



Verified Carbon Standard

DISTRIBUTION OF ONIL STOVES – MEXICO, SAN FELIPE USILA 1



By KBS Certification Services Pvt. Ltd.

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Report Title	Distribution of ONIL Stoves – Mexico, San Felipe Usila 1
Client	C-Quest Capital Stoves Asia Limited
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Summary:

'C-Quest Capital Stoves Asia Limited' has commissioned "KBS Certification Services Pvt. Ltd." (KBS) to carry out validation for renewal of crediting period (RCP) of the project - "Distribution of ONIL Stoves – Mexico, San Felipe Usila 1", with regard to the relevant requirements of VCS Standard Version 4.1.

The project involves the distribution and installation of ONIL Stoves for use by households in Mexico. Before the adoption of the ONIL Stove, households in Mexico used inefficient, conventional open fires. The ONIL Stove is an improved cook stove that reduces the significant amount of firewood required by households and results in lower emissions based on its construction and design. Since the efficiency of a traditional open fire is 10%¹ and the efficiency of an ONIL Stove is 24%, the ONIL Stove is more efficient than the traditional open fire. The average annual GHG emission reduction from the project is expected to be 84,538 tCO₂e.

A risk-based approach has been followed to perform this RCP validation. During the RCP validation, 00 Corrective Action Requests (CAR), 02 Clarification Requests (CL) and 01 (FAR) were raised and successfully closed out.

The RCP validation is based on the VCS PD, proof of title, emission reduction calculation spread sheet (ER sheet), proof of right, additional documents related to baseline and monitoring methodology; the subsequent background investigation, follow-up interviews and supporting documents made available to the VVB by project proponent.

As a result of the RCP validation, the validation team confirms that:

- The project fulfills criteria of VCS Standard Version 4.1.
- The project is in line with all relevant VCS requirements.
- The project baseline is sufficiently justified in line with the "Assessment of the validity of the

¹ Default value for open fires as stated in AMS II.G methodology, "Energy Efficiency Measures in Thermal Applications of Non-Renewable Biomass"

original/current baseline and update of the baseline at the renewal of the crediting period”, version 3.0.1.

- The monitoring plan is transparent, adequate and in line with applied baseline and monitoring methodology of AMS-II.G, version 12.0.
- All information and references relevant to the project activity resulting in emission reductions.
- Based on the information seen and evaluated we confirm that the estimated annual average emission reduction is expected to be 84,538 which adds to the total CO₂e emission reductions by the project activity over the second renewable crediting period of 10 years to **845,380 tCO₂e** respectively.

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1 INTRODUCTION

1.1 Objective

KBS Certification Services Pvt. Ltd. has been contracted by, “C-Quest Capital Stoves Asia Limited” to undertake validation for renewal of crediting period (RCP) for the greenhouse gas (GHG) emission reductions reported from ‘Distribution of ONIL Stoves – Mexico’ for the crediting period 01/01/2021 to 31/12/2030, in the project description (VCS PD) version 03 dated 08/11/2021 /1.2/ with regard to the relevant requirements of VCS Standard Version 4.1/4/. The purpose of validation is to ensure a thorough, independent assessment of project description, baseline, additionality, monitoring plan (MP) and project’s compliance with;

- The requirements of VCS Program guide Version 4.0/5/ and VCS standard 2007.1
- The requirements of VCS Standard Version 4.1/4/
- The requirements of the CDM Approved methodology, AMS-II.G - version 12.0/7/
- To assess the project’s compliance with other relevant rules, including the host country (Mexico) legislation and
- Other relevant rules, of VCS sustainability criteria are validated in order to confirm that the project description as documented is sound and reasonable and meet the stated requirements and identified criteria.

1.2 Scope and Criteria

For RCP validation, the scope is defined as an independent and objective review of the Project description, the project’s baseline study, monitoring plan and other relevant documents made available to the KBS team, alongside contract conditions. The information in these documents is reviewed against the requirements of VCS Standard/4/. KBS has employed a risk-based approach in the RCP validation, focusing on the identification of significant risks for project implementation and the generation of emission reductions.

The items covered in the RCP validation are described below:

- VCS Criteria, VCS standard version 4.1/4/
- VCS Project Description (VCS PD)/1/
- Assessment of baseline as per the “Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period”, version 3.0.1./10/

- Monitoring Plan
- Background investigation and follow up interviews
- Draft validation reporting with CARs & CLs, if any
- Final validation reporting

1.3 Level of Assurance

☒ Reasonable level of assurance

The validation report is based on VCS PD and the supporting documents made available to the validator. Based on the process and procedures conducted, KBS states whether the information in the VCS PD:

- is materially correct and is a fair representation of the actual project details, and
- is prepared in accordance with VCS requirements and the applied CDM methodology for information pertaining to GHG qualification, monitoring and reporting.

KBS has employed a risk-based approach in the RCP validation, focusing on the identification of significant risks for project implementation and the generation of emission reductions. The items covered in the RCP validation are described below:

- Criteria of VCS Version 4 (VCS Program guide Version 4.0 & VCS Standard Version 4.1) /4/
- Criteria of CDM approved methodology, AMS-II.G - Version 12.0/7/
- VCS PD/1/
- Background investigation and follow up interviews/8/
- Registered CDM CPA-DD and validation Report/3/
- Project's compliance with other relevant rules, including the project country (Mexico) legislation and assurance to stakeholders of the quality

Furthermore, the assessment 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 available on public domain. A desk review is carried out to assess the following:

- Compliance with relevant law and regulations
- Sampling Plan and methodology
- $f_{NRB,y}$ calculation spreadsheet and evidence included therein
- Baseline Fuel consumption calculation

The assessment team has checked all the above-mentioned details and confirms that all the information provided is accurate. The validation work is carried out as per this requirement and the validation opinion is assured provided the credibility of all above. Details are presented in the validation statement in section 5 below.

1.4 Summary Description of the Project

ONIL Stoves – Mexico, San Felipe Usila 1 project involves distribution and installation of ONIL Stoves for use by households in Mexico. Before adoption of the ONIL Stove, households in Mexico used inefficient, conventional open fires.

The ONIL Stove is an improved cook stove that reduces the significant amount of firewood required by households and results in lower emissions based on its construction and design. Since the efficiency of a traditional open fire is 10% and the efficiency of an ONIL Stove is 24%, the ONIL Stove is more efficient than the traditional open fire.

HELPS International A.C. is the implementer of this project. HELPS International A.C. manufactures the ONIL stoves and distributes them to communities throughout Mexico.

This project was registered under the CDM as the “ONIL Stoves –Mexico, San Felipe Usila 1” which is first CPA/3/ included under the “PoA: Distribution of ONIL Stoves—Mexico” (CDM PoA 8521). The first ONIL stove to participate in the PoA was installed on 30/12/2009. To date, the

project has installed 31,178 stoves located across Mexico. The ex-ante ERs are calculated based on the 30,869 operational stoves out of 31, 178 distributed stoves.

The average annual GHG emission reductions from the project are expected to be 845,380 tCO₂e.

The ONIL stove is made of cast concrete, manufactured locally in Mexico, and assembled and installed locally. The stove's construction allows it to be more efficient: complete combustion and more efficient energy transfer of energy to pots ensure fast heating and fuel-efficiency.

Technical Information of ONIL stoves;

Weight	394.32 lbs
Type of Fuel	firewood
Thermal efficiency	24%
Combustion speed	30.83 g/min
Fire Power	8930 watts
Material	Concrete & reinforced steel

The technology improvements make the ONIL stove more efficient than a traditional open fire. The ONIL Stove is a fuel-efficient stove that reduces the amount of firewood required by households by more than 58%, compared to the baseline, and results in lower emissions based on its construction. Based on previous experience from 1st crediting period, it has been observed that improved ONIL stoves can have a lifetime of more than 10 years, with proper maintenance and timely replacement of metal parts. The letter provided by the technology supplier to support extended life time was validated by the VVB.

2 VALIDATION PROCESS

2.1 Method and Criteria

The RCP validation process was carried out in line with the requirements of VCS standard, version 4.1/4/. In addition, the validation team followed the guidelines of the CDM Validation and Verification Standard. Standard auditing techniques and KBS's CDM Procedures were also applied during the RCP validation. A risk-based approach was followed to carry out the process and access all the factors and concerns that relate to the issuance of emission reductions from a project activity.

They include:

- Identification of all the sources contributing to the project emissions and emission reductions.
- Authenticity of the provided data is checked.
- A risk-based analysis is carried out to ensure a clear and transparent assessment. The risks involved in this process are mainly with the informational flows and data recording.

11 end users were interviewed based on the principle of acceptance sampling of CDM sampling standard with a chosen consumer/producer risk, AQL/UQL inter alia. Validation team found all the users were using the same baseline as indicated in the VCS PD, therefore acceptance number (C) was found zero. Sampling approach during remote audit is conducted in accordance with "Guidelines for Sampling and Surveys for CDM Project Activities and Programme Activities, Version 04.0" and the "Standard for Sampling and Surveys for CDM Project Activities and Programme Activities, Version 09.0".

The verification team followed the "Standard for Sampling and Surveys for CDM Project Activities and Programme Activities" version 09, VVB has adopted the acceptance sampling approach in order to verify the sampling result of the CME for the applied verification period.

For the determination of VVB's acceptance sample size, verification team assumed the following factors:

- Acceptable quality level (AQL) -0.5%
- Unacceptable Quality Level (UQL) -20%
- Producer risk-10%
- Consumer risk-10 %

Verification team has determined sample size for all the sample survey parameters based on the “Table. Sample size and acceptance number based on AQL, UQL, and producer and consumer risks” of standard “Sampling and surveys for CDM project activities and programme of activities” version 09.0. From the above assumed factors, the verification team determined the minimum sample size (n) as 11 minimum samples for individual Clean Energy products type under the project and acceptance number (c) as Zero.

KBS follows a risk-based RCP Validation approach, wherein a desk review of the project documentation is undertaken, which is followed by a remote discussion/video inspection by the members of assessment team. The validation protocol is filled by the assessment team that is based on standard auditing practices and VCS requirements. The validation protocol provides transparent means to record the observations by the assessment team members and the non-conformities, if any. The validation protocol is an internal document, and available on request.

Duration of RCP Validation:

RCP Validation Contract	08/06/2021
Draft Validation Report	10/08/2021
Final Validation Report	19/08/2021
	12/11/2021 (After VERRA Review)

2.2 Document Review

A desk review is undertaken, involving but not limited to,

- A review of the data and information presented to verify their completeness;
- A review of monitoring plan and monitoring methodology, paying particular attention to the frequency of measurements, quality assurance and quality control procedures;
- An evaluation of data management and quality assurance and quality control system in the context of their influence on the generation and reporting of emission reductions.

The list of documents reviewed is included in appendix 2: References.

2.3 Interviews

Please refer section 2.4, where complete list of interviewed personnel and key points discussed is provided.

2.4 Site Inspections

As a result of the COVID-19 pandemic, taking into account the rules of relevant national and local authorities (local to the VVB offices as well as to locality of the site visits), World Health Organization (WHO) recommendations, policies of the VVB, email clarification for Verra guidance on site visits, notification of Covid-19 Travel Guidance for Projects <https://verra.org/covid-19-travel-guidance/> and other relevant travel restrictions and guidance

(for example, a requirement to self-isolate upon return from specific countries), the VVB has skipped the on-site visit. Further Email from VERRA dated 24/03/2020 from “Andrew Beauchamp” has been referred as per which “*The VCS Program does not explicitly mandate site visits as part of the validation and verification process, only that VVBs must achieve a reasonable level of assurance on all validations and verifications (per Section 4.1.2 of the VCS Standard, v4.1). Therefore, where a VVB can achieve a reasonable level of assurance without conducting a site visit, or through a remote site visit, this is in conformance with the VCS rules, and no request for an exemption or pre-approval from Verra is required. However, where a validation/verification has been conducted without a site visit, or through a remote site visit, please ensure that the applicable section of the validation/verification report includes a discussion of how a reasonable level of assurance was achieved without an in-person site visit*”.

Hence, the VVB has used other standard auditing techniques for validation as referred to in VCS Rules/requirements, VCS Validation and Verification Manual version 3.2/4/.

Validation team has used the following alternative means for its assessment and to justify that they are sufficient for the purpose of RCP validation. Along with desk review, audit team has conducted remote audit interview as follows:

- A complete desk review of the VCS PD, as well as all applicable country legal requirement and supportive evidences have been checked by the validation team.
- Validation team has performed interview with PP in order to check updated baseline, impact of new policies on the project inter alia.
- Cross-check evaluation, for information received from interviews, under the scope of all information and references provided in VCS PD and supporting documents.
- A check of the appropriates of monitoring equipment to be used including performance and observations of monitoring practices against the requirements of VCS PD and the selected methodology.

Details of interviewees, topics covered and additional information are presented below:

Dates:	05/08/2021 (Skype interview/recorded videos) as travel restrictions are network constraints in remote places	
Key points discussed:	Name of person, interviewed	Designation, Organization
Host Country rule and regulations related to project activity in context of updated baseline parameters/scenario.	Mr. Vineet Kumar Garg	C-Quest Capital.

Baseline, stakeholder comments, project technology	Elena Martínez	End users
	Magdalena Santiago Ramírez	
	Guadalupe García Rodríguez	
	Avelina Santiago Ramírez	
	Alfonsa Samario	
	Fermina Agripina Pablo Ibáñez	
	Sara Porfiria Pablo García	
	Irma Eugenia Venegas García	
	Laura Belén Olivera Cruz	
	Victoria Olivera Díaz	
	Petra Martínez Ruíz	

2.5 Resolution of Findings

KBS applies the risk-based approach aimed at focusing on high risk issues to the RCP validation results whilst not omitting any part of the mandatory processes. A few discrepancies were found during the validation and the findings were submitted to the project proponent, indicated under the titles corrective action requests (CARs) and clarification requests (CLs). CARs and CLs require the PP to take relevant actions. Criteria for judging items as CAR or CL are as follows:

Corrective action request (CAR):

- Project participants have made mistakes that will influence the ability of the project activity to achieve real, measurable additional emission reductions
- Voluntary Carbon Standard's requirements have not been met, or
- There is a risk that emission reductions cannot be monitored or calculated.

Clarification request (CL):

- Information is insufficient or not sufficiently clear to determine whether the applicable VCS requirements have been met.

FAR (Forward Action Request):

FARs is to be raised to highlight issues related to project implementation that require review during the first verification of the project activity. FARs does not relate to VCS requirements for registration.

CARs and CLs are to be resolved or closed out if the PP modifies the project description, rectifies VCS PD or provides adequate additional explanations or evidence that satisfies the concerns. If this is not completed, the project activity cannot be recommended for registration under VCS registry.

The VCS PD was revised addressing the CARs & CLs issued by KBS. After reviewing the revised and resubmitted VCS PD/1.2/; resolving the CARs & CLs raised and outstanding concerns, KBS issues this final validation report and opinion.

02 CLs and 00 CARs were found during RCP validation and closed satisfactorily. The list of CARs/CLs raised and the response provided, the means of validation, reasons for their closure and references to correction in the VCS PD are provided in appendix 3 of this report. The revised VCS PD/1.2/ with changes incorporated as per the issues raised were rechecked with the documentary evidences and found to be inline.

2.5.1 Forward Action Requests

01FAR was raised during current RCP validation.

3 VALIDATION FINDINGS

3.1 Project Details

Project scope, activity, type, technologies and measures implemented, and eligibility of the project

ONIL Stoves – Mexico, San Felipe Usila 1 small-scale CPA (SSC-CPA) involves the distribution and installation of ONIL Stoves for use by households in Mexico. This CPA is the first included under the “Distribution of ONIL Stoves – Mexico” PoA. Before the adoption of the ONIL Stove, households in Mexico used inefficient, conventional open fires.

The ONIL Stove is an improved cook stove that reduces the significant amount of firewood required by households and results in lower emissions based on its construction and design. Since the efficiency of a traditional open fire is 10% and the efficiency of an ONIL Stove is 24%, the ONIL Stove is more efficient than the traditional open fire.

HELPS International A.C. is the implementer of this project. HELPS International A.C. manufactures the ONIL stoves and distributes them to communities throughout Mexico.

This project was registered under the CDM as the “ONIL Stoves –Mexico, San Felipe Usila 1” which is first CPA included under the “PoA: Distribution of ONIL Stoves–Mexico” (CDM PoA 8521). The first ONIL stove to participate in the PoA was installed on 30/12/2009. To date, the project has installed 31,178 stoves located across Mexico.

The average annual GHG emission reduction from the project is expected to be 845,380 t CO₂e.

The ONIL stove is made of cast concrete, manufactured locally in Mexico, and assembled and installed locally. The stove’s construction allows it to be more efficient: complete combustion and more efficient energy transfer of energy to pots ensure fast heating and fuel-efficiency.

The technical specifications of the ONIL stoves were verified from the registered CDM CPA-DD/03/, VCS PD/1/ by interviewing the representative of project developer.

Each ICS can be identified by a unique combination of customer name and geographical location, as well as a serial number. The serial number is a unique number which will allow for a clear distinction between the stoves. No individual serial number can be repeated within the project, thus ensuring that each stove is counted only once in the proposed project.

However, to ensure the no double counting considering the risk VVB has raised FAR#01 to double check the sr. no. of stoves from other CDM CPA's database of same Program under which current VCS project falls.

Project proponent

Project entity information as verified is presented below:

Item	Data
Project Entity	C-Quest Capital LLC (Project Proponent)
	HELPS International A.C. (Project Implementer)

Project location

The boundary of the project is determined by the sum of the locations of the individual households within which the ICSs are installed, but all limited to Mexico.² The boundary is already validated during the initial validation, VVB confirms that there is no change in the project boundary.

The geographic co-ordinates, as confirmed from the Google earth software and the registered documents/3/ are provided below;

Northernmost and Westernmost point: 32.500000 and -117.033333 (Tijuana); Southernmost point: 14.550000 and -92.166667 (desembocadura del Rio Suchiate); Easternmost point: 21.200000 and -86.716667 (Isla Mujeres).

Project start date

30/12/2009, which is the date of the first ONIL stove installation under this project. Start date has been already validated during the initial validation and VVB confirms that the start date based on the validated information in the initial validation of this VCS project activity.

Project crediting period

The project has been operational since 2011. The first crediting period was from 01/01/2011 to 31/12/2020; ten years; renewable twice, but not extending beyond 06/12/2033 when the

² Geographic coordinates (where available) of stoves have been provided to the Validation/Verification Body (VVB).

maximum CDM crediting period expires. It was confirmed that current VCS PD is being developed under the second crediting period which will start from 01/01/2021. After the initial crediting period of ten years, subsequent renewals of the crediting time may be considered depending on the status of the project activity and baseline revision at that time.

Second crediting period: 01/01/2021 to 31/12/2030 (both dates included).

Project scale and estimated GHG emission reductions or removals

The validation team confirms that the project activity falls under the category 1 'Project' as per para 3.9.1 of the VCS standard version 4.1/4/ as it has potential to reduce GHG emission less than 300,000 tCO₂e/year.

The estimated annual average CO₂e emission reduction by the project activity is expected to be 84,538 which adds to the total CO₂e emission reductions by the project activity over the second renewable crediting period of 10 years to 845,380 tCO₂e. The validation team confirmed that emission reduction forecast is reasonable if the underlying assumptions do not change.

Conditions Prior to Project Initiation

The conditions prior to project initiation are the continued use of non-renewable wood fuel (firewood) by the target population to meet similar thermal energy needs as provided by project cook stoves in absence of project activity. The detailed validation is provided under section 3.3.4.

Compliance with Laws, Statutes and Other Regulatory Frameworks

There are no laws and regulations governing the use of improved cook stoves in Mexico households. The project is a voluntary effort by the project proponent. The detailed validation is provided under section 3.3.4.

Project ownership:

The project ownership is with C-Quest Capital LLC and no other entity is involved in the project.

At the time of registration of the PoA under CDM, CQC was the coordinating and managing entity (CME) of the PoA and HELPS International A. C was the implementer of the CPA. Further HELPS International A. C. voluntarily withdrew from the project in 2017. VVB has checked the updated CDM Modalities of Communication and Modalities of Communication Annex 2 PP withdrawal document available on UNFCCC website.

'ONIL Stoves – Mexico, San Felipe Usila 1' is registered as a small-scale Component Project Activity under the Clean Development Mechanism Programme of Activities (CDM-POA)

“Distribution of ONIL Stoves – Mexico” (Ref. PoA 8521).³ PP would not use net GHG emission reductions by the projects for compliance with emission trading program to meet binding limits on GHG emissions as stated in section 1.16.1 of the VCS PD/1/. The above-mentioned information was also confirmed during remote assessment.

Additional Information Relevant to the Project

Eligibility Criteria

This is not a grouped project activity. Thus, this section is not applicable for this project.

Leakage Management

Not applicable to the project activity as methodology itself accounts the leakage factor of 5% into consideration.

Commercially Sensitive Information

No commercially sensitive information has been excluded from the public version of the project description.

Sustainable Development

The project promotes sustainable development through the following aspects:

Environmental sustainability

- (i) The project reduces the use of non-renewable biomass:

In Mexico, approximately a quarter of the population (27 million) uses firewood for cooking.⁴ Firewood is the main energy source for approximately 80% of rural households, and the majority of households still use open fires which are inefficient in regards to fuel usage.

By adopting the higher efficiency ICS, households reduce the quantity of fuel wood they must consume for daily cooking needs. Since a very high proportion of fuel wood comes from non-renewable sources, this translates directly into reduced emission reductions from the non-renewable extraction of wood. Thus, the PoA lowers the greenhouse gas (GHG) balance for the country.

- (ii) The project produces real and measurable reductions in GHG emissions:

³CDM documentation can be accessed through:

https://cdm.unfccc.int/ProgrammeOfActivities/poa_db/2BH1TOSFERD67JCZXAIWMKLO8PN5UO/view (PoA) and https://cdm.unfccc.int/ProgrammeOfActivities/cpa_db/3NLVJQM5FYWDA604R2GCPS8ZOEIB9U/view (San Felipe Usila 1 project).

⁴ Masera, Omar, Rodolfo Diaz and Victor Berrueta, “From cookstoves to cooking systems: the integrated program on sustainable household energy use in Mexico”, *Energy for Sustainable Development*, Volume IX No. 1, Page 26.

The programme will utilize an approved methodology, AMS II.G., version 12 “Energy Efficiency Measures in Thermal Applications of Non-Renewable Biomass”; to ensure that all measurements of greenhouse gas emission reductions are robust, conservative and verifiable. The programme will maintain high standards of monitoring to ensure that all emission reductions claimed are measurable and real.

Economic Sustainability

The project reduces household expenditures:

The project will contribute significantly to Mexico’s economic sustainability through the more efficient use of firewood. Energy savings at both individual household and national levels make important contributions to their economic efficiency and sustainability. In Mexico, households spend up to 15 to 20 per cent of their income on firewood purchases.⁵ The use of efficient stoves will have a significant impact on reducing these household expenditures.

According to World Bank reports, in 2002 approximately half of the population in Mexico was living in poverty and a fifth in extreme poverty.⁶ By installing ICS, these households would save significantly on household expenditures related to firewood purchases along with saving time spent gathering firewood, which would free up time for households for more income generating activities. Thus, these saving would help improve living conditions for households in Mexico.

Social Sustainability

The project helps to improve health conditions.

There are very tangible and significant health benefits associated with the switch in technology from traditional open fires to improved cook stoves as well. Traditional cooking methods involve open fires that result in the emissions of local pollutants such as carbon monoxide and particulate matter in often poorly ventilated rooms, which lead to respiratory problems. In addition, open fires are frequent causes of burns and other injuries. Switching from fireplaces to ICS reduces the incidence of such injuries and health problems.

Through demonstration, training and implementation, the project will also generate a range of less tangible social outcomes in education and awareness. This project will build awareness of the health problems associated with open fire pits traditionally used for cooking and create an opportunity for collective action on climate change, enhancing a sense of community, and empowering individual households.

⁵ Masera, Omar, Rodolfo Diaz and Victor Berrueta, “From cookstoves to cooking systems: the integrated program on sustainable household energy use in Mexico”, *Energy for Sustainable Development*, Volume IX No. 1, Page 26

⁶ World Bank (2009): Poverty in Mexico-Fact Sheet

Further Information

No further information is applicable.

3.2 Safeguards

3.2.1 No Net Harm

The project activity involves installation of cook stoves and does not have any negative impact. Assessment team confirms this based on its local and sectoral expertise.

3.2.2 Local Stakeholder Consultation

The local stakeholder consultation was done at PoA level, prior to the registration of the PoA. The first stakeholder meeting for the POA was conducted in Benito Juarez, San Miguel Chimalapa, Oaxaca on 30/12/2009. A series of similar meetings followed this. The LSC was validated at the time of registration of this project activity.

The outcomes from the local stakeholder consultation are available in Section D of the PoA-DD⁷.

PP conducted regular spot checks to observe that project ICS were being used properly and to get feedback from stakeholders on ICS usage and its benefits. Also, registration card contains contact details of local PP representative through which ICS users can contact PP for any concerns /comments on the project or project ICS. If any stove part is damaged or missing, then PP representatives immediately arrange for replacement of missing/damaged parts.

3.2.3 Environmental Impact

No negative environmental impacts have been identified from the project and environmental impact assessment (EIA) is not required for the project.

3.2.4 Public Comments

Not applicable during RCP validation. However, GSC period was conducted while registering into CDM and no comments were received.

3.2.5 AFOLU-Specific Safeguards

Not applicable as this is non-AFOLU project.

3.3 Application of Methodology

⁷ <https://cdm.unfccc.int/UserManagement/FileStorage/ST76NWH1FPCI3M05UADVXGJLOY2809>

3.3.1 Title and Reference

CDM Methodology: AMS-II.G version 12.0 – ‘Energy efficiency measures in thermal applications of non-renewable biomass’/7/. The assessment team has confirmed that the selected baseline methodology is the approved baseline methodology available on UNFCCC web site⁸. The applied methodology is the latest version and is valid from 14/12/2020. The selected baseline methodology, i.e., AMS-II.G is correctly applied to this type of project. All the applicability criterion of applied methodology is appropriately justified in the updated VCS PD by the project participant. The PP has correctly applied the following connected methodological tools in the VCS PD:

Tool 11 version 03.0.1 - Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period.

Tool 30 version 3.0 - Calculation of the fraction of non-renewable biomass

3.3.2 Applicability

Applicability criteria for the applied methodology/7/ in the VCS-PD/1/ against these criteria are assessed by the validation team by means of document review and interviews. Thus, the validation team confirms that the Project Participant has correctly applied the approved methodology and the selected version of the methodology is valid at the time of validation.

Sl. No.	CDM Methodology Requirement	Project Justification	Means of Validation
01	This methodology comprises efficiency improvements in thermal applications of non-renewable biomass. Examples of applicable technologies and measures include the introduction of high efficiency biomass fired project devices to replace the existing devices and/or energy efficiency improvements in existing biomass fired cookstoves or ovens or dryers.	The CPA includes dissemination of high efficiency biomass fired ICS to replace the existing traditional cookstoves in beneficiary households	The validation team by means of remote audit interviews confirms that the CPA will distribute high efficiency biomass fired ICS which will replace existing wood based stoves; therefore, no greenfield installations are included. Hence, the criterion is applicable.

⁸ <https://cdm.unfccc.int/methodologies/DB/10PELMPDW951SVSW1B2NRCQEBAX96C>

02	In the case of cookstoves, the methodology is applicable to the introduction of single pot or multi pot portable or in-situ cookstoves with rated efficiency of at least 20 per cent.	The project activity shall include only those ICS that have a rated thermal efficiency of at least 20%. Every type of ICS implemented in the project will present a certificate issued by manufacturer at the time of CPA inclusion proving the thermal efficiency as required by the CDM methodology.	The validation team by means of remote audit interview confirms that the CPA will include only those ICS which area having a specified efficiency of at least 20%. Hence, the mentioned criterion is applicable. Remote interviews were undertaken by the representative of project participants to confirm the efficiency of project ICSs will be more than 20%. This was further reviewed from the verification reports available on the VERRA registry. Moreover, the efficiency is a monitoring parameter and will also be monitored ex-post, VVB concludes based on the desk review of previous verification reports wherein PP has demonstrated the compliance of application of monitoring requirement that the projects ICSs has the efficiency of more than 20%.
03	The aggregate energy savings of a single project activity shall not exceed the equivalent of 60 GWh per year or 180 GWh thermal per year in fuel input.	PP has defined the Instances under this project as distributed ICS PP calculated the energy savings of each stove in this project activity around 0.018 GWh_{th} per year, representing only 0.01% of the small scale threshold. The excel calculations were presented to the VVB.	The validation team by means of remote audit interview confirms that the project will distribute improved cook stoves which shall not exceed the equivalent of 60 GWh per year or 180 GWh thermal per year in energy saving. Hence, the

			criteria is applicable.										
04	Non-renewable biomass has been used in the project region since 31 December 1989, using survey methods or referring to published literature, official reports or statistics.	The baseline survey confirms that participants have been using non-renewable biomass since 31 December 1989. FAO forestry statistics⁹ show that fuel wood has been harvested in Mexico since at least 1989. As seen in the FAO 2010 report (data shown in the table below), carbon stocks in the country are depleting in the project area.¹⁰ <table><tr><td></td><td>1990</td><td>2000</td><td>2005</td><td>2010</td></tr><tr><td>Forest Biomass Carbon Stocks (millions of metric tons of carbon)</td><td>2,186</td><td>2,111</td><td>2,076</td><td>2,043</td></tr></table> Because above indicator show that non-renewable biomass has been in use since 31 December 1989, the use of the methodology II.G/Version 12 is appropriate.		1990	2000	2005	2010	Forest Biomass Carbon Stocks (millions of metric tons of carbon)	2,186	2,111	2,076	2,043	The validation team has confirmed the use of Non-renewable biomass through FAO forestry statistics report which shows that fuel wood has been harvested in Mexico since at least 1989. The same was also confirmed through the means of remote audit interviews. Hence, the criteria is applicable.
	1990	2000	2005	2010									
Forest Biomass Carbon Stocks (millions of metric tons of carbon)	2,186	2,111	2,076	2,043									
05	For cases where the biomass is sourced from renewable sources, the project participants should use a corresponding Type I methodology	Not applicable.	The validation team by means of remote audit interviews confirms that the project to be included will be a type II category project. Hence, the criteria is not applicable.										
06	If the project device requires a specific fuel for this device (e.g. briquettes,	Not applicable.	The validation team by means of remote audit interviews confirms that										

⁹ FAO, Global Forest Resources Assessment 2010, Country Report, Mexico “Evaluacion de los Recursos Forestales Mundiales, Informe Nacional, 2010, Mexico”, Page 67; www.fao.org/forestry/fra/67090/en/mex/

¹⁰ FAO, Global Forest Resources Assessment 2010, Country Report, Mexico “Evaluacion de los Recursos Forestales Mundiales, Informe Nacional, 2010, Mexico”, Page 55; www.fao.org/forestry/fra/67090/en/mex/

	pellets, woodchips), the consumption of the fuel should be monitored during the crediting period.		the ICS doesn't require any other fuel than wood, as mentioned in the baseline. Hence, the criterion is not applicable.
07	The CDM-PDD or CDM-PoA-DD/CPA-DD shall explain the proposed method for distribution of project devices including the method to avoid double counting of emission reductions such as unique identifications of product and end-user locations (e.g. programme logo).	Procedure of distribution of the ICS to be implemented has been explained in the registered CPA DD.	The validation team by means of remote audit interviews and supporting documents /3/ confirms that the proposed method for distribution of project devices includes the method to avoid double counting of emission reductions such as unique identifications of product, end-user details (name, address etc) and unique GPS referenced location (if available). Therefore, the validation team confirms that the record keeping system will eliminate double counting.
08	The CDM-PDD or CDM-PoA-DD/CPA-DD shall also explain how the proposed procedures prevent double counting of emission reductions, for example to avoid that project stove manufacturers, wholesale providers or others claim credit for emission reductions from the project devices.	The project is uniquely identified and defined in an unambiguous manner by a database of uniquely identified households in which ONIL stoves have been installed. Each household has been assigned a unique ID in the database, which is linked to information for each entry on the following: • Precise geographical / location identification of the household (using GPS or similar technology), • Stove serial number (unique identifier) • Name of the head of household, and • Date of installation of the ONIL stove • Stove model • Date of distribution/installation • Retailer/distributor •	The validation team by means of remote audit interviews confirms that the proposed procedures prevent double counting of emission reductions.

3.3.3 Project Boundary

The project was included as a CPA under CDM PoA/9/ with CDM reference 8521-P1-0001-CP1, and according to paragraph 3.19.5 of the VCS Standard version 4.1, PP does not need to reproduce the same. This is accepted by the assessment team.

3.3.4 Baseline Scenario

The assessment team assessed the validity of the updated baseline through an assessment of the following points:

- a) The impact of new relevant national and/or sectoral policies and circumstances on the baseline considering relevant guidance from the Board with regard to renewal of the crediting period of the VCS project activity
- b) The correctness of the application of the approved methodologies for the determination of the continued validity of the updated baseline and the estimation of GHG emission reductions for the applicable crediting period of the VCS project activity.
- c) The assessment of estimation of emission reductions for the applicable crediting period.

The validity of the baseline has been assessed as per the methodological tool “Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period” (version 3.0.1) /10/. The assessment is performed as follows:

Step 1: Assess the validity of the current baseline for the next crediting period.

Step 1.1: Assess compliance of the current baseline with relevant mandatory national and/or sectoral policies.

The impact of the national and/or sectoral policies and circumstances upon the baseline scenario of the project activity has been assessed during the crediting period renewal of the project activity.

VVB has reviewed the publicly available information in context of Mexico, wherein the project activity is located. The energy policy tracker website¹¹ (refer footnote) shows that there is no policy in host country which mandates the implementation of ICS. Moreover, VVB has confirmed from it's auditors staff located in Mexico, to confirm that no policies mandate the PP to implement ICSs.

According to the recent study by Medrano et al., in 2019¹² it is also evident that 40% of rural households are still dependent on fuel wood as an energy source and several projections have

¹¹ [Mexico - Energy Policy Tracker](#)

¹² https://www.historiaagraria.com/FILE/articulos/RHA77_serrano-medrano_ghilardi_masera.pdf

estimated that fuel wood will remain the dominant rural cooking fuel in the short and middle term in Mexico¹³.

Hence the current baseline remains the same as it was in the registered CPA-DD & VCS PD. There has been no significant change in the relevant national and/or sectoral policies from the date of registration till now. In absence of the project activity, wood fuel will dominate as a preferred cooking fuel. Thus, the assessment team concludes that the baseline for the project activity remains same and is in line with the relevant mandatory national and/or sectoral policies.

Step 1.2: Assess the impact of circumstances

There are no impacts of circumstances existing at the time of requesting renewal of the crediting period on the current baseline scenario. This has been confirmed from the local & sectoral expertise of VVB, the Mexican team of VVB having host country competence & sector competence was consulted by verification team to arrive on the conclusion.

The assessment team has checked the baseline scenario identified at the validation of the project activity which was firewood used for conventional open fire stoves. The investment made by the PP is on a voluntary level which intends to provide efficient cook stove burning firewood, hence the same baseline as identified in the previous crediting period is still valid for the project. Therefore, the assessment of the changes in market characteristics is not required for the renewal of the project's crediting period under VCS.

Step 1.3: Assess whether the continuation of the use of current baseline equipment(s) or an investment is the most likely scenario for the crediting period for which renewal is requested.

Verification team accessed and verified the study “Spatial and temporal projection of fuelwood and charcoal consumption in Mexico” conducted in 2013. Based on the same it is confirmed that fuel wood and charcoal are fundamental fuel sources for the residential sector in Mexico. Also as assessed above in step 1.1, several projections have estimated that fuel wood will remain the dominant rural cooking fuel in the short and middle term in Mexico and future growth of mixed fuel wood-LPG users is expected however it means that fuel stacking rather than fuel switching out of fuel wood would prevail.¹⁴

Thus, validation team confirms that the current baseline of use of traditional fuel wood stoves is still applicable.

Step 1.4: Assessment of the validity of the data and parameters

PP has updated data and parameters which are no longer valid. Same were checked and validated.

¹³ https://www.historiaagraria.com/FILE/articulos/RHA77_serrano-medrano_ghilardi_masera.pdf

¹⁴ https://www.historiaagraria.com/FILE/articulos/RHA77_serrano-medrano_ghilardi_masera.pdf

Step 2: Update the current baseline and the data and parameters

Step 2.1: Update the current baseline

PP has updated the data and parameters required for baseline emissions for the current crediting period, based on the latest approved version of the methodology – AMS-II.G version 12.0.

- Default IPCC values – Values specified in the latest version of the methodology are used which is checked and confirmed.
- Emission factors, values and benchmarks - These have been updated in line with the latest version of methodology which is checked and confirmed.
- The current baseline emissions have been updated for the subsequent crediting period which is validated.
- Data and parameters that were fixed ex-ante and which were not monitored have been updated in accordance with the requirements of the latest version of applied methodology i.e. AMS II.G, version 12 which is checked and confirmed.

Step 2.2: Update the data and parameters

The approved consolidated baseline methodology, AMS–II.G version 12.0, has been used to determine the baseline and the estimation of emission reductions for the applicable crediting period.

For baseline scenario, as per the applied methodology para 23 following apply,

‘It is assumed that in the absence of the project activity, the baseline scenario would be the projected use of fossil fuels to meet similar thermal energy needs as those provided by the project devices.’

In the absence of project activity, households in the communities would have continued using inefficient, traditional open fires.

The validation team confirms that,

- a) All the assumptions and data used by the project participants are listed in the VCS PD, including their references and sources;
- b) All documentation used is relevant for establishing the baseline scenario and correctly quoted and interpreted in the VCS PD;
- c) Assumptions and data used in the identification of the baseline scenario are justified appropriately, supported by evidence, and can be deemed reasonable;
- d) Relevant national and/or sectoral policies and circumstances are considered and listed in the VCS PD

- e) The approved baseline methodology has been correctly applied to identify the most reasonable baseline scenario, and the identified baseline scenario reasonably represents what would occur in the absence of the proposed project.
- f) The VCS PD provides a description of the identified baseline scenario, including a description of the technology that would be employed and/or the activities that would take place in the absence of the proposed project activity.

The updated data and parameters are as below;

Parameters	Value	Unit	Source/Justification																																													
Bold,i,y	6.597	tonne/year	Validation team confirms that value is determined ex-ante using option (a) in para 44 of approved methodology and historical data. Validation team has checked, and accepted baseline Fuel wood consumption assessment spreadsheet submitted by PP. This parameter has been updated based on the latest data on public domain and a separate excel calculation sheet provided by the PP to VVB, this includes the data references and the baseline fuel wood consumption in host country. Validation team reviewed the data sources and the calculation methodology, based on the sectoral expertise of validation team, each data source is recent and applicable at the time of RCP. Therefore, the value is accepted. The calculation is transparently included in the revised VCS PD by the PP and sources/assumption provided therein, VVB has reviewed the assumption/sources and the calculation to derive this parameter and concluded that the assumption/sources are adequate. <table><tr><th>S N</th><th>Parameter</th><th>Value</th><th>Unit</th><th>Source</th></tr><tr><td>A</td><td>Total Population of Mexico in 2020</td><td>12,89,32,753</td><td>number</td><td>Population, total - Mexico Data (worldbank.org)</td></tr><tr><td>B</td><td>Percent Rural Population in 2020</td><td>19.27%</td><td>percentage</td><td>Rural population (% of total population) - Mexico Data (worldbank.org)</td></tr><tr><td>C</td><td>Total rural population in Mexico in 2020</td><td>2,48,44,052</td><td>number</td><td>Calculated A*B</td></tr><tr><td>D</td><td>Total urban population in Mexico in 2020</td><td>10,40,88,701</td><td>number</td><td>calculated A-C</td></tr><tr><td>E</td><td>HH size rural Mexico</td><td>4.45</td><td>number</td><td>Average household size - Area Database - Global Data Lab</td></tr><tr><td>F</td><td>HH size _urban Mexico</td><td>4.28</td><td>number</td><td>Average household size - Area Database - Global Data Lab</td></tr><tr><td>G</td><td>Clean cooking access rate in Mexico rural</td><td>57%</td><td>percentage</td><td>*SDG7_Tracking_Progress_2021.pdf The Energy Progress Report 2021</td></tr><tr><td>H</td><td>Clean cooking access rate</td><td>92%</td><td>percentage</td><td>*SDG7_Tracking_Progress_2021.pdf The Energy Progress Report</td></tr></table>	S N	Parameter	Value	Unit	Source	A	Total Population of Mexico in 2020	12,89,32,753	number	Population, total - Mexico Data (worldbank.org)	B	Percent Rural Population in 2020	19.27%	percentage	Rural population (% of total population) - Mexico Data (worldbank.org)	C	Total rural population in Mexico in 2020	2,48,44,052	number	Calculated A*B	D	Total urban population in Mexico in 2020	10,40,88,701	number	calculated A-C	E	HH size rural Mexico	4.45	number	Average household size - Area Database - Global Data Lab	F	HH size _urban Mexico	4.28	number	Average household size - Area Database - Global Data Lab	G	Clean cooking access rate in Mexico rural	57%	percentage	*SDG7_Tracking_Progress_2021.pdf The Energy Progress Report 2021	H	Clean cooking access rate	92%	percentage	*SDG7_Tracking_Progress_2021.pdf The Energy Progress Report
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H	Clean cooking access rate	92%	percentage	*SDG7_Tracking_Progress_2021.pdf The Energy Progress Report																																												

				in Mexico_urban			2021
			I	Mexican Population that lacks access to clean cooking fuel (conservatively assumed to be 100% firewood) – rural	43%	percentage	Calculated 1-G
			J	Mexican Population that lacks access to clean cooking fuel (conservatively assumed to be 100% firewood) – urban	8%	percentage	calculated 1-H
			K	Total Rural households using firewood in Mexico	2400661	number	calculated (I*C)/E
			L	Total Urban households using firewood in Mexico	1945583	number	calculated (J*D)/F
			M	Total firewood consuming households in Mexico	4346244	number	calculated K+L
			N	Total firewood consumption	28672547	tonnes	FAOSTAT
				Average annual firewood consumption per household	6.597	tons/HH/annum	calculated N/M
			The value of Bold has been derived by using the publicly available data and the same has been assessed appropriate by the VVB. Excel sheet demonstrating the calculation was thoroughly reviewed by the VVB and found that the calculation represents reasonable outcome.				
f _{NRB,y}	0.70	Fraction	The value is based on report by C4 EcoSolutions (Pvt.) Ltd. which has been calculated in accordance with latest version of CDM Tool - Calculation of the fraction of non-renewable biomass. Validation team has checked the report prepared by C4 EcoSolutions (Pvt.) Ltd. And values considered are verified and accepted. It is confirmed that latest version of CDM tool i.e. version 3.0 was used for value determination. Validation team has checked and confirmed estimations/extrapolations/projections included in f _{NRB} calculation spread sheet submitted. Validation team confirms				

			that the fnrb is calculated in line with the recent CDM tool 30, the equations used and data source used is latest and calculation is adequate. Hence, the baseline value is updated and deems reasonable to the VVB.
NCV _{biomass}	0.0156	TJ/tonne	Validation team confirms that the value is found to be consistent with the default value as per applied methodology AMS-II.G version 12.0
EF _{projected_fossilfuel}	68.6	tCO ₂ /TJ	Validation team confirms that the value is found to be consistent with the default value as per applied methodology AMS-II.G version 12.0. The value is updated by the project participant based on the recent version of methodology and VVB confirms that this is applicable to the region wherein the project activity is located.

3.3.5 Additionality

The additionality will be similar to the conditions mentioned in the registered and validated. Therefore, it is not applicable during the validation of renewal of crediting period.

VVB has reviewed the publicly available information in context of Mexico, wherein the project activity is located. The energypolicytracker website¹⁵ shows that there is no policy in host country which mandates the implementation of ICS. Moreover, VVB has confirmed from its auditors staff located in Mexico having sectoral competence, to confirm that no policies mandate the PP to implement ICSs.

3.3.6 Quantification of GHG Emission Reductions and Removals

Quantification of Baseline emissions

Emissions reductions are calculated as per methodology AMS-II.G version 12 using the following equation:

$$ER_{y,i,j} = B_{y,savings,i,j} \times N_{o,i,j} \times n_{y,i,j} \times \mu_y \times f_{NRB,y} \times NCV_{biomass} \times EF_{projected_fossil\ fuel} \text{ Where:}$$

$ER_{y,i,j}$ Emission reductions by project device of type i and batch j during year y (tCO₂e)

$B_{y,savings,i,j}$ Quantity of woody biomass that is saved per cookstove device of type i and batch j during year y (tonnes)

¹⁵ [Mexico - Energy Policy Tracker](#)

$f_{NRB,y}$	Fraction of woody biomass saved by the project activity in year y that can be established as non-renewable biomass (0.72)
$NCV_{biomass}$	Net calorific value of non-renewable woody biomass that is substituted (IPCC default value for fuel wood 0.0156 TJ/tonne)
$EF_{projected_fossil\ fuel}$	Emission factor for the substitution of non-renewable woody biomass by similar consumers. Use a value of 68.6 tCO ₂ /TJ
$N_{0,i,j}$	Number of project devices of type i and batch j commissioned (number)
$n_{y,i,j}$	Proportion of commissioned project devices of type i and batch j ($N_{0,i,j}$) that remain operating in year y (fraction)
μ_y	Adjustment to account for any continued use of pre-project devices during the year y

According to footnote 20 under para 50 (c) of the applied methodology, “the methodology allow the use of a net to gross adjustment factor of 0.95 in lieu of conducting a survey to account for leakage emissions”. PP has applied this factor instead of conducting a survey which is accepted. Hence,

$$ER_{y,i,j} = B_{y,savings,i,j} \times N_{0,i,j} \times n_{y,i,j} \times \mu_y \times f_{NRB,y} \times NCV_{biomass} \times EF_{projected_fossil\ fuel} \times 0.95$$

To calculate $B_{y,savings,i,j}$, equation 7 in option 3: water boiling test (WBT) of para 32 of applied methodology is used as below,

$$B_{y,savings,i,j} = B_{old,i,j} \times \left(1 - \frac{\eta_{old,i,j}}{\eta_{new,i,j}}\right)$$

Where:

$B_{old,i,j}$	Annual quantity of woody biomass that would have been used in the absence of the project activity to generate thermal energy equivalent to that provided by the project device type i and batch j (tonnes/year)
$\eta_{old,i,j}$	Efficiency of the old devices being replaced by project devices of type i and batch j (fraction). A default value of 0.10 may be optionally used if the replaced system is three-stone fire using firewood (not charcoal), or a conventional device with no improved combustion air supply or flue gas ventilation, that is without a grate or a chimney.
$\eta_{new,i,j}$	Efficiency of the project device i and batch j (fraction), as determined using the Water Boiling Test (WBT) protocol

PP has demonstrated calculations in the ER sheet/2/ and same is validated by assessment team in line with the applied methodology. The parameters included in the equation are validated above.

The baseline emissions for the proposed project activity were calculated as follow:

$$ER_{y,i,j} = B_{y,savings,i,j} \times N_{o,i,j} \times n_{y,i,j} \times \mu_y \times f_{NRB,y} \times NCV_{biomass} \times EF_{projected_fossil\ fuel} \times 0.95$$

For ex-ante estimates:

$$\begin{aligned} B_{y,savings,i,j} &= 6.597 \times (1 - 0.10/0.24) \\ &= 3.8483 \\ ER_{y,i,j} &= 3.8438 \times 30,869 \times 1 \times 1 \times 0.70 \times 0.0156 \times 68.6 \times 0.95 \\ &= 84,538.82 \\ &= 84,538 \text{ (Rounded down value)} \end{aligned}$$

It is mentioned under section 1.4 of the PD that the project has been designed to include multiple project activity instances i.e., improved cookstoves. As per VVS standard version 4.1 section 3.5.14, “Where a capacity limit applies to a project activity included in the project, no project activity instance shall exceed such limit”. Each ICS installed under the project activity has maximum energy saving of 0.0143 GWh/year i.e., 0.008% of the small-scale threshold value of 180 GWh_(th). Therefore, none of the project activity instance will cross the energy demand threshold of 180 GWh/year. The above statement of PP was supported by the ex-ante ER sheet, in which PP has demonstrated the compliance of type II energy saving threshold. It was validated that the project instance doesn’t breach the cap of 180 GWh/annum (thermal energy saving). Moreover, this shall also be verified by the verifying VVB as part of verification. Therefore, VVB at the time of RCP doesn’t has any reservation that project will breach the thermal energy cap as stated above.

Annual average baseline emission is estimated to be 84,538 tCO_{2e}.

Quantification of Project emissions (PE_y)

In accordance with Methodology AMS–II.G version 12.0, project emissions are considered zero.

Quantification of Leakage emissions (LE_y)

In accordance with Methodology AMS–II.G version 12.0, leakage emissions are considered zero. However, as per para 41 of approved methodology, net to gross adjustment factor (L) of 0.95 is considered to account for leakages as ex post surveys are not carried out.

In accordance with para 24 of approved methodology, emission reductions are calculated as per equation 1;

$$ER_y = \sum_i \sum_j ER_{y,i,j} - LE_y$$

Hence,

$$ER_y = 84,538 - 0$$

$$ER_y = 84,538 \text{ tCO}_2\text{e}$$

The results of the emission reduction estimation of project activities in the first crediting period are shown in the table below:

Year	Estimated baseline or removals (tCO ₂ e)	Estimated project or removals (tCO ₂ e)	Estimated leakage emissions (tCO ₂ e) ¹⁶	Estimated net GHG emission reductions or removals (tCO ₂ e)
2021	84,538	0	0	84,538
2022	84,538	0	0	84,538
2023	84,538	0	0	84,538
2024	84,538	0	0	84,538
2025	84,538	0	0	84,538
2026	84,538	0	0	84,538
2027	84,538	0	0	84,538
2028	84,538	0	0	84,538
2029	84,538	0	0	84,538
2030	84,538	0	0	84,538

¹⁶ Already deducted 5% of total baseline in line with methodology

Total	845,380	0	0	845,380
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Total emission reductions over 10 years (second) crediting period are 1,097,960 tCO₂e.

Through the assessment process KBS has confirmed that:

- All the assumptions and data used by the project participants are listed including their references and sources;
- All documentation used by the project participants as the basis for assumptions and source of data is correctly quoted and interpreted in VCS PD;
- All values used in VCS PD are considered reasonable in the context of the VCS project activity;
- The baseline methodology has been applied correctly to calculate project emissions, baseline emissions, leakage and emission reductions;
- All estimates of the baseline emissions can be replicated using the data and parameter values provided in the VCS PD.

3.3.7 Methodology Deviations

The assessment team confirms that VCS PD complies with the requirements in the applied monitoring methodology AMS-II.G version 12.0/7/. Therefore, no methodology deviations are applied.

3.3.8 Monitoring Plan

The project monitoring plan is in compliance with the approved methodology applied. The monitoring plan will give opportunity for real measurement of emission reductions achieved. As per AMS-II.G, version 12.0, no indicators have been defined regarding project emissions. Leakage accounting has not been considered for the project as per para 41 pf approved methodology. The monitored parameters with monitoring details are included in the VCS PD. It is KBS's opinion, that the project participant is able to implement the monitoring plan.

• Data and parameters available at validation

Following parameters are available at validation, which are presented in section 5.1 of VCS PD. The data/parameters were checked, assessed and verified by the validation team.

Data / Parameter	Description	Value and unit
Bold, I j	Annual quantity of woody biomass that would have been used in the absence of the project activity to generate thermal energy equivalent to that provided	6.597 tonnes

	by the project device type i and batch j . Validated in the previous section by the validation team.	/year
L	Net to gross adjustment factor to account for leakage	0.95
$\eta_{old,i,j}$	Efficiency of the old devices being replaced by project devices of type i and batch j (Default value in line with methodology)	0.10
$f_{NRB,y}$	Fraction of non-renewable biomass saved by the project activity (Validated in the previous section by the validation team)	0.70
NCV biomass	Net calorific value of non-renewable biomass that is substituted	0.0156 TJ/tonnes
$EF_{project_fossil_fuel}$	Emission factor for the substitution of non-renewable biomass by similar consumers (Validated in the previous section by the validation team)	68.6 tCO ₂ /TJ

- Data and parameters monitored

Following parameters are to be monitored as per approved methodology AMS-II.G version 12.0;

$N_{0,i,j}$ = Number of commissioned project devices of type i and batch j

Used for calculation of emission reductions. The data/parameter is measured based on actual installation records stored in the PP's database. It is measured once at the time of project implementation and recorded in installation database. The monitored value of 30,869 was checked and confirmed by the validation team.

$n_{Y,i,j}$ = Proportion of commissioned project devices of type i and batch j ($N_{0,i,j}$) that remain operating in year y (fraction)

Used for calculation of emission reductions. The data is measured directly or based on representative sampling. The validation team confirmed that if representative sampling is carried out, sampling standard will be used for determining the sample size to achieve 90/10 confidence precision according to the latest version of Standard for sampling and surveys for CDM project activities and programme of activities. It was further noted that, it will be measured through monitoring surveys at least once in every two years and staff will be trained to obtain unbiased and reliable survey data.

μ_y = Adjustment to account for any continued use of pre-project devices during the year y

Used for calculation of emission reductions. The data is measured through monitoring surveys with either of the following methods;

If the pre-project devices are decommissioned and no longer used, as determined by the monitoring survey its value will be 1.0. Or, if both the project devices and pre-project devices are used together, surveys will be designed to capture the cooking habits and stove usage of households in the region, including quantification of use of baseline devices, by formulating questions and/or collecting evidences to determine the frequency of usage of both the project devices and baseline devices

It was further noted that, the monitoring surveys will be carried out at least once in every two years and staff will be trained to obtain unbiased and reliable survey data. The monitored value of 1 was checked and confirmed by the validation team.

$\eta_{new,i,j}$ = Efficiency of the device of each type i and batch j implemented as part of the project activity

Used for calculation of emission reductions. The data is measured using Water Boiling Test (WBT) protocol. This test will be carried out at least once in every two years using monitoring equipments - weighing scale, digital thermometer, digital moisture meter. The monitored value of 24% was checked and confirmed based on Water Boiler Test Report conducted by independent third party by the validation team.

Sampling:

The VCS PD indicates a sampling plan and contains amongst others information related to sampling design, data to be collected and implementation plan. The sampling is done to obtain an unbiased and reliable estimate of the proportion and mean parameters (sampling used for parameters - $n_{y,i,j}, \mu_{y,,} \eta_{new,i,j}$).

Assessment team confirms that the sampling method (simple random sampling) is clearly described and is in line with the description of the population. The sampling plan transparently describes how the samples are selected and that the use of random number generators ensures a random selection.

The validation team confirms that:

- a) All the values used from official sources and the authenticity of sources has been verified by the validation team and confirms that all relevant parameters to calculate the GHG emissions reductions of the project have been sufficiently considered and the value of the ex-ante fixed parameter used for emission reduction calculation has been determined conservatively and the estimation of ex-post parameters are reasonable. The validation team considers that the monitoring plan has complied with the requirements in the approved methodology.

- b) The monitoring plan based on the approved monitoring methodology/7/, is included in the PD. The monitoring plan has been found to be in compliance with the requirements of the applied methodology. The monitoring plan will give opportunity for real measurements of achieved emission reductions.
- c) The validation team considers that monitoring arrangements described in the monitoring plan is feasible within the project design and the CME will be capable to implement the monitoring plan.
- d) The DOE by assessing Guidelines for sampling and surveys for CDM project activities and programme of activities confirms that the sampling plan is appropriate and plausible and is following the applicable requirements.
- e) Sampling objective, sampling size, sampling target, sampling frame, sampling method, field measurements, QA/QC procedures and implementation plan are deemed to be appropriate and plausible according to the sectoral expertise of the DOE and have been further confirmed and substantiated in skype interview with the PP.

3.4 Non-Permanence Risk Analysis

Not applicable

4 VALIDATION CONCLUSION

KBS Certification Services Pvt. Ltd. has been commissioned by 'C-Quest Capital Stoves Asia Limited' to perform Validation for renewal of crediting period (RCP) of 'Distribution of ONIL Stoves – Mexico, San Felipe Usila 1' under the second crediting period (01/01/2021 to 31/12/2030), with regard to the relevant requirements of VCS Standard Version 4.1.

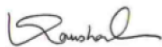
The project correctly applies the methodology AMS-Il.G version 12.0. It is demonstrated that the project is not a likely baseline scenario. The emission reductions attributable to the project are hence additional to any that would occur in the absence of the project activity.

The total emission reductions from the project for the 2nd crediting period are estimated to be 845,380 tCO₂e (annual average) over 10 year crediting period (renewable) starting from 01/01/2021. The emission reduction forecast has been checked and it is deemed likely that the stated amount is achievable given the underlying assumptions do not change.

The project will hence be recommended by KBS for request for renewal of the crediting period of the project activity with the VCS.

Location: Faridabad

Date: 12/11/2021



Authorized Signatory: Kaushal Goyal

Designation: Managing Director

KBS Certification Services Pvt. Ltd.

APPENDIX 1: ABBREVIATIONS

Abbreviations	Full Texts
AMS	Approved Methodology for Small-scale
BE	Baseline Emissions
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
CL	Clarification request
CoP	Conference of Parties
CPA	Component Project Activity
DNA	Designated National Authority
DOE	Designated Operational Entity
EB	Executive Board
EF	Emission Factor
ER	Emission Reductions
FAR	Forward Action Request
GHG	Greenhouse gas(es)
GSC	Global Stakeholder Consultation
ICS	Improved Cook Stove
IPCC	Intergovernmental Panel on Climate Change
KP	Kyoto Protocol
LSC	Local Stakeholder Consultation
LE	Leakage Emissions
IPCC	Intergovernmental Panel on Climate Change
MP	Monitoring Plan
NCV	Net Calorific Value

NGO	Non-Governmental Organisation
QA/QC	Quality Assurance/Quality Control
TJ	Tera Joule
UNFCCC	United Nations Framework Convention on Climate Change
VVS	Validation & Verification Standard
WBT	Water Boiling Test

APPENDIX 2: REFERENCES

/1/	/1.1/ VCS PD version 01, dated 30/06/2021 (Initial Version) /1.2/ VCS PD version 03 dated 08/11/2021 (Final Version)
/2/	/2.1/ Emission Reduction calculation sheet, Version 01 dated 30/06/2021 (corresponding to initial Version of VCS PD) /2.2/ Emissions Reduction calculation Sheet, Version 02 dated 11/08/2021 (corresponding to final Version of VCS PD) /2.3/ Excel sheet for calculation of baseline fuel wood consumption /2.4/ Excel sheet for calculation of fraction of Non Renewable Biomass
/3/	/3.1/ CDM registered CPA DD version 15 dated 23/11/2012 /3.2/ CDM validation report version 3 dated 03/12/2012 /3.3/ VCS Monitoring report version 2 dated 02/07/2020 /3.4/ VCS Verification report version 1 dated 09/07/2020
/4/	VCS Standard Version 4.1 VCS Validation and Verification Manual version 3.2
/5/	VCS Programme guide Version 4.0 VCS standard 2007.1
/6/	Technical specifications of the ICSs
/7/	AMS II. G “Energy efficiency measures in thermal applications of non-renewable biomass” version 12.0
/8/	Remote audit (05/08/2021) through Skype interview to validate updated baseline parameters/scenario
/9/	Registered CDM POA-DD version 15 dated 23/11/2012
/10/	“Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period” (version 3.0.1)
/11/	Calculation of the fraction of non-renewable biomass, version 2.0

APPENDIX 3: FINDINGS

Summary of findings	CL	CAR	FAR
	02	00	01

Table 1: CLs from this validation & verification

CL ID	01	Section no.	3.3.2	Date: 10/08/2021
Description of CL				
Project participant has mentioned in the updated VCS PD that the applicability criteria of AMSIIG, version 12 are already part of CPA DD which was registered originally in VCS. PP shall clarify how the project fulfils the applicability criteria of recent version of methodology applied i.e. version 12. Explicitly, the justification of all applicability criteria of version 12 of methodology are not part of updated VCS PD.				
Project participant response				Date: 11/08/2021
Applicability criteria of AMS II.G version 12 have been mentioned in the revised PD				
Documentation provided by project participant				
VVB assessment				Date: 12/08/2021
PP has updated section 3.2 of revised VCS PP and included applicability criteria as per latest version of approved methodology and justification for applicability. Same was checked and validated to be ok. CL 01 is closed.				

CL ID	02	Section no.	3.3.1	Date: 10/08/2021
Description of CL				
Under section 5.3 of updated VCS PD, PP has referred the obsolete document i.e. simple random sampling (as per of EB 69 Annex 5 Section E). PP shall clarify why the latest version of sampling guideline and standard are not applicable at the time of RCP.				
Project participant response				Date: 11/08/2021
Latest version of sampling guidelines has now been mentioned in the section 5.3 of the revised PD.				
Documentation provided by project participant				

VVB assessment		Date: 12/08/2021
PP has updated section 5.3 to include latest applicable guideline i.e. EB86 Annex 4 for simple random sampling. Same is checked and validated. CL 02 is closed.		

Table 2. CAR from this validation & verification

No CAR raised during the current validation.

CAR ID		Section no.		Date:
Description of FAR				
Project participant response				Date:
Documentation provided by project participant				
VVB assessment				Date:

Table 3. FAR from this validation & verification

FAR ID	01	Section no.	3.1	Date: 12/11/2021
Description of FAR				
The project proponent mentions in Section 1.15.1 that Project 1216 is also registered as a CPA under CDM PoA 8521 as CPA 8521-P1-0001-CP1. It was also observed that CDM PoA 8521 consists of two other CPAs (CPA 8521-P1-0002-CP1 and CPA 8521-P1-0003-CP1). The verifying VVB is requested to double check that no ICS using the unique identification number of this project are calming ERs in others or vice versa.				
Project participant response				Date:

Documentation provided by project participant	
VVB assessment	Date:

APPENDIX 4: COMPETENCE OF TEAM MEMBERS

Personnel Name:		Deepak Pundlik	
Qualified to work as:			
Team Leader	☐	Technical Expert	☐
Validator/Verifier	☒	Financial Expert	☐
Technical Reviewer	☐	Local Expert	☐
Area(s) of Technical Expertise			
Sectoral Scope	Technical Area		
Energy industries (renewable/non-renewable sources)	TA 1.2: Energy generation from renewable energy sources		
Approved by (Manager C & T)	Shikha Sharma		
Approval date:	07/07/2021		

Personnel Name:	Sanjay Kandari
Qualified to work as:	

Team Leader	☒	Technical Expert	☒
Validator/Verifier	☒	Financial Expert	☒
Technical Reviewer	☒	Local Expert (India)	☒
Area(s) of Technical Expertise			
Sectoral Scope	Technical Area		
Energy Industries (renewable/non-renewable sources)	TA 1.1: Thermal energy generation from fossil fuels and biomass including thermal electricity from solar		
Energy industries (renewable/non-renewable sources)	TA 1.2: Energy generation from renewable energy sources		
Energy demand	TA 3.1. Energy Demand		
Waste Handling and Disposal	TA 13.1 Waste Handling and Disposal TA 13.2 Manure		
Approved by (Manager C & T)	Akhilesh Joshi		
Approval date:	11/12/2015		

Personnel Name:	Tushar Eknath Chaudhari		
Qualified to work as:			
Team Leader	☒	Technical Expert	☒
Validator/Verifier	☒	Financial Expert	☒
Technical Reviewer	☒	Local Expert (India)	☒
Area(s) of Technical Expertise			
Sectoral Scope	Technical Area		
Energy Industries (renewable/non-renewable sources)	TA 1.1: Thermal energy generation from fossil fuels and biomass including thermal electricity from solar		
Energy industries (renewable/non-renewable sources)	TA 1.2: Energy generation from renewable energy sources		
Energy demand	TA 3.1. Energy Demand		
Waste Handling and Disposal	TA 13.1 Waste Handling and Disposal		
Approved by	Manager Competency & Training		

Approval date:	02/09/2020
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