




**Verification and certification report form for CDM programme of activities**  
(version 01.0)

*Complete this form in accordance with the "Attachment. Instructions for filling out the verification and certification report form for CDM programme of activities" at the end of this form.*

**VERIFICATION AND CERTIFICATION REPORT**

<b>Title of the programme of activities (PoA)</b>	Fuel Efficient Stoves for Ethiopia Programme of Activity	
<b>UNFCCC reference number of the PoA</b>	10045	
<b>Version number(s) of the PoA-DD(s) applicable to this report</b>	2.2	
<b>Version number of the verification and certification report</b>	3	
<b>Completion date of the verification and certification report</b>	23/07/2016	
<b>Monitoring period number</b>	1	
<b>Duration of this monitoring period</b>	15/11/2014 to 14/11/2015	
<b>Number and version number of the monitoring report to which this report applies</b>	Version 2.2; dated 22/07/2016	
<b>Coordinating/managing entity (CME)</b>	World Food Programme Ethiopia	
<b>Host Party(ies)</b>	Host Party(ies) of the PoA	Is this a host Party to a CPA covered in this report?(yes/no)
	Federal Democratic Republic of Ethiopia	Yes
<b>Sectoral scope(s)</b>	3: Energy Demand	
<b>Selected methodology(ies)</b>	AMS-II.G version 05. "Energy efficiency Measures in Thermal Applications of Non Renewable Biomass"	
<b>Selected standardized baseline(s)</b>	NA	
<b>Total estimated GHG emission reductions or net GHG removals for this monitoring period in the included CPA(s) covered in this report</b>	43,097 tCO <sub>2</sub>	
<b>Total certified GHG emission reductions or net GHG removals for this monitoring period for the included CPA(s) covered in this report</b>	24,458 tCO <sub>2</sub>	
<b>Name of DOE</b>	Carbon Check (India) Private Limited	

<p><b>Name, position and signature of the approver of the verification and certification report</b></p>	 Amit Anand, CEO
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**SECTION A. Executive summary**

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Purpose, general description and location of the project activity:

The co-ordinating managing entity, World Food Programme Ethiopia has commissioned the DOE, Carbon Check (India) Private Ltd. to perform an independent verification of the CDM Programme of Activity “Fuel Efficient Stoves for Ethiopia Programme of Activity” in Federal Democratic Republic of Ethiopia (hereafter referred “Programme of Activity or PoA”) for the CPA titled Fuel Efficient Stoves for Ethiopia Programme of Activity CPA 001. The objective of the PoA is to distribute over 200,000 fuel efficient cooking stoves (Improved cookstoves, ICS) to particularly rural households or institutions in Ethiopia. The PoA saves greenhouse gas emissions by replacing baseline stoves with improved cookstoves. The CPA is designed to generate emission reductions by distribution of energy efficient or improved stoves for cooking purposes in Federal Democratic Republic of Ethiopia.

This report summarises the findings of the verification of the project, performed on the basis of paragraph 62 of the CDM M & P, as well as criteria given to provide for consistent project operations, monitoring and reporting and the subsequent decisions by the CDM Executive Board. Verification is required for all registered CDM project activities/programme of activities intending to confirm their achieved emission reductions and proceed with request for issuance of CERs. This report contains the findings and resolutions from the verification and a certification statement for the certified emission reductions.

Verification is the periodic independent review and ex-post determination of both quantitative and qualitative information by a Designated Operational Entity (DOE) of the monitored reductions in GHG emissions that have occurred as a result of the registered CDM project activity during a defined monitoring period.

Certification is the written assurance by a DOE that, during a specific period in time, a project activity achieved the emission reductions as verified.

The objective of this verification was to verify and certify emission reductions reported for the Programme of activities “Fuel Efficient Stoves for Ethiopia Programme of Activity” in the host country “Federal Democratic Republic of Ethiopia” for the period 15/11/2014 to 14/11/2015 (including both the days).

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

In particular, the monitoring plan, monitoring report and the project’s compliance with relevant UNFCCC and host Party criteria are verified in order to confirm that the component project/s has/have been implemented in accordance with the previously registered/included component project design and conservative assumptions, as documented. It is also confirmed if the monitoring plan is in compliance with the registered PoA-DD/CPA-DD and the approved monitoring methodology.

Scope of the verification:

The scope of the verification is:

## CDM-PoA-VCR-FORM

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

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

### Verification process:

The verification comprises a review of the monitoring report over the monitoring period from 15/11/2014 to 14/11/2015 and based on the registered PoA-DD/CPA-DD in part of the monitoring parameters and monitoring plan, emission reduction calculation spreadsheet, monitoring methodology and all related evidence provided by project participant.

On-site visit and stakeholders' interviews are also performed as part of the verification process.

### Conclusion:

The verification team assigned by the DOE concludes that the PoA-DD (Version 2.2, dated 07/08/2014), CPA-DD (Version 2.2, 07/08/2014)<sup>B04/</sup> and monitoring report (version 2.2, dated 22/07/2016)<sup>02/</sup>, meets all relevant requirements of the UNFCCC for CDM project activities/ programme of activities including article 12 of the Kyoto Protocol and paragraph 62 of CDM M& P, the modalities and procedures for CDM (Marrakesh Accords) and the subsequent decisions by the COP/MOP and CDM Executive Board. The verification has been conducted in-line with the VVS requirements version 09.0<sup>B01-1/</sup>.

The programme of activity was correctly implemented according to selected monitoring methodology, monitoring plan and the registered PoA-DD. The monitoring system was installed, maintained in a proper manner, while collected monitoring data allowed for the verification of the amount of achieved GHG emission reductions. Through the review and on site visit the verification team confirms that the project activity has resulted in the 24,458 tCO<sub>2</sub>e emission reductions during the first monitoring period.

Carbon Check as a DOE is therefore pleased to issue a positive verification opinion expressed in the attached Certification statement.

## **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 review	On-site inspection	Interview(s)	Verification findings

**CDM-PoA-VCR-FORM**

1.	Team Leader / Technical Expert	IR	Dimri	Anubhav	CC IPL	X	X	X	X
2.	Team Member	IR	Sharma	Kranav	CC IPL	X			
3.	Local Expert	EI	Abebaw	Samuel	CC IPL	X	X	X	X

**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	Singh	Vikash Kumar	CC IPL
2.	Approver	IR	Anand	Amit	CC IPL

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

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The verification was performed primarily based on the review of the monitoring report<sup>01/</sup> 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. Documents reviewed or referenced during the verification are listed in Appendix 3 below.

**C.2. On-site inspection**

Duration of on-site inspection: 25/05/2016 to 29/05/2016				
No.	Activity performed on-site	Site location	Date	Team member
1.	An assessment of the implementation and operation of the registered project activity as per the registered PoA-DD, registered/included CPA-DD.	Ebenat and East Belesa, Ethiopia, visit to the sample households	25/05/2016 to 29/05/2016	Anubhav Dimri and Samuel Abebaw
2.	A review of information flows for generating, aggregating and reporting the monitoring parameters.	Ebenat and East Belesa, Ethiopia, visit to the sample households	25/05/2016 to 29/05/2016	Anubhav Dimri and Samuel Abebaw
3.	Interviews with relevant personnel to determine whether the operational and data collection procedures are implemented in accordance with the monitoring plan in the CPA-DD.	Ebenat and East Belesa, Ethiopia, visit to the sample households	25/05/2016 to 29/05/2016	Anubhav Dimri and Samuel Abebaw
4.	A cross check between information provided in the monitoring report and data from other sources such as monitoring database, sales records, sampling records or similar data sources.	Ebenat and East Belesa, Ethiopia, visit to the sample households	25/05/2016 to 29/05/2016	Anubhav Dimri and Samuel Abebaw
5.	A check of the monitoring equipment including calibration performance and observations of monitoring practices against the requirements of the CPA-DD and the selected methodology and corresponding tool(s), where applicable.	Ebenat and East Belesa, Ethiopia, visit to the sample households	25/05/2016 to 29/05/2016	Anubhav Dimri and Samuel Abebaw
6.	A review of calculations and assumptions made in determining the GHG data and emission reductions.	Ebenat and East Belesa, Ethiopia, visit to the sample households	25/05/2016 to 29/05/2016	Anubhav Dimri and Samuel Abebaw

**CDM-PoA-VCR-FORM**

7.	An identification of quality control and quality assurance procedures in place to prevent or identify and correct any errors or omissions in the reported monitoring parameters.	Ebenat and East Belesa, Ethiopia, visit to the sample households	25/05/2016 to 29/05/2016	Anubhav Dimri and Samuel Abebaw
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**C.3. Interviews**

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Kebede	Kassu	World Food Program Ethiopia	25/05/2016 to 29/05/2016	Project implementation and operation, monitoring procedure, data and information flow, Roles and responsibility, Quality Assurance – Management and operating system, Sales/Distribution records, Survey records, Sampling Procedure, Qualification and Training	Anubhav Dimri and Samuel Abebaw
2.	Bratschke	Sven	Atmosfair gGmbH	25/05/2016 to 29/05/2016	CER calculation and completeness of monitoring report, Sampling Procedure, compliance of monitoring plan with monitoring methodology and registered CPA-DD, Monitoring procedure, data and information flow, Roles and responsibility, Quality Assurance – Management and operating system, Sales/Distribution records, Survey records, Qualification and Training	Anubhav Dimri and Samuel Abebaw
3.	Tadesse	Genety	NA (Stove Producer)	29/05/2016	Training, Safety procedures, safety equipment, manufacturing process	Anubhav Dimri and Samuel Abebaw

## CDM-PoA-VCR-FORM

4.	Ambelu	Adino	Bureau of Agriculture and WFP focal point in East Belesa	26/05/2016	Distribution procedures, Monitoring database, Sales records and carbon credit waiver forms	Anubhav Dimri and Samuel Abebaw
5.	Tegaw	Mekonent	Stove producer	26/05/2016	Training, Safety procedures, safety equipment, manufacturing process	Anubhav Dimri and Samuel Abebaw
6.	Alemu	Mulualem	Bureau of Agriculture and WFP focal point in Ebenat	27/05/2016	Distribution procedures, Monitoring database, Sales records and carbon credit waiver forms	Anubhav Dimri and Samuel Abebaw
7.	Zelleke	Berhan	WFP suboffice Amhara Region	25/05/2016 to 29/05/2016	Project implementation and operation, monitoring procedure	Anubhav Dimri and Samuel Abebaw

### C.4. Sampling approach

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The total number of stoves distributed during the monitoring period in the PoA is 22,168. The number of Mirt stoves distributed is 11,084 and the number of Tikikil stoves is 11,084. The monitoring parameters required to be monitored through the sampling plan are “Discount factor, statistically adjusted drop out from total population of a specific Mirt stoves in period y” ( $DO_{Mirt,y}$ ), “Discount factor, statistically adjusted drop out from total population of a specific Tikikil stoves in period y” ( $DO_{Tikikil,y}$ ), “Thermal efficiency of the Tikikil stoves deployed in monitoring period y” ( $\eta_{Tikikil,y}$ ) and “Specific fuel consumption in year y of the Mirt stove as part of the project that is fuel consumption per quantity of item/s processed (e.g. food cooked)” ( $SC_{Mirt,y}$ ).

Simple random sampling was applied by the CME for the selection of the monitoring samples with 90/10 confidence interval/precision level for the parameters which is deemed acceptable as per the registered PoA-DD and CPA-DD. Please refer to the section E.6.3 of this report on detailed assessment on sampling plan opted by the PP. The number of stoves used for the parameter  $\eta_{Tikikil,y}$  is 11 and for  $SC_{Mirt,y}$  is 14. In accordance with the calculated sample size, 11 stoves have been sampled for the parameter and 14 stoves have been sampled for the parameter  $SC_{Mirt,y}$ . CAR 02 had been raised in this regard and has been resolved. DOE checked the water boiling test report<sup>/10/</sup> with records of all the sampled stoves for the verification of the stove efficiency ( $\eta_{Tikikil,y}$ ) of the project stoves for the parameter. No sampling was required for the verification of the tests of the efficiency conducted. For the parameter,  $SC_{Mirt,y}$  DOE checked the CCT test report<sup>/10/</sup> with records of all the sampled stoves for the verification. No sampling was required for the verification of the tests conducted for the specific fuel consumption.

The sample size determined for the parameter  $DO_{Mirt,y}$  is 30 and for the parameter  $DO_{Tikikil,y}$  is 30. The parameters have been sampled using simple random sampling method. The sampling has been done in accordance with the sampling plan as provided in section D.7.2 of the CPA-DD. Verification team reviewed the sampling size as calculated in the ex-ante sample size calculation sheet<sup>/05/</sup> and the sample as selected for the survey records<sup>/08/</sup> and the details as available from the water boiling test reports<sup>/10/</sup> and confirms that the sampling has been done in accordance with the requirements of para 12, 13 and 21 of the sampling standard<sup>/B07/</sup> and para 22 and 23 of the methodology, AMS-II.G, version 05<sup>/B02/</sup>. The sampling carried out for the parameters is in accordance with the sampling

standard<sup>/B07/</sup> and the methodology AMS-II.G, version 05<sup>/B02/</sup> and is thus acceptable to the verification team.

DOE used sampling during verification for checking the operational status of the improved cook stoves. CME had calculated the drop-out rate based on the results from its monitoring sample of 30 stoves each of type Mirt and Tikikil for parameters,  $DO_{Mirt,y}$  and  $DO_{Tikikil,y}$ . This was verified from the survey sample records of the 30 samples for each of the parameters. As per the sampling standard<sup>/B07/</sup>, DOE had identified 8 samples for the parameter  $DO_{Mirt,y}$  and 8 samples for the parameter  $DO_{Tikikil,y}$  out of the CME's sample size of 30 each based on the AQL/UQL stated below.

All the identified 8 samples for the parameter  $DO_{Mirt,y}$  were operational and hence no discrepancy was found (i.e.  $c=0$ ). A sample size of 8 households was chosen (no non-responses observed). A sample size of 8 was required, based on an AQL of 0.5 % and UQL of 20 %, the producer risk used is 5 % and consumer risk used was 20 %. In accordance with the para 31 (c) of the sampling standard, consumer risk of 20 % (more than 10 %) has been chosen as the host country Ethiopia is a least developed country. The households in the PoA were located very far from each other and not easily accessible through road and required walking to the households. Since, the Acceptance number (c) thus determined for the sample is 0. It was observed that all the cook stoves were in working condition and thus  $c=0$ , i.e. no discrepant records were observed with the published MR<sup>/01/</sup> and sampling record sheet<sup>/10/</sup>. Thus PP's set of records has been accepted in line with § 30 of the sampling standard, version 05<sup>/B07/</sup>.

All the identified 8 samples for the parameter  $DO_{Tikikil,y}$  were operational and hence no discrepancy was found (i.e.  $c=0$ ). A sample size of 8 households was chosen (no non-responses observed). A sample size of 8 was required, based on an AQL of 0.5 % and UQL of 20 %, the producer risk used is 5 % and consumer risk used was 20 %. In accordance with the para 31 (c) of the sampling standard, consumer risk of 20 % (more than 10 %) has been chosen as the host country Ethiopia is a least developed country. The households in the PoA were located very far from each other and not easily accessible through road and required walking to the households. Since, the Acceptance number (c) thus determined for the sample is 0. It was observed that all the cook stoves were in working condition and thus  $c=0$ , i.e. no discrepant records were observed with the published MR<sup>/01/</sup> and sampling record sheet<sup>/10/</sup>. Thus PP's set of records has been accepted in line with § 30 of the sampling standard, version 05<sup>/B07/</sup>.

#### C.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	00	01	00
Remaining forward action requests from validation and/or previous verification	00	00	00
Specific-case 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	00	00	00
Implementation and operation of the management system	00	00	00
Post-registration changes			
<ul style="list-style-type: none"> <li>Temporary deviations from the registered monitoring plan, monitoring methodology or 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 in a registered PoA-DD (including its generic CPA-DD(s))</li> </ul>	00	00	00
<ul style="list-style-type: none"> <li>Permanent changes to the monitoring plan as described in the registered PoA-DD, applied methodology, or applied standardized baseline</li> </ul>	00	00	00



**CDM-PoA-VCR-FORM**

• Changes to the programme design of the registered PoA-DD (including corresponding changes to project design of the generic CPA-DD(s)) and updates to the eligibility criteria for inclusion of specific-case CPAs in the PoA	00	00	00
• Types of changes specific to afforestation and reforestation activities	00	00	00
<b>Component project activity(ies)</b>			
Compliance of the CPA implementation with the included CPA design document	00	00	00
Post-registration changes			
• Temporary deviations from registered monitoring plan, applied methodology or applied standardized baseline	00	00	00
• Corrections	00	00	00
• Changes to the start date of the crediting period	00	00	00
• Inclusion of a monitoring plan to an included CPA-DD	00	00	00
• Permanent changes to the monitoring plan as described in the included CPA-DD, applied methodology, or applied standardized baseline	00	00	00
• Changes to the programme design of the included CPA-DD	00	00	00
• Types of changes specific to afforestation and reforestation component project activities	00	00	00
Compliance of the monitoring plan with the monitoring methodology including applicable tool and standardized baseline	00	00	00
Compliance of monitoring activities with the registered monitoring plan			
• Data and parameters fixed ex ante or at renewal of crediting period	00	00	00
• Data and parameters monitored	00	01	00
• Implementation of sampling plan	02	00	00
Compliance with the calibration frequency requirements for measuring instruments	00	01	00
Assessment of data and calculation of emission reductions or net removals			
• 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	00	00	00
• Calculation of leakage GHG emissions	00	00	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 specific-case CPA	00	00	00
• Remarks on difference from estimated value in registered PDD	00	00	00
Others (please specify)			
<b>Total</b>	<b>02</b>	<b>03</b>	<b>00</b>

**SECTION D. Internal quality control**

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

**SECTION E. Verification opinion**

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Carbon Check (India) Private Ltd. (CC IPL) has performed the first periodic verification of the registered CDM Programme of Activities “Fuel Efficient Stoves for Ethiopia Programme of Activity” having UNFCCC reference number as 10045 for the CPA titled “Fuel Efficient Stoves for Ethiopia Programme of Activity CPA 001” with UNFCCC reference number 10045-0001. The CPA covered for this verification are the ones which have crediting period falling within this monitoring period.

The verification team assigned by the DOE concludes that the PoA-DD (Version 2.2, dated 07/08/2014) and Component Project Activity 10045-0001 as described in the registered CPA-DD (Version 2.2, dated 07/08/2014)<sup>/B04/</sup> and the monitoring report (version 2.2, dated 22/07/2016)<sup>/02/</sup>, meets all relevant requirements of the UNFCCC for CDM project activities including article 12 of the Kyoto Protocol and paragraph 62 of CDM Modalities & Procedures, the modalities and procedures for CDM (Marrakesh Accords) and the subsequent decisions by the COP/MOP and CDM Executive Board. The verification has been conducted in-line with the VVS requirements version 09.0<sup>/B01-1/</sup>.

Verification methodology and process

The Verification team confirms the contractual relationship signed on 12/01/2016 between the DOE, Carbon Check (India) Private Ltd. and the Coordinating Managing Entity/ Project Participant, (World Food Programme Ethiopia). The team assigned to the verification meets the CC IPL’s internal procedures including the UNFCCC requirements for the team composition and competence. The verification team has conducted a thorough contract review as per UNFCCC and CC IPL procedures and requirements.

The verification has been performed as per the requirements described in the VVS version 09.0 and constitutes the review and completion of the following steps:

- Reviewing the registered PoA-DD (version 2.2, date 07/08/2014), the registered CPA-DD for 10045-0001 (Version 2.2, dated 07/08/2014)<sup>/B04/</sup> including the monitoring plan and the corresponding validation reports<sup>/B04/</sup>;
- Publication of the MR (version 1.1, 12/04/2016)<sup>/01/</sup> on the UNFCCC website on 14/04/2016
- Desk review of the validation report, MR and other relevant documents including documents related to the projects activities in emission reductions
- Review of the applied monitoring methodology (AMS-II.G version 05)<sup>/B02/</sup>;
- Review of any CMP and EB decisions, clarifications and guidance;
- On-site assessment (25/05/2016 – 29/05/2016)
- Resolution of CARs and CLs raised during verification
- Issuance of Verification Report

The component project activity was correctly implemented according to selected monitoring methodology, monitoring plan and the registered/included CPA-DD. The monitoring system was installed, maintained in a proper manner, while collected monitoring data allowed for the verification of the amount of achieved GHG emission reductions. Through the review and on site visit the verification team confirms that the PoA has resulted in the 24,458 tCO<sub>2</sub>e emission reductions during the first monitoring period.

Verified emission reductions for the PoA: 24,458 tCO<sub>2</sub>e.

The break-up of emission reduction from 15/11/2014 to 14/11/2015 as verified during the course of verification are as below:

Item	Emission reductions up to 31 December 2012	Emission reductions from 1 January 2013 onwards
<b>Emission reductions (t CO<sub>2</sub>e)</b>	0	24,458

Break up of emission reductions CPA wise:

10045-0001; 24,458 tCO<sub>2</sub>e

CC IPL as a DOE is therefore pleased to issue a positive verification opinion expressed in the attached Certification statement.

## SECTION F. Certification statement

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Carbon Check (India) Private Ltd., the DOE, has performed the verification of the registered Programme of Activities, UNFCCC Registration Number 10045, “Fuel Efficient Stoves for Ethiopia Programme of Activity” in Ethiopia for the CPA “Fuel Efficient Stoves for Ethiopia Programme of Activity CPA 001” with UNFCCC reference numbers 10045-0001 for the CPA. The component project activities are designed to generate emission reductions by distribution of the fuel-efficient cook stoves to particularly rural households or institutions in Ethiopia. The component project activity under consideration involves distribution of fuel-efficient cook stoves to particularly rural households. The fuel-efficient cook stoves are replacing the traditional stoves that were being used in the baseline scenario.

The CME is responsible for the monitoring, collection of data in accordance with the monitoring plan and the reporting of GHG emissions reductions from the component project activity/ies. It is DOE’s responsibility to express an independent verification statement on the reported GHG emission reductions from the component project/s. The DOE does not express any opinion on the selected baseline scenario or on the validated and registered PoA-DD/CPA-DD. The verification is carried out in-line with the VVS requirements.

The verification was performed to identify the compliance of the component project activities with implementation and monitoring requirements, and to verify the actual amount of achieved emission reductions, through obtaining evidence and information on-site that included i) checking whether the provisions of the monitoring methodology and the monitoring plan were consistently and appropriately applied and ii) the collection of evidence supporting the reported data.

The verification is based on:

- PoA-DD version 2.2 dated 07/08/2014;
- CPA-DD/s included in the registered PoA and its monitoring plan for the monitoring period 15/11/2014 to 14/11/2015.
- Approved monitoring methodology AMS-II.G “Energy efficiency measures in thermal applications of non-renewable biomass”, version 05;
- Validation report<sup>/B04/</sup> for the PoA and CPA/s;
- Monitoring report(s) version(s) 1.1, 12/04/2016; version 2, dated 21/06/2016; version 2.1, dated 27/06/2016 and version 2.2, dated 22/07/2016.

This statement covers verification period from 15/11/2014 to 14/11/2015.

The DOE has raised 02 clarification requests, 03 corrective action requests and no forward actions requests from previous verification or the ongoing verification, all of which have been successfully resolved by the CME.

**CDM-PoA-VCR-FORM**

The DOE considers necessary to give reasonable assurance that reported GHG emission reductions were calculated correctly on the basis of the approved baseline and monitoring methodology and the monitoring plan contained in the registered/included CPA-DD is fairly stated.

The DOE, hereby certifies that the project activity, achieved emission reductions by sources of GHG equal to 24,458 tCO<sub>2</sub> equivalent and all monitoring requirements have been fulfilled and is substantiated by an audit trail that contains evidence and records. The break-up of emission reduction from 15/11/2014 to 14/11/2015 as verified during the course of verification are as below:

Item	Emission reductions up to 31 December 2012	Emission reductions from 1 January 2013 onwards
Emission reductions (t CO <sub>2</sub> e)	0	24,458

**SECTION G. Verification findings - General****G.1. Compliance of the monitoring report with the monitoring report form**

Means of verification	DR, I
Findings	CAR 01 had been raised in this regard and has been resolved.
Conclusion	The monitoring report provides all the information in accordance with the valid version of the CDM-PoA-MR-FORM (version 01) and the instructions therein for filling the CDM-PoA-MR-FORM. All the clarification requests and the corrective action requests on this section of the verification report have been resolved. The monitoring report has been prepared in accordance with the § 381 and § 382 of the VVS version 09.0 <sup>B01-1/</sup> .

**G.2. Remaining forward action requests from validation and/or previous verification**

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There are no forward action requests from validation. Since, the reported monitoring period is the first monitoring period for the PoA there are no remaining forward action requests from the previous verification.

**G.3. Specific-case CPA(s) considered for verification and covered in this report**

Reference number of the specific-case CPA included in the PoA as of the end of this monitoring period	Is the specific-case CPA considered for this verification? (yes/no)	Version number of the registered PoA-DD to which the specific-case CPA complies with	Confirmation that a request for issuance including the specific-case CPA has been published for the previous monitoring period (Y/N)
10045-0001	Yes	2.2	N

**SECTION H. Verification findings – Programme of activities****H.1. Compliance of the programme implementation with the registered programme design document**

Means of verification	DR, I
Findings	NA

<b>Conclusion</b>	<p>CC IPL by means of an on-site inspection and document review, assessed that all physical features (technology, project equipment, and monitoring and metering equipment) of the included CPA in the registered PoA-DD or CPA-DD are in place and that the coordinating/managing entity has operated the PoA and the CPA as per the registered PoA-DD and CPA-DD.</p> <p>As part of the site visit, the verification team was able to confirm that the implementation of Programme of Activity (PoA) and the Component Project Activity (CPA) is in accordance with the project description contained in the registered/included CPA-DD<sup>/B04/</sup>. The verification took cognizance of § 244 and 245 of the CDM Project Standard version 09 and § 383 (a) and § 384 of VVS version 09.</p>
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## H.2. Implementation and operation of the management system

<b>Means of verification</b>	DR, I
<b>Findings</b>	NA
<b>Conclusion</b>	<p>The PoA management system including the record-keeping system and the management structure has been explained in section C of the registered PoA-DD<sup>/B04/</sup>. During the course of verification, verification team based on review of section B.1 of the monitoring report<sup>/02/</sup>, supporting documents and OSV interview/observation has assessed this management system. 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.</p> <p>As outlined in section D.7.2 of CPA-DD<sup>/B04/</sup> and section B.1 of MR, monitoring has been done by the CME, World Food Programme Ethiopia by means of sales database, visits and interviews. The records of sales database<sup>/06/</sup> has been verified during the course of verification.</p> <p>In order to ensure completeness and accuracy of monitoring information, electronic database(s) is operated and maintained by the CME, World Food Programme Ethiopia. The cookstoves distributed in the CPA are identified by a unique number. The unique numbers for the Tikikil type of stoves are marked on the stoves and for the Mirt stoves (fixed) on the household the stove is installed in. Since the unique number inscribed on the cook stoves/houses correspond to its CPA in the database, it's possible to trace the stove from the users back to the production process and this assures against the occurrence of double counting. This provision for the avoidance of double counting as outlined in the PoA management system has been verified by means of review records of sales database<sup>/06/</sup> and OSV interview/observation during the course of verification. This unique numbering system was further cross-checked (on a sampling basis) during the site visit physical inspection.</p> <p>It was confirmed during the OSV and by checking the monitoring system that all the roles and responsibilities related to monitoring are fulfilled by representatives of the CME including the 3<sup>rd</sup> parties assigned by the CME survey conducted for the monitoring. The CME is further assisted by the local offices and the regional bureau of agriculture.</p> <p>The responsibilities and authorities for monitoring and reporting are in accordance with the responsibilities and authorities stated in the monitoring plan<sup>/B04/</sup>.</p> <p>The details about monitoring system have been provided in Section B.1 of the monitoring report<sup>/02/</sup>. The data flow and management and reporting structure was also checked during the site visit.</p> <p>Diagram of the monitoring procedure for the monitoring system has been provided in section F of the MR <sup>/02/</sup>.</p>

	The verification team confirms that the monitoring management system of the CDM PoA is in place; with the responsibilities properly identified and in place. This confirms the compliance of § 83 (a), § 390 (b) (iv) and § 390 (e) of VVS version 09.0 <sup>B01/</sup> .
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### H.3. Post-registration changes

#### H.3.1. Temporary deviations from the registered monitoring plan, monitoring methodology or standardized baseline

>>

There are no temporary deviations for the reported monitoring period from the registered PoA-DD or CPA-DD.

#### H.3.2. Corrections

>>

There are no corrections for the reported monitoring period.

#### H.3.3. Inclusion of a monitoring plan in a registered PoA-DD (including its generic CPA-DD(s))

>>

Monitoring plan has not been included to the registered PoA-DD during the monitoring period.

#### H.3.4. Permanent changes to the monitoring plan as described in the registered PoA-DD, applied methodology, or applied standardized baseline

>>

No permanent changes from the registered monitoring plan in the PoA-DD, monitoring methodology or any standardized baseline have either been approved by the Board during the monitoring period or being submitted with the request of issuance.

#### H.3.5. Changes to the programme design of the registered PoA-DD (including corresponding changes to project design of the generic CPA-DD(s)) and updates to the eligibility criteria for inclusion of specific-case CPAs in the PoA

>>

No programme design changes from the registered PoA-DD (including corresponding changes to project design of the generic CPA-DD(s)) have either been approved by the Board during the monitoring period or being submitted with the request of issuance.

#### H.3.6. Types of changes specific to afforestation and reforestation activities

>>

Not applicable. The programme of activities is not an afforestation and reforestation activity.

## SECTION I. Verification findings – Component project activity(ies)

### I.1. Compliance of the CPA implementation with the included CPA design document

<b>Means of verification</b>	DR, I
<b>Findings</b>	NA
<b>Conclusion</b>	<p>Carbon Check's verification team considers the CPA description of the project contained in the registered CPA-DD<sup>B04/</sup> 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. The CPA has been implemented in accordance with the registered CPA-DD<sup>B04/</sup>. A detailed analysis of the CPA implementation and operation has been provided in Appendix 5.</p> <p>In summary, the monitoring period is reasonable and the operation of the CPA is in accordance with the registered CPA-DD<sup>B04/</sup>. The verification team took cognizance of § 239 to § 242 of CDM Project Standard version 09 and § 373 b (i), § 383, § 384 and § 385 of VVS version 09.</p>

**I.2. Post-registration changes****I.2.1. Temporary deviations from registered monitoring plan, applied methodology or applied standardized baseline**

&gt;&gt;

There are no temporary deviations for the reported monitoring period from the registered PoA-DD or CPA-DD.

**I.2.2. Corrections**

&gt;&gt;

There are no corrections for the reported monitoring period.

**I.2.3. Changes to the start date of the crediting period**

&gt;&gt;

There are no changes to the start date of the crediting period.

**I.2.4. Inclusion of a monitoring plan to an included CPA-DD**

&gt;&gt;

Monitoring plan has not been included to the registered CPA-DD during the monitoring period.

**I.2.5. Permanent changes to the monitoring plan as described in the included CPA-DD, applied methodology, or applied standardized baseline**

&gt;&gt;

No permanent changes from the registered monitoring plan in the CPA-DD, monitoring methodology or any standardized baseline have either been approved by the Board during the monitoring period or being submitted with the request of issuance.

**I.2.6. Changes to the programme design of the included CPA-DD**

&gt;&gt;

No programme design changes from the included CPA-DD are applicable to the reported monitoring period.

**I.2.7. Types of changes specific to afforestation and reforestation component project activities**

&gt;&gt;

Not applicable. The programme of activities is not an afforestation and reforestation activity.

**I.3. Compliance of monitoring plan with the monitoring methodology including applicable tool and standardized baseline**

<b>Means of verification</b>	DR, I
<b>Findings</b>	NA
<b>Conclusion</b>	<p>The verification team is able to confirm that the monitoring plan contained in the registered CPA-DD<sup>/B04/</sup> is in accordance with the approved methodology applied by the project activity, i.e. AMS-II.G (version 05)<sup>/B02/</sup>.</p> <p>The monitoring plan is in accordance with the approved methodology, AMS-II.G version 05<sup>/B02/</sup>, applied by the component project activity and as provided in the CPA-DD<sup>/B04/</sup>.</p> <p>The verification took cognizance of § 386 to § 388 of VVS version 09<sup>/B01/</sup>.</p>

**I.4. Compliance of monitoring activities with the registered monitoring plan****I.4.1. Data and parameters fixed ex ante or at renewal of crediting period**

<b>Means of verification</b>	DR, I
<b>Findings</b>	NA

<b>Conclusion</b>	<p>Verification team confirms that the Data and parameters fixed ex ante are in compliance with the registered CPA-DD<sup>/B04/</sup> and monitoring plan. Please refer above for assessment of each parameter. Please refer Appendix 6 for detailed analysis of the ex-ante parameters.</p> <p>The verification took cognizance of § 389 of VVS version 09<sup>/B01/</sup>.</p>
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#### I.4.2. Data and parameters monitored

<b>Means of verification</b>	DR, I
<b>Findings</b>	CAR 02 had been raised in this regard and has been resolved.
<b>Conclusion</b>	<p>The verification team has assessed the data and parameters monitored during the the monitoring period in accordance with para 247, 248 and 249 of the CDM Project Standard<sup>/B01-2/</sup>. A complete assessment of each of the monitored parameters has been provided in Appendix 7 of the verification report. A complete assessment of the sampling approach has also been provided in Appendix 7 of the verification report.</p> <p>In summary, the verification team confirms that all the ex-ante and ex-post parameters are monitored in accordance with the approved monitoring plan and applied methodology. The verification took cognizance of § 247, 248 and 249 of the CDM Project Standard version 09.0 <sup>/B01-2/</sup> and § 401, 402 and 403 of the VVS version 09 <sup>/B01-1/</sup>.</p>

#### I.4.3. Implementation of sampling plan

<b>Means of verification</b>	DR, I
<b>Findings</b>	CL 01 and CL 02 had been raised in this regard and have been resolved.
<b>Conclusion</b>	<p>The total number of stoves till the last date of the monitoring period is 22,168 with 11,084 of the type Tikikil and 11,084 of the type Mirt stoves. Sampling has been used to monitor following parameters:</p> <ol style="list-style-type: none"> <li>1. <math>SC_{Mirt,y}</math>: Specific fuel consumption in year y of the Mirt stove as part of the project that is fuel consumption per quantity of item/s processed (e.g. food cooked)</li> <li>2. <math>\eta_{Tikikil,y}</math>: Thermal efficiency of the Tikikil stoves deployed in monitoring period y. This parameter is monitored during the crediting period.</li> <li>3. <math>DO_{Mirt,y}</math>: Discount factor, statistically adjusted drop out from total population of a specific Mirt stoves in period y</li> <li>4. <math>DO_{Tikikil,y}</math>: Discount factor, statistically adjusted drop out from total population of a specific Tikikil stoves in period y</li> </ol> <p>Simple random sampling was used to determine the values of thermal efficiencies of the ICSs in use (<math>\eta_{Tikikil}</math> and <math>SC_{Mirt}</math>). The confidence interval/precision level used for the monitoring of parameters <math>\eta_{Tikikil}</math> and <math>SC_{Mirt}</math> is 90/10 for the efficiency test which is deemed acceptable as per the registered PoA-DD/CPA-DD<sup>/B04/</sup>. For monitoring of parameter <math>\eta_{Tikikil}</math> WBTs were conducted. The sample size calculated for the parameter based on 90/10 is 13 and the applied sample size is 14, thus meets the sample size requirements. Validation team reviewed the sampling size as calculated in the sampling calculation sheet<sup>/05/</sup> and the stoves as selected for the survey records and the details as available from water boiling test reports<sup>/10/</sup> and confirms that the sampling has been done in accordance with the requirements of para 12, 13, 21 and 24 of the sampling standard<sup>/B07/</sup> and para 22 and 23 of the methodology, AMS-II.G, version 05<sup>/B02/</sup>. The sampling has been carried out on an annual frequency. The sampling carried out for the parameters is in accordance with the sampling standard<sup>/B07/</sup> and the methodology AMS-II.G, version 05<sup>/B02/</sup> and is thus acceptable to the verification team. For monitoring of parameter <math>SC_{Mirt,y}</math> CCTs were conducted. The sample size calculated for the parameter based on 90/10 is 9 and the applied sample size is 11, thus meets the sample size requirements. The sampling effort and surveys have been carried out in accordance with the sampling plan and the required confidence interval/precision level of 90/10 met. The selected sample was representative of the population including sampled households spread across the geographical boundary of the population from the CPA. Validation team reviewed the sampling size as calculated in the sampling calculation sheet<sup>/05/</sup> and the stoves as selected for the survey records and the details as available from Mirt stove CCT test reports<sup>/10/</sup> and confirms that the sampling has been done in accordance with the requirements of</p>



para 12, 13, 21 and 24 of the sampling standard<sup>/B07/</sup> and para 22 and 23 of the methodology, AMS-II.G, version 05<sup>/B02/</sup>. The sampling has been carried out on an annual frequency. The sampling carried out for the parameters is in accordance with the sampling standard<sup>/B07/</sup> and the methodology AMS-II.G, version 05<sup>/B02/</sup> and is thus acceptable to the verification team.

Simple random sampling was used to determine the value of parameters  $DO_{Mirt,y}$  and  $DO_{Tikil,y}$ . For monitoring of parameters  $DO_{Mirt,y}$  and  $DO_{Tikil,y}$ , questionnaires were used to check the existing dropout rate of the stoves. The confidence interval/precision level used for the monitoring of parameters  $DO_{Mirt,y}$  and  $DO_{Tikil,y}$  is 90/10 for the efficiency test which is deemed acceptable as per the registered PoA-DD/CPA-DD<sup>/B04/</sup>. The sample size calculated for the parameters based on 90/10 is 30 each and the applied sample size is 30 for each of the parameters, thus meeting the sample size requirements. The operability is checked for the sampled stoves for monitoring the values of the parameters  $DO_{Mirt,y}$  and  $DO_{Tikil,y}$ . Further, the usage of the baseline/traditional stoves was also monitored through the parameter and in case of usage of baseline stoves for cooking purposes the project stove is considered as a dropout. Thus the monitoring meets the requirements of para 26 of the methodology, AMS-II.G, version 05<sup>/B02/</sup>. The baseline stoves (3 stone stoves) could however be used for non-cooking purposes such as the production of alcohol and this has been factored in the calculation of baseline emissions. Validation team reviewed the sampling size as calculated in the sampling calculation sheet<sup>/05/</sup> and the stoves as selected for the survey records and the details as available from the sample questionnaires and confirms that the sampling has been done in accordance with the requirements of para 12, 13, 21 and 24 of the sampling standard<sup>/B07/</sup> and para 22 and 23 of the methodology, AMS-II.G, version 05<sup>/B02/</sup>. The sampling has been carried out on an annual frequency. The sampling carried out for the parameters is in accordance with the sampling standard<sup>/B07/</sup> and the methodology AMS-II.G, version 05<sup>/B02/</sup> and is thus acceptable to the verification team.

DOE used sampling during verification for checking the operational status of the improved cook stoves. CME had calculated the drop-out rate based on the results from its monitoring sample of 30 stoves each of type Mirt and Tikil for parameters,  $DO_{Mirt,y}$  and  $DO_{Tikil,y}$ . This was verified from the survey sample records of the 30 samples for each of the parameters. As per the sampling standard<sup>/B07/</sup>, DOE had identified 8 samples for the parameter  $DO_{Mirt,y}$  and 8 samples for the parameter  $DO_{Tikil,y}$  out of the CME's sample size of 30 each based on the AQL/UQL stated below.

All the identified 8 samples for the parameter  $DO_{Mirt,y}$  were operational and hence no discrepancy was found (i.e.  $c=0$ ). A sample size of 8 households was chosen (no non-responses observed). A sample size of 8 was required, based on an AQL of 0.5 % and UQL of 20 %, the producer risk used is 5 % and consumer risk used was 20 %. In accordance with the para 31 (c) of the sampling standard, consumer risk of 20 % (more than 10 %) has been chosen as the host country Ethiopia is a least developed country. The households in the PoA were located very far from each other and not easily accessible through road and required walking to the households. Since, the Acceptance number (c) thus determined for the sample is 0. It was observed that all the cook stoves were in working condition and thus  $c=0$ , i.e. no discrepant records were observed with the published MR<sup>/01/</sup> and sampling record sheet<sup>/10/</sup>. Thus PP's set of records has been accepted in line with § 30 of the sampling standard, version 05<sup>/B07/</sup>.

All the identified 8 samples for the parameter  $DO_{Tikil,y}$  were operational and hence no discrepancy was found (i.e.  $c=0$ ). A sample size of 8 households was chosen (no non-responses observed). A sample size of 8 was required, based on an AQL of 0.5 % and UQL of 20 %, the producer risk used is 5 % and consumer risk used was 20 %. In accordance with the para 31 (c) of the sampling standard, consumer risk of 20 % (more than 10 %) has been chosen as the host country Ethiopia is a least developed country. The households in the PoA were located very far from each other and not easily accessible through road and required walking to the households. Since, the Acceptance number (c) thus determined for the sample is 0. It was observed that all the cook stoves were in working condition and thus  $c=0$ ,

	i.e. no discrepant records were observed with the published MR <sup>/01/</sup> and sampling record sheet <sup>/10/</sup> . Thus PP's set of records has been accepted in line with § 30 of the sampling standard, version 05 <sup>/B07/</sup> .
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## I.5. Compliance with the calibration frequency requirements for measuring instruments

<b>Means of verification</b>	DR, I
<b>Findings</b>	CAR 03 had been raised in this regard and has been resolved.
<b>Conclusion</b>	<p>Sales database has been used to record the stoves details by the CME through a survey of the installed stoves based on sampling basis. The stove efficiency testing has been done by conducting CCTs for Mirt stoves and WBTs for Tikikil stoves conducted in line with the guidance provided by the CME in the CPA-DDs<sup>/B04/</sup>. The key monitoring equipment used for conducting the stove efficiencies by WBTs and CCTs are thermocouple and weighing scale. The appropriate QA/QC procedures have been followed for the monitoring parameters. The weighing scale used for the monitoring of parameters has an accuracy of 1 g<sup>/11/</sup> and is in accordance with the registered CPA-DD<sup>/B04/</sup> and the registered PoA-DD<sup>/B04/</sup>. The accuracy of the monitoring equipment (thermometer) is <math>\pm 0.03^{\circ}\text{C} \pm 1 \text{ Digit}</math><sup>/12/</sup>. The equipment has been calibrated by the manufacturer<sup>/11/</sup> and further calibration checks<sup>/13/</sup> have been performed during the monitoring period.</p> <p>The verification took cognizance of § 389 and § 394 of VVS version 09<sup>/B01-1/</sup>.</p>

## I.6. Assessment of data and calculation of emission reductions or net removals

### I.6.1. Calculation of baseline GHG emissions or baseline net GHG removals by sinks

<b>Means of verification</b>	DR, I
<b>Findings</b>	NA
<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<sup>/B04/</sup> and the methodology AMS-II.G, version 05<sup>/B02/</sup>, are:</p> $ER_{Mirt,y} = cons_{capita,HH} * eaters_{HH,y} * FW_{Mirt,y} * (1 - SC_{Mirt}/SC_{old} * f_{NRB,y} * NCV_{biomass} * EF_{projected\_fossilfuel} * N_{Mirt,y} * mp_{length,y} / 365 * (1 - DO_{Mirt,y}) * L_y$ $ER_{Tikikil,y} = cons_{capita,HH} * eaters_{HH,y} * FW_{Tikikil,y} * (1 - \eta_{old}/\eta_{Tikikil}) * f_{NRB,y} * NCV_{biomass} * EF_{projected\_fossilfuel} * N_{Tikikil,y} * mp_{length,y} / 365 * (1 - DO_{Tikikil,y}) * L_y$ <p>Total emission reductions will be calculated as:</p> $ER_y = ER_{Mirt,y} + ER_{Tikikil,y}$ <p>Where:</p> <p>cons<sub>capita,HH</sub>: Ethiopian fuelwood consumption per capita  eaters<sub>HH,y</sub>: average number of eaters per stove  FW<sub>Mirt,y</sub>: Proportion of household fuel wood consumed by Mirt stove, used as a discount factor for continued baseline stove use for non-Mirt purposes.  Efficiency gain: <math>(1 - SC_{Mirt,y}/SC_{old})</math>; <math>(1 - \eta_{old}/\eta_{Tikikil,y})</math>  f<sub>NRB,y</sub>: The fraction of biomass used in absence of the project that is non-renewable.  NCV<sub>biomass</sub>: Net calorific value of the non-renewable woody biomass that is substituted (IPCC default for wood fuel, 0.015 TJ/tonne, wet basis).  EF<sub>projected_fossilfuel</sub>: Emission factor for the substitution of non-renewable woody biomass by similar consumers. Use a value of 81.6 t CO<sub>2</sub>/TJ  N<sub>Mirt,i</sub>: Number of efficient Mirt stoves distributed until the end of the monitoring period y adjusted by implementation dates. The adjustment accounts for the fact</p>

	<p>that stoves do not start to save CO<sub>2</sub> simultaneously, but each stove starts saving CO<sub>2</sub> as soon as it is sold and implemented.</p> <p><math>N_{Tikil,i}</math>: Number of efficient Tikil stoves distributed until the end of the monitoring period <math>y</math> adjusted by implementation dates. The adjustment accounts for the fact that stoves do not start to save CO<sub>2</sub> simultaneously, but each stove starts saving CO<sub>2</sub> as soon as it is sold and implemented.</p> <p><math>mp_{length,y}</math>: Length of monitoring period.</p> <p><math>DO_{Mirt,y}</math>: Discount factor, statistically adjusted drop out from total population of a specific Mirt stoves in period <math>y</math></p> <p><math>DO_{Tikil,y}</math>: Discount factor, statistically adjusted drop out from total population of a specific Tikil stoves in period <math>y</math></p> <p><math>L_y</math>: leakage adjustment</p> <p><math>f_{NRB,y}</math>: The fraction of biomass used in absence of the project that is non-renewable.</p>
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#### I.6.2. Calculation of project GHG emissions or actual net GHG removals by sinks

<b>Means of verification</b>	DR, I
<b>Findings</b>	NA
<b>Conclusion</b>	There are no project emissions identified in the monitoring methodology <sup>/B02/</sup> and the CPA-DD <sup>/B04/</sup> .

#### I.6.3. Calculation of leakage GHG emissions

<b>Means of verification</b>	DR, I
<b>Findings</b>	NA
<b>Conclusion</b>	<p>A default (0.95) Net to gross adjustment factor to account for leakages (<math>L_y</math>) has been considered by the project and thus it is in line with the requirement of monitoring methodology<sup>/B02/</sup> and the CPA-DD<sup>/B04/</sup>.</p> <p>The verification took cognizance of § 389 of VVS version 09<sup>/B01/</sup>.</p>

#### I.6.4. Summary of calculation of GHG emission reductions or net GHG removals by sinks

<b>Means of verification</b>	DR, I
<b>Findings</b>	NA
<b>Conclusion</b>	<p>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 pre-defined formulae from registered CPA-DD<sup>/B04/</sup>. The total number of ERs achieved during the monitoring period is 24,458 tCO<sub>2</sub>e.</p> <p>In summary, verification team confirms that actual emission reduction is lower than the estimate of the registered (included)/approved CPA-DD/B04/ for the current monitoring period.</p> <p>The verification took cognizance of § 401 of VVS version 09<sup>/B01-1/</sup>.</p>

Specific-case CPA reference number	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)		
				Results achieved in the period up to 31 December 2012	Results achieved in the period from 1 January 2013 onwards	Results achieved in the entire monitoring period
10045-0001	24,458	0	0	0	24,458	24,458
<b>Total</b>	24,458	0	0	0	24,458	24,458

#### I.6.5. Comparison of actual GHG emission reductions or net GHG removals by sinks with estimates in included specific-case CPA

<b>Means of verification</b>	DR, I
<b>Findings</b>	NA
<b>Conclusion</b>	<p>The actual GHG emission reductions are less than the estimates in the included specific-case CPA. CME has stated that this is due to the fact that since lesser number of efficient stoves have been distributed to the households. Instead of 18,000 stove pairs as assumed in the registered CPA-DD<sup>B04/</sup> only 11,084 stove pairs have been distributed till the end of the monitoring period. 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.</p> <p>The verification took cognizance of § 256 &amp; 257 of the CDM Project Standard version 09<sup>B01-2/</sup> and § 385 (d) and 402 (c) of VVS version 09<sup>B01-1/</sup>.</p>

Specific-case CPA reference number	Value estimated in ex ante calculation in the included specific-case CPA-DD(s)	Actual values achieved by the specific-case CPA(s) during this monitoring period
10045-0001	43,097	24,458
<b>Total</b>	43,097	24,458

#### I.6.6. Remarks on difference from estimated value in registered PDD

<b>Means of verification</b>	DR, I
<b>Findings</b>	NA
<b>Conclusion</b>	<p>Verification team confirms that the actual emission reduction is lower than the estimate of the registered (included)/approved CPA-DD<sup>B04/</sup> for the current monitoring period.</p> <p>The verification took cognizance of § 256 &amp; 257 of the CDM Project Standard version 09<sup>B01-2/</sup> and § 385 (d) and 402 (c) of VVS version 09<sup>B01-1/</sup>.</p>

## Appendix 1. Abbreviations

Abbreviations	Full texts
AQL	Acceptable Quality Limit
BAU	Business As Usual
CA	Corrective Action / Clarification Action
CCT	Controlled Cooking Test
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
CAR	Corrective Action Request
CC IPL	Carbon Check (India) Private Ltd.
CER	Certified Emission Reduction
CL	Clarification Request
CME	Co-ordinating and Managing entity
CPA	Component Project Activity
CPA-DD	Component Project Activity Design Document
CO <sub>2</sub>	Carbon Dioxide
CO <sub>2</sub> e	Carbon Dioxide Equivalent
DR	Document review
DOE	Designated Operational Entities
DVR	Draft Verification Report
EB	CDM Executive Board
EF	Emission Factor
EI	External individual
FA	Final Approval
FAR	Forward Action Request
FVR	Final verification Report
GHG	Greenhouse gas(es)
GWh	Giga Watt Hour
I	Interview
IPCC	Intergovernmental Panel on Climate Change
IR	Internal resource
KPT	Kitchen Performance Test
MoARD	Ministry of Agriculture and Rural Development, Ethiopia
MWh	Mega Watt Hour
MR	Monitoring Report
PoA	Programme of Activities
PoA-DD	Programme of Activities Design Document
PP	Project Participant
OSV	On Site Visit
QC/QA	Quality control /Quality assurance
RMP	Revised Monitoring Plan
TA	Technical Area
TR	Technical Review
UNFCCC	United Nations Framework Convention on Climate Change

<b>UQL</b>	Unacceptable Quality Limit
<b>VVS</b>	Validation and Verification Standard
<b>WBT</b>	Water boiling test
<b>WFP</b>	World Food Programme

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



**Carbon Check (India) Private Ltd.**

**Anubhav Dimri**

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

*For following functions:*

Validator	<input checked="" type="checkbox"/>	Team Leader	<input checked="" type="checkbox"/>	Technical reviewer	<input checked="" type="checkbox"/>
Verifier	<input checked="" type="checkbox"/>	Technical Expert	<input checked="" type="checkbox"/>	Local Expert <sup>1</sup>	<input checked="" type="checkbox"/>

*In the following Technical Areas:*

TA 1.1	<input checked="" type="checkbox"/>	TA 3.1	<input checked="" type="checkbox"/>	TA 5.2	<input type="checkbox"/>	TA 9.2	<input type="checkbox"/>	TA 13.2	<input type="checkbox"/>
TA 1.2	<input checked="" type="checkbox"/>	TA 4.1	<input type="checkbox"/>	TA 8.1	<input type="checkbox"/>	TA 10.1	<input type="checkbox"/>	TA 14.1	<input type="checkbox"/>
TA 2.1	<input type="checkbox"/>	TA 5.1	<input type="checkbox"/>	TA 9.1	<input type="checkbox"/>	TA 13.1	<input checked="" type="checkbox"/>		

**Mr. Vikash Kumar Singh**  
Compliance Officer

**Mr. Amit Anand**  
CEO



**Date of Approval**  
24/12/2015

**Valid Till**  
23/12/2016

### Revision History of the Document

26/12/2014  
20/01/2016

Initial Adoption  
Revision to reflect updated office address

<sup>1</sup> India, South Africa

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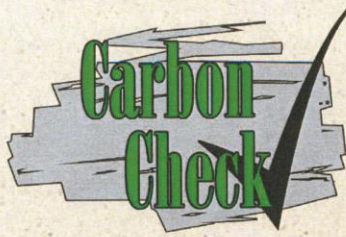
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Corporate off: G 49 & 50, 3<sup>rd</sup> Floor, Sector - 3, NOIDA (Uttar Pradesh) - 201301

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## Carbon Check (India) Private Ltd.

### Kranav Sharma

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

For following functions:

Validator ☐ Team Leader ☐ Technical reviewer ☐  
 Verifier ☐ Technical Expert ☒ Local Expert<sup>1</sup> ☒

In the following Technical Areas:

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

*Vikash K. Singh*

Mr. Vikash Kumar Singh  
Compliance Officer



*Amit Anand*

Mr. Amit Anand  
CEO

Date of Approval  
24/12/2015

Valid Till  
23/12/2016

#### Revision History of the Document

26/12/2014  
20/01/2016

Initial Adoption  
Revision to reflect updated office address

<sup>1</sup> India

#### CARBON CHECK (INDIA) PRIVATE LIMITED

Registered in India: U74930DL2012PTC232495

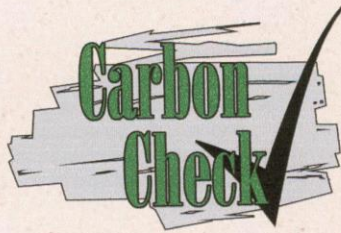
Regd. Off: 2071/38, 2<sup>nd</sup> Floor, Naiwala, Karol Bagh, New Delhi - 110005

Corporate off: G 49 & 50, 3<sup>rd</sup> Floor, Sector - 3, NOIDA (Uttar Pradesh) - 201301

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## Carbon Check (India) Private Ltd.

### Vikash Kumar Singh

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

For following functions:

Validator	<input checked="" type="checkbox"/>	Team Leader	<input checked="" type="checkbox"/>	Technical reviewer	<input checked="" type="checkbox"/>
Verifier	<input checked="" type="checkbox"/>	Technical Expert	<input checked="" type="checkbox"/>	Local Expert <sup>1</sup>	<input checked="" type="checkbox"/>

In the following Technical Areas:

TA 1.1	<input type="checkbox"/>	TA 3.1	<input checked="" type="checkbox"/>	TA 5.2	<input type="checkbox"/>	TA 9.2	<input type="checkbox"/>	TA 13.2	<input checked="" type="checkbox"/>
TA 1.2	<input checked="" type="checkbox"/>	TA 4.1	<input checked="" type="checkbox"/>	TA 8.1	<input type="checkbox"/>	TA 10.1	<input type="checkbox"/>	TA 14.1	<input type="checkbox"/>
TA 2.1	<input type="checkbox"/>	TA 5.1	<input type="checkbox"/>	TA 9.1	<input type="checkbox"/>	TA 13.1	<input checked="" type="checkbox"/>		

Mr. Amit Anand  
CEO



Date of Approval  
24/12/2015

Valid Till  
23/12/2016

#### Revision History of the Document

26/12/2014  
20/01/2016

Initial Adoption  
Revision to reflect updated office address

<sup>1</sup> India, South Africa

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e-mail: [info@carboncheck.co.in](mailto:info@carboncheck.co.in)

### Appendix 3. Documents reviewed or referenced

No.	Author	Title	References to the document	Provider
1	World Food Programme Ethiopia	1. Webhosted Monitoring report  2. Monitoring Report  3. Monitoring Report	Version 01.1, 12/04/2016  Version 02, 21/06/2016  Version 02.1, 27/06/2016	CME
2	World Food Programme Ethiopia	Final Monitoring report	Version 02.2, 22/07/2016	CME
3	World Food Programme Ethiopia	Emission reduction calculation sheet corresponding to /01-1/ Emission reduction calculation sheet corresponding to /01-2/	NA  NA	CME
4	World Food Programme Ethiopia	Emission reduction calculation sheet corresponding to /02/	NA	CME
5	World Food Programme Ethiopia	Sample size calculation spreadsheet 1. Ex-ante sample size calculation sheet 2. Ex-post sample size calculation sheet	NA	CME
6	World Food Programme Ethiopia	Sales/Distribution records	NA	CME
7	World Food Programme Ethiopia	Sample sales receipts/Carbon credit waiver for end users	NA	CME
8	World Food Programme Ethiopia	Sampling Results spreadsheet	NA	CME
9	GIZ/BMZ  MoME/ MoARD/ GTZ	Stoves Technical Specifications 1. Mirt Stove Technical Specifications  2. Manual for Production of a Household Rocket Stove "Tikikil"	November 2011  NA	CME  CME
10	World Food Programme Ethiopia	Efficiency Test Results 1. Efficiency Test Report Summary spreadsheet 2. Mirt Stove CCT Test Report	NA  NA	CME
11	MyWeigh	Weighing Scale Calibration certificate/ Manufacturer's Certificate for KD8000	#267834-06	CME
12	Greisinger Electronic	Thermometer Calibration certificate/ Manufacturer's Certificate	GMH3710 – 32403915 Dated 19/08/2015	CME
13	Woreda Office of Agriculture, Institute	Calibration check 1. Weighing Scale Calibration check 2. Thermometer Calibration check	Dated 24/11/2015	CME
14	Ministry of Water and Energy, The Federal Democratic	Letter from the Alternative Energy Technology Promotion And Dissemination Directorate, Ministry of Water and Energy, The Federal Democratic Republic of Ethiopia	Dated 10/01/2013	CME

**CDM-PoA-VCR-FORM**

	Republic of Ethiopia			
/B01/	UNFCCC	1. Validation and Verification Standard version 09.0 2. Project Standard version 09.0 3. Project Cycle Procedure version 09.0	<a href="http://cdm.unfccc.int/">http://cdm.unfccc.int/</a>	Others
/B02/	UNFCCC	Applied baseline and monitoring methodology, AMS-II.G, version 05	<a href="http://cdm.unfccc.int/">http://cdm.unfccc.int/</a>	Others
/B03/	UNFCCC	Instructions for filling the monitoring report form for CDM programme of activities, version 01.0	<a href="http://cdm.unfccc.int/">http://cdm.unfccc.int/</a>	Others
/B04/	UNFCCC	Registered PoA-DD (version 2.2 dated 07/08/2014), (CPA-DD for 10045-0001: version 2.2 dated 07/08/2014) and corresponding validation report.	<a href="http://cdm.unfccc.int/">http://cdm.unfccc.int/</a>	Others
/B05/	Web sites	Websites: 1. <a href="http://cdm.unfccc.int/">http://cdm.unfccc.int/</a> 2. <a href="http://www.ipcc-nggip.iges.or.jp/">http://www.ipcc-nggip.iges.or.jp/</a>	--	Others
/B06/	UNFCCC	Guidelines: Sampling and surveys for CDM project activities and programmes of activities, Version 04.0	<a href="http://cdm.unfccc.int/">http://cdm.unfccc.int/</a>	Others
/B07/	UNFCCC	Standard: Standard for sampling and surveys for CDM project activities and Programme of Activities, version 05	<a href="http://cdm.unfccc.int/">http://cdm.unfccc.int/</a>	Others
/B08/	UNFCCC	Default values of fraction of non-renewable biomass ( <a href="https://cdm.unfccc.int/DNA/fNRB/index.html">https://cdm.unfccc.int/DNA/fNRB/index.html</a> )	<a href="http://cdm.unfccc.int/">http://cdm.unfccc.int/</a>	Others

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

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

FAR ID	xx	Section no.	Date: DD/MM/YYYY
<b>Description of FAR</b>			
<b>CME response</b>			<b>Date: DD/MM/YYYY</b>
<b>Documentation provided by the CME</b>			
<b>DOE assessment</b>			<b>Date: DD/MM/YYYY</b>

**Table 2. CL from this verification**

CL ID	01	Section no.	1.4.3	Date: 06/06/2016
<b>Description of CL</b>				
<i>It needs to be clarified if both single skirt Tikikil and double skirt Tikikil stoves have been distributed in the PoA. Since, the thermal efficiency of the Tikikil stoves is different for both the types in section A.5 of the registered CPA-DD, it needs to be clarified if stratified random sampling has been done for the determination of thermal efficiency of the two types of stoves.</i>				
<b>CME response</b>				<b>Date: 21/06/2016</b>
<i>Under the CPA 1 of the PoA only the double skirt Tikikil stove has been distributed. Simple random sampling has been applied to select the stoves for efficiency testing.</i>				
<b>Documentation provided by the CME</b>				
NA				
<b>DOE assessment</b>				<b>Date: 23/06/2016</b>

## CDM-PoA-VCR-FORM

It has been clarified by the CME that only double skirt Tikikil stoves have been distributed in the CPA and thus the stoves are homogeneous for the reported vintage of the monitoring period. The used of simple random sampling is thus justified for the monitoring parameters used for efficiency of the type of stoves.

<b>CL ID</b>	02	<b>Section no.</b>	I.4.3	<b>Date:</b> 06/06/2016
<b>Description of CL</b>				
Expected proportion for calculation of sample size for drop-out rate of Tikikil stoves has been used as 0.96666 in the sample size calculation sheet. The reason for use of this value needs to be clarified.				
<b>CME response</b>				<b>Date:</b> 21/06/2016
<p>The ex-ante value for drop-out rate of Tikikil stove was assumed to be 10%. For this reason the sample size was calculated using the value <math>1 - 0.1 = 0.9</math>. This value was used to calculate the sample size for the efficiency testing during the monitoring campaign. Please see <i>Ex-ante sample size_CPA1_WFP_Ethiopia.xlsx</i></p> <p>Through the monitoring interviews the real drop-out rate for Tikikil stove was determined to be 3.33%. To calculate the achieved precision, we used the value <math>1 - 0.0336 = 0.96666</math>. The ex-post sample size calculation table shows this value and calculates if we have achieved the required precision (please see: <i>Ex-post sample size_CPA1_WFP_Ethiopia_20.06.2016.xlsx</i>). This monitored value was used to calculate the real emission reduction from Tikikil stoves.</p>				
<b>Documentation provided by the CME</b>				
<i>Ex-ante sample size_CPA1_WFP_Ethiopia.xlsx</i> <i>Ex-post sample size_CPA1_WFP_Ethiopia_20.06.2016.xlsx</i>				
<b>DOE assessment</b>				<b>Date:</b> DD/MM/YYYY
<p>CME has clarified that the actual sample sizes for the project activity were calculated in the ex-ante sample size calculation sheet based on the estimated drop-out rates and efficiency values from ex-ante. The sample sizes thus calculated were used for monitoring and once the values were determined for the drop-out rates and efficiency, such values were used to determine whether the sample size meets the required precision. The values have been checked from ex-ante sample size calculations sheet and ex-post sample size calculation sheet by the verification team.</p> <p>In section G.3 of the Monitoring Report, the summary from ex-ante calculations is provided in a tabular format. In the table, the estimated value and standard deviation are from the ex-ante calculation sheet but the calculated sample size and applied sample size from ex-post. Also the date in the * footnote for table states dates in future.</p>				
<b>CME response</b>				<b>Date:</b> 27/06/2016
<p>All values shown in the summary from ex-ante calculations provided In section G.3 of the Monitoring Report are from the ex-ante calculation sheet. The Estimate values are reflected in row 21 of the relevant tabs in the ex-ante calculation sheet. Estimate Standard Deviation is shown in row 22 of the efficiency tab of the ex-ante calculation sheet. The values for the calculated sample size are reflected in row 24 for the parameter <math>DO_{ICS,y}</math> and in row 25 for the parameters <math>\eta_{Tikikil,y}</math> and <math>SC_{Mirt,y}</math>. For the monitoring of <math>SC_{Mirt}</math> the calculated sample size was 13. According to EB30 Annex 30 par 12: "If the parameter of interest is a numeric mean value (i.e. not a proportion or percentage) the Student's t-distribution shall be used if the resulting sample size is less than 30." Therefore applied sample sizes for the parameter <math>SC_{Mirt}</math> increased to 14. This value is shown in row 42 of the ex-ante calculation sheet.</p> <p>For the monitoring of <math>\eta_{Tikikil}</math> the calculated sample size is 9, but according to EB30 Annex 30 par 12 the applied sample size for the parameter <math>\eta_{Tikikil}</math> increased to 11. This value is shown in row 42 of the ex-ante calculation sheet.</p> <p>The applied values for the sample size do also occur in the ex-post sample size calculation, to prove that the applied sample sizes meet the precision requirements.</p> <p>The date in the * footnote was corrected.</p>				
<b>Documentation provided by the CME</b>				
NA				
<b>DOE assessment</b>				<b>Date:</b> 11/07/2016
CME has clarified the values used and reported in section G.3 of the monitoring report and the values in the ex-ante sample size calculations. The values in the sample size calculation along with the precision limits have been determined for the actual sample size in the ex-ante sample size calculation sheet. The values have been compared with the section G.3 of the monitoring report and have been found correct.				

**Table 3. CAR from this verification**

<b>CAR ID</b>	01	<b>Section no.</b>	G.1	<b>Date:</b> 06/06/2016
<b>Description of CAR</b>				

## CDM-PoA-VCR-FORM

1. Section B.2 of the MR has not been completed in accordance with CDM-PoA-MR-FORM.	
2. In section G.2 of the MR ',' has been used to represent the decimal point. It numbers are not presented in internationally recognized format.	
<b>CME response</b>	<b>Date:</b> 21/06/2016
1. <i>Section B.2 of the MR has been adapted according to CDM-PoA-MR-FORM. The section is not applicable since only one CPA is registered under this PoA so far and a simple random sampling approach has been applied. Therefore, the sampling plan does not cover several specific case CPAs. Detailed information on the sampling plan for this CPA1 can be found in section G.3 of part II of this monitoring report.</i> 2. <i>The monitoring report has been updated to present all numbers in internationally recognized format.</i>	
<b>Documentation provided by the CME</b>	
Updated MR	
<b>DOE assessment</b>	<b>Date:</b> 23/06/2016
1. CME has provided information on the sampling plan for the PoA and CPA in section B.2 of the MR, further detailed information about the sampling plan is provided in section G.3 of the Part II of the Monitoring Report. 2. The monitoring report has been updated to report the numbers in accordance with clause 8 of the General Instructions to the Attachment: Instructions for filling out the monitoring report form for CDM programme of activities (CDM-PoA-MR-FORM).	

<b>CAR ID</b>	02	<b>Section no.</b>	I.4.2	<b>Date:</b> 06/06/2016
<b>Description of CAR</b>				
The value of the parameter $\eta_{Tikil,y}$ in section G.2 of the MR does not match with the value calculated in the calculation sheet for sampled stoves.				
<b>CME response</b>				<b>Date:</b> 21/06/2016
<i>The value of the parameter <math>\eta_{Tikil,y}</math> in section G.2 of the MR has been corrected according to the value calculated in the calculation sheet for sampled stoves.</i>				
<b>Documentation provided by the CME</b>				
Updated MR and emission reduction calculation.				
<b>DOE assessment</b>				<b>Date:</b> 23/06/2016
The value of the parameter $\eta_{Tikil,y}$ in section G.2 of the MR has been updated in accordance with the ER calculation spreadsheet.				

<b>CAR ID</b>	03	<b>Section no.</b>	I.5	<b>Date:</b> 06/06/2016
<b>Description of CAR</b>				
Accuracy and calibration records of the equipment used for the monitoring of the parameter $\eta_{Tikil,y}$ and $SC_{Mirt,y}$ have not been provided in section G.2 of the monitoring report.				
<b>CME response</b>				<b>Date:</b> 21/06/2016
<i>Information on accuracy and calibration records of the equipment used for the monitoring of the parameter <math>\eta_{Tikil,y}</math> and <math>SC_{Mirt,y}</math> have been provided in section G.2 of the monitoring report.</i>				
<b>Documentation provided by the CME</b>				
NA				
<b>DOE assessment</b>				<b>Date:</b> 23/06/2016
Information on the accuracy and calibration records of the equipment used for monitoring has been provided in section G.2 of the monitoring report. The manufacturer's certificate for the calibration have not been provided for the thermometer and the weighing scales used for the parameters $\eta_{Tikil,y}$ and $SC_{Mirt,y}$ . Records of calibration check have not been provided.				
<b>CME response</b>				<b>Date:</b> 27/06/2016
<i>The manufacturer's certificate for the calibration of equipment and records of calibration check have been provided.</i>				
<b>Documentation provided by the CME</b>				
8.1 Calibration Certificate Weigh Scale 8.2 Calibration Certificate Thermometer 9. Calibration Check Scale and Thermometer				
<b>DOE assessment</b>				<b>Date:</b> 11/07/2016

## CDM-PoA-VCR-FORM

The calibration certificates of the weigh scales and thermometer issued from the manufacturer have been provided to the verification team. Furthermore, the calibration check performed on 25/11/2015 by the Woreda office have been provided to the verification team. Verification team confirms that the equipment is calibrated and within the accuracy class of the equipment used.	
The accuracy class of the weighing scale is not available from the calibration certificate/manufacturer's certificate.	
<b>CME response</b>	<b>Date:</b> 11/07/2016
The Manufacturers specification of the weighing scale was provided, showing the required accuracy of 1 g.	
<b>Documentation provided by the CME</b>	
<i>Manufacturers specification WeighScale</i>	
<b>DOE assessment</b>	<b>Date:</b> 11/07/2016
The manufacturer's specification for the weighing scale has been provided and it is confirmed that the weighing scale meets the accuracy class provided in the registered PoA-DD/CPA-DD.	

**Table 4. FAR from this verification**

<b>FAR ID</b>	xx	<b>Section No.</b>		<b>Date:</b> DD/MM/YYYY
<b>Description of FAR</b>				
<b>CME response</b>				<b>Date:</b> DD/MM/YYYY
<b>Documentation provided by the CME</b>				
<b>DOE assessment</b>				<b>Date:</b> DD/MM/YYYY

## Appendix 5. PoA/CPA Implementation and Operation Status

The implementation status of the component project activity

<b>Co-ordinating and Managing entity/Project Participants:</b>	World Food Programme Ethiopia
<b>Title of the PoA:</b>	Fuel Efficient Stoves for Ethiopia Programme of Activity
<b>UNFCCC registration No:</b>	PoA10045
<b>Applied Baseline and monitoring methodology:</b>	AMS-II.G (version 05)

<b>Title of the CPA:</b>	Fuel Efficient Stoves for Ethiopia Programme of Activity CPA 001
<b>CPA reference number:</b>	10045-0001
<b>Date of inclusion:</b>	13/10/2014
<b>CPA start date:</b>	10/03/2014, the date when funding was approved for implementation
<b>CPA start of operation:</b>	Sale/Distribution of stoves – 11/08/2014 <sup>/06/</sup>
<b>CPA implementer</b>	World Food Programme Ethiopia
<b>Project Scale:</b>	Small scale
<b>Location of the CPA:</b>	Ethiopia
<b>CPA crediting period:</b>	15/11/2014 to 14/11/2021
<b>Reported monitoring Period verified in this verification:</b>	15/11/2014 to 14/11/2015 01 (First monitoring period)

As part of the site visit, the verification team was able to confirm that the implementation of Programme of Activity (PoA) and the Component Project Activity (CPA) is in accordance with the project description contained in the registered/included CPA-DD of 13/10/2014<sup>/B04/</sup>. The verification took cognizance of of § 239 to § 242 of CDM Project Standard, version 09.0 and § 373 b (i), § 383, § 384 and § 385 of VVS version 09.0.



<b>Project physical features (technology, project equipment, monitoring and metering equipment)</b>	<p>The CPA includes distribution of energy efficient or improved stoves for cooking purposes. The CPA implementer, World Food Programme Ethiopia has distributed two type of improved cookstoves (ICS) to particularly rural households: Slim type of Mirt stoves for injera baking (further only referred to as “Mirt stove”) and Tikikil rocket stoves for other cooking tasks.</p> <p>The Mirt stove is used for making Injeras (local flat breads). The Mirt stove is a structure of ~0.6 x 1.0 m made out of cement, sand and mud with an enclosed heating chamber and a biomass fuel inlet opening in its front. It has two heating zones: a big one for baking Injera and a small one for cooking sauces or stews. Smoke is led out via an opening above the stove. It is locally manufactured in six pieces using metal moulds. The local Woreda offices buy the stoves from the stove producers and then distribute to the individual households. The stoves are assembled and installed at the household under the guidance and instructions of MoARD staff. The CPA includes distribution of slim type of Mirt stove. The slim Mirt has its quadrant parts as well as its ‘U’ chimney stack, and a wall thickness of all 4 cm. The Mirt stoves are fixed stoves and generally installed indoor inside a kitchen. Option 3 (equation 5) from the methodology AMS-II.G, version 5 has been used for calculation of the parameter <math>B_{y,savings}</math> for the type of stove and thus uses controlled cooking test in accordance with the footnote 7 of the methodology AMS-II.G, version 5. The specific fuel consumption thus determined for the stove type during the monitoring period is 405.80 g/kg.</p> <p>Tikikil stove is a rocket stove, which is used for cooking purposes other than Injera. It uses firewood as fuel, which is continuously fed to the combustion chamber. There are two types of Tikikil stoves, single-skirt Tikikil and double-skirt Tikikil. Single-skirt Tikikil is designed to accommodate a 25 cm diameter pot and Double-skirt Tikikil can accommodate 27 cm and 31 cm diameters of pots. Both single and double skirt stoves have the same stove body, consisting of a cylindrical inner clay liner as combustion chamber, covered with galvanized sheet metal on the outside. The 4 cm thick liner has internal diameter of 11 cm and is 23.5 cm high. The total stove is 36 cm high. At its bottom is an 11 cm x 11 cm opening as fuel and air inlet. A fuel shelf made of a 6 mm steel round bar also constitutes part of the stove. The clay liner is produced by local potters while the metal cladding is done by metal artisans. The stove has a non-removable skirt. The fuel shelf is made up of a 5 mm radius round metal bar. The skirt diameter is 27cm for the single-skirt stove and 29 cm and 33cm for the double-skirt model. Option 2 (equation 3) from the methodology AMS-II.G, version 5 has been used for calculation of the parameter <math>B_{y,savings}</math> for the type of stove and thus uses water boiling test in accordance with the footnote 7 of the methodology AMS-II.G, version 5. The value of the efficiency determined for the Tikikil stove type during the monitoring period is 30.65 %. CAR 02 had been raised in this regard and has been resolved.</p>	
<b>Any Project Design Change been sought and approved by EB for the CPA?</b> {compliance of § 330 (f) of VVS}	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	No project design change has been sought from EB for the CPA.

The implemented CPA involves distribution of fuel-efficient firewood stoves by the CME World Food Programme Ethiopia in rural households of Ethiopia. The CPA involves the installation of a total of 22,168 stoves 11,084 of type Tikikil and 11,084 of type Mirt. It was confirmed through the monitoring database/06/ that the CPA involves distribution and installation of only 22,168 stoves till the end of the monitoring period and thus does not exceed the limit of stoves as stated in the CPA.

The stoves in the CPA have been distributed across different locations in Amhara region of Ethiopia, in East Belesa and Ebenat Woredas. As confirmed through the monitoring details provided in the ER sheet first stove for the CPA was distributed on 11/08/2014<sup>/06/</sup> and last stove on 19/07/2015. All the stoves that were checked during verification survey were found to be working and with the serial number marked on the household for the fixed Mirt stoves and on the stoves for the Tikikil stoves.

The component project activity was implemented and equipment installed as described in the registered/included CPA-DD<sup>B04/</sup>.

## CDM-PoA-VCR-FORM

It was confirmed during OSV that World Food Programme Ethiopia is the Co-ordinating/Managing Entity for the PoA. The actual project activity is in line with the registered/included CPA-DD<sup>/B04/</sup>. World Food Programme Ethiopia is the CPA implementer for the only CPA included in the PoA.

The information (including data and variables) provided in the MR<sup>/02/</sup> is in line with the details provided in the included/registered CPA-DD<sup>/B04/</sup>.

Verification Team summarizes the *major* changes for the CPA/s between webhosted Monitoring Report and final version of Monitoring Report for submission as follows:

Subject	Webhosted Monitoring Report (MR) <sup>/01/</sup>	Verified Monitoring Report <sup>/02/</sup>
<b>Changes</b>		
CER calculations (amount of emission reduction)	24,148	24,458. The value has changed due to revised value of the thermal efficiency of the Tikikil stoves. CAR 02 had been raised in this regard and has been resolved.
Specific fuel consumption in year y of the Mirt stove as part of the project that is fuel consumption per quantity of item/s processed ( $SC_{Mirt,y}$ )	405.80 g/kg	405.80 g/kg
Thermal efficiency of the Tikikil stoves deployed in monitoring period y. ( $\eta_{Tikikil,y}$ )	29.04%	30.65%. The value of the parameter reported in the webhosted MR <sup>/01/</sup> did not match with the value in the ER sheet <sup>/03-1/</sup> and the calculation sheet for sample stoves <sup>/10/</sup> . CAR 02 had been raised in this regard and has been resolved. The value in the final monitoring report <sup>/02/</sup> is consistent with the supporting documents.
Number of efficient Mirt stoves distributed until the end of the monitoring period y adjusted by implementation dates. The adjustment accounts for the fact that stoves do not start to save CO <sub>2</sub> simultaneously, but each stove starts saving CO <sub>2</sub> as soon as it is sold and implemented. ( $N_{Mirt,y}$ )	9,271.04	9,271. The value has been rounded down.
Number of efficient Tikikil stoves distributed until the end of the monitoring period y adjusted by implementation dates. The adjustment accounts for the fact that stoves do not start to save CO <sub>2</sub> simultaneously, but each stove starts saving CO <sub>2</sub> as soon	9,271.04	9,271. The value has been rounded down.



as it is sold and implemented. ( $N_{Tikil,y}$ )		
Discount factor, statistically adjusted drop out from total population of a specific Mirt stoves in period y ( $DO_{Mirt,y}$ )	0 %	0 %
Discount factor, statistically adjusted drop out from total population of a specific Tikikil stoves in period y ( $DO_{Tikil,y}$ )	3.33 %	3.33 %

Carbon Check's verification team considers the CPA description of the project contained in the registered CPA-DD<sup>B04/</sup> to be complete and accurate. The CPA-DD<sup>B04/</sup> complies with the relevant methodology, tools, forms and guidance at the time of CPA-DD submission for registration/inclusion.

#### The actual operation of the CDM PoA

The starting date of the CPA is 10/03/2014 as per the CPA-DD<sup>B04/</sup>, that is the date when the funding was approved for the implementation of the CPA. The first distribution of stoves started on 11/08/2014 and the distribution continued till 19/07/2015. A total of 22,168 stoves were distributed in the CPA<sup>B04/</sup> during the monitoring period. The number of stoves distributed of type Mirt is 11,084 and of the type Tikikil is also 11,084. The dates of distribution have been adjusted with for the start of the operation. The adjustment accounts for the fact that stoves do not start to save CO<sub>2</sub> simultaneously, but each stove starts saving CO<sub>2</sub> as soon as it is sold and implemented. Only those stoves that were installed before the last day of monitoring period, 14/11/2015 have been used for the calculation of the emission reductions. The PoA and CPA were registered on 13/10/2014 and the starting date of the crediting period is 15/11/2014 thus CPA is claiming emission reductions only after the start date of crediting period, i.e. 15/11/2014 that is after the registration of the PoA and CPA. This is the first monitoring period for the PoA and thus the stoves are claiming emission reductions only from the start date of the monitoring period, i.e. 15/01/2014 to the end date of the monitoring period, i.e. 14/11/2015. Recipient households have signed an acknowledgement (CER waiver forms) that the CPA implementer, World Food Programme Ethiopia owns the rights to the CERs generated from the CPA. This has been confirmed through the actual agreements as evidence<sup>07/</sup>. Sample agreements were checked during OSV. Operation of the devices is confirmed during the site visit by the verification team. Following was verified at the project site:

1. Manufacturing/Production site of the cook stoves
2. Stoves numbering system
3. Electronic monitoring system including input procedure
4. Actual implementation of the stoves
5. Household-representatives were interviewed regarding the usage of stove
6. Whether or not baseline technology was still in use
7. Process of data collection during installation of stove
8. Agreements between households and CPA implementer

Carbon Check's verification team confirms that the CPA is implemented within the boundary of the PoA as described in the registered PoA-DD<sup>B04/</sup> and the implementation and operation of the project activity has been conducted in accordance with the description contained in the registered PoA-DD<sup>B04/</sup> and registered/included CPA-DD<sup>B04/</sup>.

The monitoring report has been submitted for monitoring period 1 (from 15/11/2014 to 14/11/2015).

In summary, the monitoring period is reasonable and the operation of the CPA is in accordance with the registered (included) CPA-DD<sup>B04/</sup>. The verification took cognizance of § 317 of VVS version 09.0 and has assessed the project in order to check any proposed or actual changes to the project design. Carbon Check's verification team confirms that the CPA is implemented within the boundary of the PoA as described in the registered PoA-DD and the implementation and operation of the project activity has been conducted in accordance with the description contained in the registered PoA-DD and registered/included CPA-DD.

## Appendix 6. Data and parameters fixed ex ante

Parameter	Quantity of biomass per capita consumed in households in absence of the project activity per person and year ( $cons_{capita,HH}$ )
Data unit:	Tonnes/year
Default values used:	0.75
Purpose of data	Baseline emissions calculation
Source and Verification of the source	The value of this parameter is fixed ex-ante and used for ex-ante calculations. The value is calculated based on official sources for the total fuelwood consumption in Ethiopia in $m^3$ , average wood density and the population of Ethiopia, all for 2007. The value is derived by multiplying the total fuelwood consumption in $m^3$ with the density factor and then dividing by the population. The value has been validated during validation by the validating DOE and is acceptable to the verification team.

Parameter	Specific fuelwood consumption of the baseline system (three stone fire) for injera baking ( $SC_{old}$ )
Data unit:	g/kg
Default values used:	1031
Purpose of data	Baseline emissions calculation
Source and Verification of the source	The value of this parameter is fixed ex-ante. The value of the parameter is based on the CCT tests. The value is based on the GTZ-SUN Energy (2011): Energy Mirt stove test report.

Parameter	Efficiency of the baseline system being replaced ( $\eta_{old}$ )
Data unit:	%
Default values used:	0.10
Purpose of data	Baseline emissions calculation
Source and Verification of the source	The value of this parameter is fixed ex-ante. The value is based on the default value provided in the methodology AMS-II.G, version 05 <sup>/B02/</sup> .

Parameter	Emission factor for the substitution of non-renewable biomass by similar consumers ( $EF_{projected\_fossilfuel}$ )
Data unit:	tCO <sub>2</sub> /TJ
Default values used:	81.6
Purpose of data	Baseline emissions calculation
Source and Verification of the source	The value of this parameter is fixed ex-ante. The value is based on the default value provided in the methodology AMS-II.G, version 05 <sup>/B02/</sup> .

Parameter	Fraction of woody biomass saved by the project activity in period y that can be established as non-renewable biomass ( $f_{NRB,y}$ )
Data unit:	%
Default values used:	88
Purpose of data	Baseline emissions calculation
Source and Verification of the source	The value of this parameter is fixed ex-ante. The value is based on the default value provided by UNFCCC for the host country, Ethiopia <sup>/B08/</sup> .

Parameter	Leakage adjustment factor ( $L_y$ )
Data unit:	Fraction
Default values used:	0.95
Purpose of data	Baseline emissions calculation

## CDM-PoA-VCR-FORM

Source and Verification of the source	The value of this parameter is fixed ex-ante. The value is based on the default value provided in the methodology AMS-II.G, version 05 as per para 20 for net to gross adjustment factor <sup>/B02/</sup> .
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Parameter	The proportion of household fuel wood consumed by Mirt stove, used as a discount factor for continued use of baseline stoves or non-Mirt stoves in the monitoring period y. ( $FW_{Mirt,y}$ )
Data unit:	%
Default values used:	49.91
Purpose of data	Baseline emissions calculation
Source and Verification of the source	The value of this parameter is fixed ex-ante. The value is based on the letter from the Alternative Energy Technology Promotion And Dissemination Directorate, Ministry of Water and Energy, The Federal Democratic Republic of Ethiopia, from 10/01/2013 <sup>/14/</sup> .

Parameter	The proportion of household fuel wood consumed by Mirt stove, used as a discount factor for continued use of baseline or non-Tikil stoves in the monitoring period y. ( $FW_{Tikil,y}$ )
Data unit:	%
Default values used:	41.50
Purpose of data	Baseline emissions calculation
Source and Verification of the source	The value of this parameter is fixed ex-ante. The value is based on the letter from the Alternative Energy Technology Promotion And Dissemination Directorate, Ministry of Water and Energy, The Federal Democratic Republic of Ethiopia, from 10/01/2013 <sup>/14/</sup> .

Parameter	Average number of eaters (residents) per household ( $eaters_{HH}$ )
Data unit:	-
Default values used:	6
Purpose of data	Baseline emissions calculation
Source and Verification of the source	The value of this parameter is fixed ex-ante. The value is based on An average household size of 6 based on a fertility rate of 3.9 live births per woman in 2010-2015, as per UN Data available at: <a href="http://data.un.org/CountryProfile.aspx?crName=Ethiopia">http://data.un.org/CountryProfile.aspx?crName=Ethiopia</a> .

## Appendix 7. Data and parameters monitored

Monitoring Parameter Requirement	Assessment/ Observation by the DOE
Data / Parameter: (as in monitoring plan of CPA-DD):	Specific fuel consumption in year y of the Mirt stove as part of the project that is fuel consumption per quantity of item/s processed ( $SC_{Mirt,y}$ )
Measuring frequency/Time Interval:	Annual for this monitoring period (90/10 confidence interval /precision level)
Reporting frequency:	Annual for this monitoring period (90/10 confidence interval /precision level)
Unit:	g/kg
Reported value:	405.80
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes

**CDM-PoA-VCR-FORM**

Details of monitoring equipment:	MyWeigh Weighing Scale Greisinger Electronic Thermometer CAR 03 had been raised in this regard and has been resolved.
Is accuracy of the monitoring equipment as stated in the CPA-DD? If the CPA-DD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	Yes, the accuracy of the monitoring equipment (weighing scale) is 1 g <sup>/11/</sup> and is in accordance with the registered CPA-DD <sup>/B04/</sup> and the registered PoA-DD <sup>/B04/</sup> . The accuracy of the monitoring equipment (thermometer) is $\pm 0.03^{\circ}\text{C} \pm 1 \text{ Digit}^{/11/}$ . The accuracy for the thermometer is not provided in the registered CPA-DD <sup>/B04/</sup> and the registered PoA-DD <sup>/B04/</sup> , however it does represent good monitoring practise.
Calibration frequency /interval: Is it monitoring methodology /CDM EB guidance / local or national standards / manufacturers specification	The calibration frequency of the equipment is not provided in the registered PoA-DD or CPA-DD. However the calibration has been carried out for the monitoring period <sup>/13/</sup> .
Is the calibration interval in line with the monitoring plan of the CPA-DD? If the CPA-DD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	The calibration interval is not provided in the monitoring plan of the CPA-DD. The calibration has been carried out for the monitoring period and represent good monitoring practise.
Company performing the calibration(internal or external calibration):	The calibration has been done by Woreda office of Agriculture and it an external calibration.
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	Yes, the calibration confirmed proper functioning of monitoring equipment.
Is (are) calibration(s) valid for the whole reporting period?	Yes, the calibration is valid for the reported period.
If applicable, has the reported data been cross-checked with other available data?	Yes, reported data in MR <sup>/02/</sup> has been compared with ER sheet <sup>/04/</sup> and CCT test report <sup>/10/</sup> .
How were the values in the monitoring report verified?	The values in the monitoring report were compared against the values in ER sheet <sup>/04/</sup> , and CCT test report <sup>/10/</sup> .
Does the data management (from data generation to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data management ensures correct transfer of data and reporting of emission reductions and all necessary QA/QC processes are in place.
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	NA.

Monitoring Parameter Requirement	Assessment/ Observation by the DOE
Data / Parameter: (as in monitoring plan of CPA-DD):	Thermal efficiency of the Tikikil stoves deployed in monitoring period y. This parameter is monitored during the crediting period. This preliminary value is for reference. ( $\eta_{\text{Tikikil},y}$ )
Measuring frequency/Time Interval:	Annual for this monitoring period (90/10 confidence interval /precision level)
Reporting frequency:	Annual for this monitoring period (90/10 confidence interval /precision level)
Unit:	Fraction
Reported value:	30.65 %. CAR 02 had been raised in this regard and has been resolved.
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Details of monitoring equipment:	MyWeigh Weighing Scale Greisinger Electronic Thermometer CAR 03 had been raised in this regard and has been resolved.

## CDM-PoA-VCR-FORM

Is accuracy of the monitoring equipment as stated in the CPA-DD? If the CPA-DD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	Yes, the accuracy of the monitoring equipment (weighing scale) is 1 g <sup>/11/</sup> and is in accordance with the registered CPA-DD <sup>/B04/</sup> and the registered PoA-DD <sup>/B04/</sup> . The accuracy of the monitoring equipment (thermometer) is $\pm 0.03\text{ }^{\circ}\text{C} \pm 1\text{ Digit}^{/12/}$ . The accuracy for the thermometer is not provided in the registered CPA-DD <sup>/B04/</sup> and the registered PoA-DD <sup>/B04/</sup> , however it does represent good monitoring practise.
Calibration frequency /interval: Is it monitoring methodology /CDM EB guidance / local or national standards / manufacturers specification	The calibration frequency of the equipment is not provided in the registered PoA-DD or CPA-DD. However the calibration has been carried out for the monitoring period <sup>/13/</sup> .
Is the calibration interval in line with the monitoring plan of the CPA-DD? If the CPA-DD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	The calibration interval is not provided in the monitoring plan of the CPA-DD. The calibration has been carried out for the monitoring period and represent good monitoring practise.
Company performing the calibration(internal or external calibration):	The calibration has been done by Woreda office of Agriculture and is an external calibration by an external entity.
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	Yes, the calibration confirmed proper functioning of monitoring equipment.
Is (are) calibration(s) valid for the whole reporting period?	Yes, the calibration is valid for the reported period.
If applicable, has the reported data been cross-checked with other available data?	Yes, reported data in MR <sup>/02/</sup> has been compared with the ER sheet <sup>/04/</sup> .
How were the values in the monitoring report verified?	The values in the monitoring report <sup>/02/</sup> were compared against the values in ER sheet <sup>/04/</sup> .
Does the data management (from data generation to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data management ensures correct transfer of data and reporting of emission reductions and all necessary QA/QC processes are in place.
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	NA.

Monitoring Parameter Requirement	Assessment/ Observation by the DOE
Data / Parameter: (as in monitoring plan of CPA-DD):	Number of efficient Mirt stoves distributed until the end of the monitoring period y adjusted by implementation dates. The adjustment accounts for the fact that stoves do not start to save CO <sub>2</sub> simultaneously, but each stove starts saving CO <sub>2</sub> as soon as it is sold and implemented. (N <sub>Mirt,y</sub> )
Measuring frequency/Time Interval:	Continuously updated in the distribution database. Adjustment calculation Once for this monitoring period (i.e. annual monitoring)
Reporting frequency:	Once for the monitoring period
Unit:	n/a
Reported value:	9271
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Details of monitoring equipment:	NA. Determined from the distribution database <sup>/06/</sup> .
Is accuracy of the monitoring equipment as stated in the CPA-DD? If the CPA-DD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	Yes, the accuracy as stated in QA/QC procedures of CPA-DD <sup>/B04/</sup> is same in the MR <sup>/02/</sup> .
Calibration frequency /interval:	NA

**CDM-PoA-VCR-FORM**

Is it monitoring methodology /CDM EB guidance / local or national standards / manufacturers specification	
Is the calibration interval in line with the monitoring plan of the CPA-DD? If the CPA-DD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	NA. QA/QC procedures stated in MR <sup>/02/</sup> comply with CPA-DD <sup>/B04/</sup> .
Company performing the calibration(internal or external calibration):	NA
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	NA
Is (are) calibration(s) valid for the whole reporting period?	NA
If applicable, has the reported data been cross-checked with other available data?	The reported data has been cross-checked with the ER sheet <sup>/04/</sup> and the distribution database <sup>/06/</sup> . The value thus determined is acceptable to the verification team.
How were the values in the monitoring report verified?	NA
Does the data management (from data generation to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data management ensures correct transfer of data and reporting of emission reductions and all necessary QA/QC processes are in place.
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	NA.

<b>Monitoring Parameter Requirement</b>	<b>Assessment/ Observation by the DOE</b>
Data / Parameter: (as in monitoring plan of CPA-DD):	Number of efficient Tikikil stoves distributed until the end of the monitoring period y adjusted by implementation dates. The adjustment accounts for the fact that stoves do not start to save CO2 simultaneously, but each stove starts saving CO2 as soon as it is sold and implemented. (N <sub>Tikikil,y</sub> )
Measuring frequency/Time Interval:	Continuously updated in the distribution database. Adjustment calculation Once for this monitoring period (i.e. annual monitoring)
Reporting frequency:	Once for the monitoring period
Unit:	n/a
Reported value:	9271
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Details of monitoring equipment:	NA. Determined from the distribution database <sup>/06/</sup> .
Is accuracy of the monitoring equipment as stated in the CPA-DD? If the CPA-DD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	Yes, the accuracy as stated in QA/QC procedures of CPA-DD <sup>/B04/</sup> is same in the MR <sup>/02/</sup> .
Calibration frequency /interval: Is it monitoring methodology /CDM EB guidance / local or national standards / manufacturers specification	NA
Is the calibration interval in line with the monitoring plan of the CPA-DD? If the CPA-DD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	NA. QA/QC procedures stated in MR <sup>/02/</sup> comply with CPA-DD <sup>/B04/</sup> .

**CDM-PoA-VCR-FORM**

Company performing the calibration(internal or external calibration):	NA
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	NA
Is (are) calibration(s) valid for the whole reporting period?	NA
If applicable, has the reported data been cross-checked with other available data?	The reported data has been cross-checked with the ER sheet <sup>/04/</sup> and the distribution database <sup>/06/</sup> . The value thus determined is acceptable to the verification team.
How were the values in the monitoring report verified?	NA
Does the data management (from data generation to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data management ensures correct transfer of data and reporting of emission reductions and all necessary QA/QC processes are in place.
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	NA.

<b>Monitoring Parameter Requirement</b>	<b>Assessment/ Observation by the DOE</b>
Data / Parameter: (as in monitoring plan of CPA-DD):	Discount factor, statistically adjusted drop out from total population of a specific Mirt stoves in period y (DO <sub>Mirt,y</sub> )
Measuring frequency/Time Interval:	Annual for this monitoring period (90/10 confidence interval /precision level)
Reporting frequency:	Annual for this monitoring period (90/10 confidence interval /precision level)
Unit:	NA
Reported value:	0 %
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Details of monitoring equipment:	NA. The parameter doesn't require any monitoring equipment. The parameter is monitored through the sampling questions for the distributed stoves.
Is accuracy of the monitoring equipment as stated in the CPA-DD? If the CPA-DD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	NA
Calibration frequency /interval: Is it monitoring methodology /CDM EB guidance / local or national standards / manufacturers specification	NA
Is the calibration interval in line with the monitoring plan of the CPA-DD? If the CPA-DD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	NA. QA/QC procedures stated in MR <sup>/02/</sup> comply with CPA-DD <sup>/B04/</sup> .
Company performing the calibration(internal or external calibration):	NA
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	NA
Is (are) calibration(s) valid for the whole reporting period?	NA
If applicable, has the reported data been cross-checked with other available data?	Yes, the value of parameter has been crosschecked with the data in ER sheet.

<p>How were the values in the monitoring report verified?</p>	<p>The values in the monitoring report were verified through the review of the sampling records and by conducting interviews with the individual households during the site visit. Since, the value of the parameter was 0 % verification team while conducting the site visit for the sampled households interviewed the households and the CME representative on the reasons for no drop-out for the stoves. Based on the interviews and the site observation following reasons were determined as the factors for no drop-out in context of major causes for drop out.</p> <ol style="list-style-type: none"> <li>1. Stoves getting damaged – Mirt stoves are fixed stoves made of mortar (from scoria (a type of local sand) and cement) and use a ceramic or clay plate for baking Injeras. Since, the stoves are made from strong construction materials, the likelihood of stoves getting damaged is very low for the first monitoring period.</li> <li>2. Stoves not being used due to non-suitability to the type of food being cooked or being used very rarely – Mirt stoves are used for baking Injeras. Injera is staple food in Ethiopia and is the food consumed for all the meals in rural areas, so the likelihood of stoves not being used is also very low.</li> <li>3. Stoves being transported to some other location/ transferred to some other person – As is observed in cookstove distribution projects the stoves are sometimes transported to some location due to movement of household or individual from household or sometimes the cookstove is gifted to a friend or a relative. Since, Mirt is a fixed type stove it cannot be moved from one place to another and thus restricts movement.</li> </ol> <p>Overall, in the opinion of verification team the drop-out rate for the stoves being 0 % for the monitoring period is justified.</p>
<p>Does the data management (from data generation to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?</p>	<p>Yes, the data management ensures correct transfer of data and reporting of emission reductions and all necessary QA/QC processes are in place. The parameter also checks if the baseline stoves are not used anymore for daily cooking purposes.</p> <p>For the parameter <math>DO_{Mirt,y}</math> the value has been calculated in accordance with the section D.7.1 of the CPA-DD<sup>B04/</sup>, section B.7.1 of the PoA-DD<sup>B04/</sup> and para 28 of the methodology AMS-II.G version 05<sup>B02/</sup>. The confidence interval/precision level for the parameter is 90/10 and is in accordance with the para 22 and 28 of the methodology AMS-II.G, version 05<sup>B02/</sup>. Based on 90/10, a sample size of 30 is considered for the population 11,084 for the parameter. A sample size of 30 has been used by the project participant and thus meets the aforementioned requirements. From the sample selected all households were still using the stoves, thus a dropout rate of 0 % is determined for the parameter. The usage of baseline stoves was also checked and it was determined that baseline stoves were not in use for daily cooking purposes anymore and thus meets the requirements of para 26 of the methodology, AMS-II.G, version 05<sup>B02/</sup>. This is in accordance with the para 12, 13 and 21 of the sampling standard<sup>B07/</sup>. The sampling carried out for the parameter is in accordance with the sampling standard<sup>B07/</sup> and the methodology, AMS-II.G, version 05<sup>B02/</sup>.</p> <p>DOE used sampling during verification for checking the stoves. A sample size of 8 households was chosen (no non-responses). A sample size of 8 was required, based on an AQL of 0.5 % and UQL of 20 %, the producer risk used is 5</p>



**CDM-PoA-VCR-FORM**

	<p>% and consumer risk used was 20 %. A consumer risk of more than 10 % is allowed in accordance with the para 28 and 31 of the sampling standard since the host country Ethiopia is a Least Developed Country (para 31 (c)). Acceptance number (c) thus determined for the sample is 0. A sample size of 8 meets the following requirements. It was observed that all the stoves were in working condition and thus less than or equal to <math>c=0</math>, discrepant records were observed with the webhosted MR<sup>/01/</sup> and ER sheet<sup>/03/</sup>. Thus PP's set of records has been accepted in line with para 30 of the sampling standard, version 05<sup>B07/</sup>. The usage of baseline stoves was also checked and verified by the DOE and it was determined that baseline stoves were not in use for daily cooking purposes anymore and thus meets the requirements of para 26 of the methodology, AMS-II.G, version 05<sup>B02/</sup>.</p> <p>Based on the above, the value determined for the parameter is acceptable to the verification team.</p>
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	NA

Monitoring Parameter Requirement	Assessment/ Observation by the DOE
Data / Parameter: (as in monitoring plan of CPA-DD):	Discount factor, statistically adjusted drop out from total population of a specific Mirt stoves in period y (DO <sub>Tikil,y</sub> )
Measuring frequency/Time Interval:	Annual for this monitoring period (90/10 confidence interval /precision level)
Reporting frequency:	Annual for this monitoring period (90/10 confidence interval /precision level)
Unit:	NA
Reported value:	3.33 %
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Details of monitoring equipment:	NA. The parameter doesn't require any monitoring equipment. The parameter is monitored through the sampling questions for the distributed stoves.
Is accuracy of the monitoring equipment as stated in the CPA-DD? If the CPA-DD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	NA
Calibration frequency /interval: Is it monitoring methodology /CDM EB guidance / local or national standards / manufacturers specification	NA
Is the calibration interval in line with the monitoring plan of the CPA-DD? If the CPA-DD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	NA. QA/QC procedures stated in MR <sup>/02/</sup> comply with CPA-DD <sup>/B04/</sup> .
Company performing the calibration(internal or external calibration):	NA
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	NA
Is (are) calibration(s) valid for the whole reporting period?	NA

**CDM-PoA-VCR-FORM**

If applicable, has the reported data been cross-checked with other available data?	Yes, the value of parameter has been crosschecked with the data in ER sheet.
How were the values in the monitoring report verified?	The values in the monitoring report were verified through the review of the sampling records and by conducting interviews with the individual households during the site visit.
Does the data management (from data generation to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	<p>Yes, the data management ensures correct transfer of data and reporting of emission reductions and all necessary QA/QC processes are in place.</p> <p>For the parameter <math>DO_{Mirt,y}</math> the value has been calculated in accordance with the section D.7.1 of the CPA-DD<sup>/B04/</sup>, section B.7.1 of the PoA-DD<sup>/B04/</sup> and para 28 of the methodology AMS-II.G version 05<sup>/B02/</sup>. The confidence interval/precision level for the parameter is 90/10 and is in accordance with the para 22 and 28 of the methodology AMS-II.G, version 05<sup>/B02/</sup>. Based on 90/10, a sample size of 30 is considered for the population 11,084 for the parameter. A sample size of 30 has been used by the project participant and thus meets the aforementioned requirements. From the sample selected 29 households were still using the stoves, thus a dropout rate of 3.33 % is determined for the parameter. CL 02 had been raised in this regard and has been resolved. The usage of baseline stoves was also checked and it was determined that baseline stoves were not in use for daily cooking purposes anymore and thus meets the requirements of para 26 of the methodology, AMS-II.G, version 05<sup>/B02/</sup>. This is in accordance with the para 12, 13 and 21 of the sampling standard<sup>/B07/</sup>. The sampling carried out for the parameter is in accordance with the sampling standard<sup>/B07/</sup> and the methodology, AMS-II.G, version 05<sup>/B02/</sup>.</p> <p>DOE used sampling during verification for checking the stoves. A sample size of 8 households was chosen (no non-responses). A sample size of 8 was required, based on an AQL of 0.5 % and UQL of 20 %, the producer risk used is 5 % and consumer risk used was 20 %. A consumer risk of more than 10 % is allowed in accordance with the para 28 and 31 of the sampling standard since the host country Ethiopia is a Least Developed Country (para 31 (c)). Acceptance number (c) thus determined for the sample is 0. A sample size of 8 meets the following requirements. It was observed that all the stoves were in working condition and thus less than or equal to <math>c=0</math>, discrepant records were observed with the webhosted MR<sup>/01/</sup> and ER sheet<sup>/03/</sup>. Thus PP's set of records has been accepted in line with para 30 of the sampling standard, version 05<sup>/B07/</sup>. The usage of baseline stoves was also checked and verified by the DOE and it was determined that baseline stoves were not in use for daily cooking purposes anymore and thus meets the requirements of para 26 of the methodology, AMS-II.G, version 05<sup>/B02/</sup>.</p> <p>Based on the above, the value determined for the parameter is acceptable to the verification team.</p>
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	NA

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**Document information**

<i>Version</i>	<i>Date</i>	<i>Description</i>
01.0	5 June 2015	Initial publication.
Decision Class: Regulatory		
Document Type: Form		
Business Function: Issuance		
Keywords: programme of activities, verifying and certifying		