



Verified Carbon Standard

GROUPED PROJECTS FOR CAMBODIA WATER PURIFIER

Document Prepared by (Carbon Check (India) Private Ltd.)



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Summary:

A brief description of the validation and the project

Validation: Sustainability Investment Promotion and Development Joint Stock Company has appointed Carbon Check (India) Private Ltd., to carry out the validation of the project “Grouped Projects For Cambodia Water Purifier”, with regards to the relevant requirements of VCS Standard Version 4.5 (dated 29-August-2023)/B01-a/.

Project: The project “Grouped Projects For Cambodia Water Purifier”, is a grouped project which employs CDM methodology AMS-III.AV. (Version 08.0) /B02-a/. The project involves distribution/installation of SDWPs to the households/communities of Cambodia. The grouped project activity (hereafter referred to as “proposed project activity”) involves the distribution of low greenhouse gas emitting safe drinking water purifier (SDWP) to provide clean drinking water to the households/communities (hereafter “users”) of Cambodia. For this reason, this proposed project activity aims at reducing the wood fuel consumption of traditional stove users by distributing water purifiers.

The group project will provide WPs for free to households that use wood fuel to boil Water. All of the project instances that will be included in this grouped project will be from Cambodia. The annual average GHG emission reductions of the grouped project activity 1 are estimated to be 43,129 tCO₂e/annum. The estimated total emission reduction for 10 years crediting period will be 431,290 tCO₂e. The project proponent aims to disseminate 26,000 WP in Takeo Province in the first project activity instances of the grouped project.

The grouped project activity reduces the use and demand for non-renewable biomass that would have been used to boil water as a means to purify water in the absence of this project activity. This directly leads to reduced greenhouse gas emissions.

Purpose: The purpose of a validation is to have a thorough and independent assessment of the proposed project activity against the applicable VCS requirements, in particular, the project's baseline, monitoring plan and compliance with the relevant VCS and host Party criteria. These are validated in order to confirm that the project design, as documented, is sound and reasonable and meets the identified criteria. Validation is a requirement for all VCS projects and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of emission reductions. Carbon Check’s objective is to perform a thorough, independent assessment of the validation of the project activity.

Scope: Validation scope is defined as an independent and objective review of the Project Description (PD). The PD is reviewed against the relevant criteria and guidance documents provided by VCS which include the following: VCS Program Guide (v4.4, dated 29-August-2023), VCS Standard (v4.5, dated 29-August-2023), Program Definitions (v4.4, dated 29-August-2023), Registration & Issuance Process (v4.4, dated 29-August-2023), VCS Validation and Verification Manual (v3.2, dated 19-October-2016) applicable at the time in order to confirm that the project meets the applicability conditions of the selected baseline and monitoring CDM methodology AMS-III.AV. (Version 08.0), also assess the claims

and assumptions made in the PD without limitation on the information provided by the project participants.

The method and criteria used for validation

The validation consists of the following four phases:

- I. A desk review of the project description documents
 - A review of data and information;
 - Cross checks between information provided in PD and information from sources with all necessary means without limitations to the information provided by the project proponent;
- II. On-site interviews with project stakeholders
 - Interviews with relevant stakeholders in host country with personnel having knowledge with the project development via telephone, email or direct on-site visits;
 - Cross checking between information provided by interviewed personnel with all necessary means without limitations to the information provided by the project proponent;
- III. Reference to available information relating to projects or technologies similar to project under validation and review based on the approved methodology being applied for the appropriateness of formulae and accuracy of calculations.

The resolution of outstanding issues and the issuance of the final validation report and opinion.

The number of findings raised during validation

During the course of validation, a total of 09 findings were raised, which include:

08 Corrective Action Requests (CARs);

01 Clarification Requests (CLs);

00 Forward Action requests (FARs).

All the raised findings have been successfully resolved by the Project Proponent.

Any uncertainties associated with the validation.

There are no uncertainties associated with the validation of the project activity. The validation has been done with a reasonable level of assurance.

Summary of the validation conclusion

Carbon Check (India) Private Ltd. concludes the validation with a positive opinion that the VCS Grouped Project “Grouped Projects For Cambodia Water Purifier” as described in the PD (**version 06, dated 13-May-2023**) /01-f/, meets all applicable VCS requirements, including those specified in the VCS Standard (v4.5, dated 29-August-2023)/B01-a/, relevant methodology, tools, and guidelines.

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1 INTRODUCTION

1.1 Objective

Sustainability Investment Promotion and Development Joint Stock Company has appointed the VVB, Carbon Check (India) Private Ltd. to perform a validation of the VCS Grouped Projects For Cambodia Water Purifier". This report summarizes the findings of validation of the project, performed based on the VCS Program Guide (v4.4, dated 29-August-2023), VCS Standard (v4.5, dated 29-August-2023), Program Definitions (v4.4, dated 29-August-2023), Registration & Issuance Process (v4.4, dated 29-August-2023), VCS Validation and Verification Manual (v 3.2, dated 19-October-2016). Validation is required for all VCS project activities intending to register a grouped project under the VCS program. This report contains the findings and resolutions from the validation of the grouped project.

The purpose of a validation is to have a thorough and independent assessment of the proposed grouped project against the applicable VCS requirements, in particular, the project's baseline, monitoring plan and the project's compliance with relevant VCS and host Party criteria. These are validated in order to confirm that the project design, as documented, is sound and reasonable and meets the identified criteria. Validation is a requirement for all VCS projects and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of emission reductions, VCUs.

1.2 Scope and Criteria

The validation scope is defined as an independent and objective review of the Project Description (PD), project design, the project's baseline study and monitoring plan and other relevant documents. The PD is reviewed against the relevant criteria and decisions by the VCS Program, and against the approved baseline and monitoring methodology. Carbon Check has employed a risk-based approach in the validation, focusing on the identification of significant risks and reliability of project monitoring and generation of emission reductions.

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

The validation is carried out based on the following requirements, applicable for this grouped project:

- VCS Program Guide v4.4 (dated 29-August-2023)
- VCS Standard v4.5 (dated 29-August-2023)
- Program Definitions v4.4 (dated 29-August-2023)

- Registration & Issuance Process v4.4 (dated 29-August-2023)
- VCS Validation and Verification Manual v3.2 (dated 19-October-2016)
- CDM methodology AMS-III.AV., Version 08.0
- Other relevant rules, including the host country legislation

1.3 Reasonableness of Assumptions

☒ Reasonable level of assurance

☐ Limited level of assurance

The approach used by VVB for validation of the project activity is built on a thorough understanding of the risk associated with reporting data on GHG emissions and the controls used to mitigate them. VVB conducted the validation by reviewing and substantiating all the evidence and other relevant information and explanations from sources to provide reasonable assurance that estimated GHG emissions reductions are fairly reported. Validation team checked the criteria of VCS Program guide/B01/ & VCS standards/B01/, criteria of applied methodology and compliances with relevant laws and regulations. The validation is planned and performed by obtaining evidence and other information and explanations that validation team considers necessary to give reasonable assurance that reported estimated GHG emission reductions are fairly stated and in compliance with the standards and guidelines of VERRA. The threshold for quantitative materiality with respect to the aggregate of errors, omissions, and misrepresentations, relative to the total reported GHG emission reductions and/or removals was limited to five percent, as required by section 4.1.10 of the VCS Standard version 4.5 /B01-a/.

Reasonable level of assurance is met during site visit, being conducted by using credible and reliable alternate means of validation (explained in detail in section 2.4 below). All documentary evidence was checked, and a physical site visit was conducted with PP representatives, site personnel and consultants to arrive at a validation conclusion by the assessment team. Validation is carried out in conformity of all above-mentioned details, and it is confirmed that information provided by project developer is accurate and estimated GHG emissions reductions are calculated appropriately on the basis of the approved baseline and monitoring methodology/B02/ and VCS standard version 4.5/B01/

1.4 Summary Description of the Project

The project “Grouped Projects For Cambodia Water Purifier”, is a grouped project which employs the CDM methodology; AMS-III.AV: “Low greenhouse gas-emitting safe drinking water production systems”, version 08 /B02-a/. The grouped project involves distribution of safe drinking water purifiers (SDWP)s in Cambodia for free of cost to the targeted households in communities. .PP has considered each WP as a project activity instances The geographical boundary for all project

activity under the grouped project is within Cambodia. The project activity will distribute water purifiers to households in Cambodia that use wood fuel to boil drinking water. PP will prioritize distribution first to households in rural and remote areas. In urban areas, there is still a hierarchy of rich and poor, so project activities will still be distributed to households in urban areas if those households meet all project criteria.

The project proponent for the project activity is Sustainability Investment Promotion and Development Joint Stock Company, owns the rights to VCU's /05/.

The total estimated GHG emission reductions for the first project activity instance of the grouped project are 431,290 tCO₂e for the ten years fixed crediting period and average of 43,129 tCO₂e/year. The estimated volume of emission reduction of one instance activity is less than 300,000 tonnes of CO₂e per year. Therefore, in accordance with the para 3.10.1 of the VCS Standard, v4.5 the scale of the project activity is under "Project" category.

2 VALIDATION PROCESS

2.1 Method and Criteria

Sustainability Investment Promotion and Development Joint Stock Company has appointed the VVB, Carbon Check (India) Private Ltd., to carry out the validation of the grouped project "Grouped Projects For Cambodia Water Purifier", with regards to the relevant requirements of VCS Standard Version 4.5 (dated 29-August-2023)/B01-a/.

The validation includes a thorough and independent assessment of the proposed grouped project against the applicable VCS requirements, the project's baseline, additionality, monitoring plan and the project's compliance with relevant VCS and host party criteria. The validation involves assessment of the project and to confirm that the project meets the applicability conditions of the selected methodology, AMS-III.AV: "Low greenhouse gas-emitting safe drinking water production systems", version 08/B02-a/ and assess the claims and assumptions made in the VCS PD /01-f/ without limitation on the information provided by the project participants.

The validation team of the DOE has applied a sampling approach, acceptance sampling for the on-site interviews as part of validation in accordance with the paragraph 26 of the Standard: Sampling and surveys for CDM project activities and programmes of activities, (Version 09.0)/B03/ In accordance with the paragraph 28 of the sampling standard, acceptance sampling has been chosen by the validation team and accordingly steps listed in paragraph 29 and 39 of the sampling standards shall be followed.

Validation team has opted for AQL of 0.5 % and UQL of 20 %; producer risk of 10 % and consumer risk of 10 % in determining the DOE's sample size. Accordingly, the sample size to be interviewed for the above-mentioned parameters are 11, with acceptance number (c) as 0.

The overall validation was conducted using Carbon Check's internal procedures.

2.2 Document Review

During the document review, CCIPL has applied standard auditing techniques including but not limited to document reviews and on-site interviews, review of the applicable/applied methodology and its underlying formulae and calculations to assess the quality of information provided.

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

The VCS project description,/01-f/ emission reduction calculation spread sheet, and supporting documents related to the project design and baseline were reviewed as per VCS standard version 4.5 /B01-a/ requirements. The desk review included:

- A review of the data and information presented to verify completeness and consistency in accordance with VCS standard version 4.5 requirements.
- A review of the project description and monitoring methodology, paying particular attention to the applicability conditions of the methodology and baseline and additionality related requirements.
- A review of the monitoring plan and the project's compliance with relevant VCS criteria.

Furthermore, the validation team used additional documentation by third parties like host-party legislation, technical reports referring to the project design or to the basic conditions and technical data.

The VCS PD version 01 dated 31-March-2022 /01-a/ was initially reviewed and CCIPL requested the PP to present the supporting information and documents. The documents reviewed by CCIPL are listed below in Appendix 1. Through the process of the validation, the revised VCS PD and the supporting documents were evaluated to confirm the actions taken by the PP to the CARs and CLs issued by the validation team.

The table in Appendix 1.1 and 1.2 outlines the documentation reviewed during the validation.

2.3 Interviews

The table below describes the on-site interview process and further identifies personnel, including their roles, who were interviewed and/or provided information additional to that provided in the project description /01-f/ and any supporting documents.

Table 1: List of interviewees

S. no	Date	Name	Organization	Topic	Interviewed by
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/1/	13 October-2022	Nhu Quynh	Project coordinator-Sustainability Investment Promotion and Development Joint Stock Company (SIPCO)	• Project Design • Project Implementation status • Project start date and Project Location • Baseline Scenario • Baseline Identification and Additionality • Qualification and Training • Monitoring and reporting documentation • Quality Assurance – Management and operating system • Social and Environmental Impacts • Local Stakeholders meeting process • Compliance with relevant laws • Roles and responsibility	Pallavi Gedam and Nguyen Hong Ngoc Trang
/2/	13 October-2022	Oung Srey	End User (Vice principle)	Discuss on the baseline scenario and the additionality (specifically on the cost of the water purifier) if any.	Pallavi Gedam and Nguyen Hong Ngoc Trang
/3/	13 October-2022	Soun Phan	End User (Vice principle)	Discuss on the baseline scenario and the additionality (specifically on the cost of the water purifier) if any.	Pallavi Gedam and Nguyen Hong Ngoc Trang
/4/	13 October-2022	Phin Seng	End User	Discuss on the baseline scenario and the additionality (specifically on the cost of the water purifier) if any.	Pallavi Gedam and Nguyen Hong Ngoc Trang
/5/	13 October-2022	Sao Nin	End User	Discuss on the baseline scenario and the additionality (specifically on the cost of the water purifier) if any.	Pallavi Gedam and Nguyen Hong Ngoc Trang

/6/	13 October-2022	Pich Nhuep	End User (Vice principle)	Discuss on the baseline scenario and the additionality (specifically on the cost of the water purifier) if any.	Pallavi Gedam and Nguyen Hong Ngoc Trang
/7/	13 October-2022	Pich Phon	End User	Discuss on the baseline scenario and the additionality (specifically on the cost of the water purifier) if any.	Pallavi Gedam and Nguyen Hong Ngoc Trang
/8/	14 October-2022	Mey Norm	End User	Discuss on the baseline scenario and the additionality (specifically on the cost of the water purifier) if any.	Pallavi Gedam and Nguyen Hong Ngoc Trang
/09/	14 October-2022	Sen Son	End User	Discuss on the baseline scenario and the additionality (specifically on the cost of the water purifier) if any.	Pallavi Gedam and Nguyen Hong Ngoc Trang
/10/	14 October-2022	Ouk Sophal	End User	Discuss on the baseline scenario and the additionality (specifically on the cost of the water purifier) if any.	Pallavi Gedam and Nguyen Hong Ngoc Trang
/11/	114 October-2022	On Srey Von	End User	Discuss on the baseline scenario and the additionality (specifically on the cost of the water purifier) if any.	Pallavi Gedam and Nguyen Hong Ngoc Trang
/12/	14 October-2022	Mon Srey	End User	Discuss on the baseline scenario and the additionality (specifically on the cost of the water purifier) if any.	Pallavi Gedam and Nguyen Hong Ngoc Trang
/13/	14 October-2022	Jeng Sopheal	CWPD	Local Stakeholder Consultation Social and Environmental Impacts	Pallavi Gedam and Nguyen Hong Ngoc Trang
/14/	14 October-2022	Meach Sotheary	CWPD	Local Stakeholder Consultation Social and Environmental Impacts	Pallavi Gedam and Nguyen Hong Ngoc Trang
/15/	14 October-2022	Met Davy	CWPD	Local Stakeholder Consultation Social and Environmental Impacts	Pallavi Gedam and Nguyen Hong Ngoc Trang

/16/	14 October- 2022	Nguyet Phuong	SIPCO	Local Stakeholder Consultation Social and Environmental Impacts	Pallavi Gedam and Nguyen Hong Ngoc Trang
/17/	14 October- 2022	Hoang Tiem Dat	Officer of Hoang Su	Local Stakeholder Consultation Social and Environmental Impacts	Pallavi Gedam and Nguyen Hong Ngoc Trang
/18/	14 October- 2022	Nguyer Thi Lam	Vice president	Local Stakeholder Consultation Social and Environmental Impacts	Pallavi Gedam and Nguyen Hong Ngoc Trang
/19/	14 October- 2022	Nung Thi Hong	Officer	Local Stakeholder Consultation Social and Environmental Impacts	Pallavi Gedam and Nguyen Hong Ngoc Trang

2.4 Site Visits

As discussed in the above section 2.3, an on-site visit was undertaken by the validation team from 13-October-2022 to 14-October-2022 to carry out the following; -

- An assessment of the project design and technical specification, project location, project boundary, additionality, baseline scenario, baseline methodology, GHG emissions quantification and implementation status and operation of the project activity as per the PD.
- A review of information flows for generating, aggregating, and reporting the monitoring parameters and monitoring methodology.
- Interviews with relevant personnel to determine whether the operational and data collection procedures are implemented in accordance with the monitoring plan in the VCS PD; /01-f/
- The assessment team has verified sufficient appropriate audit evidence, to reduce audit risk to an acceptably low level as requisite to achieve reasonable level of assurance for the current validation.

In line with paragraph 26 of the Sampling Standard, the verification team has applied acceptance sampling approach through on-site interviews on the sampling survey as part of validation. The project participant had applied sampling approach. A representative baseline survey /07/ was conducted by the representatives of Project participant. The validation team has chosen acceptance sampling in accordance with paragraph 28 of the sampling standard /B03/.

Applying paragraph 39 of the sampling standard, version 09 /B03/, a sample size of 11 SDWPs (with no discrepant records) was determined, based on an AQL of 0.5% and UQL of 20%, producer risk 10% and consumer risk 10%. Acceptance number thus determined for the sample is 0.

The information provided in the sampling survey data /07/, has been cross checked during the on-site interviews conducted. As a part of acceptance sampling, the validation team could confirm the sampling survey data with no discrepant records. Thus, PP's set of records has been accepted in line with § 33 of the sampling standard, version 09 /B03/.

The validation team carried out on-site interviews with representatives of PP in order to assess the information included in the project documentation and to gain additional information regarding the compliance of the project with the relevant criteria applicable for the VCS requirements/B01/

2.5 Resolution of Findings

This section summarizes the findings from the validation of the project activity. In this section the findings from the document review, assessments and on-site interviews are provided.

Material discrepancies identified in the course of the validation are addressed either as CARs, CLs or FARs.

Corrective action requests (CAR) are issued, where:

- i. mistakes have been made with a direct influence on project results requiring adjustments of the VERs/VCUs monitoring report;
- ii. applicable methodological specific requirements have not been met.

A **Clarification request (CL)** may be used where additional information is needed to fully clarify an issue or where the information is not transparent enough to establish whether a requirement is met.

Total 08 CAR, and 01 CLs had been raised. Please refer to Appendix 4 below for the details of the CARs/CLs and their closure.

2.5.1 Forward Action Requests

Forward Action Request (FAR) is to be raised when the monitoring and reporting require attention and/or adjustment for the next verification period.

CC IPL has not raised any FAR during this validation.

3 VALIDATION FINDINGS

3.1 Project Details

The project “Grouped Projects For Cambodia Water Purifier”, is a grouped project which employs baseline and monitoring methodology; AMS–III.AV: “Low greenhouse gas-emitting safe drinking water production systems”, version 08/B02-a/. To achieve the targeted volume of emission reductions, the project proponent aims to distribute 26,000 SDWP in Takeo Province in Cambodia , for free of cost to the target communities under project activity 1 under this grouped project. The project results in reducing the amount of non-renewable biomass used for boiling water. Through reduction in nonrenewable biomass consumption, the programme will decrease greenhouse gas emissions. By reducing the consumption of wood fuel, it can contribute to improving public health problems. Section 1.1. of the VCS PD/01-f/ contains a clear summary description of the projects. The completeness and accuracy of the project description was validated through on-site interviews.

Table 1: Eligibility criteria of the grouped project activity

The eligibility criteria have been provided clearly in section 1.4 of the PD /01-f/ and then justification provided for inclusion of project activity instances for the CDM methodology. AMS – III.A.V: “Low greenhouse gas emitting safe drinking water production systems”, version 08.0

Sl. No.	Eligibility criteria for the inclusion of new project activity instances	Applicability	Assessment by the validation team
1.	Meet the applicability conditions set out in the methodology applied to the project.	The new project activity instance will meet all applicability conditions of AMS-III.AV: “Low greenhouse gas - emitting safe drinking water production systems”, version 08.0	The validation team on the basis of documents review, Manufacturer specification/04/ Microbiological test report from an accredited laboratory. /11/ and on-site interview confirms that grouped project met the applicability conditions set out in the methodology applied to the project. Thus, the eligibility criteria have been met for the new project activity instances under this group project
2.	Use the technologies or measures specified in the project description.	The water purification technologies include a low greenhouse gas emitting technology	The Validation team, through document review and on-site interviews analyzed that PP will be using only the SDWP with the technology as mentioned in section 1.11 of this PD, i.e. The ceramic mixed with silver ions (Ag+) to make water filter

			Thus, the eligibility criteria have been met for the new project activity instances under this group project
3.	Apply the technologies or measures in the same manner as specified in the project description.	Technologies that use fossil fuels are not eligible. Technologies shall meet minimum criteria for specific instance type, as outline below: - Technologies shall be deployed Natural Osmosis systems with the components illustrated in section 1.11 of this PD - - Flow rate: 2 – 3l/hr Other key features of the design of the systems. Type of service, as well as performance specification based on, inter alia testing/certification: - Each unit must achieve water quality for microbes defined in QCVN 6-1:2010/BYT for drinking water - Lifespan is 10 years.	The Validation team, through document review and on-site interviews analyze that PP will be using only SDWP with the technology as mentioned under section 1.11 of the project description. Thus, the eligibility criteria have been met for the new project activity instances under this group project
4.	Are subject to the baseline scenario determined in the project description for the specified project activity and geographic area.	Are installed within the geographic area specified in Section 1.12, thus subject to the same baseline scenario determined in Section 3.3	The Validation team through document review and on-site interviews confirms that baseline is demonstrated in the section 3.4 i.e., is continued use of non-renewable wood fuel by the target population and the same shall be followed by PP in any instances. Furthermore, the geographical area for the project will be Cambodia for all instances. Thus, the eligibility criteria have been met for the new project activity instances under this group project

5.	Have characteristics with respect to additionality that are consistent with the initial instances for the specified project activity and geographic area.	the additionality of the project activity is demonstrated by barrier analysis that is in line with paragraph 10 (a) of Tool 21 “Demonstration of additionality of small-scale project activities” (version 13.1) and paragraph 33 and 34 of TOOL01 “Tool for the demonstration and assessment of additionality”. To demonstrate additionality by barrier analysis, each instance shall confirm and demonstrate that the SDWPs are distributed for free to the Users. The water from the SDWPs are free of cost of end users during the operation of the SDWPs.	The Validation team through document review and on-site interviews analyze that PP has demonstrated additionality as per the 10 (a) of Tool21 “Demonstration of additionality of small-scale project activities” (version 13.1) and paragraph 33 and 34 of TOOL01 “Tool for the demonstration and assessment of additionality (version 07.0) This has also been mentioned in the PD and the same shall be followed by all the instances under the project activity. Thus, the eligibility criteria have been met for the new project activity instances under this group project
6	Conditions that avoid double counting of emission reductions.	The new project activity instances will: • Apply a unique system (i.e., conformity letter) for SDWP in each project instance, assigning a unique ID to each SDWP and allowing to clearly identify each SDWP and to which project instance it belongs. • Each SDWP installed will include project instance assignment and will have corresponding end user details (i.e. name, address). This data will be recorded as part of the beneficiary agreement and Project database. • The CME has an agreement in place with residents who use drinking water from	The validation team based on document review and on-site audit confirms, and the unique system submitted by the PP confirms that Each SDWP in activity is uniquely identifiable and not part of any other VSC/CDM registered project not it is instance of any other project activity. Thus, the eligibility criteria have been met for the new project activity instances under this group project

		SDWPs in the project instance in which the owner transfers the rights to the emissions reductions exclusively to the CME as part of the Carbon Rights Waiver within the Beneficiary agreement	
7	Capacity Limit	Each project instance in this grouped project will have a maximum capacity of 60,000tCO ₂ e per year throughout the project instance crediting period..	On the basis of review of the PD, ER sheet and interview with the PP, validation team confirms that each instance under the grouped project will achieve emission reductions less than 60,000 tCO₂/year. Thus, the eligibility criteria have been met for the new project activity instances under this group project
8	Target group	Each project instance will target households where use traditional cookstove to boil water	The validation team on the basis of review of the beneficiary agreement template to be signed at the time of distribution, interview with the PP and interview with the end-users confirms that the end-users are using traditional cookstove to boil water. Thus, the eligibility criteria have been met for the new project activity instances under this group project
9	Occur within one of the designated geographic areas specified in the project description.	New project activity instances will be located within the geographic boundaries of Cambodia. The new project instances geographic location will be defined in the monitoring reports.	Based on review of VCS PD and interviews with representatives of PP, validation team confirms that PAI 1 is located Takeo province within Cambodia. Geodetic coordinates of PAI are sufficiently specified. Thus, the eligibility criteria have been met for the new project activity instances under this group project
10	Conform with at least one complete set of eligibility criteria for the inclusion of new project activity instances. Partial conformance	New project activity instances must comply set of eligibility criteria for the inclusion of new project activity instances in the table.	Based on review of VCS PD validation team confirms that PAI 1 complies with eligibility criteria for inclusion of new PAI and the eligibility criteria is sufficiently justified.

	with multiple sets of eligibility criteria is insufficient.		Thus, the eligibility criteria have been met for the new project activity instances under this group project
11	Be included in the monitoring report with sufficient technical, financial, geographic, and other relevant information to demonstrate conformance with the applicable set of eligibility criteria and enable evidence gathering by the validation/verification body	New Project Activity Instances must comprise monitoring plans that outline the technical, financial, geographic, and other relevant information to enable sampling by the validation/verification body	Based on review of VCS PD, VVB confirms that monitoring plan is designed to outline the technical, financial, geographic, and other relevant information. The monitoring plan will enable sampling by the validation/verification body. Thus, the eligibility criteria have been met for the new project activity instances under this group project
12	Be included in an updated project description, with updated project location information, which shall be validated at the time of verification against the applicable set of eligibility criteria.	New project activity instances must comprise an updated project description, with updated project location information.	Based on review of VCS PD, VVB confirms that location of PAI 1 is sufficiently described. Geodetic coordinates of PAI are sufficiently specified. Thus, the eligibility criteria have been met for the new project activity instances under this group project
13	Have evidence of project ownership, in respect of each project activity instance, held by the project proponent from the respective start date of each project activity instance (i.e., the date upon which the project activity instance began reducing or removing GHG emissions).	New PIs will demonstrate ownership by the project proponent, from the start date of the PI	Based on review of VCS PD and interviews with representatives of PP, VVB confirms that the ownership of the PAI 1 is demonstrated through agreements between SIPCO and WP manufacturer ; and SIPCO and end-users. Thus, the eligibility criteria have been met for the new project activity instances under this group project.
14.	Have a start date that is the same as or later than the grouped project start date.	Only PIs having a start date that is the same as or later than the GP start date will be	Based on review of VCS PD and evidence of start date/03/, VVB confirms that the start date of PAI is

		included in the grouped project.	02-May-2022 which is same as the start date of the grouped project. Thus, the eligibility criteria have been met for the new project activity instances under this group project.
15.	Be eligible for crediting from the start date of the project activity instance through to the end of the project crediting period (only).	New PI within this grouped project shall only be eligible for crediting from its start date through to the end of the project crediting period	Based on review of VCS PD and evidence of start date/03/, VVB confirms that PAI will be eligible for crediting from its operating start date, which is 02-May-2022 through to the end of the project crediting period. Thus, the eligibility criteria have been met for the new project activity instances under this group project.
16.	Only eligible for crediting from the start of the verification period in which they were added to the grouped project.	New PI within this grouped project shall only be eligible for crediting from the start of the verification period in which they were added to the grouped project.	The monitoring reports shall specify the start date of PAI. All of instances under the grouped project shall only be eligible for crediting from the start of the verification period in which they were added to the grouped project. Thus, the eligibility criteria have been met for the new project activity instances under this group project.
17	Not be or have been enrolled in another VCS project.	All of new PIs within this grouped project will be a new activity and not be or have been enrolled in another VCS project.	Based on review of VCS PD , the validation team confirms that project activity 1 will distribute water purifier in Takeo province. It is a new activity and do not leave one VCS project and subsequently enroll another VCS project. VVB has confirmed the same through declaration provided by PP/17/-/18/. Thus, the eligibility criteria have been met for the new project activity instances under this group project.
18	Where inclusion of a new project activity instance necessitates the addition of a new project proponent to the project, such instances shall be included in the	All of new project activity instance within this grouped project will include the information of the project proponent in the project description if the project has a new project proponent	Based on review of VCS PD and interviews with representatives of PP. The project activity 1 is developed by SIPCO, there is no other project proponent.

	grouped project description within two years of the project activity instance start date or, where the project activity is an AFOLU activity, within five years of the project activity instance start date. The procedure for adding new project proponents is set out in the Registration and Issuance Process.	within two years of the project activity instance start date.	Thus, the eligibility criteria have been met for the new project activity instances under this group project.
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Project proponent and other entities involved in the project and Ownership.

The project proponent is Sustainability Investment Promotion and Development Joint Stock Company which will be holding the carbon credits generated from the project activity/05//12/.

Project start date

The start date for the grouped project is 02-May-2022. /03/ which is the date of installation of first water purifier under this project activity. The same has been cross-checked by the VVB on the basis of the review of the first beneficiary agreement signed./03//12/

Project Crediting Period

The crediting period starts on 02-May-2022/03/ which coincides with the starting date of the project activity, and lasts for 10 years, fixed. This is in accordance with paragraph 3.9.1 of the VCS standard version 4.5/B01-a/ for non-AFOLU projects.

Project Location

The indication of the project activity location and the geographic boundaries is provided in section 1.12. of the VCS PD. They are in accordance with paragraph 3.12.1 of the VCS Standard and can confirm that the project activity boundary is uniquely defined. The grouped project location and geographic boundaries of the project are those of Cambodia.

The geographical coordinates of Cambodia are:

- Longitude: from 102.29 E to 107.83 E
- Latitude: from 10.41 N to 14.80 N

The project activity 1 will distribute water purifiers to households in Takeo Province in Cambodia,

is scattered throughout the province between:

- Latitudes: 10.99 N;
- Longitudes: 104.78 E.

Additionally, PP has provided KML file with geodetic coordinates of Takeo province/22/ which is assessed by VVB and deemed acceptable. This is in accordance with paragraph 3.11.1 of the VCS standard version 4.5/B01-a/, which requires grouped projects to have one or more clearly defined geographic areas within which new project activity instances may be developed.

The first project activity instance was installed in the Takeo Province of Cambodia and the same has been verified by the validation team.

The VCS PD clearly indicates the project scope, which is scope 3: Energy demand, and more specifically demand-side energy efficiency project. The project is a grouped project, this is indicated in section 1.2. of the VCS PD/01-f/.

Participation under other GHG programs

The proposed grouped project is an energy efficiency project activity and is located in a non-Annex I country. Therefore, the ER generated would not be part of an emission trading program, nor it is located in a jurisdiction or sector with binding limits. The project proponent intends to claim carbon credits under the VCS programme only for the emission reductions achieved. The PP states in the VCS PD that the emission reductions generated by this project will not be used for compliance with an emission-trading program or to fulfil binding commitments. In fact, at the time of validation, no binding targets have been set by Cambodia under the Kyoto protocol, as indicated in the UNFCCC website /B04/.

The project proponent has declared that the project is not registered under any other GHG program. The validation team has checked the UNFCCC database of registered projects or projects under validation and was able to confirm that the listed projects are not the proposed project activity

The proposed project activity instances do not generate another form of environmental credit. The project proponent indicates in the VCS PD that the project does not intend to generate any other form of GHG related environmental credit other than those claimed under this VCS project.

Commercially sensitive information

There is no Commercially Sensitive Information excluded from the VCS-PD. PP has also clearly stated the contributions to sustainable development in regards with economic sustainability, environmental sustainability, social sustainability, and technological sustainability under section 1.18 of the VCS PD/01-f/.

Sustainable Development contribution

SDWP reduces non-renewable consumption and emissions savings but also has many other benefits for the household. It contributes to sustainable development in Cambodia through:

- Project can contribute to improving public health problems. Increase in disposable income due to reduced spending on fuels.
- It helps stimulate economic empowerment by creating jobs and entrepreneurs in the construction of SDWP.
- Over the long-term, this project activity is anticipated to reduce deforestation and the emission of greenhouse gas caused by using the burning of wood fuel.

In terms of Sustainable development, the project will provide environmental well-being, socio economic benefit and technological benefits as described in section 1.17 of the PD/01-f/. Also, the project activity involves the reduction of the GHG emission reduction by the use of improved technology thus also improving the air quality and will be improved as the programme program reduces pressure on remaining forest reserves in Cambodia No negative impacts can be identified. The validation team reviewed the PD and interview with the PP and confirms the same

Conditions prior to project initiation:

The project activity involves the distribution and installation of water purifiers in the targeted households using wood fuel for use in boiling water in Cambodia. The distributed water purifiers will reduce the amount of nonrenewable fuel used for boiling water as well as the emissions produced by wood burning. These WP will reduce the use of baseline's inefficient, conventional cookstoves. In the absence of this project activity, the target population would have continued to use the traditional three-stone fire, which would have ensured continuous use of non-renewable fuelwood to boil water.

Conditions prior to the project initiation has been validated by the end users interview during the validation audit. The Same has been cross verified by the baseline survey /07/ conducted by PP before distributing Water purifiers by SIPCO and Cambodia Women for Peace Development at all levels to confirm the type of baseline cookstove.

Wood fuel is used to boil water as a means of water purification in the absence of project activity. The project will distribute Water purifiers which will help reduce the wood fuel consumption used for boiling water, using wood biomass more economically thereby reducing emissions of greenhouse gases

Other forms of credit and supply chain (Scope 3) emissions:

PP will inform the manufacturers of the water purifiers and the implementation partner that the Verified Carbon Units (VCUs) may be issued for the greenhouse gas emission reductions and removals under this grouped project. For these VCUs, the PP will be claiming carbon credits under VERRA. PP will further apprise that the ownership of these credits lies exclusively with SIPCO to avoid any potential risk of double claiming of Scope 3 emissions.

The Validation team has reviewed the website of SIPCO for the public statement which is, deemed appropriate and in line with the VCS standard requirements/B01/.

The validation team concludes that the description in the project description is accurate, complete, and provides an understanding of the nature of the project.

3.2 Safeguards

3.2.1 No Net Harm

As identified by PP project has no negative impact. The potential negative environmental and socio-economic impacts identified by the project proponent and have been listed in section 2.1 of the PD.

Every additional project activity instance to be added to this Grouped Project will summarize any potential negative environmental and socio-economic impacts and the steps taken to mitigate them

The validation team confirms that for the project does not pose any potential negative environmental and socio-economic impacts. A local stakeholders meeting was conducted for the project and there was no negative feedback.

3.2.2 Local Stakeholder Consultation

The stakeholder consultation meeting was held on 02-May-2022 at Takeo provincial administration, Takeo People's Committee.

The key comments made by the local stakeholders were all answered during the local stakeholder consultation meetings and have also been provided in the section of 2.2 the VCS PD /01-f/. The stakeholder meetings conducted by the PP have been listed in section 2.2 of the PD/01-f/. A summary of the local stakeholder participation has been provided. The local stakeholder consultation meetings with the list of participants have been provided to the validation team/08/.

The validation team confirms the procedure and method for engagement, method for documenting the outcomes of local stakeholders' consultation and account of all inputs received. The validation team confirms that the project proponent has taken due account of all input (no negative comments were received for the project). Hence the validation team deemed the local stakeholders meeting procedure including the inputs received as appropriate.

The validation team has assessed the grievance mechanism designed by the PP. The grievance redressal process has been designed where beneficiaries and stakeholders have PP's contact information and the understanding that they should contact the organization with any problems,

questions, or grievances. During the onsite inspection interviews and based on document review it can be confirmed that grievance addressal procedure has been designed and that it is effective in its aim. In the opinion of the assessment team, based on the onsite inspection interviews and observations, the grievance redressal procedure will address issues that may arise during project planning and implementation.

3.2.3 Environmental Impact

As per the need for an EIA, Environmental Impact Assessments in Cambodia are regulated through, and no environmental impacts have been identified by the project proponent.

3.2.4 Public Comments

.Public commenting period were from 10/07/2022 to 09/08/2022. No public comments were received for the grouped project.

3.2.5 AFOLU-Specific Safeguards

This is a non-AFOLU project, hence this section is not required.

3.3 Application of Methodology

3.3.1 Title and Reference

The Grouped Project provides for projects that use one of the CDM approved methodology:

- AMS–III.AV. “Low greenhouse gas-emitting safe drinking water production systems”, (version 08)”

The associated tools and guideline documents in the Grouped Project include:

- CDM Guideline “Sampling and surveys of CDM project activities and programmes of activities” version 04.0
- CDM Standard “Sampling and surveys for CDM project activities and programmes of activities” version 09.0
- AMS-I.E. - Switch from non-renewable biomass for thermal applications by the user - Version 13.0
- TOOL01 “Tool for the demonstration and assessment of additionality”, version 07.0.
- TOOL30 - Calculation of the fraction of non-renewable biomass. Version 04.0.

3.3.2 Applicability

The project applies CDM methodology; AMS–III.AV: “Low greenhouse gas-emitting safe drinking water production systems”, version 08/B02-a/. Applicability criteria for the baseline line methodology and tools are assessed by the validation team by means of document review and

interview. The Validation team confirms that the project activity meets the criteria of the applied methodology.

Table 02: Applicability of Methodology AMS III.AV. v.08

Sl. No.	Methodology requirement	Justification	Assessment by the validation team
1	This methodology comprises introduction of low greenhouse gas emitting water purification systems to provide safe drinking water (SDWP). Water purification technologies that involve point-of use (POU) or point-of-entry (POE) treatment systems for residential or institutional applications such as systems installed at a households or a community Centre are included. The examples include, but are not limited to, water filters (e.g. membrane, activated carbon, ceramic filters), solar energy powered ultraviolet (UV) disinfection devices, solar disinfection techniques, photocatalytic disinfection equipment, pasteurization appliances, chemical disinfection methods (eg. chlorination), combined treatment approaches (eg. Flocculation plus disinfection). The methodology is also applicable to water	Under this grouped project, low greenhouse gas emitting water purification will be distributed to households. Detail of technology has been detailed in section 1.11 of this grouped VCS.	The validation team has cross checked the information provided in section 1.11 of this grouped VCS PD by interviewing the PP and by physically verifying the Water purifier on site and confirms that the low greenhouse gas emitting water purification will be distributed. Thus, the eligibility criteria has been met for the new project activity instances under this group project.

	kiosks that treat water using one or more of the following disinfection. In case the water kiosk is using solar disinfection powders and solar implement measures to prevent recontamination (e.g. disinfecting containers, sealing containers and hygiene trainings).		
2	Soil filtration schemes (boreholes, wells) that include container disinfection (e.g. chlorination) may be applied. Project proponents shall demonstrate ex ante that rehabilitation and/or construction of the wells complies with relevant national and/or international standards and that measures are taken to ensure that water and well are not contaminated	This is not applicable for this proposed project.	This is not applicable for this proposed project.
3	Prior to the implementation of the project activity, a public distribution network supplying SDWP) to the project boundary does not exist.	For each project activity instance shall proof that a public distribution network supplying SDWP does not exist in the project boundary. If during the crediting period SDWP is made available through a public distribution network, the emission reductions pertaining to the households supplied by the	On the basis of review of the documents, survey records and by cross checking the same by interviewing the households, validation team confirms that prior to the implementation of the project activity, a public distribution network supplying SDWP) to the project boundary does not exist. Thus, the eligibility criteria has been met for the new project activity instances under this group project

		public system area cannot be claimed from that point onwards. This condition will be checked annually during the crediting period.	
4	It shall be demonstrated based on laboratory testing or official notifications (for example notifications from the national authority on health) that the application of the project technology/equipment achieves compliance either with: (i) the “interim” performance target as per “Evaluating household water treatment options: Health based targets and microbiological performance specifications” (WHO, 2011); and “International Scheme to Evaluate Household Water Treatment Technologies” (WHO, 2014) or (ii) an applicable national standard or guideline. Applicable national standard should be based on laboratory efficacy testing that, at a minimum, includes quantitative microbial measures of pre- and post-treatment challenge waters that are	The drinking water purifier supply use various water treatment filters according to the water quality of water sources to meet the national standard or guideline of Cambodia. The outlet quality water shall meet microbes defined in Drinking Water Quality Standards.	On the basis of the review of the microbiological test report submitted by the PP and by interviewing the same during on site validation team confirms that The drinking water purifier supply use various water treatment filters according to the water quality of water sources to meet the national standard or guideline of Cambodia. The outlet quality water shall meet microbes defined in Drinking Water Quality Standards. Thus, the eligibility criteria has been met for the new project activity instances under this group project

	representative of potential drinking water sources, and that includes measured reductions based on at least one pathogen class (bacteria, viruses, protozoa).		
5	In cases where the life span of the water treatment technologies is shorter than the crediting period of the project activity, there shall be documented measures in place to ensure that end users have access to replacement purification systems of comparable quality.	The lifespan of the water purifier is 10 years, which is the length of the crediting period of the instance.	The Validation team through document review (Technical specification of SDWP provided by the manufacturer confirms that the life span of SDWP is 10 years. Thus, the eligibility criteria has been met for the new project activity instances under this group project.
6	It should be demonstrated that the project appliances use technologies that meet the technology standards as per paragraph 4(b) of approved methodology AMS-III.AV Version 08, and that they deliver microbiologically safe drinking Water	Each water purifier shall confirm to the technology standards as per paragraph 4(b) of approved methodology AMS-III.AV version 08.0. The outlet quality water shall meet microbes defined in Drinking Water Quality Standards for drinking waters	The Validation team on the basis of document (Microbiological test report) provided by the PP confirms that the outlet water quality of SDWP meets microbes define in water quality standard for drinking water. . Thus, the eligibility criteria has been met for the new project activity instances under this group project.

Table 03: Applicability of TOOL01 “Tool for the demonstration and assessment of additionality”.

1	The use of the “Tool for the demonstration and assessment of additionality” is not mandatory for project participants when proposing new methodologies. Project participants may propose alternative	Complies. Tool 01 is applied to demonstrate and assessment of additionality for each instance of grouped project.	Validation team on the basis of document review, on-site interviews and review of equipment contract submitted by the PP, confirms that the project is to free distribution of SDWPs to the Household, the PP has no other income from VER revenue.
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	methods to demonstrate additionality for consideration by the Executive Board. They may also submit revisions to approved methodologies using the additionality tool.		Thus, the eligibility criteria has been met for the new project activity instances under this group project.
2	Once the additionally tool is included in an approved methodology, its application by project participants using this methodology is mandatory	Complies. The additionality tool is not included in the approved methodology. However, the project participants using simple cost analysis in tool 01 to demonstrate and assessment of additionality.	Project participant has demonstrated additionality using simple cost analysis in tool 01. Thus, the eligibility criteria has been met for the new project activity instances under this group project.

Table 04: Applicability of TOOL30: Calculation of the fraction of non-renewable biomass

1	This tool may be used by: (a) DNAs to submit region/country-specific default fNRB values, following the procedures for development, revision, clarification and update of standardized baselines (SB procedures); or (b) Project proponents to calculate project or PoA-specific fNRB values.	Complies. This tool was used by the project participants to calculate a project specific value for fNRB under option (b) of applicability condition 1.	It has been observed by the validation team that the project uses Tool 30 to calculate project specific value of fNRB in line with the option (b) of the applicability condition 1 of tool 30. It was cross checked by the validation team on the basis of review of the fNRB report prepared by C4 Eco solutions (Pty) Ltd, submitted to VVB by PP. Thus, the eligibility criteria has been met for the new project activity instances under this group project.
2	For project or PoA specific fNRB values, project proponents shall assess the area where biomass is sourced and justify the selection of the area in CDM project design documents.	Complies. The area for the calculated value was selected to coincide with the Grouped Project's project boundary	The area where the biomass is sourced is described by the PP and the same is reviewed from the fNRB report submitted by the PP. Thus, the eligibility criteria has been met for the new project activity instances under this group project.

Table 05: Applicability of AMS-I.E.: "Switch from non-renewable biomass for thermal applications

by the user”.

1	The use of this methodology in a project of activity under a grouped project is legitimate if the leakage is estimated and accounted for as per the relevant provisions of AMS-I. E under the section for grouped project.	Complies. Leakage is calculated by applying a net to gross adjustment factor of 0.95 to account for leakages.	The validation team observed that the project uses the AMS I.E for the value of leakage emission for the calculation of emission reduction. In line with paragraph 24 of the methodology AMS I.E version 13 “By is multiplied by a net to gross adjustment factor of 0.95 to account for leakages. The same is considered by the PP for this project. Thus, the eligibility criteria has been met for the new project activity instances under this group project.
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3.3.3 Project Boundary

The Grouped Project boundary is defined as per the methodology AMS-III.AV (v 08.0)/B02-a/.

The sources of greenhouse gas identified in the PD/01-f/ are deemed to be appropriate and assessed below:

The project boundary for the grouped Project consists of the physical, geographical locations of the distributed SDWP limited to within Cambodia.

	Source	Gas	Included?	Justification/Explanation
Baseline	Non-renewable biomass	CO ₂	Yes	Main emission source
		CH ₄	No	Minor emission source
		N ₂ O	No	Minor emission source
		Other	No	Minor emission source
Project	Non-renewable biomass	CO ₂	Yes	Minor emission source
		CH ₄	No	Minor emission source
		N ₂ O	No	Minor emission source
		Other	No	Minor emission source

The greenhouse gas sources indicated in the VCS PD section 3.3 /01-f/ are transparently stated and deemed appropriate and consistent with the technology used within the project boundary.

3.3.4 Baseline Scenario

The project activity will use methodology AMS-III.AV: “Low greenhouse gas-emitting safe drinking water production systems”, Version 08.0. This is the most recent valid version available on the UNFCCC website and the VERRA site at the time of validation. Since the project activity that apply the indicative simplified and standardized approach. It is assumed that non-renewable biomass (NRB) is used to boil water as a means of water purification in the absence of project activity. The emissions are calculated based on the energy demand for boiling water, and in case of displacement of NRB, the baseline emissions are corrected for the fraction of the biomass that can be demonstrated to be non-renewable. Only purified water consumed for drinking purposes can be used in the baseline calculation.

The baseline described in the VCS PD complies with the requirements of the methodology, as the energy baseline is the existing level of consumption of non-renewable biomass used for boiling water currently in use and which is used in the absence of the project activity.

In Cambodia, 27.76% the population using at least basic drinking water by 2020. Based on a document of World Bank, over 90 percent of energy used for cooking comes from wood, contributing to increased deforestation. VVB has cross-checked this information and confirms that the sources specified for the above statistics in section 3.4 of the VCS PD are relevant, credible, and correctly interpreted in project context.

VVB has assessed the baseline survey records/07/ and cross-checked the details including sampling process, sampling size, sample selection. Further during the on-site assessment, VVB has applied acceptance sampling approach to physically interviewed end-users from PP’s baseline survey to cross-check the results in line with “Standard for sampling and surveys for CDM project activities and programme of activities” (version 09.0). Details related to VVBs on-site assessment are included in section 2.4 of the validation report.

The Validation team based on review of the VCS PD/01-f/ and on-site interviews, confirms that the documentary evidence used in determining the above baseline scenarios are relevant, and correctly quoted and interpreted in the project description. The baseline scenarios for the applied methodology were also confirmed through on-site interviews with the end users of technologies and representatives of PP.

Validation team confirms that the baseline scenario opted by the project activity is in accordance with the requirements of the applied methodology/B02-a/ and is justified.

3.3.5 Additionality

The additionality of the grouped project has been demonstrated by the PP as per the methodology section 5.2 /B02-a/. As per the methodology under this grouped project, the additionality of the project activity is demonstrated by a barrier analysis that is in line with the Tool 01 -

In accordance with the rules and requirements regarding regulatory surplus set out in the latest version of the VCS Standard and it can be confirmed that the project is not mandated by any law, statute, or other regulatory framework, or for UNFCCC non-Annex I countries, any systematically enforced law, statute or other regulatory framework.

The project demonstrates the existence of an Investment Barrier. Procuring, installing SDWPs requires capital, which is a barrier to the end user of the Project due to difficulties in accessing capital, a wide dissemination of such technology in the Host Country is unlikely. The actions under the Project will alleviate these barriers by distributed free SDWPs to households.

Furthermore, the grouped project meets all the applicability conditions of the applied methodology AMS-III.AV: Version 08 and distributes SDWP at zero cost to the end-users and has no other source of revenue other than the sale of GHG credits. Hence, in line with paragraph 33 and 34 TOOL01 “Tool for the demonstration and assessment of additionality”, the project faces an investment barrier and is additional. Validation team confirms that simple cost analysis is deemed acceptable on the basis of review of the above-mentioned tools, project description and on-site interviews. VVB has also cross checked the documents purchase equipment between SIPCO and water purifier manufactures/23 a/, the transportation contract between SIPCO and transportation partner/ 23b/ and the distribution contract between SIPCO and CWPD/23c/ and thus confirms that the project proponent appropriately derived the additionality and there is no revenues generated other than the sale of GHG credits.

Therefore, the validation team confirms that the grouped project is additional, and all the project activity instances that will be included in the grouped project will meet the eligibility criteria. Distribution of Safe drinking water purifiers in Cambodia is additional – the emission reductions achieved by the project would be below those that would have occurred without the implementation of the project.

3.3.6 Quantification of GHG Emission Reductions and Removals

The equations and choices provided in the methodology and all other methodological tools are correctly quoted in the VCS PD/01-f/. The emission reductions of the project instances of the grouped project would be calculated using the formulae mentioned in the applied methodology; AMS-III.AV (version 08)/B02-a/.

Validation team based on the review of the PD /01-f/, confirms that the formulae are correctly presented for the determination of emissions reductions. The parameters and equations presented in the PD/01-f/, as well as other applicable documents, have been compared with the information and requirements presented in the methodology respectively. An equation comparison has also been made to ensure consistency between all the formulae presented in the PD/01-f/ and ER spreadsheet/02-e/ and methodology ; AMS-III.AV (version 08)/B02-a/.

According to applied methodology ; AMS–III.AV (version 08)/B02-a/. the emissions are calculated as below:

Baseline emissions

$$BE_y = QPW_y \times m \times X_{boil} \times SEC \times \sum_i (BL_{fuel,i} \times f_i \times EF_{projected_fossil\ fuel,i} \times 10^{-9}) \quad \text{Equation (1)}$$

Where:

BE_y	=	Baseline emissions during the year y in (t CO ₂ e)
QPW_y	=	Total quantity of water purified by the project in year y (L)
m	=	Fraction of functional appliances that are providing the SDW (%). Only project appliances that (i) use technologies that meet the technology standards as per paragraph 4(b) and (ii) are operating or replaced by an equivalent in service appliance and (iii) deliver microbiologically safe drinking water, are counted for emission reductions
X_{boil}	=	Fraction of the population served by the project activity for which the common practice of water treatment is or would have been water boiling. It is determined ex ante through surveys
SEC	=	Specific energy consumption required to boil one litre of water (kJ/L), to be calculated according to paragraphs below
$BL_{fuel,i}$	=	Proportions of baseline fuel type i (NRB and/or fossil fuels) used in the absence of the project activity (fraction)
f_i	=	Fraction of non-renewable fuel type i used in the absence of the project activity in year y . For biomass, it is the fraction of woody biomass that can be established as non-renewable biomass (f_{NRB}). If the baseline fuel is fossil fuel, the value to be applied is 1
$EF_{projected_fossil\ fuel,i}$	=	Emission factor of the fuel type i substituted (t CO ₂ /TJ)

i. Determination of the quantity of purified water serviced by the project activity in year y (QPW_y)

The quantity of purified water is the total of water treated by the project activity in year y

As per paragraph 16 of the applied methodology AMS-III.AV (Version 08.0), the quantity of purified water in a year should be monitored and calculated based on the provided options.

Accordingly, PP has chosen option 2.2 and calculated the parameter as follows:

The population serviced by the project activity and an average volume of drinking water per person per day, as follows:

$$QPWy = P_y \times \min(QPW_{pp}; 5.5) \times 365 \quad \text{Equation (2)}$$

Where:

- P_y = Population who consumes the purified water serviced by the project activity in year y
- QPW_{pp} = Average volume of drinking water per person per day (L/person/day) determined ex ante of the crediting period through a baseline survey

The household targeted by the grouped projects are those who are using the traditional cookstove for boiling the water. Depending on the average number of people per household (P_{ay}) and number of household WP shall be distributed (N_y), population who consumes the purified water serviced by the project activity in year y is monitored and calculated.

The number of water purifiers which are distributed in project activity instance 1 under this grouped project activity is 26,000 units to 26,000 households in Takeo province in Cambodia.

The average number of person in household in Cambodia is 4.6 person/household

Therefore, the population who consumes the purified water service by the project activity 1 in year is $26,000 \times 4.6 = 119,600$ persons.

As baseline survey, the total of daily drinking water usage by 462 households is 10,946 litre/day.

Therefore, the average volume of drinking water per person per day is $(10,946/462)/4.6 = 5.15$ l/person/day which is less than the maximum quality of drinking water person per day of 5.5l/person/day defined in AMS-III.AV v.8.0.

So, the quantity of purified water in year is

$$QPWy = P_y \times \min(QPW_{pp}; 5.5) \times 365 = 119,600 \times 5.15 \times 365 = 224,818,100 \text{ l/year}$$

ii. Determination of the fraction of fuel type (f_i) , (Non-renewable biomass)

PP has contracted an independent party "C4Ecosolutions" for a study and calculation of fNRB as per CDM Methodological Tool: "Calculation of fraction of non- renewable biomass" (v03.0). Validation team confirms that it has checked fNRB calculation report/spread sheet /19/ prepared by C4Ecosolutions

From the review of this report/spread sheet /19/ and interviews with the CME and C4 EcoSolutions (Pty) Ltd, validation teams confirm the following:

- The report has been prepared by an independent party (i.e., C4 EcoSolutions (Pty) Ltd.), who is experienced in conducting such study and the value of f_{NRB} is calculated as 0.7044
- The detailed methodology (including the calculation) of conducting the study has been provided in the report /spread sheet /19/.
- The study has been done in accordance with the CDM Methodological Tool: “Calculation of fraction of non- renewable biomass” (v04.0) including the equation used and the data source as required by the tool.
- All the reference and data source used for the calculation/study has been listed and assessed by the VVB.

PP has contracted an independent party “C4Ecosolutions” for a study and calculation of $f_{NRB,y}$ as per CDM Methodological Tool 30: “Calculation of fraction of non-renewable biomass” (v4.0). Validation team confirms that it has checked $f_{NRB,y}$ calculation report/spread sheet /11/ prepared by C4Ecosolutions. As per the applied methodological tool, In the case of ex ante calculation of $f_{NRB,y}$, the parameter $f_{NRB,y}$ shall be estimated using the most recent historical year for which data is available. Review of $f_{NRB,y}$ report /11/ prepared by C4Ecolution revealed that all the data used for the calculation is latest available data at the time of validation. Review of $f_{NRB,y}$ calculation report/spread sheet /11/ prepared by C4Ecosolutions reveals that the estimation of non-domestic fuel consumption was derived from the FAO Forestry Production and Trade database. The non-domestic fuelwood consumption estimates provided by the UN Statistics Division non-domestic wood consumption data as 5,814,980. The total woody biomass consumption for Cambodia is as per the $f_{NRB,y}$ report /11/ prepared by C4Ecolution is estimated to be 15,621,617 t/yr., which is deemed appropriate to the VVB. In Cambodia three ecological zone has been found i.e. tropical dry forest, tropical moist forest, and Tropical Rainforest and the same was verified by referring the Global ecological zones for FAO forest reporting: 2010 Update. VVB has noted that in report /11/ geospatial data products for Cambodia were analysed in R¹⁷⁻²¹ to estimate Cambodia renewable biomass. The woody cover from all areas defined as “forest” (>10%) cover “other wooded land” (5-10% cover) as well as “other land” (<5% cover) according to the FAO definitions or 2000 and 2020, was estimated using Hansen/UMD/Google/USGS/NASA23 spatial data, which is derived from Hansen et al.¹

The default age-weighted mean annual increment (MAI) estimates of each ecological zone, as reported by the IPCC, was used for the study, checked and confirmed by the VVB. The proportion of forest stand ages above and below 20 years old including primary forest were estimated for each ecological zone by extrapolating the observed forest gain extents between 2000 and 2012 to a 20-year period. The resulting

¹ Hansen/UMD/Google/USGS/NASA. Hansen Global Forest Change v1.8 (2000-2020). (2020)

average MAI estimates for Cambodia are 1.19, 0.75, and 1.05 t/ha/year for the tropical dry forest, tropical moist forest, and tropical rainforest. respectively. The table below provides the validated total, protected and remote forest cover extent, mean annual increment and renewable biomass by ecological zone for Cambodia.

Ecological Zone	Total Forest cover (ha)	Protected Cover (ha)	Remote Cover (ha)	MAI (t/ha/yr)	Renewable biomass (t/yr)
Tropical dry forest	2,555,072	913,563	1,060,791	1.19	1,772,909
Tropical moist forest	2,135,828	1,261,064	477,383	0.75	1,241,657
Tropical rainforest	1,324,718	1,413,588	102,491	1.05	1,602,668
Total	6,324,718	3,588,215	1,640,665	-	4,617,234

$$fNRB = NRB / (NRB + RB)$$

Where:

fNRB = Fraction of non-renewable biomass in the applicable area in the relevant period (fraction or %)

NRB = Quantity of non-renewable biomass consumed in the applicable area in the relevant period (tonnes)

RB = Quantity of renewable biomass that is available on a sustainable basis in the applicable area in the relevant period (tonnes)

$$NRB = H - RB$$

where,

H = Total consumption of woody biomass in the applicable area in the relevant period (tonnes)

$$H = HW \times N + CE + NE$$

Where:

HW = Average consumption of wood fuel per household, including fuelwood, in the applicable area in the relevant period (tonnes//household)

CE = Commercial woody biomass consumption for energy applications (e.g. commercial, industrial or institutional uses of woody biomass in ovens, boilers etc.) that are extracted from forests or other land areas in the applicable area in the relevant period (tonnes)

NE = Commercial woody biomass consumption for non-energy applications (e.g. construction, furniture) that are extracted from forests or other land areas in the applicable area in the relevant period (tonnes)

N = Number of households consuming wood fuel within the applicable area in the relevant period (number)

$$RB = \sum(MAI_{forest,i} \times (F_{forest,i} - P_{forest,i})) + \sum(MAI_{other,i} \times (F_{other,i} - P_{other,i}))$$

Where:

MAI_{forest,i} = Mean Annual Increment of woody biomass growth per hectare in subcategory i of forest areas in the relevant period (tonnes/ha/yr)

MAI_{other,i} = Mean Annual Increment of woody biomass growth per hectare in subcategory i of other land areas in the relevant period (tonnes/ha/yr)

F_{forest,i} = Extent of forest in sub-category i in the relevant period (ha)

F_{other,i} = Extent of other land in sub-category i in the relevant period (ha)

P_{forest,i} = Extent of non-accessible area (e.g. protected area where extraction of wood is prohibited, geographically remote area) within forest areas (in subcategory i) in the relevant period (ha)

P_{other,i} = Extent of non-accessible area (e.g. protected area where extraction of wood is prohibited, geographically remote area) within other land areas (in sub-category i) in the relevant period (ha) i = Sub-category i of forest areas and other land areas

PP has provided the fNRB calculation sheet in line with the TOOL30, v04.0). Validation team has checked the above calculation/19/and the calculation deemed to be appropriate.

The difference between woody biomass consumption and renewable biomass is considered to be non-renewable. Non-renewable biomass utilization in Cambodia is, therefore, validated as 11,004,383t/yr. The fraction of non-renewable biomass is the quotient of the non-renewable and the total biomass. The fraction of non-renewable biomass for Cambodia is, therefore, validated as 0.7044

As mentioned in PD and cross checking the same from the fNRB report it is found that MAIs were calculated using a weighted average based on the forest area of three categories (i.e., primary forests, above 20-year secondary forest, below 20- year secondary forest). Data from the 2019 Refinement of the 2006 IPCC Guidelines was used in combination with extrapolating the observed forest gain extents between 2000 and 2012 to a future 21-year period. As per the comparison study, MAI values were derived from a combination of field observations and IPCC values, followed by a different estimation of growth

rates as a percentage of standing stock. This approach often yields higher MAIs and may lead to higher estimations of RB and subsequently, lower estimations of NRB and fNRB.

As per paragraph 13 of the Tool 30 version 04.0,

“If the fNRB value is estimated at the national level, as a cross check, project proponent shall compare the value of estimated NRB with the product of i) total average above ground biomass tonnage of the area of forest areas deforested in recent past (tonnes/ha), and ii) most recent available observed annual rate of deforestation (ha/yr). If the estimated NRB value is more than 10% above the value calculated as per the product of biomass and deforestation rate, justification shall be provided for the higher value for NRB.”

Accordingly, The estimated NRB for Cambodia was compared to the top-down product of average aboveground biomass (69.30 tonnes per hectare (t/ha)) and the most recent annual deforestation data (155,690 hectare per year (ha/yr)) as specified in section 4.1.2 of the PD. . The NRB, as calculated in this report according to the CDM Tool 30 v4.0 2022, was found to be 11,004,383 t/yr, which is similar to the crosscheck results based on deforestation (10,789,317 t/yr).

Further, as per paragraph 6(b) of Tool 30 v 4.0, the fNRB value was compared with other literature specified in section 4.1.2 of the PD. The resulting fNRB value is higher than the expected fNRB values determined in peer reviewed literature using the WISDOM method. Justification for the higher value is provided by PP which is assessed and deemed acceptable to the VVB.

In the opinion of the validation team, the calculation of $f_{NRB,y}$ is correct and in line with the CDM Methodological tool: Calculation of the fraction of non-renewable biomass (v4.0) and thus acceptable to the validation team.

iii. Determination of specific energy consumption required to boil one litre of water is to be calculated as follows:

$$SEC = [WH \times (T_f - T_i) + 0.01 \times WHE] / h_{wb} \quad \text{Equation (3)}$$

Where:

WH	=	Specific heat of water (kJ/L °C). Use a default value of 4.186 kJ/L °C
T_f	=	Final temperature (°C). Use a default value of 100 °C
T_i	=	Initial temperature of water (°C). Use annual average ambient temperature; or use a default value of 20 °C
WHE	=	Latent heat of water evaporation (kJ/L). Use a default value of 2260 kJ/L. The latent heat required to boil one litre of water for five minutes is assumed to be equivalent to latent heat for the evaporation of 1% of the water volume (WHO recommends a minimum duration of five minutes of water boiling)

h_{wb} = Efficiency of the water boiling systems being replaced, estimated ex ante.
Default values in Data / Parameter table 3 may be used

Determination of the efficiency of the water boiling systems. (h_{wb})

Efficiency of the water boiling systems being replaced. Use one of the options below:

(a) The efficiency of the water boiling system shall be established using representative sampling methods or based on referenced literature values (fraction), use weighted average values if more than one type of systems is encountered;

(b) 0.10 default value may be optionally used if the replaced system or the system that would have been used is a three stone fire or a conventional system for woody biomass lacking improved combustion air supply mechanism and flue gas ventilation system that is without a grate as well as a chimney; for the rest of the systems using woody biomass 0.2 default value may be optionally used;

(c) 0.5 default value may be used if the replaced system or the system that would have been used is a fossil fuel combusting system.

The project proponents will distribute the SDWPs for the households who have used the wood fuel to meet heat demand to boil water. Therefore, the efficiency of the water boiling systems is 0.1. The same has been confirmed by the validation team on the basis of the on-site interview and the beneficiary agreement template to be signed between the PP and the beneficiaries.

Accordingly, SEC is calculated as 3,575 (KJ/L).

The value of the specific consumption is calculated in section 4.4 of the PD, and it is confirmed by the validation team that the same value is used by the PP for the calculation of emission reduction.

iv. Determining the fraction of functional appliances that are meeting the SDWP standards (m).

The value for this parameter has been described by PP under section 4.1.5 of the PD and the value assumed is 1 which will be monitoring annually for each monitoring and shall be checked by the VVB assigned during the verification.

v. Determining the fraction of the population served by the project activity for which the common practice of water purification is or would have been water boiling.

The value of X_{boil} is 0.9848 and the same has been checked by the validation team based on review of the baseline survey of households done.

Accordingly, BE_y is calculated as,

$$BE_y = 45,399 \text{ tCO}_2\text{e/y}$$

Project Emissions

There are no project emissions considered for this grouped project.

$$PE_y = 0$$

Leakage Emissions

Leakage for the project has been taken into account by the PP in line with the paragraph 24 of the methodology AMS I.E., v.13.0 Therefore, **BE_y** is multiplied by a net to gross adjustment factor of 0.95 to account for leakages.

BE_y will be multiplied by a net to gross adjustment factor of 0.95 to account for leakages, in which

case surveys are not required. This is applied for the grouped project.

So LE_y = BE_y x (1 – 0.95)

LE_y = 45,399 x (1 – 0.95) = 2,270 tCO₂e/year

Emission reductions

Emissions reductions are calculated as follows:

$$ER_y = BE_y - PE_y - LE_y$$

Equation (4)

Where:

ER_y = Emission reductions in year y (t CO₂e/yr)

BE_y = Baseline emissions in year y (t CO₂/yr)

PE_y = Project emissions in year y (t CO₂e/yr)

LE_y = Leakage emissions in year y (t CO₂e/yr)

Emissions reductions are calculated as

$$ER_y = BE_y - PE_y - LE_y = 45,399 - 0 - 2,270 = 43,129$$

$$ER_y = 43,129 \text{ tCO}_2\text{e/year}$$

This grouped project would achieve a total emission reduction of 431,290 tCO₂e in the 10-year crediting period and an average of 43,129 tCO₂e per year as indicated in the VCS PD/01-f/ and in the ER spread sheet /02/. In conclusion, all values used in the VCS PD to calculate emission

reductions are considered reasonable in the context of the proposed grouped project “Grouped projects for Cambodia Water Purifier” and calculation approach is correct.

3.3.7 Methodology Deviations

No methodological deviations have been applied to the project activity.

3.3.8 Monitoring Plan

The grouped project employs baseline and monitoring methodology namely AMS-III.AV: “Low greenhouse gas-emitting safe drinking water production systems”, version 08 /B02-a/. According to section 5.1 and 5.2 of PD/01-f/ the parameters determined ex-ante and those to be monitoring ex post as per the requirements of the methodology are given below.

The following parameters are determined ex-ante and mentioned in section 5.1 of the PD:

Table 08: Parameters Determined ex-ante

S.No	Parameter	Unit	Value	Assessment
1	QPWpp	Litres	5.15	Validation team on the basis of document review (baseline survey) and interview with the end users confirms the acceptability of the value.
2	LS	Years	10	Validation team on the basis of review of Manufacturers specifications of SDWP confirms the acceptability of value.
3	<i>nwb</i>	%	10	On the basis of document review and on-site audit validation team confirms that the value applied is acceptable.
4	BLfuel,i	Fraction	0.9502	Validation team on the basis of document review, baseline survey and on-site audit

				confirms that the value applied is acceptable.
5	fi	Fraction	0.7044	The value is calculated by third party (C4Ecosolutions) in line with the applicable methodological CDM Tool 30, version 4.0
6	EF _{projected fossilfuel}	tCO ₂ /TJ	85.7	The value is taken from table 2 of AMS I.E and is deemed acceptable.
7	X _{boil}	%	0.9848	The value applied is acceptable and cross checked from the baseline survey and on-site audit.

VVB has cross-checked the values applied for ex-ante parameters through baseline survey and confirmed that applied values are consistent with survey results. Further, during the on-site visit VVB has applied an acceptance sampling approach to cross-check PPs baseline survey results including but not limited to confirmation of conductance of baseline survey, ex ante parameters QPW_{pp}, BL_{fuel,i}, X_{boil}. As per VVBs assessment no discrepant records were found and PPs baseline survey results were accepted in line with “Standard for sampling and surveys for CDM project activities and programme of activities” (version 09.0).”

Following parameters are monitored ex-post is stated in section 5.2 of the PD

Table 09: Parameters monitored ex-post

S.No.	Parameters	Unit	Value applied	Assessment
1	P_y	Number	No more than 26,000 per each instances	A survey shall be conducted annually to check the number of persons who consume the purified water supplied by functional project appliances.
2	QPW_y	liters	224,818,100	Calculated value determining quantity of purified water in year y.

3	<i>m</i>	fraction	1	Every year, SWDP will be tested on a sample basis (through a statistically representative sample) by an accredited Laboratory. Emission reductions cannot be claimed if over 10% of appliances in the project activity fail to meet the final water quality requirements as per the applied methodology AMS III AV.
4	Check for SDWP public distribution network	-	-	If SDWP is made available through a public distribution network during the crediting period, the emission reductions pertaining to the households supplied by the public system cannot be claimed from that point onwards. This condition should be checked annually during the crediting period.
5	Quality of safe drinking water	-	-	The parameter monitors the quality of safe drinking water. The parameter is monitored at least every two years, during which SDWPs need to be tested by accredited Laboratory on a sample basis. Emission reductions cannot be claimed if

				project activity fails to meet SDWP standards
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In accordance with section 3.25.1 of the VCS Standard (version 4.5) /B01-a/ all documents and records will be kept in a secure and retrievable manner for at least two years after the end of the project crediting period. The data collecting and management methods as provided in section 5.3 of the VCS PD/01-f/ are acceptable to the validation team. The validation team interviewed representatives of PP and it was established that the database of all the project equipment distributed by PP is created and maintained. The entire database will be kept with protected by PP for a period of more than two years. /B02-a/.

The surveys for parameters Py and m and Check for SDW public distribution network will be done by trained field personnel from the project proponent. Microbiological testing for parameter m and the Quality of safe drinking water will be established through an independent accredited laboratory in Cambodia. As per approved methodology AMS-III.AV (version 08.0), the following guidance is being used for the representative sampling method: "A statistically valid sample of the appliances can be used to determine the parameter value, as per the relevant requirements for sampling in the "Standard for sampling and surveys for CDM project activities and programme of activities"./B03/ 90/10 confidence/precision if annual sampling is applied, or 95/10 confidence/prevision if biennial (every two years) sampling is applied of error requirement shall be achieved for the sampled parameters." The parameters to be sampled within this instance project activity as below.

Parameter	Description of parameter	Monitoring frequency
Py	Population who consumes the purified water serviced by the project activity in year y	At least annually
Check for SDW public distribution network	Annual check if there is a public distribution network supplying SDW is installed	At least annually
m	Fraction of functional appliances that are meeting the SDWP Standard	At least annually
Quality of safe drinking water	The quality of the safe drinking water	At least every two years

The validation team considers that the means of implementation of the monitoring plan, including the data management, monitoring equipment and quality assurance and quality control procedures, are sufficient to ensure that the emission reductions achieved by/resulting from the proposed grouped project therein can be reported ex post and verified. In addition, the sampling plan meets the requirements of the monitoring methodology AMS – III.AV, Version 08.0 /B02-a/ and the Standard of Sampling and Surveys of CDM project activities and Programme of Activities

(version 09.0) /B04-a/ and Guidelines for sampling and surveys for CDM project activities and Programme of Activities (version 04) /B04-b /.

Validation team confirms that the overall monitoring plan complies with the requirements of the methodology AMS – III.AV, Version 08.0 /B02-a/, the monitoring arrangements describes in the monitoring plan are feasible within the project design and the project proponents will be able to implement the described monitoring plan.

3.4 Non-Permanence Risk Analysis

This is not applicable to the project activity as the project is not an AFOUL (Agriculture, Forestry, and other Land use) project.

4 VALIDATION OPINION

The Project Participant, Sustainability Investment Promotion and Development Joint Stock Company, has commissioned the VVB, Carbon Check (India) Private Ltd. to perform an independent validation of the VCS Project Activity “Grouped Projects For Cambodia Water Purifier”. This report summarizes the findings of the validation of the project, performed on the basis of VCS criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.

The validation process was performed on the basis of VCS Program Guide (v4.4, dated 29-August-2023), VCS Standard (v4.5, dated 29-August-2023), Program Definitions (v4.4, dated 29-August-2023), Registration & Issuance Process (v4.4, dated 29-August-2023), VCS Validation and Verification Manual (v3.2, dated 19-October-2016).

The project activity provides the information in PD/01-f/ as required by the VCS Standard/B01-a/ and Validation and Verification Manual /B01-c/ and in Carbon Check’s opinion meets the requirements of the applied baseline and monitoring methodology AMS–III.AV: “Low greenhouse gas-emitting safe drinking water production systems”, version 08/B02-a/and is likely to achieve the estimated emission reductions. The validation has been performed using a risk- based approach, as described above. The expected annual average emission reductions from the grouped project activity 1 are 43,129 tCO₂e/year and total emission reductions for the 10 years crediting period are 431,290 tCO₂e.

Carbon Check (India) Private Ltd concludes the validation with a positive opinion that the VCS Project Activity “Grouped Projects For Cambodia Water Purifier”, in Cambodia as described in the PD (version 06; dated 27-March-2023) /01-/, meets all the applicable VCS requirements, including those specified in the Project Standard, relevant methodology, tools and guidelines.

The selected baseline and monitoring methodology AMS-III.AV: “Low greenhouse gas-emitting safe drinking water production systems”, version 08/B02-a/ is applicable to the project and correctly applied. Carbon Check (India) Private Ltd therefore requests the registration of the project as a VCS project activity.

Validated GHG emission reductions and removals for Project activity 1:

Year	Estimated GHG emission reductions or removals (tCO ₂ e)
02-May-2022 to 31-Dec-2022	28,831
01-Jan-2023 to 31-Dec-2023	43,129
01-Jan-2024 to 31-Dec-2024	43,129
01-Jan-2025 to 31-Dec-2025	43,129
01-Jan-2026 to 31-Dec-2026	43,129
01-Jan-2027 to 31-Dec-2027	43,129
01-Jan-2028 to 31-Dec-2028	43,129
01-Jan-2029 to 31-Dec-2029	43,129
01-Jan-2030 to 31-Dec-2030	43,129
01-Jan-2031 to 31-Dec-2031	43,129
01-Jan-2032 to 01-May-2032	14,298
Total estimated ERs	431,290
Total number of crediting years	10
Average annual ERs	43,129

APPENDIX 1.1: REFERENCE DOCUMENTS

Ref	Document
/01/	Project description titled: a) Grouped Projects For Cambodia Water Purifier (Version 01 dates 31/03/2022) b) Grouped Projects For Cambodia Water Purifier (Version 02 dated 09/02/2023) c) Grouped Projects For Cambodia Water Purifier (Version 03 dated 26/04/2023) d) Grouped Projects For Cambodia Water Purifier (Version 04 dated 26/04/2023) e) Grouped Projects For Cambodia Water Purifier (Version 05 dated 21/08/2023) f) Grouped Projects For Cambodia Water Purifier (Version 06 dated 13/05/2024)
/02/	• ER estimated spread sheet correspond to /01-a/ • ER estimated spread sheet correspond to /01-b/ • ER estimated spread sheet correspond to /01-c/ • ER estimated spread sheet correspond to /01-d/ • ER estimated spread sheet correspond to /01-e/ • ER estimated spread sheet correspond to /01-f/
/03/	Consent deed as evidence for the start date of the grouped project
/04/	Technical specifications of the SDWP from manufacturer including the life span.
/05/	Consent deed as proof of right of relinquishment of VERs from the end users to the project proponent.
/06/	Beneficiary agreement confirming that the traditional wood stoves were used for boiling water in the baseline situation.
/07/	Baseline survey records (for the parameters QPWpp, BLfuel,i, Xboil) implemented in Cambodia
/08/	Local stakeholders consultation meeting records.
/09/	Project implementation schedule.
/10/	Consent deed as evidence of unique identification system of the SDWP.
/11/	Microbiological test report from an accredited laboratory.
/12/	Evidence to demonstrate water purifiers as free of cost to the users.
/13/	Sample survey or reference literature used to determine the types of stoves and fuel used in the baseline scenario.
/14/	Monitoring survey questionnaire template

/15/	SDWP distribution agreement
/16/	Training plan/ records of personnel appointed for surveys.
/17/	Declaration from the project proponent that the project is not creating any other form of environmental credit under any specific program.
/18/	Declaration from the project proponent that the project has not or shall not claim carbon credits on any other scheme after Registration of the project under VCS.
/19/	fNRB calculation report by C4 EcoSolutions (Pty) Ltd. and fNRB calculation spreadsheet.
/20/	Evidence for the values used for the ex-ante VER estimation.
/21/	Investment analysis sheet
/22/	KML file of Takeo province
/23/	a) Purchase equipment between SIPCO and water purifier manufacturer b) Transportation contract between SIPCO and transportation partner c) Distribution contract between SIPCO and CWPD

APPENDIX 1.1: BACKGROUND DOCUMENTS

Ref	Document
/B01/	VCS Requirements a. VCS Standard (v4.5, dated 29-August-2023) b. VCS Program Guide (v4.4, dated 29-August-2023) c. VCS Validation and Verification Manual version (v3.2, dated 19/10/2016) d. Registration & Issuance Process (v4.4, dated 29-August-2023) e. VCS Program Definitions version (v4.4, dated 29-August-2023) f. VCS PD template version 4.2
/B02/	Applied baseline and monitoring methodology a. AMS-III.AV. "Low greenhouse gas emitting safe drinking water production systems", version 08.0 b. CDM TOOL30 "Calculation of the fraction of non-renewable biomass" version 04.0
/B03/	a. "Standard for sampling and surveys for CDM project activities and programme of activities" (version 09.0) b. Guidelines for sampling and surveys for CDM project activities and Programme of Activities (version 04)
/B04/	Website and links: 1. IPCC (http://www.ipcc-nggip.iges.or.jp)

	2. http://cdm.unfccc.int 3. http://www.v-c-s.org
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APPENDIX 2 : ABBREVIATIONS

CDM	Clean Development Mechanism
BE	Baseline Emission
CAR	Corrective Action Request
CC IPL	Carbon Check (India) Private Ltd.
CDM	Clean Development Mechanism
CL	Clarification Request
CO ₂	Carbon Dioxide
CO _{2e}	Carbon Dioxide Equivalent
VVB	Designated Operational Entity
DPR	Detailed project report
DVR	Draft Validation Report
EB	CDM Executive Board
EF	Emission Factor
ER	Emission Reduction
FAR	Forward Action Request
FVR	Final validation Report
GHG	Greenhouse gas(es)
GWh	Giga Watt Hour
IPCC	Intergovernmental Panel on Climate Change
MW	Mega Watt
MWh	Mega Watt Hour
NA	Not Applicable
OSV	On Site Visit
PD	Project Description
PP	Project Proponent
QC/QA	Quality control/Quality assurance
TR	Technical Review
UNFCCC	United Nations Framework Convention on Climate Change
VCS	Verified Carbon Standard
VCSA	Verified Carbon Standard Association
VCU	Verified Carbon Unit
VVB	Validation Verification Body
VVM	Validation and Verification Manual

APPENDIX 3 : CERTIFICATES OF COMPETENCE



Carbon Check (India) Private Limited

Certificate of Competency

Ms. Pallavi Gedam

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:

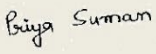
☒ Validator	☒ Verifier	☒ Team Leader	☒ Technical Expert
☐ Technical Reviewer	☐ Health Expert	☐ Gender Expert	☐ Plastic Waste Expert
☐ CCB Expert	☐ Legal Expert	☐ Financial Expert	☐ Environmental, Health and Safety financial matters
☒ SDG+	☒ Social no-harm(S+)	☒ Environment no-harm(E+)	
☒ Local Expert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



Ms. Priya Suman
Compliance Officer

Expiry Date

31st December 2024



Mr. Sanjay Kumar Agarwalla
Technical Director

Revision History of the document:

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

CCIPL_FM 7.9 Certificate of Competency_V4.0_112023

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



Carbon Check (India) Private Limited

Certificate of Competency

Sorin Socheat

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

for the following functions and requirements:

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

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

1st December 2023

Expiry Date

31st December 2024

Priya Suman

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Revision History of the document:

Revision date	Summary of changes
May 2023	Initial Adoption
Dec 2023	Template changes to include additional functions and TA

CCIPL_FM 7.9 Certificate of Competency_V4.0_112023

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



Carbon Check (India) Private Limited

Certificate of Competency

Ms. Indumathi C

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

for the following functions and requirements:

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

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

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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 4 : FINDINGS LOG

TABLE 1: CORRECTIVE ACTION REQUESTS (CARs) AND CLARIFICATION REQUESTS (CLs)

Finding	CL 01		
Classification	☐ CAR	☒ CL	☐ FAR
Description of finding (VVB)	It has been observed that PP has used the parameter m, i.e. the fraction of functional appliances. The equation used for the same is based on mean value. PP is requested to clarify how appropriateness of the equation used for the parameter.		
Corrective Action or clarification #1 <i>(PP shall write a detailed and clear corrective action or further information for clarification as per finding)</i>	PD has revised the parameter m, which is determined by the fraction of functional appliances in the updated PD version 02, dated 09/02/2023		
VVB Assessment #1 <i>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.</i>	VVB has checked that PP has revised the parameter m, which is determined by the fraction of functional appliances in the updated PD version 02, dated 09/02/2023, and the same is in line with the applied methodology. Thus the finding has been closed.		
Conclusion <i>Tick the appropriate checkbox</i>	☐ To be checked during the next periodic verification ☒ Outstanding finding (not closed) ☒ The finding is closed		

Finding	CAR 01		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding (VVB)	Under section 1.4 of the PD, PP is requested to provide the details of supporting documents for inclusion as well.		
Corrective Action or clarification #1 <i>(PP shall write a detailed and clear corrective action or further information for clarification as per finding)</i>	PP has provided the details of supporting document for inclusion on the section 1.4 in the updated PD version 02.		

VVB Assessment #1 <i>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.</i>	PP has provided the details of the referred document for inclusion of instances. Thus the finding has been closed.
Conclusion <i>Tick the appropriate checkbox</i>	☐ 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)	Under section 1.8 of the PD, PP is requested to mention the correct start date of the project. And date is same as mentioned in the PD, PP is requested to update it as start date instead of expected start date.		
Corrective Action or clarification #1 <i>(PP shall write a detailed and clear corrective action or further information for clarification as per finding)</i>	PP has updated the start date in Section 1.8 in the updated PD version 02		
VVB Assessment #1 <i>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.</i>	The correct start date of the project has been updated in the revised PD. Thus the finding has been closed		
Conclusion <i>Tick the appropriate checkbox</i>	☐ 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)	PP is requested to mention that if project is registered or seeking to register in any other GHG program and to provide the Declaration on the same.
Corrective Action or clarification #1 <i>(PP shall write a detailed and clear corrective action or further information for clarification as per finding)</i>	PP has provided the information in Section 1.15 in the updated PD version 03
VVB Assessment #1 <i>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.</i>	PP has added the required information in the revised and the same has been checked by VVB in compliance with the PD filling requirement. Thus, finding has been closed.
Conclusion <i>Tick the appropriate checkbox</i>	☐ To be checked during the next periodic verification ☐ Outstanding finding (not closed) ☒ The finding is closed

Finding	CAR 04		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding (VVB)	Under section 2.2, PP is requested to update the complete details of the Local stakeholder consultation including the planned method for grievance mechanism and ongoing communication. Furthermore, PP is requested to update the details of Public comments under section 2.4 of the PD		
Corrective Action or clarification #1 <i>(PP shall write a detailed and clear corrective action or further information for clarification as per finding)</i>	The consultation meeting was hold in May 2nd 2022 in Takeo province after PD version 01 was uploaded. PD has added LSC in the updated PD version 02. The project did not have any comments for 30 days public comment period. PD has also confirmed the information in the PD version 02.		
VVB Assessment #1 <i>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.</i>	The required information of LSC and of public comment period has been added by the PP in the revised PD and the same has been validated and assessment has been provided in the FVR.		
Conclusion <i>Tick the appropriate checkbox</i>	☐ To be checked during the next periodic verification ☐ Outstanding finding (not closed) ☒ The finding is closed		

Finding	CAR 05		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding (VVB)	PP is requested to add the reference for Sampling standard and sampling guideline with its latest versions available and all the referred tools under section 3.1 of the PD.		
Corrective Action or clarification #1 <i>(PP shall write a detailed and clear corrective action or further information for clarification as per finding)</i>	PP has added the reference for Sampling standard and sampling guideline with its latest versions available and all the referred tools under section 3.1 of the updated PD version 02		
VVB Assessment #1 <i>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.</i>	PP has added the reference and version number of the sampling standard and thus finding has been closed.		
Conclusion <i>Tick the appropriate checkbox</i>	☐ To be checked during the next periodic verification ☐ Outstanding finding (not closed) ☒ The finding is closed		

Finding	CAR 06		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding (VVB)	Under section 3.2 of the PD, PP is requested to add the applicability of tools used in the table provided.		
Corrective Action or clarification #1 <i>(PP shall write a detailed and clear corrective action or further information for clarification as per finding)</i>	PD has added the applicability of tools used in table 3.2 in Section 3.2 of the updated PD		
VVB Assessment #1 <i>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.</i>	PP has added the applicability of tool used in table 3.2 of the revised PD thus the finding has been closed.		
Conclusion <i>Tick the appropriate checkbox</i>	☐ To be checked during the next periodic verification ☐ Outstanding finding (not closed) ☒ The finding is closed		

Finding	CAR 07
Classification	☒ CAR ☐ CL ☐ FAR
Description of finding (VVB)	Under section 3.5 additionality, PP is requested to mention the detailed explanation of additionality for PA 1 as well.
Corrective Action or clarification #1 <i>(PP shall write a detailed and clear corrective action or further information for clarification as per finding)</i>	PD has provided the information for additionality of PA 1 in the updated PD version 02
VVB Assessment #1 <i>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.</i>	PP has added the additionality of the PA 1 as well under section 3.5 of the revised PD. Thus the finding has been closed.
Conclusion <i>Tick the appropriate checkbox</i>	☐ To be checked during the next periodic verification ☐ Outstanding finding (not closed) ☒ The finding is closed

Finding	CAR 08		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding (VVB)	As per the VCS Standard v4.3, section 3.12.1, the baseline scenario for the project shall be determined in accordance with the requirements set out in the methodology applied to the project, and the choice of baseline scenario shall be justified. However, it was noted that Section 4.1 of the project description document does not include information on the determination of the fraction of non-renewable biomass based on Tool 30. Also, no information was provided in the project description document regarding the baseline sampling applied to determine the average volume of drinking water per person and the fraction of people using woody biomass in the baseline. It is required that project description document includes proper justification of all baseline parameters applied by the project activity, such as the fraction of non-renewable biomass, the average volume of drinking water per person, and the fraction of people using woody biomass in the baseline.		
Corrective Action or clarification #1 <i>(PP shall write a detailed and clear corrective action or further information for clarification as per finding)</i>	PD has added the determination of parameters, which are used to calculate baseline emissions in Section 4.1 in the revised PD version 02. However, for the fraction odd non-renewable biomass, PP had to hire a specialized company for a geographic information system (GIS) is a system that creates, manages, analyses, and maps all types of data to calculate it. This cost PP several ten thousand USD and PP considered it as a high value asset. Therefore, PP considers this is confidential document including the data to calculate this parameter and request to not show it to public. As a result, PP only shared report and calculation sheet to VERRA and DOE in the supporting document file.		
VVB Assessment #1 <i>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.</i>	PP has added the information for the parameter however the information for GIS is kept confidential by PP but already submitted to VVB and Verra. Thus the finding has been closed.		
Conclusion <i>Tick the appropriate checkbox</i>	☐ To be checked during the next periodic verification ☐ Outstanding finding (not closed) ☒ The finding is closed		