




**Verification and certification report form for  
CDM programme of activities  
(version 02.0)**

*Complete this form in accordance with the instructions attached at the end of this form.*

**BASIC INFORMATION**

<b>Title and UNFCCC reference number of the programme of activities (PoA)</b>	Domestic Cooking Stoves substitution programme in Mozambique (9981)	
<b>Version number(s) of the PoA-DD(s) to which this report applies</b>	Version 05, 10/10/2014	
<b>Version number of the verification and certification report</b>	1.0	
<b>Completion date of the verification and certification report</b>	14 <sup>th</sup> February 2019	
<b>Monitoring period number and duration of this monitoring period</b>	3 <sup>rd</sup> Monitoring Period 01/12/2016 to 31/12/2017	
<b>Number and version number of the monitoring report to which this report applies</b>	Batch no.01 of 03 Version 05, Dated 08/02/2019	
<b>Coordinating/managing entity (CME)</b>	Fondazione AVSI	
<b>Host Parties</b>	Host Parties of the PoA	Is this a host Party to a CPA covered in this report? (yes/no)
	The Republic of Mozambique	Yes
<b>Applied methodologies and standardized baselines</b>	AMS-II.G. Energy efficiency measures in thermal applications of non-renewable biomass. Version 05.0	
<b>Mandatory sectoral scopes linked to the applied methodologies</b>	Sectoral Scope 03: Energy Demand	
<b>Conditional sectoral scopes linked to the applied methodologies, if applicable</b>	NA	
<b>Estimated amount of GHG emission reductions or GHG removals for this monitoring period in the included CPAs covered in this report</b>	30,359 tCO <sub>2</sub> e	
<b>Certified amount of GHG emission reductions or GHG removals for this monitoring period for the included CPAs covered in this report</b>	1,916 tCO <sub>2</sub> e	
<b>Name and UNFCCC reference number of</b>	EPIS Sustainability Services Private Limited (E-0062)	

the DOE	Issuance request number : 9981-MP2-IRP3
Name, position and signature of the approver of the verification and certification report	K. Sudheendra, Director and Head Operations 

## SECTION A. Executive summary

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EPIC Sustainability Services Private Limited (EPIC) has been contracted by Fondazione AVSI to undertake the independent verification of the registered CDM PoA titled “Domestic Cooking Stoves substitution programme in Mozambique” (PoA ID: 9981) covering CPA 001 titled “Domestic Cooking Stoves in Maputo (Mozambique)”. The objectives of this verification are to verify and certify emission reductions reported for project activity for the monitoring period of 01/12/2016 to 31/12/2017 (first and last day included); and to verify that the data reported are complete and transparent.

This report summarizes the findings of the verification of the project, performed on the basis of UNFCCC criteria for CDM, as well as criteria given to provide for consistent project operations, monitoring and reporting. UNFCCC criteria refer to the Kyoto Protocol, the CDM rules and modalities as agreed in the Bonn Agreement, the Marrakech Accords and the CDM Executive Board's decisions.

The verification team has, based on the recommendations in the Validation and Verification Standard for PoA, version 02.0<sup>1/</sup>, focusing on the identification of significant risks and reliability of project monitoring and generations of VERs. The verification is not meant to provide any consulting towards the client. However, stated request for clarifications and/or corrective actions may provide input for improvement of the project design.

The scope of the verification is the independent and objective review and ex-post determination of the monitored reductions in GHG emission by the project activity. The verification is based on the validated Programme Design Document, version 05, dated 10/10/2014 and registered Component Project Design Document, version 05, dated 10/10/2014 and validated Component Project Design Document, version 09, dated 24/09/2018<sup>1/1/</sup> (hereinafter referred to as PoA-DD<sup>2/</sup> and CPA-DDs<sup>3/,4/</sup>), corresponding Validation Report<sup>5/</sup> and Monitoring Report<sup>6/</sup> (hereinafter referred as final MR). These documents were reviewed against the requirements of the Kyoto Protocol, the CDM Modalities and Procedures and related rules and guidance.

The objective of this small-scale CPA (SSC-CPA) No. 01: “Domestic Cooking Stoves in Maputo (Mozambique)” is to improve energy efficiency by substituting inefficient traditional cookstoves with more effective ones and at the same improving the conditions of the local population living in the poor settlements of Chamanculo C and Xipamanine in the district of Nhlamankulu, in Maputo city, Mozambique and reducing the greenhouse gas emissions.

The verification team determines the conformity of the actual project activity and its operation with the CPA-DD and MR. EPIC has, by means of a desk review and an on-site visit, assessed that all physical features of the proposed CDM project activity proposed in the PoA-DD<sup>2/</sup> are in place, and that the project participants have operated the project activity as per the PoA-DD<sup>2/</sup>. Thus the verification team has concluded that the project activity was implemented and operated as per CPA-DD in line with PoA-DD, and that all physical features of the project are in place.

The verification team, based on the site visit and document review, was able to conclude that the project activity has been commissioned and implemented as per the PoA-DD. The start date of this monitoring period is 01/12/2016.

The monitoring report for this monitoring period is in compliance with the monitoring plan of the PoA-DD. The project activity was registered by applying the small scale methodology “AMS-II.G. Energy efficiency measures in thermal applications of non-renewable biomass (Version 05.0)”<sup>6/</sup> and the verification was carried out in accordance with the applied methodology. It was confirmed during the site visit that the project activity during the current verification is in accordance with the applicability criteria of the methodology.

It is the responsibility of EPIC to express an independent GHG verification opinion on the GHG emissions reductions and on the calculation of GHG emission reductions from the project for this monitoring period based on the reported emission reduction in the monitoring Report.

EPIC's verification approach was based on the requirements as defined under the Kyoto Protocol, Marrakech accord, as well as those defined by the CDM Executive board. EPIC's approach was risk-based, drawing on an understanding of the risks associated with reported GHG emissions data and the controls in

<sup>1</sup> Post registration corrections are presented in PRC ref. PRC-9981-001 with effective approval from 25/10/2018.

place to mitigate these. The examination includes assessment of evidence relevant to the amounts and disclosures in relation to the project's GHG emission reductions for this monitoring period.

The verification team has planned and performed the work to obtain the information and explanations that is considered necessary to provide sufficient evidence for it to give reasonable assurance that the amount of calculated GHG emission reductions for this monitoring period were fairly stated.

## SECTION B. Verification team, technical reviewer and approver

### B.1. Verification team members

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)	Involvement in			
						Desk/document review	On-site inspection	Interview(s)	Verification findings
1.	Team Leader	IR	D	Siddaramu	EPIC	√	√	√	√
2.	Auditor	IR	Radhamadhavan	Vijayaraghavan	EPIC	√	x	x	√
3.	Host Country Expert	ER	Muzima	Adelio	EPIC	√	√	√	√

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

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)
1.	Technical reviewer	IR	Vishnu	Govindarao	EPIC
2.	Technical expert assisting Technical reviewer	IR	Prabu Das	Anbazhagan	EPIC
3.	Approver	IR	Sudheendra	Krishnachar	EPIC

## SECTION C. Application of materiality in conducting the verification

### C.1. Consideration of materiality in planning the verification

No.	Risk that could lead to material errors, omissions or misstatements	Assessment of the risk		Response to the risk in the verification plan and/or sampling plan
		Risk level	Justification	
1.	Errors in manual transfer of records.	Low	9981-0001_Stove Selling Database 2015-2017, 9981-0001_Usage Survey Database 2016 and 9981-0001_Usage Survey Database 2017 was manually transferred from the hand-written survey records to the ER calculation spread sheet.	Verification team checked the 9981-0001_Stove Selling Database 2015-2017 <sup>7/</sup> , KPT reports dated 2016 & 2017 <sup>8/</sup> , 9981-0001_Usage Survey Database 2016 <sup>9/</sup> and 9981-0001_Usage Survey Database 2017 as well as the User Agreements <sup>10/</sup> of all the 27 sampled users, which are legally-binding and considered credible. In addition, the verification team also conducted acceptance sampling of the sampled users, and visited 27 sampled users as well as 04

				non-sampled users during the site visit.
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## C.2. Consideration of materiality in conducting the verification

In line with Guidelines for Application of materiality in verifications<sup>/11/</sup>, a reasonable level of assurance are defined for the verification of the project by complete verification of all the values indicated in the emission reduction spreadsheet<sup>/12/</sup> in documents at the document review stage and onsite. There are no material errors, omissions or misstatements.

## SECTION D. Means of verification

### D.1. Desk/document review

The verification was performed primarily based on the review of the monitoring report and the supporting documentation. This process included review of data and information presented to verify their completeness and review of the monitoring plan and monitoring methodology, paying particular attention to the frequency of measurements, and the QA/QC procedures, and an evaluation of data management and the QA/QC system in the context of their influence on the generation and reporting of emission reduction.

The first MR<sup>/13/</sup> version 1.0 submitted by the project participant and additional background documents related to the emission reductions are reviewed as an initial step of the verification process. The subsequent step involved the identification of corrective action requests and clarification requests (CAR and CL) which are presented in Appendix 4 of this report. As a result of these findings, the MR is revised to MR version 5.0<sup>/14/</sup>. A complete list of all documents and records reviewed is as attached in Appendix 3 of this report.

**D.2. On-site inspection**

Duration of on-site inspection: 01/05/2018 to 05/05/2018				
No.	Activity performed on-site	Site location	Date	Team member
1.	<p>The verification team conducted visits to the project site to confirm the information and to resolve issues identified in the document review. An on-site assessment was conducted as a part of verification activity and involved:</p> <ol style="list-style-type: none"> <li>1) an assessment of the implementation and operation of the project activity as per the validated PoA-DD/CPA-DD</li> <li>2) a review of information flows for generating, aggregating and reporting of the monitoring parameters</li> <li>3) interviews with relevant personnel to confirm that the operational and data collection procedures are implemented in accordance with the Monitoring Plan</li> <li>4) a cross-check between information provided in the MR and data from other sources</li> <li>5) a check of the monitoring equipment including calibration performance, and observations of monitoring practices against the requirements of the PoA-DD/CPA-DD and the applied methodology</li> <li>6) a review of calculations and assumptions made in determining the GHG data and ERs, and</li> <li>7) an identification of QA/QC procedures in place to prevent, or identify and correct, any errors or omissions in the reported monitoring parameters</li> <li>8) Review of the implementation status of the project activity</li> <li>9) Review of the Monitoring plan. Visit to households and Interview with stakeholders. Verification of baseline. Operation and maintenance Procedures. Technical details of project. Review of the implementation status of the project activity</li> </ol>	Project site	01/05/2018 to 05/05/2018	Dr. D.Siddaramu and Mr. Adelio Muzima

**D.3. Interviews**

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Galimberti	Alessandro	AVSI	01/05/2018 to 05/05/2018	KPT and Usage Survey, Project design, Distribution system of cookstoves, Baseline fuel usage, Type of cookstoves used.	Full team
2.	Cumbi	Cristina	AVSI	01/05/2018 to 05/05/2018		Full team
3.	Guiso	Antonio	Carbon Sink	01/05/2018 to 05/05/2018		Full team

4.	27 households (and 04) in Chamanculo C and Xipamanine in the district of Nhlamankulu, Maputo city, Mozambique	Households	02/05/2018 to 05/05/2018	Usage Survey, Distribution system of cookstoves, Baseline fuel usage, Type of cookstoves used.	Validation team
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#### D.4. Sampling approach

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The total number of stoves distributed at the end of the monitoring period in the Project is 1,819 (for which resultant usage rate was 92% for 2016 and 25.43% for 2017). The verification team used acceptance sampling approach for checking the operational status of the improved cook stoves. A sample size of 22 was required, based on an AQL of 0.5% and UQL of 15%, the producer risk used is 5% and consumer risk used was 10%. In accordance with the para 33 (a) of "Sampling and surveys for CDM project activities and programmes of activities"<sup>/15/</sup>, version 07.0 has been chosen "*The estimated volume of annual GHG emission reductions of the project activity or the PoA being verified is equal to or less than 100,000 t CO<sub>2</sub> eq.*"

However, the verification team visited 27 households (and 04 households non-sampled users during the site visit) in Chamanculo C and Xipamanine in the district of Nhlamankulu, Maputo city, Mozambique. It was observed that all the cook stoves visited were in working condition and no discrepant records were observed with the published MR<sup>/13/</sup>, Survey reports and Stove Selling Database 2015-2017<sup>/07/</sup>. Thus PP's set of records has been accepted in line with para 30 of "Sampling and surveys for CDM project activities and programmes of activities", version 07<sup>/15/</sup>.

#### D.5. Clarification requests, corrective action requests and forward action requests raised

Areas of verification findings	No. of CL	No. of CAR	No. of FAR
<b>General</b>			
Compliance of the monitoring report with the monitoring report form	CL06	00	00
Remaining forward action requests from validation and/or previous verification	00	00	00
CPA(s) considered for verification and covered in this report	00	00	00
<b>Programme of activities</b>			
Compliance of the programme implementation with the registered PoA-DD	CL01, CL02	00	00
Implementation and operation of the management system	CL09	CAR06	00
Post-registration changes			
<ul style="list-style-type: none"> <li>Temporary deviations from the registered monitoring plan, applied methodology or applied standardized baseline</li> </ul>	00	00	00
<ul style="list-style-type: none"> <li>Corrections</li> </ul>	00	00	00
<ul style="list-style-type: none"> <li>Inclusion of a monitoring plan</li> </ul>	00	00	00
<ul style="list-style-type: none"> <li>Permanent changes to the registered monitoring plan or permanent deviation of monitoring from the applied methodology, standardized baseline or other applied standards or tools</li> </ul>	00	00	00
<ul style="list-style-type: none"> <li>Changes to the programme design or project design</li> </ul>	00	00	00
<ul style="list-style-type: none"> <li>Change of coordinating/managing entity</li> </ul>	00	00	00
<ul style="list-style-type: none"> <li>Changes specific to afforestation and reforestation activities</li> </ul>	00	00	00
<b>Component project activities</b>			
Compliance of the CPA implementation with the included CPA design document	00		00
Post-registration changes			
<ul style="list-style-type: none"> <li>Temporary deviations from registered monitoring plan, applied methodology or applied standardized baseline</li> </ul>	00	00	00
<ul style="list-style-type: none"> <li>Corrections</li> </ul>	00	00	00

• Changes to the start date of the crediting period of component project activities	00	00	00
• Inclusion of a monitoring plan	00	00	00
• Permanent changes to the registered monitoring plan or permanent deviation of monitoring from the applied methodology, standardized baseline or other applied standards or tools	00	00	00
• Changes to the programme design of project design	00	00	00
• Changes specific to afforestation and reforestation component project activities	00	00	00
Compliance of the registered monitoring plan with the methodology including applicable tool(s) and standardized baseline	00	00	00
Compliance of monitoring activities with the registered monitoring plan	00	00	00
• Data and parameters fixed ex ante or at renewal of crediting period	00	00	00
• Data and parameters monitored	00	00	00
• Implementation of sampling plan	00	00	00
Compliance with the calibration frequency requirements for measuring instruments	00	00	00
Assessment of data and calculation of emission reductions or net removals	00	00	00
• Calculation of baseline GHG emissions or baseline net GHG removals by sinks	00	00	00
• Calculation of project GHG emissions or actual net GHG removals by sinks	CL03, CL04 and CL05	CAR04	00
• Calculation of leakage GHG emissions	00	CAR02	00
• Summary of calculation of GHG emission reductions or net GHG removals by sinks	00	00	00
• Comparison of actual GHG emission reductions or net GHG removals by sinks with estimates in included CPA	00	00	00
• Remarks on difference from estimated value in included CPA	00	00	00
Assessment of reported sustainable development co-benefits	00	00	00
Global stakeholder consultation	00	00	00
Others (please specify)			
Crediting period	00	00	00
KPT, WBT and Usage survey	CL10	CAR03, CAR05	00
Sampling	CL07	00	00
Lifetime of the equipment	00	CAR08, CAR09	00
Document/Records submission	00	CAR01, CAR07	00
Double counting	CL08	00	00
Compliance of the monitoring report with the monitoring report form	00	CAR10	
<b>Total</b>	10	10	00

## SECTION E. Verification findings

### E.1. General

#### E.1.1. Compliance of the monitoring report with the monitoring report form

<b>Means of verification</b>	The verification team determined whether the monitoring report was completed using the valid version of the applicable monitoring report form. The verification
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	team has checked whether all the sections of the monitoring report follows the guidelines provided in the template itself.
<b>Findings</b>	CAR10 was raised in this section.
<b>Conclusion</b>	The verification team concludes that the monitoring report provides all the information in accordance with the valid version of the CDM-PoA-MR-FORM (version 02.0) <sup>16/</sup> and the instructions therein for filling the CDM-PoA-MR-FORM. The monitoring report has been prepared in line with VVS-PoA, version 02.0.

### E.1.2. Remaining forward action requests from validation and/or previous verifications

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The verification team has reviewed the validation report and observed that there was no FAR. EPIC has not raised a forward Action Request (FAR) during this verification process.

### E.1.3. CPAs considered for verification and covered in this report

Title and UNFCCC reference number of the CPA included in the PoA as of the end of this monitoring period	Is the CPA considered for this verification? (yes/no)	The date when the CPA was included	Version of the PoA-DD	Confirmation that a request for issuance including the CPA has been published for the previous monitoring period (Y/N)
Domestic Cooking Stoves in Maputo (Mozambique) - (9981-0001)	Yes	10/10/2014	05	Yes. FVR for previous monitoring period where CPA 1 is included was uploaded already. (Issuance request number: 9981-MP1-IRP4)

## E.2. Programme of activities

### E.2.1. Compliance of the programme implementation with the registered programme design document

<b>Means of verification</b>	The verification team determined the conformity of the actual project activity and its operation with the registered project design document. EPIC has, by means of a desk review and an on-site visit, assessed that all physical features of the project activity in the registered PoA-DD <sup>2/</sup> are in place, and that the project participants have operated the project as per the registered PoA-DD <sup>2/</sup> .
<b>Findings</b>	CL01 and CL02 were raised in this section.
<b>Conclusion</b>	The verification team by means of an on-site inspection and document review concludes that the project activity was implemented and operated as per the registered PoA-DD and validated CPA-DD and that all physical features of the project are in place. A total of 1,819 "CH-2200" model charcoal cook stoves of Envirofit were distributed during January 2015 to November 2015 in this CPA01; (resultant usage rate being 92% in 2016 and 25.43% in 2017). During the monitoring period, no cook stoves were distributed. The cook stoves can be easily tracked using cook stove IDs punched on them. Thus the verification team states that the implementation of the project matches with that mentioned in the registered PoA-DD and CPA-DD.

### E.2.2. Implementation and operation of the management system

<b>Means of verification</b>	The verification team determined the roles and responsibilities, training arrangements and capacity development, procedure for technical review of inclusion of CPA's, data management responsibilities, detailed record-keeping system for each CPA under the PoA, and how the process performance documentation, and relevant evidences are explained in the CPA-DD <sup>3/</sup> .
<b>Findings</b>	CL09 was raised in this section
<b>Conclusion</b>	Verification team evaluated the management systems in place to implement the monitoring of the project activity. This included the management structure, records and document control process, procedures for training, continuous improvement of the PoA management system, record keeping system, procedures for double counting. The PoA management system including the record-keeping system and

	<p>the management structure has been explained in section C of the registered PoA DD. During the course of verification, verification team based on review of section B.1 of the monitoring report, supporting documents and interview/observation has assessed this management system.</p> <p>The verification team confirms that the monitoring management systems of the CDM PoA are in place; with the responsibilities properly identified and in place as described.</p>
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### E.2.3. Post-registration changes

#### E.2.3.1. Temporary deviations from the registered monitoring plan, applied methodology or applied standardized baseline

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There is no such change

#### E.2.3.2. Corrections

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There are no corrections in this monitoring period.

#### E.2.3.3. Inclusion of a monitoring plan

&gt;&gt;

Not applicable

#### E.2.3.4. Permanent changes to the registered monitoring plan or permanent deviation of monitoring from the applied methodology, standardized baseline or other applied standards or tools

&gt;&gt;

There is no such change

#### E.2.3.5. Changes to the programme design or project design

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There is no such change.

#### E.2.3.6. Change of coordination/managing entity

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There is no such change.

#### E.2.3.7. Changes specific to afforestation and reforestation activities

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Not applicable as the project does not involve afforestation and reforestation activity.

### E.3. Component project activities

#### E.3.1. Compliance of the CPA implementation with the included CPA design document

<b>Means of verification</b>	The verification team determined how the generic CPA is part of a PoA-DD and checked how each technology/measure, methodology and combination thereof, or that technologies/measures have been combined in one generic CPA-DD in accordance with the relevant requirements in the "CDM project standard for programmes of activities, version 02.0".
<b>Findings</b>	No CAR/CL was raised in this section
<b>Conclusion</b>	The verification team concludes that the CPA description of the project contained in the registered CPA-DD to be complete and accurate. The CPA-DD complies with the relevant methodology, tools, forms and guidance at the time of CPA-DD submission for registration/inclusion. A total of 1,819 "CH-2200" model charcoal cook stoves of Envirofit were distributed during January 2015 to November 2015 in this CPA01; (usage rate being 92% in 2016 and 25.43% in 2017). During the monitoring period, no cook stoves were distributed. The cook stoves can be easily tracked using cook stove IDs punched on them. Thus the verification team states

	that the implementation of the project matches with that mentioned in the registered PoA-DD <sup>/2/</sup> , CPA-DD and validated CPA-DD.
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### E.3.2. Post-registration changes

#### E.3.2.1. Temporary deviations from registered monitoring plan, applied methodology or applied standardized baseline

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Annual KPT was conducted in 24<sup>th</sup> October 2016 to 27<sup>th</sup> October 2016. As per the CPA-DD, the next KPT should have happened in 24<sup>th</sup> October 2017. But to some practical reasons, it was found started only on 13<sup>th</sup> November 2017 (more than one year). Accordingly, CME considered KPT 2017 (KPT 2017 is more conservative than KPT 2016) for the whole monitoring period. This temporary deviation is valid for this monitoring period only. Accordingly, CME made necessary modifications in the monitoring report.

#### E.3.2.2. Corrections

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As per the MR, Post registration correction is presented in PRC ref. PRC-9981-001 with effective approval date on 25th of October 2018. The verification team checked the UNFCCC website and accepted the same as correct. .

#### E.3.2.3. Changes to the start date of the crediting period of component project activities

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There is no such change.

#### E.3.2.4. Inclusion of a monitoring plan

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Not applicable as monitoring plan was part of the validated CPA

#### E.3.2.5. Permanent changes to the registered monitoring plan or permanent deviation of monitoring from the applied methodology, standardized baseline, or other applied standards or tools

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There is no such change.

#### E.3.2.6. Changes to the programme design or project design

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As per the MR, Post registration correction is presented in PRC ref. PRC-9981-001 with effective approval date on 25th of October 2018. The verification team checked the UNFCCC website and accepted the same as correct.

#### E.3.2.7. Changes specific to afforestation and reforestation component project activities

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Not applicable as the project does not involve afforestation and reforestation activity.

### E.3.3. Compliance of the registered monitoring plan with the methodology including applicable tool(s) and standardized baseline

<b>Means of verification</b>	The verification team determined whether the registered monitoring plan is in accordance with the applied methodology <sup>/3/</sup> including applicable tools.
<b>Findings</b>	CAR02 and CAR09 were raised in this section
<b>Conclusion</b>	The verification team is able to confirm that the monitoring plan contained in the registered CPA-DD is in accordance with the approved methodology applied i.e., AMS-II.G (version 05). The monitoring plan contained in the PoA-DD/CPA-DD is in accordance with the approved methodology applied by the project activity and its applicable tools.

**E.3.4. Compliance of monitoring activities with the registered monitoring plan****E.3.4.1. Data and parameters fixed ex ante or at renewal of crediting period**

<b>Means of verification</b>	The verification team has determined whether all ex-ante parameters used for emission reduction calculation stated in the registered monitoring plan are used appropriately as per the registered CPA-DD.
<b>Findings</b>	No CAR/CL was raised in this section
<b>Conclusion</b>	Verification team confirms that the data and parameters fixed ex-ante are in compliance with the registered CPA-DD and monitoring plan. Please refer Appendix 5 for details.

**E.3.4.2. Data and parameters monitored**

<b>Means of verification</b>	The verification team has determined whether the registered monitoring plan has been properly implemented and followed by the PP that the monitoring has been carried out in accordance with the registered monitoring plan.
<b>Findings</b>	No CAR/CL was raised in this section
<b>Conclusion</b>	<p>The verification team has assessed the data and parameter monitored during the monitoring period and confirms that all the ex-ante and ex-post parameters are monitored in accordance with the approved monitoring plan and applied methodology. Please refer Appendix 5 for details.</p> <p>In the usage survey (conducted biennially as required by the methodology) a sample size (52 households in 2016 and 52 households in 2017) for this monitoring period was set by PP as calculated in the separate Excel spreadsheet, in line with the applied methodology, is at least 95/10 (a 95% confidence interval and a 10% margin of error). The required confidence/precision level was not for survey 2017. The required confidence/precision level was met for survey 2016. Please refer Appendix 5 for details.</p> <p>And for KPT, (conducted annually), sample size (42 households for KPT 2016 and 37 households for KPT 2017) was set by PP as calculated in the separate Excel spreadsheet, in line with the applied methodology. The minimum sample size required for KPT 2016 and KPT 2017 was calculated to be 37 only. But as a conservative measure, CME has taken 42 samples during KPT 2016. The required precision of least 90/10 (a 90% confidence interval and a 10% margin of error) is applied in line with the applied methodology<sup>2</sup> and the required confidence/precision level was met. Please refer Appendix 5 for details.</p>

**E.3.4.3. Implementation of sampling plan**

<b>Means of verification</b>	The verification assessed whether the compliance of the sampling efforts and surveys with the registered sampling plan in accordance with the "Guidelines for sampling and surveys for CDM project activities and programme of activities" if PP had applied a sampling approach to determine data and parameters monitored.
<b>Findings</b>	CL07 was raised in this section
<b>Conclusion</b>	<p>The verification team was able to confirm that "Simple random sampling approach was followed by PP as a sampling approach for monitoring. The monitoring plan contained a detailed description in accordance with the "Guidelines for sampling and surveys for CDM project activities and programme of activities", version 04<sup>13/</sup>.</p> <p>In the usage survey (conducted biennially as required) a sample size (52 households in 2016 and 52 households in 2017) for this monitoring period was set by PP as calculated in the separate Excel spreadsheet, in line with the applied methodology, is at least 95/10 (a 95% confidence interval and a 10% margin of error). The required confidence/precision level was not met for survey 2017. Hence lower bound value was used. The required confidence/precision level was met for survey 2016. Please refer Appendix 5 for details.</p> <p>And for KPT, (conducted annually), sample size (42 households for KPT 2016 and 37 households for KPT 2017) was set by PP as calculated in the separate Excel spreadsheet, in line with the applied methodology. The minimum sample size required for 2016 and 2017 was calculated to be 37 only. But as a conservative</p>

<sup>2</sup> 9981-0001\_Project KPT Report 2015 and 9981-0001\_Project KPT Report 2016

	measure, CME has taken 42 samples for the KPT 2016. The required precision of least 90/10 (a 90% confidence interval and a 10% margin of error) is applied in line with the applied methodology <sup>3</sup> and the required confidence/precision level was met. Please refer Appendix 5 for details.
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#### E.3.4.4. Compliance with the calibration frequency requirements for measuring instruments

Means of verification	The verification team determined whether the calibration of the measuring equipment that has an impact on the claimed emission reductions is conducted by the PP at a frequency specified in the registered monitoring plan.		
Findings	No CAR/CL was raised in this section		
Conclusion	The key monitoring equipment used for conducting the stove efficiencies is weighing scale. The appropriate QA/QC procedures have been followed for the monitoring parameters.		
	The verification reviewed the calibration reports and observed the following. The scales used are calibrated before put into use. The validity is 06 months from the calibration date. Model and serial number of the scale and that mentioned in the calibration certificate matches. Hence accepted.		
	KPT dates for CPA1	Calibration date	Calibration agency
	24 <sup>th</sup> October 2016 to 27 <sup>th</sup> October 2016	24 <sup>th</sup> October 2016  Used equipments were BECT 0014 and BECT 0016	Biomass Energy Certification & Testing Centre (BECT)
	13 <sup>th</sup> November 2017 to 16 <sup>th</sup> November 2017	6 <sup>th</sup> November 2017 Used equipments were MAP1, MAP2 and MAP3	Dipartimento di Scienze delle Produzioni Agroalimentari e dell'Ambiente, Università degli Studi di Firenze (DISPAA) – University of Florence, Italy
	The weighing scale used for the monitoring of parameters is Digital Spring Scale WeiHeng 40 kg max.; 10 gr. Precision. Calibration scale: Ohaus Ranger 3000 Series; 0.1 gr precision using a 5 kg certified reference weight. The identified standard deviation of the spring scales used for the KPT was 6.1 gr. Calibration performed is valid for the instruments used in the monitoring.		

#### E.3.5. Assessment of data and calculation of emission reductions or net removals

##### E.3.5.1. Calculation of baseline GHG emissions or baseline net GHG removals by sinks

<b>Means of verification</b>	The verification team assessed whether the data and calculations of baseline emission resulting from the registered CPA-DD is correct. The verification team has checked whether calculations of baseline GHG emissions have been carried out in accordance with the formulae and methods described in the registered monitoring plan.
<b>Findings</b>	No CAR/CL was raised in this section
<b>Conclusion</b>	<p>The equations for baseline emissions, as provided in the monitoring report<sup>(02)</sup> and confirmed with the registered CPA-DD and the methodology AMS-II.G, version 05 are:</p> $ER_y = B_{y,savings} * f_{NRB,y} * NCV_{biomass} * EF_{projected\_fossilfuel} * N_{y,i}$ <p>Where:</p> <p>ER<sub>y</sub> = Emission reductions during the year y in tCO<sub>2</sub>e</p> <p>B<sub>y,savings</sub> = Quantity of woody biomass that is saved in tonnes per device</p> <p>f<sub>NRB,y</sub> = Fraction of woody biomass saved by the project activity in year y that can be established as non-renewable biomass using survey methods or government data or default country specific fraction of non-renewable woody biomass (f<sub>NRB</sub>) values available on the CDM</p>

<sup>3</sup> 9981-0001\_Project KPT Report 2016 and 9981-0001\_Project KPT Report 2017

website

$NCV_{biomass}$  = Net calorific value of the non-renewable woody biomass that is substituted (IPCC default for wood fuel, 0.015 TJ/tonne, wet basis)

$EF_{projected\_fossilfuel}$  = Emission factor for the substitution of non-renewable woody biomass by similar consumers. Use a value of 81.6 tCO<sub>2</sub>/TJ

$N_{y,i}$  = Number of project devices of type i operating in year y

#### Determination of $B_{y,savings}$

In order to determine ex post  $B_{y,savings}$  equation 2 of Option 1 described in paragraph 12 of AMS-II.G is chosen and therefore, the following equation is used:

$$B_{y,saving} = B_{old} - B_{y,new,KPT}$$

Where:

$B_{y,savings}$  = Quantity of woody biomass that is saved in tonnes per device

$B_{old}$  = Quantity of woody biomass used in the absence of the project activity in tonnes per device

$B_{y,new,KPT}$  = Annual quantity of woody biomass used in year y in tonnes per device, measured as per the Kitchen Performance Test (KPT) protocol

The verification team confirms that equations for baseline emissions provided in the monitoring report and confirmed with the registered CPA-DD and the methodology AMS-II.G, version 05

Parameter	Description	Unit	Value	Data Source
$B_{old}$	Quantity of woody biomass used in the absence of the project activity in tonnes per device	Tonnes of woody biomass/device/year	6.080 for 2016 and 2017 <sup>4</sup>	Calculated
Usage rate	Based on the survey of 2016, 92%, of the respondents confirmed that the majority were using the project stoves daily This usage rate is applied for the ER calculations ensuring that only the operational devices (i.e. project stoves which are used daily) are included in the ER calculations.  For the survey 2017, usage rate is only 25.43%	Percentage	92% for 2016 and 25.43% for 2017	Survey
LAF	Leakage adjustment factor to account for leakages		0.95	Methodology AMS-G.II

<sup>4</sup> As 25% of the project households have bought 2 project stoves and 75% of the project households have bought 1 project stoves, the weighted average to be used in ER calculations can be calculated as follows:  
 $(0.25 * (0.5 * 6.9486 \text{ t/device/year})) + (0.75 * 6.9486 \text{ t/device/year}) = 6.080 \text{ t/device/year}$ . Please refer cell C40 in the 9981-0001\_ER Calculations, sub-page "ERs per device"

$B_{y,new, KPT}$	Annual quantity of woody biomass used in year y in tonnes per device, measured as per the Kitchen Performance Test (KPT) protocol	Tonnes of woody biomass/device/year	KPT Survey 2016: 2.349 KPT Survey 2017: 2.919	Project KPT, See below
$f_{NRB, y}$	Fraction of woody biomass saved by the project activity in year y that can be established as non-renewable biomass		0.91	National Default Value. See section D.4 of the PoA-DD
$NCV_{biomass}$	Net calorific value of the non-renewable woody biomass that is substituted	TJ/t	0.015	IPCC Default Value
$EF_{projected\_fossilfuel}$	Emission factor for the substitution of non-renewable woody biomass by similar consumers	tCO <sub>2</sub> /TJ	81.6	AMS-II G Default Value
$ER_y$	Emission reductions during the year y in tCO <sub>2e</sub>	tCO <sub>2</sub> /device/year	3.82 for 2016 and 3.18 for 2017 with leakage adjustments	Calculated
Total baseline emissions calculated are 2,120 tCO <sub>2e</sub> .				

**E.3.5.2. Calculation of project GHG emissions or actual net GHG removals by sinks**

<b>Means of verification</b>	There are no project emissions identified in the monitoring methodology.
<b>Findings</b>	There is no CAR/CL raised in this section.
<b>Conclusion</b>	There are no project emissions identified in the monitoring methodology.

**E.3.5.3. Calculation of leakage GHG emissions**

<b>Means of verification</b>	The verification team assessed whether the data and calculations of leakage emission resulting from the registered PDD is correct. The verification team has checked whether calculations of leakage GHG emissions have been carried out in accordance with the formulae and methods described in the registered monitoring plan.
<b>Findings</b>	CAR02 was raised in this section
<b>Conclusion</b>	A default (0.95) Net to gross adjustment factor to account for leakages ( $B_{old}$ ) has been considered by the project and thus it is in line with the requirement of monitoring methodology and the CPA-DD. Total leakages for the current monitoring period is 204 tCO <sub>2e</sub> .

**E.3.5.4. Summary of calculation of GHG emission reductions or net GHG removals by sinks**

<b>Means of verification</b>	The verification team assessed whether the data and calculations of GHG emission reductions achieved resulting from the registered GS project activity. The verification team has checked whether calculations of GHG emission reduction have been carried out in accordance with the formulae and methods described in the registered monitoring plan.
<b>Findings</b>	CL03, CL04, CL05 and CAR04 were raised in this section

<b>Conclusion</b>	Verification team confirms that all parameters are used correctly in the calculations, all results are verifiable and transparent, all assumptions are described and based on verifiable evidence and calculations are done in accordance with the predefined formulae from registered CPA-DD. The total number of ERs achieved during the monitoring period is 1,916 tCO <sub>2</sub> e. In summary, verification team confirms that actual emission reduction is lower than the estimate of the registered (included)/approved CPA-DD for the current monitoring period.
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Title and UNFCCC reference number of the CPA	Baseline emissions or baseline net GHG removals by sinks (tCO <sub>2</sub> e)	Project emissions or actual net GHG removals by sinks (tCO <sub>2</sub> e)	Leakage (tCO <sub>2</sub> e)	GHG emission reductions or net GHG removals by sinks (tCO <sub>2</sub> e)		
				Amount achieved before 1 January 2013	Amount achieved from 1 January 2013	Amount achieved in the entire monitoring period
9981-001	2,120	0	204	0	1,916	1,916
<b>Total</b>	2,120	0	204	0	1,916	1,916

#### E.3.5.5. Comparison of actual GHG emission reductions or net GHG removals by sinks with estimates in included CPA

<b>Means of verification</b>	The verification team has determined the VER achieved during this monitoring period with the estimated value and reason for increase if any.
<b>Findings</b>	No CAR/CL was raised in this section
<b>Conclusion</b>	The total number of ERs achieved during the monitoring period is 1,916 tCO <sub>2</sub> e. In summary, verification team confirms that actual emission reduction is lower than the estimate of the registered (included)/approved CPA-DD for the current monitoring period.

Title and UNFCCC reference number of the CPA	Value estimated in ex ante calculation in the included CPA-DD(s)	Actual values achieved by the CPAs during this monitoring period
9981-001	30,359 <sup>5</sup> tCO <sub>2</sub> e	1,916 tCO <sub>2</sub> e
<b>Total</b>	30,359 tCO <sub>2</sub> e	1,916 tCO <sub>2</sub> e

#### E.3.5.6. Remarks on difference from estimated value in included CPA

<b>Means of verification</b>	The verification team checked the actual values achieved by the CPA during this monitoring period with the values estimated in ex-ante calculation in the included CPA-DD
<b>Findings</b>	No CAR/CL was raised in this section
<b>Conclusion</b>	The CER achieved in this monitoring period is 1,916 tCO <sub>2</sub> e as compared to ex-ante estimates of 30,359 tCO <sub>2</sub> e indicated in the registered CPA-DD. In summary, verification team confirms that actual emission reduction is lower than the estimate of the registered (included) CPA-DD for the current monitoring period. Hence no justification is required.

#### E.3.6. Assessment of reported sustainable development co-benefits

<b>Means of verification</b>	NA
<b>Findings</b>	NA
<b>Conclusion</b>	NA

#### E.3.7. Global stakeholder consultation

<b>Means of verification</b>	The project MR was webhosted on UNFCCC website
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<sup>5</sup> Period 12/07/2016 to 30/11/2016



<b>Findings</b>	There is no CAR/CL raised in this section.
<b>Conclusion</b>	The project MR was webhosted on UNFCCC website No comments were received during commenting period.

## SECTION F. Internal quality control

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After the completion of assessment by the verification team all the relevant documentation is submitted to a qualified, Independent Technical reviewer as part of EPIC' internal quality control system. A Technical reviewer team is appointed to review the draft final verification report (Draft FVR). The comments made by the Technical reviewer team are taken into consideration and incorporated in the final FVR. The technical reviewer team assesses whether all the reporting requirements have been fulfilled and whether all the issues raised were closed satisfactorily by the verification team with justification. The technical review process can also raise issues in this regard which is resolved further by the verification team to the satisfaction of the technical reviewer. The technical reviewer team either accepts or rejects the report made by the verification team. The final report (after resolutions of all findings) is then submitted to the Head-operations for review and approval.

## SECTION G. Verification opinion

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EPIC Sustainability Services Private Limited (EPIC) has been contracted by Fondazione AVSI to undertake the independent verification of the registered CDM PoA titled "Domestic Cooking Stoves substitution programme in Mozambique" (PoA ID: 9981) covering CPA 001 titled "Domestic Cooking Stoves in Maputo (Mozambique)". The objectives of this verification are to verify and certify emission reductions reported for project activity of 01/12/2016 to 31/12/2017 (first and last day included); and to verify that the data reported are complete and transparent.

The verification team determines the conformity of the actual project activity and its operation with the validated project design document. EPIC has, by means of a desk review and an on-site visit, assessed that all physical features of the proposed project activity proposed in the PoA-DD / CPA-DD are in place, and that the project participants have operated the project activity as per the PoA-DD<sup>[2]</sup>. Thus the verification team has concluded that the project activity was implemented and operated as per PoA-DD, and that all physical features of the project are in place.

The verification team, based on the site visit and document review, was able to conclude that the project activity has been commissioned and implemented as per the PoA-DD<sup>[2]</sup>. The start date of this monitoring period is 01/12/2016

The monitoring report for this monitoring period is in compliance with the monitoring plan of the validated PDD. The verification team was able to confirm that the monitoring plan contained in the registered PDD is in accordance with the approved methodology applied by the project activity "AMS-II.G. Energy efficiency measures in thermal applications of non-renewable biomass" (Version 05.0) and its applicable tools. It was confirmed during the site visit that the project activity during the current periodic verification is in accordance with the applicability criteria of the methodology.

The management of project participants is responsible for the preparation and reporting of GHG emissions data, and the reported GHG emission reduction on the basis set out within the project monitoring plan. The development and maintenance of records and reporting procedures in accordance with the monitoring plan, including the calculation and determination of GHG emission reduction from the project is the responsibility of the management of the project. It is the responsibility of EPIC to express an independent GHG verification opinion on the GHG emissions reductions and on the calculation of GHG emission reductions from the project for this monitoring period based on the reported emission reduction in the monitoring Report.

EPIC's verification approach was based on the requirements as defined under the Kyoto Protocol, Marrakech accord, as well as those defined by the CDM Executive board. EPIC's approach was risk-based, drawing on an understanding of the risks associated with reported GHG emissions data and the controls in place to mitigate these. The examination includes assessment of evidence relevant to the amounts and disclosures in relation to the project's GHG emission reductions for this monitoring period.

The verification team has planned and performed the work to obtain the information and explanations that is considered necessary to provide sufficient evidence for it to give reasonable assurance that the amount of calculated GHG emission reductions for this monitoring period were fairly stated.

**CDM-PoA-VCR-FORM**

The verification team has verified that the information included in the revised monitoring report is correct and that the emission reduction achieved has been determined correctly. Based on the information seen and evaluated, the verification team confirms the following:

Project title:	Domestic Cooking Stoves substitution programme in Mozambique (9981)
CDM PoA id:	9981
CPA 1 Title:	Domestic Cooking Stoves in Maputo (Mozambique)
Crediting period of included CPA01:	01/01/2015 – 31/12/2021 (Renewable)
PoA-DD Registered CPA-DD Validated CPA-DD Monitoring report of the included CPA01.	Version 05, dated 10/10/2014 Version 05, dated 10/10/2014 Version 09, dated 24/09/2018 Version 5.0 dated 08/02/2019
Methodology used for verification:	AMS-II.G. Energy efficiency measures in thermal applications of non-renewable biomass” (Version 05.0)
Applicable monitoring period:	01/12/2016 to 31/12/2017 (first and last day included), third verification
Emissions reductions verified:	1,916 tCO <sub>2</sub> e

**SECTION H. Certification statement**

&gt;&gt;

EPIC Sustainability Services Private Limited (EPIC) has carried out the independent verification of the registered CDM PoA titled “Domestic Cooking Stoves substitution programme in Mozambique” (PoA ID: 9981) covering CPA 001 titled “Domestic Cooking Stoves in Maputo (Mozambique)” for the monitoring period of 12/07/2016 to 30/11/2016 (first and last day included).

The project participants are responsible for the collection of data in accordance with the monitoring plan and the reporting of GHG emissions reductions from the project activity.

EPIC takes responsibility for issuance of an independent verification statement on the reported GHG emission reductions from the project activity.

The verification was done on the basis of the baseline and monitoring methodology (End-use energy efficiency improvement; “AMS-II.G. Energy efficiency measures in thermal applications of non-renewable biomass” (Version 05.0) and the monitoring report (version 5.0, dated 08/02/2019)<sup>9/</sup>. The verification included checking whether the provisions of the monitoring methodology and the monitoring plan were consistently and appropriately applied and the collection of evidence supporting the reported data.

The emission reductions are calculated correctly and EPIC could certify that the emission reductions from the CDM PoA id: 9981 “Domestic Cooking Stoves substitution programme in Mozambique” for the monitoring period of 01/12/2016 to 31/12/2017 (first and last day included) is 1,916 tonnes of CO<sub>2</sub> equivalent

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## Appendix 1. Abbreviations

Abbreviations	Full texts
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER	Certified Emission Reduction(s)
CL	Clarification request
CME	Coordinating and Managing Entity
CO <sub>2</sub>	Carbon dioxide
CO <sub>2</sub> e	Carbon dioxide equivalent
CPA-DD	Component Project Design Document
DNA	Designated National Authority
FAR	Forward Action Request
GHG	Greenhouse gas(es)
GWP	Global Warming Potential
KPT	Kitchen Performance Test
IPCC	Intergovernmental Panel on Climate Change
MP	Monitoring Plan
MR	Monitoring Report
PDD	Project Design Document
PoA-DD	Programme Design Document
PS	Project Standard
UNFCCC	United Nations Framework Convention on Climate Change
VVS	Clean Development Mechanism Validation and Verification Standard

## Appendix 2. Competence of team members and technical reviewers

The following validation team has been assigned to carry out the verification of the project.

Name	Dr.D.Siddaramu	Mr. R. Vijayaraghavan	Mr Muzima Adelio	Dr.Vishnu	Mr. A. Prabu Das
Role	Lead Auditor	Auditor	Host country expert	Technical Reviewer	Technical expert assisting Technical review
Competence in relevant sectors	Sector 1	Sector 1 and 13	Sector 03	NA	Sector 03
Responsibility	Document review, onsite, DVer preparation, DVer resolution, FVer preparation	Document review, DVer preparation, FVer preparation	Document review, onsite	Technical review	Assisting in Technical review

**Dr. D. Siddaramu** holds a M.Sc., Ph.D in Environmental Science, with over 16 years of experience. A qualified Clean Development Mechanism (CDM) Lead Auditor, successfully registered more than 30 projects with United Nations Framework Convention on Climate Change (UNFCCC) and Verified Carbon Standard registry (VCS) registry; well versed with both National and International legal regime. Has hands on experience in Environmental Impact Assessment (EIA) studies pertaining to different Ecosystem; monitoring, collection & analyzing environmental samples and conducting socio-economic surveys; data analysis. Conducting CDM/VCS audits, preparation of validation protocols and reports. He is qualified for Sector 1 based on CDM accreditation requirements and qualified lead auditor as per GS4GG EPIC accreditation.

**Mr Adelio Muzuma** holds a Degree in Applied Physics. From 2016 onwards has been working as freelancer for data collection and Surveys for household and community level projects implemented in multiple locations in Mozambique. He has performed several verification, validation, satisfaction surveys, CES, KPT based on random visits to beneficiaries of the systems and reported to the implementing partners. He has working

knowledge of the sector and is qualified as Technical and Host Country Expert for TA 3.1 Energy demand in accordance with the procedures of EPIC.

**Mr. R. Vijayaraghavan** holds BE in Mechanical Engineering, M.Tech in Energy Conservation and Management and MBA in Technology Management. He is certified as Energy Auditor by Bureau of Energy Efficiency (BEE), Government of India. He has 10 years of working experience in energy sector including validation / verification of fifty CDM and VCS/GS projects and has undergone extensive training on CDM validation and verification and has been qualified as technical reviewer for several sectoral scopes. He is also an ISO 26000 lead auditor certified by Professional Evaluation and Certification Board (PECB).

**Dr. G. Vishnu** holds a Masters and Doctorate in Environmental Science. He has around 8 years of experience in the field of research and consultancy related to water, wastewater, solid waste management systems, implementation of new, Cleaner Production technologies and biomass assessment studies. He has more than four years" experience in validation verification of more than thirty CDM, projects and has undergone extensive training on GHG validation and verification. He is a Lead Auditor for various technical areas. He is also an ISO 26000 lead auditor and ISO 50001 auditor certified by Professional Evaluation and Certification Board (PECB). He is a Certified Sustainability Assurance Practitioner (CSAP) from AccountAbility, UK. He is qualified as Lead Auditor based on EPICs CDM accreditation procedures.

**Mr. A Prabhu Das**, holds a M.Tech Degree in Energy Conservation and Management and B. Tech Degree in Petro-chemical Technology. He is a certified Energy Auditor by Bureau of Energy Efficiency (BEE), Government of India. He has around 12 years of work experience in Design of biomass Power plants, preparing Techno Economic Feasibility Reports (TEFR), carrying out energy audits, of which last 9 years have been in CDM consultancy and validation services. He has undergone extensive training on CDM validation and verification and is a qualified lead auditor for several scopes in accordance with procedures of EPIC Sustainability Services Pvt. Ltd. He is also an ISO 50001 lead auditor certified by Professional Evaluation and Certification Board (PECB).

### Appendix 3. Documents reviewed or referenced

No.	Author	Title	References to the document	Provider
1	UNFCCC	Validation and Verification Standard for PoA, version 2.0	<a href="http://cdm.unfccc.int/Reference/index.html">http://cdm.unfccc.int/Reference/index.html</a>	UNFCCC
2	PP	Project Design Document (POA-DD), version 05, dated 10/10/2014	<a href="http://cdm.unfccc.int/ProgrammeOfActivities/poa_db/6E3TWBSAG8IVRF/DZCJK12L4X0CYHOM/view">http://cdm.unfccc.int/ProgrammeOfActivities/poa_db/6E3TWBSAG8IVRF/DZCJK12L4X0CYHOM/view</a>	UNFCCC
3	PP	Registered Component Project Design Document (CPA-DD), version 05, dated 10/10/2014	<a href="http://cdm.unfccc.int/ProgrammeOfActivities/poa_db/6E3TWBSAG8IVRF/DZCJK12L4X0CYHOM/view">http://cdm.unfccc.int/ProgrammeOfActivities/poa_db/6E3TWBSAG8IVRF/DZCJK12L4X0CYHOM/view</a>	UNFCCC
4	PP	Validated Component Project Design Document (CPA-DD), version 09, dated 24/09/2018	<a href="http://cdm.unfccc.int/ProgrammeOfActivities/poa_db/6E3TWBSAG8IVRF/DZCJK12L4X0CYHOM/view">http://cdm.unfccc.int/ProgrammeOfActivities/poa_db/6E3TWBSAG8IVRF/DZCJK12L4X0CYHOM/view</a>	UNFCCC
5	Validation DoE	Validation Reports of POA-DD and CPA-DD	<a href="http://cdm.unfccc.int/ProgrammeOfActivities/poa_db/6E3TWBSAG8IVRF/DZCJK12L4X0CYHOM/view">http://cdm.unfccc.int/ProgrammeOfActivities/poa_db/6E3TWBSAG8IVRF/DZCJK12L4X0CYHOM/view</a>	UNFCCC
6	PP	Monitoring Report, version 05, dated 08/02/2019	-	PP
7	PP	9981-0001_Stove Selling Database 2015-2017		PP
8	PP (Third party)	Kitchen Performance Test (KPT) dated 2016 and 2017	-	Third party (GIZ)
9	PP	9981-0001_Usage Survey Database 2016 and 9981-	-	PP

		0001_Usage Survey Database 2017		
10	PP	User Agreements		PP
11	UNFCCC	Guidelines for Application of materiality in verifications	<a href="http://cdm.unfccc.int/">http://cdm.unfccc.int/</a>	UNFCCC
12	PP	Emission reduction calculation sheet	-	PP
13	PP	First MR, version 01	-	PP
14	UNFCCC	AMS-II.G. Energy efficiency measures in thermal applications of non-renewable biomass, version 05.0	<a href="http://cdm.unfccc.int/methodologies/DB/HLXIKEIBAXBE4EHO24H5IAB824MBD8">http://cdm.unfccc.int/methodologies/DB/HLXIKEIBAXBE4EHO24H5IAB824MBD8</a>	UNFCCC
15	UNFCCC	Standard for sampling and surveys for CDM project activities and Programme of Activities, version 07	<a href="http://cdm.unfccc.int/">http://cdm.unfccc.int/</a>	UNFCCC
16	UNFCCC	CDM-PoA-MR-FORM, version 02.0	<a href="http://cdm.unfccc.int/Reference/PDDs_Forms/index.html">http://cdm.unfccc.int/Reference/PDDs_Forms/index.html</a>	UNFCCC
17	Brouwer, R. and Falcão, M. P)	Brouwer and Falcão, 2004 (Brouwer, R. and Falcão, M. P., 2004	-	Third party

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

Table 1. Remaining FAR from validation and/or previous verification

<b>FAR ID</b>	NIL	<b>Section no.</b>	NA	<b>Date:</b> 03/04/2018
<b>Description of FAR</b>				
<b>Project participant response</b>				<b>Date:</b> DD/MM/YY
<b>Documentation provided by project participant</b>				
<b>DOE assessment</b>				<b>Date:</b> DD/MM/YY

Table 2. CL from this verification

<b>CL ID</b>	01	<b>Section no.</b>	MR	<b>Date:</b> 10/05/2018
<b>Description of CL</b>				
<p>Please clarify;</p> <ol style="list-style-type: none"> <li>1) In Table-2 (section A.3 of CPA-DD, version 05, dated 10/10/2014, it is indicated that "...<i>The project involves the distribution of around 10,000 energy efficient stoves to households during the years 2014, 2015 and 2016....</i>"</li> <li>2) In section C.1, MR version 01, dated 06/02/2018, it is indicated that "...<i>The stove distribution started on January 2015 and by 31<sup>st</sup> of December 2017 totally 1819 energy efficient stoves has been distributed. In the latter project years additional stoves are foreseen to be distributed under this CPA..</i>"</li> </ol> <p>But, as per ER sheet, the "Theoretical maximum number of devices are 8,386 for 2015, 9,392 for 2016 and 10,720 for 2017. CME to clarify on this apparent reduction in the number of cook stoves in the monitoring period as per MR and increase in ER sheets.</p>				
<b>Project participant response</b>				<b>Date:</b> 16/05/2018
<p>The CPA-DD (Section A.3 of the CPA-DD) includes the description of the stove distribution plan made <u>ex-ante</u>. The ex-ante defined plan was, in fact, was to distribute around 10,000 stoves between the years 2014-2016.</p> <p>The real distribution which has been realized (until 31/12/2017) is instead only 1,819 stoves as described in the MR (Section C.1). This same is indicated in the ER Spreadsheet (see the sub-page "Total CERs", column C) which indicates the number of stoves distributed each month. The number of operational stoves (indicated in the column D) is based on the Usage Rate determined through the project monitoring.</p> <p>The reduction in the number of the distributed stoves is caused mainly by two factors. First of all, for logistical reasons the stove distribution was delayed and didn't start in 2014 but only in 2015. Moreover, in the field some difficulties with the organizing of the stove distribution teams have been faced which have caused delays in the monthly distribution and less stoves / month has been distributed as was foreseen ex-ante. In addition, there project implementer has faced some additional financial challenges to order the foreseen quantity of the cookstoves as no ERPA for the future carbon credits has not been yet signed or other financial support received as was anticipated in ex-ante situation. For this reason, the distribution has been stopped since December 2015.</p> <p>To clarify the number of the distributed stoves, the section C.1 of the MRs have been re-written in more clear way. Moreover, the ER Spreadsheet has been updated (theoretical maximum numbers of devices indicated in the sub-page "Energy Savings" of the ER Spreadsheet have been deleted).</p>				
<b>Documentation provided by project participant</b>				

9981-0001_Monitoring Report I_ver02 9981-0001_Monitoring Report II_ver02 9981-0001_Monitoring Report III_ver02 9981-0001_ER Calculations for MR I, II and III_ver02		
<table border="1"> <tr> <td><b>DOE assessment</b></td> <td><b>Date:</b> 11/06/2018</td> </tr> </table>	<b>DOE assessment</b>	<b>Date:</b> 11/06/2018
<b>DOE assessment</b>	<b>Date:</b> 11/06/2018	
The clarification by PP on the planned and actually number of stoves distributed is now clearly re-written in section C.1 of the MR. The ER spreadsheets were checked and found ok. Hence acceptable and CL01 is closed		

<b>CL ID</b>	02	<b>Section no.</b>	MR	<b>Date:</b> 10/05/2018												
<b>Description of CL</b>																
Justify, how 1. Usage survey conducted during 10/10/2016 – 10/12/2016 and 16/11/2017 – 01/12/2017 2. Kitchen Performance Test (KPT) conducted during 23/11/2015 – 26/11/2015 (37), 24/10/2016 – 27/10/2016 (42) and 13/11/2017 – 16/11/2017 (52) holds good for the cook stoves distributed/operating in the crediting period start date 09/01/2015 and post November 2017																
<b>Project participant response</b>				<b>Date:</b> 16/05/2018												
<u><b>Justification on the frequency and timing:</b></u> In line with to the applied AMS-II.G methodology (paragraph 22 and 23) and the registered CPA-DD (Section D.7.2) the KPT is to be made every year and the Usage Survey at least every two years. Moreover, the registered CPA-DD indicates that the monitoring activities should be conducted at latest 6 months after the end of the specific monitoring period (Section D.7.2). During the crediting period covered by this verification KPT has been made annually and Usage Survey at least every two years, all within the 6 months limit and thus they are fulfilling the above indicated requirements regarding the monitoring frequency and timing. Consequently, the made monitoring activities can be hold good for the cookstoves distributed/operating at the crediting period start date 01/01/2015 and as post November 2017. The below table summarizes the timing of the monitoring activities made for CPA 1																
<table border="1"> <thead> <tr> <th>Monitoring Survey</th> <th>Year 2015</th> <th>Year 2016</th> <th>Year 2017</th> </tr> </thead> <tbody> <tr> <td>KPT</td> <td>23/11/2015 – 26/11/2015</td> <td>24/10/2016 – 27/10/2016</td> <td>13/11/2017 – 16/12/2017</td> </tr> <tr> <td>Usage Survey</td> <td>N/A</td> <td>10/10/2016 – 16/11/2016</td> <td>16/11/2017 – 01/12/2017</td> </tr> </tbody> </table>					Monitoring Survey	Year 2015	Year 2016	Year 2017	KPT	23/11/2015 – 26/11/2015	24/10/2016 – 27/10/2016	13/11/2017 – 16/12/2017	Usage Survey	N/A	10/10/2016 – 16/11/2016	16/11/2017 – 01/12/2017
Monitoring Survey	Year 2015	Year 2016	Year 2017													
KPT	23/11/2015 – 26/11/2015	24/10/2016 – 27/10/2016	13/11/2017 – 16/12/2017													
Usage Survey	N/A	10/10/2016 – 16/11/2016	16/11/2017 – 01/12/2017													
<u><b>Justification on the representativeness:</b></u> In line with to the applied AMS-II.G methodology (paragraph 22 and 23) and the registered CPA-DD (Section D.7.1) the KPT has been made on a representative sample of all operating devices and Usage Survey on a representative sample of all devices. In fact, the CDM Guidelines for sampling and surveys for CDM project activities and programme of activities has been followed for determining the required sample sizes. Moreover, the Section E.3 of the MRs include the demonstration that the required confidence/precision level was met and that the samples were randomly selected and are representative of the population.																
<b>Documentation provided by project participant</b>																
For further information the previously provided documents may be referred: - 9981-0001_Project KPT Report 2015, 9981-0001_Project KPT Report 2016 and 9981-0001_Project KPT Report 2017 - 9981-0001_Usage Survey Database 2016 and 9981-0001_Usage Survey Database 2017																
<b>DOE assessment</b>				<b>Date:</b> 11/06/2018												
The justification on KPT and usage survey by PP is acceptable. Usage Survey Database 2016 and 2017, KPT Report 2015, 2016 and 2017 were checked and found ok. Hence CL02 is closed																

<b>CL ID</b>	03	<b>Section no.</b>	A.3 of CPA DD	<b>Date:</b> 10/05/2018
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<b>Description of CL</b>	
The PP is requested to clarify if the use of different fuels is foreseen, and in this case how the diversity is managed in the calculation of emission reductions, in particular with respect to conversion factors.	
<b>Project participant response</b>	<b>Date:</b> 16/05/2018
<p>The main cooking fuel used in the project area is charcoal as evident from on the initial Baseline Survey made in the area as well as the from the Usage Surveys. In addition to charcoal, some families are using as secondary cooking fuels gas or electricity. The usage of these fuels is anyhow marginal compared to charcoal usage as described in the MRs.</p> <p>Within this context, there is no need to assume that the introduction of the project cookstoves would have a significant impact on the shares of different fuels used in the area. Therefore, only the changes in the charcoal consumption are included in the ER calculations (in other words, the impact of the additional fuels <u>is not accounted neither in the baseline nor in the project scenario</u>).</p>	
<b>Documentation provided by project participant</b>	
N/A	
<b>DOE assessment</b>	<b>Date:</b> 11/06/2018
The clarification by PP on use of different fuels is clear and that only the changes in the charcoal consumption are included in the ER calculations is acceptable. Hence CL03 is closed	

<b>CL ID</b>	04	<b>Section no.</b>	MR and ER sheets	<b>Date:</b> 10/05/2018
<b>Description of CL</b>				
When "Cook stoves are broken (i.e., not in use) and traditional (old) cook stoves are used", what is the impact and how such issues are accounted in ER calculations. Clarify				
<b>Project participant response</b>				<b>Date:</b> 16/05/2018
<p>The impact of the project cookstoves which are not used are accounted in the ER calculations in two ways:</p> <ul style="list-style-type: none"> <li>- Only the project stoves being operational (in other words, being used daily) are included in the ER calculations. The number of operation stoves is determined through the Usage Survey made in the field. This procedure ensures that the project cookstoves which are not used (for example because they are broken) are excluded from the ER calculations.</li> <li>- Average daily charcoal consumes are measured via KPT procedure which measures the complete charcoal consumption within the project families. This monitoring procedure ensures that the impact of the continued use of traditional cookstoves are accounted in the ER calculations.</li> </ul>				
<b>Documentation provided by project participant</b>				
N/A				
<b>DOE assessment</b>				<b>Date:</b> 11/06/2018
The clarification by PP that, only the project stoves being operational (in other words, being used daily) are included in the ER calculations and project cookstoves which are not used (for example because they are broken) are excluded from the ER calculations is acceptable. The Usage Survey database was checked and found ok. Hence CL04 is closed				

<b>CL ID</b>	05	<b>Section no.</b>	MR and ER sheets	<b>Date:</b> 10/05/2018
<b>Description of CL</b>				
PP needs to clarify that how he has monitored and taken into account in estimation of ER that if traditional/old cook stoves are still operational.				
<b>Project participant response</b>				<b>Date:</b> 16/05/2018

<p>The monitoring has taken into account in estimation of ER the usage of traditional/old cookstoves in two ways:</p> <ol style="list-style-type: none"> <li>1) First of all, to be conservative only the families using the project cookstoves daily have been included in the ER calculations (determined through the Usage Survey)</li> <li>2) Secondly, the monitoring of the project charcoal consumption with the KPT ensures that the total charcoal consumption is accounted in the project scenario (KPT measures the total fuel consumption of the sampled household without making difference if the consumption is made with the project stove or with baseline charcoal stove).</li> </ol>	
<b>Documentation provided by project participant</b>	
9981-0001_ER Calculations for MR I, II and III_ver02	
<b>DOE assessment</b>	<b>Date:</b> 11/06/2018
The clarification by PP on impact of traditional/old cook stoves are still operational on ER calculations is now clear from the ER calculation sheets, checked, found ok and acceptable. Hence CL05 is closed	

<b>CL ID</b>	06	<b>Section no.</b>	MR	<b>Date:</b> 10/05/2018
<b>Description of CL</b>				
Please refer para 256 of Standard - CDM project standard for programmes of activities, Version 01.0 (CDM-EB93-A07-STAN) and accordingly submit a single monitoring report, the report shall contain all monitoring results of all CPAs included in the registered CDM PoA.				
<b>Project participant response</b>				<b>Date:</b> 16/05/2018
The PP has applied the option (b) of the paragraph 256 of the above named CDM standard. Therefore, separate MRs of each CPA under the PoA has been prepared.				
<b>Documentation provided by project participant</b>				
N/A				
<b>DOE assessment</b>				<b>Date:</b> 11/06/2018
The clarification is acceptable. Hence CL06 is closed				

<b>CL ID</b>	07	<b>Section no.</b>	MR	<b>Date:</b> 10/05/2018
<b>Description of CL</b>				
Please clarify how the samples were selected from domestic and non-domestic stove population. Also provide the reference of tools/calculations used for the selection of numbers as well as the determination of the sample sizes in the monitoring report.				
<b>Project participant response</b>				<b>Date:</b> 16/05/2018
<p>As described in the registered CPA-DD, the target population shares similar socioeconomic circumstances and similar baseline cooking habits and can thus be considered homogenous compared to the continued use of the efficient cookstoves. In fact, all the stoves have been bought by local families and no institutional or purely commercial uses of the stoves have been identified by the Usage Surveys. Therefore, PP considers that the used sample selection method (random sample selection chosen out from the whole population or vintage wise populations) is appropriate and that there is no need to make difference between domestic and non-domestic users for the purpose of the sampling.</p> <p>The selection of the sample size has been made, in line with the registered CPA-DD, following the "Guidelines for sampling and surveys for CDM project activities and programme of activities". The sample size calculations are presented in the ER Spreadsheets in the sub-page "Sample size".</p> <p>The clarification regarding the used CDM guideline as well as the mentioning that the sample size calculations are presented in the ER Spreadsheet have been added in the Section E.3. of the MRs.</p>				
<b>Documentation provided by project participant</b>				

9981-0001_Monitoring Report I_ver 02 9981-0001_Monitoring Report II_ver 02 9981-0001_Monitoring Report III_ver 02	
<b>DOE assessment</b>	<b>Date:</b> 11/06/2018
The clarification is acceptable; PP has used "Guidelines for sampling and surveys for CDM project activities and programme of activities" for selecting samples. Hence CL07 is closed	

<b>CL ID</b>	08	<b>Section no.</b>	MR	<b>Date:</b> 10/05/2018
<b>Description of CL</b>				
In section.E, page no.19, it is mentioned that " <i>The families were offered a significant discount in case they gave away their old inefficient stove at the moment of bying the project stove and for this reason basically all the families have disposed at least one inefficient stove...</i> ". Whereas the same was not evident from the discussion with CME and site personal during the site visit.				
<b>Project participant response</b>				<b>Date:</b> 16/05/2018
The wording of Section E has been corrected regarding the discount.				
<b>Documentation provided by project participant</b>				
9981-0001_Monitoring Report I_ver 02 9981-0001_Monitoring Report II_ver 02 9981-0001_Monitoring Report III_ver 02				
<b>DOE assessment</b>				<b>Date:</b> 11/06/2018
Now Section E of the MR is revised for clarity, so acceptable. Hence CL08 is closed				

<b>CL ID</b>	09	<b>Section no.</b>	MR	<b>Date:</b> 10/05/2018
<b>Description of CL</b>				
The entire project data has been submitted by Carbonsink, as per the MR, the CME (i.e., Fondazione AVSI) is in charge for the training of the field staff responsible of the stove distribution and monitoring activities, PP is requested to clarify on how this requirement is met.				
<b>Project participant response</b>				<b>Date:</b> 16/05/2018
In line with the registered CPA-DD (Table D-6) Carbonsink is responsible for preparing the monitoring reports to be provided to DOE. The CME (AVSI Foundation) has further authorized Carbonsink to submit the MRs directly to DOE.  Always in line with the CPA-DD (Table D-6), the CME is in charge of the field staff. In fact, the distribution and monitoring field staff (like stove promoters and Usage Survey implementers) as well as external entities (like GIZ for KPT) have been selected, hired and also trained by the CME. In generally, Carbonsink has been actively included in all of these processes to ensure that the CPA-DD and methodology requirements are fulfilled. In some cases, the CME has moreover authorized Carbonsink to take care directly a part of the training. For example, Carbonsink has organized the initial trainings for the monitoring staff implementing the usage surveys in the field.				
<b>Documentation provided by project participant</b>				
N/A				
<b>DOE assessment</b>				<b>Date:</b> 11/06/2018
The clarification on the role of Carbonsink and Fondazione AVSI is clear and acceptable. Hence CL09 is closed				

<b>CL ID</b>	10	<b>Section no.</b>	MR	<b>Date:</b> 10/05/2018
<b>Description of CL</b>				

As per PoA-DD, section B.7.1 “...*Water-Boiling-Test (WBT) protocol will be carried out in accordance with national standards (if available) or international standards or guidelines. Weighted average values will be used if more than one type of system is being introduced by the project activity*”.

Submit the records for verification as MR is silent on WBT protocol used.

<b>Project participant response</b>	<b>Date:</b> 16/05/2018
<p>In line with the paragraph 23 of the applied methodology (AMS-II.G, ver05) and the Section B.7.1 of the registered PoA-DD, the efficiency of the cookstoves can be monitored using one of the following procedures: (a) Kitchen Performance Test (KPT), (b) Water Boiling Test (WBT) or (c) Controlled Cooking Test (CCT).</p> <p>As indicated in the registered CPA-DD (Section D.7.2), the option (a) Kitchen Performance Test (KPT) has been selected for the monitoring of this CPA and, therefore, only the descriptions related to KPT are included in the MRs.</p>	
<b>Documentation provided by project participant</b>	
N/A	
<b>DOE assessment</b>	<b>Date:</b> 11/06/2018
The clarification is acceptable. Hence CL10 is closed	

**Table 3. CAR from this verification**

<b>CAR ID</b>	01	<b>Section no.</b>	A.2 (PoA-DD, Version 05, dated 10/10/2014)	<b>Date:</b> 10/05/2018
<b>Description of CAR</b>				
<p>As per PoA-DD, Version 05, dated 10/10/2014; under A.2., 1.General operating and implementing framework of PoA, It is mentioned that “<i>Details concerning stove performance, distribution, and assembly will be provided at the CPA level. For each CPA under the proposed PoA stoves will have a unique serial number. Data collected during distribution and monitoring of each CPA will be stored in an electronic data management system, or monitoring database, for a minimum of two years past the crediting period. From this data, the emissions reductions of each CPA in the PoA will be determined. This system will be available for review by the Designated Operational Entity (DOE) during verification of each CPA</i>”.</p> <p>Accordingly submit the documents for verification</p>				
<b>Project participant response</b>				<b>Date:</b> 16/05/2018
<p>The electronic data management system referred in the Section A.2 of the PoA-DD is meaning the totality of the databases, reports and other documents related to each CPA which are stored. The stored documentations are including:</p> <ul style="list-style-type: none"> <li>- databases like stove selling database and Usage Survey database</li> <li>- reports like Baseline Survey and KPT Survey reports</li> <li>- documents like MRs</li> </ul> <p>In line with the PoA, the above-mentioned documents have been already submitted to the DOE for verification.</p>				
<b>Documentation provided by project participant</b>				
<ul style="list-style-type: none"> <li>- 9981-0001_Stove Selling Database</li> <li>- 9981-0001_Usage Survey Database 2016 and 9981-0001_Usage Survey Database 2017</li> <li>- 9981-0001_Baselines Survey - Cooperação CMD_2012</li> <li>- 9981-0001_Project KPT Report 2015, 9981-0001_Project KPT Report 2016 and 9981-0002_Project KPT Report 2017</li> <li>- 9981-0001_Monitoring Report I_ver 02, 9981-0001_Monitoring Report II_ver 02 and 9981-0001_Monitoring Report III_ver 02</li> </ul>				
<b>DOE assessment</b>				<b>Date:</b> 11/06/2018
The requested documents were submitted, checked and found ok. Hence CAR01 is closed				

<b>CAR ID</b>	02	<b>Section no.</b>	MR	<b>Date:</b> 10/05/2018
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Description of CAR	
Provide details as per para 25 of the methodology <i>"In order to assess the leakage described above, monitoring shall include data on the amount of woody biomass saved under the project activity that is used by non-project households/users (who previously used renewable energy sources). Other data on non-renewable woody biomass use required for leakage assessment shall also be collected"</i> .	
<b>Project participant response</b>	<b>Date:</b> 16/05/2018
Like described in Section D.7.2 (page 30) of the registered CPA-DD, to account for leakage a net to gross adjustment factor of 0.95 (option c of paragraph 29 of the applied AMS-II.G methodology) is applied. In this case monitoring of leakage is not required.	
Documentation provided by project participant	
N/A	
<b>DOE assessment</b>	<b>Date:</b> 11/06/2018
The justification for not monitoring leakage provided by PP is now in line with the applied methodology is acceptable. Hence CAR02 is closed	

CAR ID	03	Section no.	MR	Date:	10/05/2018
Description of CAR					
As per the methodology <i>"Biennial monitoring (i.e., monitoring once every two years) may be chosen, if the project proponents are able to demonstrate that the efficiency of the cook stove does not drop significantly as compared to the initial efficiency of the new device, over a time period of two years of typical usage"</i> . Accordingly, provide record/report to justify biennial monitoring for most of the parameters in the project.					
<b>Project participant response</b>					<b>Date:</b> 16/05/2018
As specified in the Section D.7.2 of the registered CPA-DD, the above referred sentence (i.e. footnote 60 of the CPA-DD) as well as the footnote 12 of the applied AMS-II.G. methodology are referring <u>only to the KPT procedure</u> . During this verification period KPTs have been made anyhow annually and thus there is no need for additional proofs or justifications.  During this verification period the Usage Survey has been made biennially which is in line with the paragraph 22 of the applied AMS-II.G methodology requiring the stove usage to be monitored at least ones every two years (biennial).					
Documentation provided by project participant					
N/A					
<b>DOE assessment</b>					<b>Date:</b> 11/06/2018
The justification for monitoring i.e., KPT/usage survey provided by PP is now in line with the applied methodology is acceptable. Hence CAR03 is closed					

CAR ID	04	Section no.	MR	Date:	10/05/2018
Description of CAR					
It is not clear from the MR <ul style="list-style-type: none"> <li>a) How monitoring has ensured that the replaced low efficiency appliances are disposed off and are not used within the boundary or within the region.</li> <li>b) If baseline stoves are continued to be used, then how wood fuel consumption of those cook stoves are excluded in ER calculations</li> </ul>					
<b>Project participant response</b>					<b>Date:</b> 16/05/2018

- a) Usage Survey included a question to find out if the baseline low efficiency stoves have been sold or donated further. The Usage Survey find out that only few families had sold or donated their old stoves further. Please see page 19 of MR I, II and III for more details.

As the low efficiency charcoal cookstoves are the most common cooking methods used in the project area and easily available anyhow both within the project boundary as well as with the region. Therefore, it is not likely that the resold/donated low efficiency stoves made for non-project families would have any significant impact on overall usage of the inefficient charcoal stoves or fuel consumption within the project boundary or within the region. In fact, it would be most likely that the resold/donated low efficiency stoves would replace only older low efficiency cookstoves. Moreover, each project family has been encouraged to dispose their old inefficient stove at the moment they bought the project stove. The project activities also make awareness raising by informing the local population on the benefits of the usage of the improved stoves.

- b) Monitoring (i.e. Usage Survey) determines the share of the operational devices which is then applied in the ER calculations ensuring that the project devices which are not used are excluded from the calculations. Moreover, monitoring of the project charcoal consumption with the KPT procedure ensures that also the charcoal consumption caused by the eventual continued usage of the baseline stoves in the project scenario is accounted in the ER calculations. In fact, KPT measures the total fuel consumption of the sampled household without making difference if the fuel consumption is made with the project stove or with baseline charcoal stove.

Documentation provided by project participant	
9981-0001_Monitoring Report I_ver 02 9981-0001_Monitoring Report II_ver 02 9981-0001_Monitoring Report III_ver 02	
DOE assessment	Date: 11/06/2018
The justification for KPT/usage survey and ER calculations provided by PP is now acceptable. Hence CAR04 is closed	

CAR ID	05	Section no.	MR	Date: 10/05/2018
Description of CAR				
It is not clearly explained and justified in the Monitoring report				
a) How the samples represent the complete population of cook stoves distributed and				
b) How the sample size of 52 (1 <sup>st</sup> , 2 <sup>nd</sup> and 3 <sup>rd</sup> Monitoring) cook stoves for usage survey and sample size of 37, 42 & 37 (1 <sup>st</sup> , 2 <sup>nd</sup> and 3 <sup>rd</sup> Monitoring) for KPT has been determined				
Project participant response				Date: 16/05/2018

- a) The samples used for the usage survey and KPTs are representative of the complete population of project cookstoves distributed within the area by the end of each monitoring period in question as justified below.

As shown by the Stove Selling database, the stove distribution has been made between 9<sup>th</sup> of January 2015 and 30 of November 2015 and thus most of the stoves were distributed already before the first monitoring survey was made in the field (starting on 23<sup>th</sup> of November 2015). The samples have been drawn out always from the whole distributed stove population and thus they are representative.

- b) The minimum sample sizes have been determined, in line with the registered CPA-DD by following the "Guidelines for sampling and surveys for CDM project activities and programme of activities". The specific calculations regarding the minimum sample sizes are presented in the ER Spreadsheets in the sub-page "Sample size". The below table summarizes instead the effective sample sizes used for the CPA 1 monitoring as described also in the Section E.3 of MRs. Moreover, the same section of the MRs includes the demonstration that the required confidence/precision levels were met and that the samples were randomly selected.

As shown in the below table, similar sample sizes have used for the different monitoring periods as the total number of the distributed stoves has remained same for all the 3 monitoring.

Monitoring Survey	1 <sup>st</sup> monitoring (2015)	2 <sup>nd</sup> monitoring (2016)	3 <sup>rd</sup> monitoring (2017)
Number of the distributed stoves	1,819	1,819	1,819
Sample size – Usage Survey	N/A	52	52
Sample size – KPT	37	42	37
Reference in ER Spreadsheet	9981-0001_ER Calculations for MRs I, II and III_ver02, sub-page "Sample size". In particularly, see the cell B-36 for the Usage Survey and the cell B-15 for the KPT.		

#### Documentation provided by project participant

9981-0001\_ER Calculations for MR I, II and III\_ver02

9981-0001\_Stove Selling Database

#### DOE assessment

Date: 11/06/2018

The justification for sample size and selection provided by PP is now acceptable. The ER calculations sheets were checked and found ok. Hence CAR05 is closed

CAR ID	06	Section no.	SECTION C (PoA-DD, Version 05, dated 10/10/2014)	Date:	10/05/2018
<b>Description of CAR</b>					
<p>As per PoA-DD, Version 05, dated 10/10/2014; SECTION C. Management system, page no.9, under f) Measures for continuous improvements of the PoA management system, it is mentioned that <i>"Project participants of the PoA in close collaboration with the CPA implementers, will undertake an annual review of the overall PoA management system, including identifying any problems with stove distribution, stove use in the homes, monitoring of the stove use and overall database maintenance. This review will ensure that the best practices are maintained through the lifetime of the PoA. If the methodology and standards are updated, the PoA management system might be improved too"</i>.</p> <p>PP to provide the records/documents on</p> <ol style="list-style-type: none"> <li>1. Annual review of the overall PoA management system</li> <li>2. Identified problems with stove distribution as recorded</li> <li>3. Stove use in the homes</li> <li>4. Method/procedure of monitoring of the stove use and overall database maintenance and</li> <li>5. Any other Best practices maintained through the lifetime of the PoA</li> </ol>					
<b>Project participant response</b>					<b>Date:</b> 16/05/2018

There are currently 3 on-going CPAs under this PoA. All of these CPAs are implemented in the field by AVSI Foundation (CME of the PoA) and their MRs for verification have been prepared by Carbonsink (one of the PoA participants). This has permitted an easy and continuous information exchange. In addition to AVSI Foundation and Carbonsink, there are two other PoA participants which have been updated and consulted for any proposals for improvements when necessary using mainly conference calls. No separate reports or tracking of these activities have been made.

As the all of the current CPAs are implemented by AVSI Foundation, the role of AVSI has been essential in informing and updating the other partners on issues like stove distribution status, stove usage monitoring and other monitoring activities. Moreover, as an example of an improvement on the CPA management practices can be mentioned the new on-line based monitoring application which was introduced for improving the monitoring of all the three CPAs.

#### Documentation provided by project participant

The following documents, which covers the requested issues, have been shared with DOE regarding the CPA 1:

- 9981-0001\_Stove Selling Database
- 9981-0001\_Usage Survey Database 2016 and 9981-0002\_Usage Survey Database 2017
- 9981-0001\_Project KPT Report 2015, 9981-0001\_Project KPT Report 2016 and 9981-0001\_Project KPT Report 2017
- 9981-0001\_Monitoring Report I\_ver 02, 9981-0001\_Monitoring Report II\_ver 02 and 9981-0001\_Monitoring Report III\_ver 02

#### DOE assessment

**Date:** 11/06/2018

The requested documents were submitted, checked and found ok. Hence CAR06 is closed

CAR ID	07	Section no.	CPA DD	Date:	10/05/2018
Description of CAR					
PP to submit records/documents on <ol style="list-style-type: none"> <li>1. Water Boiling Test (WBT) report</li> <li>2. Kitchen Performance Test (KPT)</li> <li>3. The records of calibration for the instruments (Weighing scale, Thermometer, etc.,) used in the KPT and WBT tests.</li> <li>4. Training records for the project monitoring staff.</li> <li>5. Agreements made with GIZ and the work instructions or procedures issued to them.</li> </ol>					
Project participant response					Date:
					16/05/2018



1. The Water Boiling Test (WBT) mentioned in the table D-4 of the registered CPA-DD has been made by the Colorado State University for determining of thermal efficiency the Envirofit CH-2200 stove model. The report has been provided to DOE as requested.
2. The written evidence regarding the estimated life span of the stoves as indicated by the stove producer, Envirofit, has been provided to DOE as requested.
3. The calibration procedure of the weighting scale used for the KPT is described in the KPT Report provided to DOE. Please refer for example the page 12 of the "Project KPT Report 2016".
4. The following trainings have been organized for the monitoring staff
  - 9-11 October 2016: Three days training for the Usage Survey field team organized by AVSI (Alessandro Galimberti) and Carbonsink (Antonio Guiso). The training including initial theoretical training regarding the survey and its correct filling as well as practical training and follow up during the first days of the Usage Survey implementation in the field. Totally 5 participants (Celso Langa (responsible of the field team), Angela Mbuiangue, Ester Agostinho, Halima Virgilio Cumbana and Jorge Chicavane).
  - 15-17 November 2017: Three days training for the Usage Survey field team organized by AVSI (Anna Benetello) and Carbonsink (Antonio Guiso). The training including initial theoretical training regarding the survey and practical training and follow up during the first days of the Usage Survey implementation in the field. Totally 3 participants (Celso Langa (responsible of the field team), Cristina Cumbe and Jorge Chicavane).
  - Initial training for the stove promoters (made initially in January 2015 and repeated whenever a new promoter/promoters have been hired): 8-10 days initial training made for the stove promoters included the following topics: human training (soft skills as politeness, motivation to work, sense of responsibility, honesty, team working, civil education, etc.); introduction and objectives of the project; use and maintenance of the product; logistical and administrative procedures; GPS coordinates registration and sales visit simulations; sales coaching with experienced ICSs Sales Promoters.
5. The collaboration between AVSI and German Development Cooperation (GIZ) is made within the framework of Energising Development (EnDev) programme within which GIZ is offering services, like implementation of KPT, to AVSI. In fact, GIZ is highly experienced and internationally known entity working for several decades with cookstove projects and it is implementing the KPTs following the international standard protocol approved by the Global Alliance for Clean Cookstoves. For this purpose, the GIZ's Mozambican team has been trained in the KPT workshop organized 16-20 of June 2013 by Berkeley Air Monitoring Group and United States Environmental Protection Agency EPA (See for example the Project KPT Report 2016, Section 8 "Quality Assurance"). In line with the above-named framework contract and as specified in the Project KPT Report, the KPTs has been implemented by following international standard protocol prepared by Shell Foundation which is approved by the Global Alliance for Clean Cookstoves.  
 AVSI provided to GIZ the following main material and info before GIZ started the KPT in the field:
  - Stove selling database
  - Minimum sample size
  - Confidence/precision levels to be respected and reached by the KPT.

Documentation provided by project participant	
<ol style="list-style-type: none"> <li>1. 9981-0001_Clorado State University 2013</li> <li>2. 9981-0001_Envirofit 2014</li> <li>3. 9981-0001_Project KPT Report 2016</li> <li>4. 9981-0001_Monitoring Report I_ver02, 9981-0001_Monitoring Report II_ver02 and 9981-0001_Monitoring Report III_ver02</li> <li>5. 9981-0001_Project KPT Report 2016</li> </ol>	
<b>DOE assessment</b>	<b>Date:</b> 11/06/2018
The requested documents are submitted, checked and found ok. Hence CAR07 is closed	

CAR ID	08	Section no.	CPA-DD, MR and ER sheets	Date: 10/05/2018
Description of CAR				

Please clarify; As per section A.5 PoA – DD, version 05, dated 10/10/2014, “... <i>The stove is highly durable, with an average lifetime of the equipment corresponding to seven years, and has five years warranty from the manufacturer (Envirofit, 2014).</i> ” Accordingly provide the evidence for lifetime of cook stoves. And the provision for replacement and warranty is not found described in registered CPA-DD and webhosted MR. Even the number of cook stoves that have been replaced (if any) is also missing from in the MR and ER sheets.	
<b>Project participant response</b>	<b>Date:</b> 16/05/2018
The written evidence regarding the estimated life span of the stoves has been provided by the stove producer, Envirofit. This document has been provided to DOE as requested. It is the same document which was (as indicated in the Section A.5 of the registered CPA-DD) provided as reference also during the CPA validation process. There have been no stove replacements within this CPA and consequently no records are presented in the MRs or included in the ER Spreadsheets.	
<b>Documentation provided by project participant</b>	
9981-0001_Envirofit 2014	
<b>DOE assessment</b>	<b>Date:</b> 11/06/2018
The submitted document was checked and found ok. Hence CAR08 is closed	

<b>CAR ID</b>	09	<b>Section no.</b>	CPA-DD, MR and ER sheets	<b>Date:</b> 10/05/2018
<b>Description of CAR</b>				
In section B.5 of PoA – DD, version 05, dated 10/10/2014, for meth eligibility criteria no.13 it is mentioned that “ <i>End users will enter into an agreement transferring rights to the CERs generated by CPA in return for the subsidized improved stove and its on-going maintenance over a lifetime of the each CPA</i> ”. When the length of the first crediting period is 7 years and can be renewed at most three times, for a maximum total length of 21 years. Justify				
<b>Project participant response</b>				<b>Date:</b> 16/05/2018
Like described in the Section A.3 of the registered CPA-DD, end users have entered into an agreement transferring rights to the CERs generated by the CPA in return for the subsidized price of the improved stove. This form has been, in fact, approved already during the project validation and inclusion under the PoA. Moreover, during the stove distribution each family has been informed on the correct stove usage and cleaning procedures to be followed for conserving the stove in best way and for maximising its duration. Please note that the expected operational lifetime of this CPA is 7 years and 00 months as indicated in the Section A.8.2 of the registered CPA-DD.				
<b>Documentation provided by project participant</b>				
N/A				
<b>DOE assessment</b>				<b>Date:</b> 11/06/2018
The justification by PP on the expected operational lifetime and length of the crediting period is acceptable. Hence CAR09 is closed				

<b>CAR ID</b>	10	<b>Section no.</b>	CPA-DD, MR and ER sheets	<b>Date:</b> 10/05/2018
<b>Description of CAR</b>				
The following sections of MR is not as per the CDM PoA MR form filling guidelines: <ol style="list-style-type: none"> <li>1. Section A.1.2. CPAs included in the PoA heading missing</li> <li>2. B.1. Description of implemented PoA, information is incomplete and</li> <li>3. F.6. Remarks on increase in achieved emission reductions – justification not provided</li> </ol>				
<b>Project participant response</b>				<b>Date:</b> 16/05/2018

1. The heading has been corrected as noted.
2. The description in B.1. has been updated to include more detailed information, for example, on the competencies of the personnel and the implemented training activities.
3. N/A. The achieved emission reductions are lower than estimated ex-ante and thus the section F.6 is not relevant to be filled.

<b>Documentation provided by project participant</b>	
9981-0001_Monitoring Report I_ver 02 9981-0001_Monitoring Report II_ver 02 9981-0001_Monitoring Report III_ver 02	
<b>DOE assessment</b>	<b>Date:</b> 11/06/2018
The sections of MR are now revised as per the CDM PoA MR form filling guidelines, checked and found ok. So acceptable. Hence CAR10 is closed	

Table 4. FAR from this verification

<b>FAR ID</b>	Nil	<b>Section No.</b>	NA	<b>Date:</b> 10/05/2018
<b>Description of FAR</b>				
-				
<b>Project participant response</b>				<b>Date:</b> DD/MM/YYYY
-				
<b>Documentation provided by project participant</b>				
-				
<b>DOE assessment</b>				<b>Date:</b> DD/MM/YYYY
-				

## Appendix 5.

### Data and parameters fixed ex-ante

Net calorific value of the non-renewable woody biomass that is substituted ( $NCV_{\text{biomass}}$ , TJ/t)	<p>PP has selected IPCC default value i.e., 0.015 TJ/t. It is used for calculation of project emissions or actual net GHG removals by sinks, fixed at PoA level and for entire crediting period of the CPA.</p> <p>The verification team confirms that IPCC default value for wood fuel is 0.015 TJ/tonne can be used for net calorific value of the non-renewable woody biomass that is substituted (<math>NCV_{\text{biomass}}</math>) which is in line with the applied methodology (AMS-II.G, paragraph 11)</p>
Emission factor for the substitution of non-renewable woody biomass by similar consumers ( $EF_{\text{projected\_fossilfuel}}$ tCO <sub>2</sub> /TJ)	<p>PP has selected AMS-II.G default value i.e., 81.6 tCO<sub>2</sub>/TJ. It is used for calculation of project emissions or actual net GHG removals by sinks, fixed at PoA level and for entire crediting period of the CPA.</p> <p>The verification team confirms that the value of 81.6 tCO<sub>2</sub>/TJ is to be used as emission factor for the substitution of non-renewable woody biomass by similar consumers (<math>EF_{\text{projected\_fossilfuel}}</math>) is in line with the applied methodology (AMS-II.G, paragraph 11)</p>
Quantity of woody biomass used in the absence of the project activity in tonnes per device ( $B_{\text{old}}$ , t/device/year)	<p>PP has applied value of 6.080 for 2016 and 2017<sup>6</sup> based on local survey.</p> <p>It is used for calculation of project emissions or actual net GHG removals by sinks, fixed at PoA level and for entire crediting period of the CPA. <math>B_{\text{old}}</math> will be multiplied by a net to gross adjustment factor (LAF) to account for leakages.</p> <p>Based on the Baseline KPT the average baseline charcoal consumption per device is to be 973.2 kg of charcoal/device/year.</p> <p>The verification team confirms that the value applied is in accordance to paragraph 14 of the methodology, the quantity of woody biomass (<math>B_{\text{old}}</math>) is determined by using a credible local conversion factor determined from literature. Here the conversion factor of 7.14 is chosen based on the study of Brouwer and Falcão, 2004 (Brouwer, R. and Falcão, M. P., 2004<sup>18/</sup>. Wood fuel consumption in Maputo, Mozambique. Biomass and Bioenergy. Volume 27, Issue 3, September 2004, Pages 233–245. Available at <a href="http://www.sciencedirect.com">www.sciencedirect.com</a>).</p>
Leakage adjustment factor to account for leakages (LAF, Fraction)	<p>PP has applied AMS-II.G default value i.e., 0.95. It is used for calculation of leakage, fixed at PoA level and for entire crediting period of the CPA.</p> <p>The verification team confirms that the value applied is in accordance to paragraph AMS-II.G (option c of the paragraph 29). <math>B_{\text{old}}</math> will be multiplied by a net to gross adjustment factor to account for leakages. In this case surveys are not required.</p>

<sup>6</sup> As 25% of the project households have bought 2 project stoves and 75% of the project households have bought 1 project stoves, the weighted average to be used in ER calculations can be calculated as follows:  
 $(0.25 \times (0.5 \times 6.9486 \text{ t/device/year})) + (0.75 \times 6.9486 \text{ t/device/year}) = 6.080 \text{ t/device/year}$ . Please refer cell C40 in the 9981-0001\_ER Calculations, sub-page "ERs per device"

## Data and parameters monitored

<p>Fraction of woody biomass saved by the project activity in year y that can be established as non-renewable biomass (<math>f_{NRB,y}</math>, Fraction)</p>	<p>PP has applied a default Country specific fraction of non-renewable woody biomass (<math>f_{NRB}</math>) value available on the CDM website (<a href="http://cdm.unfccc.int/DNA/fNRB/index.html">http://cdm.unfccc.int/DNA/fNRB/index.html</a>) i.e., 0.91. It is used for calculation of project emissions or actual net GHG removals by sinks.</p>																															
<p>Annual quantity of woody biomass used during the project activity in tonnes per device, determined through a survey (<math>B_{y,new,KPT}</math>, t/device/year)= 2.349 t/device/year for 2016 and 2.919 t/device/year for 2017</p> <p>Achieved precision = 9.6% for 2016 and 7.6% for 2017</p> <p>Source : KPT 2016 and KPT 2017</p> <p>Note: Annual KPT was conducted in 24<sup>th</sup> October 2016 to 27<sup>th</sup> October 2016. As per the CPA-DD, the next KPT should have happened in 24<sup>th</sup> October 2017. But to some practical reasons, it was found started only on 13<sup>th</sup> November 2017 (more than one year). Accordingly, CME considered KPT 2017 (KPT 2017 is more conservative than KPT 2016) for the whole monitoring period. This temporary deviation is valid for this monitoring period only. Accordingly, CME made necessary modifications in the monitoring report.</p>	<p>PP has applied a measured value based on Kitchen Performance Test Report 2016 &amp;2017. It is used for calculation of project emissions or actual net GHG removals by sinks.</p> <p>The verification team confirms that the value</p> <ul style="list-style-type: none"><li>➤ In KPT, (conducted annually) a sample size ( 42 households for KPT 2016 and 37 households for KPT 2017) for this monitoring period was set by PP as calculated in the separate Excel spreadsheet, in line with the applied methodology. The required precision of least 90/10 (a 90% confidence interval and a 10% margin of error) is applied in line with the applied methodology<sup>7</sup> and the required confidence/precision level was met.</li><li>• The KPT is conducted by trained monitoring personal</li></ul>																															
<p><b>Number of project devices of type i operating in year y (<math>N_{y,i}</math>, Number)</b></p> <p>Usage rate = 92% for 2016 and 38% for 2017</p> <p>Source: Usage survey report 2016 &amp;2017</p> <p>Achieved precision = 7.7% for 2016 and 33.9% for 2017 (lower bound value is hence used for 2017)</p> <p>Resultant precision = 92% for 2016 and 25.43% for 2017</p>	<p>PP has applied a measured value</p> <table><tr><th>Year</th><th>Month</th><th>Number of operational devices</th></tr><tr><td>2016</td><td>December</td><td>1,673</td></tr><tr><td rowspan="12">2017</td><td>January</td><td>463</td></tr><tr><td>February</td><td>463</td></tr><tr><td>March</td><td>463</td></tr><tr><td>April</td><td>463</td></tr><tr><td>May</td><td>463</td></tr><tr><td>June</td><td>463</td></tr><tr><td>July</td><td>463</td></tr><tr><td>August</td><td>463</td></tr><tr><td>September</td><td>463</td></tr><tr><td>October</td><td>463</td></tr><tr><td>November</td><td>463</td></tr><tr><td>December</td><td>463</td></tr></table>	Year	Month	Number of operational devices	2016	December	1,673	2017	January	463	February	463	March	463	April	463	May	463	June	463	July	463	August	463	September	463	October	463	November	463	December	463
Year	Month	Number of operational devices																														
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<sup>7</sup> 9981-0001\_Project KPT Report 2016 and 9981-0001\_Project KPT Report 2017

	<p>The verification team reviewed the Project database records (Stove Selling Database 2015-2017 and Usage Survey Database 2016<sup>19</sup> &amp; 2017). In the usage survey (to be conducted biennially) a sample size (52 households for 2016 and 52 households for 2017) for this monitoring period was set by PP as calculated in the separate Excel spreadsheet, in line with the applied methodology, is at least 95/10 (a 95% confidence interval and a 10% margin of error). The required confidence/precision level was met for 2016. The required confidence/precision level was not met for 2017 survey. Hence lower bound value was used. It is used for calculation of project emissions or actual net GHG removals by sinks and shall remain within the limit of 180 GWh<sub>th</sub> for type II CDM project activities.</p>
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### Document information

<i>Version</i>	<i>Date</i>	<i>Description</i>
02.0	29 December 2017	Revision to align with the requirements of the "CDM validation and verification standard for programme of activities" (version 01.0).
01.0	5 June 2015	Initial publication.
Decision Class: Regulatory Document Type: Form Business Function: Issuance Keywords: programme of activities, verifying and certifying		