding (not closed) ☐ The finding is closed

Annex 1: Assessment of data and parameters fixed ex-ante at the time of validation

Relevant SDG Indicator	SDG 13.B.1, Climate action)
Parameter	(EF _{b,co2}) co ₂ emission factor arising from use of fuels in baseline scenario 112 tCO ₂ e/TJ for Wood/Wood Waste, or the IPCC default value of other relevant fuel
Data unit	tCO ₂ /TJ
Default values used	112
Purpose of data	Calculation of the baseline emission
Source of verification of the source	2006 IPCC Guidelines for National Greenhouse Gas Inventories /B05/

Relevant SDG Indicator	SDG 13.B.1, Climate action
Parameter	(EF _{b, non-co2}) Non-CO ₂ (CH ₄ and N ₂ O) emission factor arising from use of wood fuel in baseline scenario
Data unit	tCO ₂ e/TJ
Default values used	9.46
Purpose of data	Calculation of emission reduction
Source of verification of the source	EFDB Emission Factor Database /B07/

Relevant SDG Indicator	SDG 13.B.1, Climate action
Parameter	(EF _{p,co2}) CO ₂ emission factor arising from use of fuels in the project scenario.
Data unit	tCO ₂ /TJ
Default values used	112
Purpose of data	Calculation of emission reduction
Source of verification of the source	Volume 2: 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Chapter 2, Table 2.5 /B05/

Relevant SDG Indicator	SDG 13.B.1, Climate action
Parameter	(EF _{p,non co2}) Non-CO ₂ (CH ₄ and N ₂ O) emission factor arising from use of wood fuel in baseline scenario
Data unit	tCO ₂ e/TJ
Default values used	9.460
Purpose of data	Calculation of emission reductions
Source of verification of the source	EFDB Emission Factor Database. Accessible /B07/

Relevant SDG Indicator	SDG 13.B.1, Climate Action
Parameter	Net calorific value of the fuel that is substituted or reduced (NCV _b)
Data unit	TJ/ton
Default values used	0.0156
Purpose of data	Calculation of emission reduction
Source of verification of the source	TPDDTEC v.2 /B01/

Relevant SDG Indicator	SDG 13.B.1, Climate Action
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Parameter	Net calorific value of the fuel that is substituted or reduced (NCV_p)
Data unit	TJ/ton
Default values used	0.0156
Purpose of data	Calculation of emission reduction
Source of verification of the source	TPDDTEC v.2 /B01/

Relevant SDG Indicator	SDG 13.B.1, Climate Action
Parameter	($f_{NRB,i,y}$) Non-renewability status of woody biomass fuel in scenario i during year y
Data unit	Fractional non-renewability
Default values used	0.97
Purpose of data	Calculation of emission reduction
Source of verification of the source	Default values of fraction of non-renewable biomass as outlined by the UNFCCC CDM ⁶

Relevant SDG Indicator	SDG 13.B.1 (Climate Action), SDG 3.9.1 (Good Health and Well-Being), SDG 6.1.1 (Clean Water and Sanitation)
Parameter	($W_{b,y}$) Quantity of wood fuel that is used to treat 1 litre of water in the baseline scenario b during year y
Data unit	T/litre
Default values used	Zoba Debub: 0.000889 Zoba Maekel: 0.000883 Zoba Anseba: 0.000577
Purpose of data	Calculation of emission reductions.
Source of verification of the source	Baseline water boiling test /10/

Relevant SDG Indicator	SDG 13.B.1 (Climate Action), SDG 6.1.1 (Clean Water and Sanitation), SDG 3.9.1 (Good Health and Well Being)
Parameter	($W_{p,y}$) Quantity of wood fuel that is used to treat 1 litre of water in the project scenario p during year y
Data unit	T/litre
Default values used	0.0004
Purpose of data	Calculation of emission reduction
Source of verification of the source	Baseline water boiling test /10/

Relevant SDG Indicator	SDG 13.B.1 (Climate Action), SDG 6.1.1 (Clean Water and Sanitation)
Parameter	(C_j) Portion of users of project safe water supply who were already in baseline using a non-boiling safe water supply.
Data unit	%
Values used	Zoba Debub: 0 Zoba Maekel: 0 Zoba Anseba: 0
Purpose of data	Calculation of emission reductions and SDG 6 impact.
Source of verification of the source	Baseline study /06/

Relevant SDG Indicator	SDG 13.B.1, Climate action
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⁶ https://cdm.unfccc.int/Reference/Notes/meth/meth_note12.pdf

Parameter	(X _{boil Non-Suppressed Demand}) 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
Data unit	%
Default values used	Zoba Debub: 0% Zoba Maekel: 4% Zoba Anseba: 2%
Purpose of data	Calculation of emission reductions.
Source of verification of the source	Baseline Survey/06/Credible literature, studies, survey, reports, relevant to the project target area/04/
Relevant SDG Indicator	SDG 13.B.1 (Climate Action), SDG 6.1.1 (Clean Water and Sanitation)
Parameter	(T _{b,y}) Baseline time spent collecting firewood per household per day
Data unit	Hours
Default values used	1.74
Purpose of data	Calculating time saved collecting water by project.
Source of verification of the source	Baseline project survey /06/

Annex 2: Assessment of data and parameters monitored

Monitoring Parameter Requirement	Assessment/ Observation by the VVB
Relevant SDG Indicator	SDG 13.B.1 (Climate Action)
Data / Parameter: (as in monitoring plan of PDD):	(N _{p,y}) Project technology-days in the project database for project scenario p through year y
Unit	Project Technology Days
Measuring frequency/Time Interval:	Continuous
Reported value	24,333,885 values can be found in the ERs spreadsheet.
Verified Source of Data	PTD's /02/
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Assessment of details of monitoring equipment, its specification and calibration as per the requirements of registered PDD:	NA
Does the data management (from data generation to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data management ensures correct transfer of data and reporting of emission reductions and all necessary QA/QC processes are in place
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	NA

Monitoring Parameter Requirement	Assessment/ Observation by the VVB
Relevant SDG Indicator	SDG 13.B.1 (Climate Action), SDG 6.1.1 (Clean Water and Sanitation), SDG 3.9.1 (Good Health and Wellbeing)

Data / Parameter: (as in monitoring plan of PDD):	($U_{p,y}$) Usage rate in project scenario p through year y
Unit	%
Measuring frequency/Time Interval:	Annual
Reported value	100% (capped at 95%)
Verified Source of Data	Usage Survey /04/ VVB undertaken the acceptance sampling to verify the appropriateness of PP's sampling during onsite visit inspection.
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Assessment of details of monitoring equipment, its specification and calibration as per the requirements of registered PDD:	NA
Does the data management (from data generation to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data management ensures correct transfer of data and reporting of emission reductions and all necessary QA/QC processes are in place
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	NA

Monitoring Parameter Requirement	Assessment/ Observation by the VVB
Relevant SDG Indicator	SDG 13.B.1 (Climate Action), SDG 6.1.1 (Safe Water and Sanitation)
Data / Parameter: (as in monitoring plan of PDD):	($Q_{p,y}$) 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	Litres per person per day
Measuring frequency/Time Interval:	Biennial
Reported value	7
Verified Source of Data	Water Consumption Field Test (WCFT) /13/ VVB undertaken the acceptance sampling to verify the appropriateness of PP's sampling during onsite visit inspection.
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Assessment of details of monitoring equipment, its specification and calibration as per the requirements of registered PDD:	NA
Does the data management (from data generation to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data management ensures correct transfer of data and reporting of emission reductions and all necessary QA/QC processes are in place
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption	NA

theoretically possible been applied or has a request for deviation been approved?	
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Monitoring Parameter Requirement	Assessment/ Observation by the VVB
Relevant SDG Indicator	SDG 13.B.1 (Climate Action), SDG 6.1.1 (Safe Water and Sanitation)
Data / Parameter: (as in monitoring plan of PDD):	$(Q_{p, \text{cleanboil}, y})$ Quantity of safe water boiled in the project scenario p during the year y using the zero or low emissions clean water supply technology
Unit	Litres per person per day
Measuring frequency/Time Interval:	Biennial
Reported value	0
Verified Source of Data	Water Consumption Field Test (WCFT) /13/ VVB undertaken the acceptance sampling to verify the appropriateness of PP's sampling during onsite visit inspection.
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Assessment of details of monitoring equipment, its specification and calibration as per the requirements of registered PDD:	NA
Does the data management (from data generation to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data management ensures correct transfer of data and reporting of emission reductions and all necessary QA/QC processes are in place
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	NA

Monitoring Parameter Requirement	Assessment/ Observation by the VVB
Relevant SDG Indicator	SDG 13.B.1 (Climate Action), SDG 6.1.1 (Safe Water and Sanitation)
Data / Parameter: (as in monitoring plan of PDD):	$(Q_{p, \text{rawboil}, y})$ The raw of unsafe water that is still boiled after installation of the water treatment technology
Unit	Litres per person per day
Measuring frequency/Time Interval:	biennial Value taken from the 2020 WCFT, under requirements of WCFT it was not required in 2021. The latest WCFT was conducted 12/10/2020 – 28/10/2020. The previous WCFTs were conducted between 05/09/2018 – 21/09/2018 and 26/09/2017 – 20/10/2017, maintaining biennial monitoring frequency.
Reported value	0
Verified Source of Data	Water Consumption Field Test (WCFT) /13/

	VVB undertaken the acceptance sampling to verify the appropriateness of PP's sampling during onsite visit inspection.
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Assessment of details of monitoring equipment, its specification and calibration as per the requirements of registered PDD:	
Does the data management (from data generation to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data management ensures correct transfer of data and reporting of emission reductions and all necessary QA/QC processes are in place
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	NA

Monitoring Parameter Requirement	Assessment/ Observation by the VVB
Relevant SDG Indicator	SDG 13.B.1 (Climate Action), SDG 6.1.1 (Safe Water and Sanitation)
Data / Parameter: (as in monitoring plan of PDD):	Quality of Treated Water
Unit	Performance of the treatment technology
Measuring frequency/Time Interval:	Parameters as per national standards
Reported value	A sample (sampling requirements employ 90/10 precision) of boreholes is tested each quarter. All boreholes are tested at least once per year
Verified Source of Data	Pass
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Water Quality Test Report /05/ VVB undertaken the acceptance sampling to verify the appropriateness of PP's sampling during onsite visit inspection.
Assessment of details of monitoring equipment, its specification and calibration as per the requirements of registered PDD:	Yes
Does the data management (from data generation to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	NA
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	Yes, the data management ensures correct transfer of data and reporting of emission reductions and all necessary QA/QC processes are in place
	NA

Monitoring Parameter Requirement	Assessment/ Observation by the VVB
Relevant SDG Indicator	SDG 13.B.1 (Climate Action)
Data / Parameter: (as in monitoring plan of PDD):	(LE _{p,y}) Leakage for project scenario p in year y

Unit	tCO _{2e} per year
Measuring frequency/Time Interval:	Completed every two years
Reported value	0
Verified Source of Data	Baseline and Monitoring surveys /06/
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Assessment of details of monitoring equipment, its specification and calibration as per the requirements of registered PDD:	NA
Does the data management (from data generation to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data management ensures correct transfer of data and reporting of emission reductions and all necessary QA/QC processes are in place
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	NA

Monitoring Parameter Requirement	Assessment/ Observation by the VVB
Relevant SDG Indicator	SDG 5.4.1 (Gender Equality)
Data / Parameter: (as in monitoring plan of PDD):	Project time spent collecting water per household per day (T _{p,y})
Unit	Hours
Measuring frequency/Time Interval:	Annual
Reported value	0.58 hours
Verified Source of Data	Project Survey /03/ VVB undertaken the acceptance sampling to verify the appropriateness of PP's sampling during onsite visit inspection.
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Assessment of details of monitoring equipment, its specification and calibration as per the requirements of registered PDD:	NA
Does the data management (from data generation to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data management ensures correct transfer of data and reporting of emission reductions and all necessary QA/QC processes are in place
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	NA

Monitoring Parameter Requirement	Assessment/ Observation by the VVB
Relevant SDG Indicator	SDG 6.1.1 (Clean Water and Sanitation)
Data / Parameter:	(P _{access})

(as in monitoring plan of PDD):	Number of additional persons having access to safe water in the project activity compared to the baseline scenario
Unit	Number of people
Measuring frequency/Time Interval:	Annual
Reported value	44,405
Verified Source of Data	Project Survey /03/, Baseline survey /06/ VVB undertaken the acceptance sampling to verify the appropriateness of PP's sampling during onsite visit inspection.
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Assessment of details of monitoring equipment, its specification and calibration as per the requirements of registered PDD:	NA
Does the data management (from data generation to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data management ensures correct transfer of data and reporting of emission reductions and all necessary QA/QC processes are in place
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	NA

Monitoring Parameter Requirement	Assessment/ Observation by the VVB
Relevant SDG Indicator	SDG 5.4.1 (Gender Equality)
Data / Parameter: (as in monitoring plan of PDD):	Total reduction time spent collecting firewood per day for project activity in year y (TR _y)
Unit	Hours
Measuring frequency/Time Interval:	Annual
Reported value	1.16
Verified Source of Data	Project Survey /03/ and baseline survey /06/ VVB undertaken the acceptance sampling to verify the appropriateness of PP's sampling during onsite visit inspection.
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Assessment of details of monitoring equipment, its specification and calibration as per the requirements of registered PDD:	NA
Does the data management (from data generation to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data management ensures correct transfer of data and reporting of emission reductions and all necessary QA/QC processes are in place
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	NA

Monitoring Parameter Requirement	Assessment/ Observation by the VVB
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Relevant SDG Indicator	SDG 3.9.1 (Good Health and Well-Being)
Data / Parameter: (as in monitoring plan of PDD):	HAPR,y Total reduction in Household Air Pollution for project activity in year y (%)
Unit	Percentage
Measuring frequency/Time Interval:	Annual
Reported value	95%
Verified Source of Data	Project Survey /03/, baseline survey /06/ BWBT /10 / and WCFT /13/
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Assessment of details of monitoring equipment, its specification and calibration as per the requirements of registered PDD:	NA
Does the data management (from data generation to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data management ensures correct transfer of data and reporting of emission reductions and all necessary QA/QC processes are in place
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	NA

Monitoring Parameter Requirement	Assessment/ Observation by the VVB		
Relevant SDG Indicator	SDG 6.1.1 (Safe Water and Sanitation)		
Data / Parameter: (as in monitoring plan of PDD):	Hygiene campaigns Hygiene campaigns carried out among project technology users		
Unit	Outcome of WASH meetings		
Measuring frequency/Time Interval:	Annual		
Reported value	Village	Date	
	Dekemhare	20/06/2021	
	Adikeih	23/06/2021	
	Adiquala	12/06/2021	
	Areza	14/06/2021	
	Dbarwa	04/06/2021	
	Emnihaili	06/06/2021	
	Mendefera	02/06/2021	
	Segheneity	21/06/2021	
	Tsorona	27/06/2021	
Verified Source of Data	Hygiene campaigns /12/		
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes		
Assessment of details of monitoring equipment, its specification and calibration as per the requirements of registered PDD:	NA		

Does the data management (from data generation to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data management ensures correct transfer of data and reporting of emission reductions and all necessary QA/QC processes are in place
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	NA

Monitoring Parameter Requirement	Assessment/ Observation by the VVB
Relevant SDG Indicator	SDG 6.1.1 (Clean Water and Sanitation)
Data / Parameter: (as in monitoring plan of PDD):	(P _y) Number of persons having access to safe water in the project activity
Unit	Number of people
Measuring frequency/Time Interval:	Annual
Reported value	46,742
Verified Source of Data	Project Survey /03/, Usage Survey /04/ and Household list /02/ VVB undertaken the acceptance sampling to verify the appropriateness of PP's sampling during onsite visit inspection.
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Assessment of details of monitoring equipment, its specification and calibration as per the requirements of registered PDD:	NA
Does the data management (from data generation to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data management ensures correct transfer of data and reporting of emission reductions and all necessary QA/QC processes are in place
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	NA