

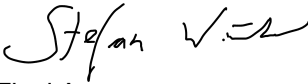


**Verification and certification report form for  
CDM programme of activities  
(version 02.0)**

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

**BASIC INFORMATION**

<b>Title and UNFCCC reference number of the programme of activities (PoA)</b>	Improved cookstove program in Bangladesh supported by the Republic of Korea UNFCCC ref: 10431	
<b>Version number(s) of the PoA-DD(s) to which this report applies</b>	04.1	
<b>Version number of the verification and certification report</b>	2	
<b>Completion date of the verification and certification report</b>	22/02/2019	
<b>Monitoring period number and duration of this monitoring period</b>	1 1 <sup>st</sup> periodic verification for CPA 01 31/08/2018 – 10/09/2018 (both days included)	
<b>Number and version number of the monitoring report to which this report applies</b>	1 Version 4.0	
<b>Coordinating/managing entity (CME)</b>	Ecoeye Co., Ltd.	
<b>Host Parties</b>	Host Parties of the PoA	Is this a host Party to a CPA covered in this report? (yes/no)
	Bangladesh	Yes
<b>Applied methodologies and standardized baselines</b>	AMS II.G. – “Energy efficiency measures in thermal applications of non-renewable biomass” (version 08.0) Standardized baseline: N/A	
<b>Mandatory sectoral scopes linked to the applied methodologies</b>	Scope: 3 / Technical Area: 3.1	
<b>Conditional sectoral scopes linked to the applied methodologies, if applicable</b>	-	
<b>Estimated amount of GHG emission reductions or GHG removals for this monitoring period in the included CPAs covered in this report</b>	45,963 tCO <sub>2</sub> e	
<b>Certified amount of GHG emission reductions or GHG removals for this monitoring period for the included CPAs covered in this report</b>	2,338 tCO <sub>2</sub> e	

<b>Name and UNFCCC reference number of the DOE</b>	TÜV NORD CERT GmbH E-0022
<b>Name, position and signature of the approver of the verification and certification report</b>	 Final Approver Stefan Winter

**SECTION A. Executive summary**

&gt;&gt;

Ecoeye Co., Ltd. (EECL) has commissioned the TÜV NORD JI/CDM Certification Program to carry out the 1<sup>st</sup> periodic verification of the CDM Programme of Activities (CDM-PoA) (10431):

“Improved cookstove program in Bangladesh supported by the Republic of Korea”  
with regard to the relevant requirements for CDM PoAs.

This verification covers the period from 31/08/2018 – 10/09/2018(both days included)

The programme of activities and relevant CPA reduces GHG emissions by disseminating biomass based improved cookstoves (“Bondhu Chulha”) to households / SMEs in Bangladesh. Under the CPA 001 Bondhu chulha of two types (1 pot and 2 pots) have been installed in project households in Bangladesh, replacing the cookstoves used in the baseline scenario (3 stone fire / traditional unimproved clay stoves).

EECL has fully financed all improved cooking stoves distributed to the households under the relevant CPA (The total project cost per stove is USD 10, including BDT 450 subsidy a stove and CPA implementation costs to BBF).

Details of the PoA location are given in table A-1 below:

**Table A-1:** Project Location of CPA 001

No.	Project Location
Host Country	Republic of Bangladesh
Region:	All across Bangladesh
Project location address:	Whole country where CPA 1 is implemented

Basic technical details of the PoA are summarized in table A-2.

**Table - A-2:** Technical data of the of CPA 001

Parameter	Unit	Value
Average Thermal Efficiency as per CPA-DD	%	34% (1-Pot Bondhu Chulha) 34.62 % (2-Pot Bondhu Chulha)
Portable/Fixed	-	Fixed with fuel grate (1-Pot and 2-Pot)
Materials	-	Cement concrete mix with chimney and grate
Producer	-	Bangladesh Bondhu Foundation (BBF) and BBF trained local partners
Design operational life time	Year	5-7 (1-Pot and 2-Pot)

As a result of this verification, the verifier confirms that:

- all operations of the CPA is implemented and installed as planned and described in the validated component project activities design document.
- the monitoring plan is in accordance with the applied approved CDM methodology, i.e., AMS-II.G. ver. 08.0
- the equipment essential for measuring parameters required for calculating emission reductions are calibrated appropriately.
- the monitoring system is in place and functional. The CPA has generated GHG emission reductions.

As the result of the 1<sup>st</sup> periodic verification of CPA 10431-0001, the verifier confirms that the GHG emission reductions are calculated without material misstatements in a conservative and appropriate manner. TÜV NORD JI/CDM CP herewith confirms that the project has achieved emission reductions in the above mentioned reporting period as follows:

Emission reductions: **2,338 tCO<sub>2</sub>e****SECTION B. Verification team, technical reviewer and approver****B.1. Verification team members****B.2.**

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
1.	Team Leader+ Technical Expert	IR	Mishra	Prakash Kumar	TÜV NORD CERT	x	x	x	x

**B.3. 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/Approver	IR	Winter	Stefan	TÜV NORD CERT

**SECTION C. Application of materiality in conducting the verification****C.1. Consideration of materiality in planning the verification**

In order to ensure a complete, transparent and timely execution of the verification task the team leader has planned the complete sequence of events necessary to arrive at a substantiated final verification opinion.

Various tools have been established in order to ensure an effective verification planning.

**Materiality Threshold**

The verification is based on the materiality threshold identified in table C-1 below:

**Table C-1:** Applied Materiality Threshold

	Threshold	Related to
<input type="checkbox"/>	0.5 %	Emission reductions or removals for registered CDM project activities achieving a total emission reduction or removal equal to or more than 500,000 tonnes of carbon dioxide equivalent per year <sup>1</sup> ;
<input type="checkbox"/>	1 %	Emission reductions or removals for registered CDM project activities achieving a total emission reduction or removal of

<sup>1</sup> A year refers to a period of 12 consecutive months.

	Threshold	Related to
		between 300,000 and 500,000 tonnes of carbon dioxide equivalent per year;
<input type="checkbox"/>	2 %	Emission reductions or removals for registered large-scale CDM project activities achieving a total emission reduction or removal of 300,000 tonnes of carbon dioxide equivalent per year or less;
<input checked="" type="checkbox"/>	5 %	Emission reductions or removals for registered small-scale CDM PoA other than registered CDM PoA covered under next category below;
<input type="checkbox"/>	10 %	Emission reductions or removals for the type of registered small-scale CDM PoA referred to in decision 3/CMP.6, paragraph 38 (referred to as microscale project activities).

### Strategic Analysis

At the beginning of the verification, the verification team leader has assessed the nature, scale and complexity of the verification tasks by carrying out a strategic analysis of all activities relevant to the project activity. The team leader has collected and reviewed the information relevant to assess that the designated verification team is sufficiently competent to carry out the verification and to ensure that it is able to conduct the necessary risk analysis.

### Risk analysis and detailed audit testing planning

For the identification and assessment of potential reporting risks and to determine the necessary detailed audit testing procedures for residual risk areas the following table is used.

No.	Risk that could lead to material errors, omissions or misstatements	Assessment of the risk		Response to the risk in the verification plan and/or sampling plan
		Risk level	Justification	
1.	Analysis and transfer of data from monitoring documents (installation database, household usage Survey and WBT Records) for parameters under monitoring, to MR and excel ER spreadsheet.	Low	Human error during transfer of data from Usage Survey reports and WBT reports/sheet for BE, PE and ER calculations	Thorough cross-check and assessment required on the generation and transfer of data to the ER spreadsheet. Assessment of Usage Survey reports and WBT reports/sheet for Usage rate, change in efficiency, fuel wood consumption by baseline stoves still in use, no of days stoves under operation, appropriateness of sampling plan etc.

On the basis of the risk analysis the verification has been planned. A detailed audit / verification plan has been prepared and submitted to the project participant(s) in due time before the site visit.

## C.2. Consideration of materiality conducting the in verification

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Based on the verification planning, verification process is carried out. The concept of materiality is considered during the verification process. A breakdown of the chosen approaches is included in the following table.

Parameter	Approach*	Errors* detected	Findings reference	Corrected	Remaining verification risk
N <sub>y,i,j</sub> (Number of project devices of type i and batch j operating during	SPL	<input checked="" type="checkbox"/>	CAR 1	<input checked="" type="checkbox"/>	Not material

year y)					
$\eta_{new,i,j}$ (Efficiency of the project device of each type i and batch j)	CDC	<input checked="" type="checkbox"/>	CAR1	<input checked="" type="checkbox"/>	Not material
$H_y$ (Adjustment to account for any continued use of pre-project devices during the year y)	SPL	<input checked="" type="checkbox"/>	CAR1	<input checked="" type="checkbox"/>	Not material
Date of commissioning of project device i	CDC	<input type="checkbox"/>	-	<input type="checkbox"/>	
Aggregate					Materiality threshold not exceeded

\*) incl. omissions and misstatements

+) Verification Approaches:

CDC: Complete data check of data including all data aggregation steps

NDC: Non-complete data check – omissions not material

SPL: Sampling approach (all data available)

ASP: Acceptance Sampling

COM: Data check at higher data aggregation levels and sampling at original data levels

For above mentioned risks in C.1, verification team has conducted a thorough cross check and verification as follows:

**1. Analysis and transfer of data from, ICS installation database, household usage Survey and WBT Reports for parameters under monitoring, to MR and excel ER spreadsheet:**

Total installation record presented in ER calculation spreadsheet were assessed and verified at CME office/premise during onsite verification audit. CME conducted usage survey and WBTs in October 2018, before the 1<sup>st</sup> verification site audit, (same was verified by interview with survey team, end users, CME and project consultant at site) in accordance with registered monitoring plan in PoA DD and CPA-DD. Verification team has assessed the value of parameters monitored (Number of project devices of type i and batch j operating during year y, Efficiency of the project device of each type i and batch j, Adjustment to account for any continued use of pre-project devices during the year y) against the Installation / survey / WBT records presented to the verification team by the CME.

Verification team reviewed and compared data available at CME office (total installation record, monitoring records) with data presented in the MR under the current monitoring period were found to be consistent. For more detail please refer Appendix-4 of this report.

**SECTION D. Means of verification**

**D.1. Desk/document review**

During the desk review all documents initially provided by the client and publicly available documents relevant for the verification were reviewed. The main documents are listed below:

- the registered PoA-DD including the monitoring plan<sup>/PoA-DD/</sup>,
- the registered CPA-DD<sup>/CPA-DD/</sup>,
- the PoA validation report<sup>/PoA-VAL/</sup>,
- CPA validation report<sup>/CPA-VAL/</sup>,
- the monitoring report, including the claimed emission reductions for the PoA<sup>/MR/</sup>,
- Field monitoring Records<sup>/FMR/</sup> and related work sheets<sup>/RC/</sup>
- Water Boiling Test Records<sup>/WBT/</sup> and related work sheets
- the emission reduction calculation spreadsheet<sup>/XLS/</sup>.

Other supporting documents, including publicly available information on the UNFCCC website and background information were also reviewed.

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

Duration of on-site inspection: 17/12/2018 to 19/12/2018				
No.	Activity performed on-site	Site location	Date	Team member
1.	<ul style="list-style-type: none"> <li>Assessment of the installation database</li> <li>Assessment of sample end-user/customer's agreements</li> <li>Comparison of end-user/customer's agreements with information in the database (dates, serial numbers, names, locations)</li> <li>Assessment of data management system, QA/QC procedures</li> <li>Interviews with local stove manufacturers</li> <li>Interviews with CME and BBF management</li> <li>Interview with operation manager of BBF/CPA implementer</li> <li>Interviews with CME representative</li> <li>Discussion of emission reductions and supporting documentation</li> <li>Telephonic interview with ceramic liner producer</li> <li>Video Telephonic interview with randomly selected non-sampled users from total database (distant users of BBF stoves) to further cross verify if the samples taken are representative of the entire population</li> </ul>	BBF office, Dhaka Bangladesh	17-19 Dec 2018	PKM
2.	Visit of randomly selected households  Meeting with partners or local manufacturers, interview with Field Survey team and WBT expert team	Stove users house in Bangladesh at different locations sampled	17-19 Dec 2018	
3.	Discussion on MR and supporting documents and final closing meeting	Lome	17-19 Dec 2018	

**D.3. Interviews**

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Jeon	Kyunghwa	CME (Ecoeye) Portfolio Manager- IM01	17-19 Dec-2018	CPA development, implementation schedule, QM Organisational structure funding/subsidy	PKM
2.	-Md.	Khalequzzaman	CPA (BBF) Implementer-Representative	17-19 Dec-2018	CPA development, MR, ER, QM, Organisational structure, QA/QC, Calculations, raw data, sales	

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
					database	
3.	Kumar Sarkar	Dr. Animesh	CEO (BBF)	17-19 Dec-2018	CPA development, MR, ER, QM, Organisational structure, QA/QC, Calculations, raw data, sales database	
4.	Lohia	Rohit	Principal Consultant (CSS)	17-19 Dec-2018	MR development, ER calculation and monitoring aspects including Sampling & Survey and WBT analysis	
5.	-	Nihar	Associate Consultant (CSS)	17-19 Dec-2018	MR development, ER calculation and monitoring aspects including Sampling & Survey and WBT analysis	
6.	Hossain	Kamal	Head-Operation (BBF)	17-19 Dec-2018	stove production, Stove installation, trainings, Information flow, data Management, record keeping, Financial Management, staff training, sales database	
7.	Hakim	Md Abdul	Zonal Manager (BBF)	17-19 Dec-2018	stove production, Stove installation, trainings, Information flow, data Management, record keeping, Financial Management, staff training, sales database	
8.	Hosain	Md. Masud	Zonal Manager (BBF)	17-19 Dec-2018	stove production, Stove installation, trainings, Information flow, data Management, record keeping, Financial Management, staff training,	



No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
					sales database	
9.	Haque	Md. Emdadul	Zonal Manager (BBF)	17-19 Dec-2018	stove production, Stove installation, trainings, Information flow, data Management, record keeping, Financial Management, staff training, sales database	
10.	Hossain	Faroque	Zonal Manager (BBF)	17-19 Dec-2018	stove production, Stove installation, trainings, Information flow, data Management, record keeping, Financial Management, staff training, sales database	
11.	Ahmed Sarkar	Faruk	Zonal Manager (BBF)	17-19 Dec-2018	stove production, Stove installation, trainings, Information flow, data Management, record keeping, Financial Management, staff training, sales database	
12.	Kibria	Md. Golam	Zonal Manager (BBF)	17-19 Dec-2018	stove production, Stove installation, trainings, Information flow, data Management, record keeping, Financial Management, staff training, sales database	
13.	Alam Mozumder	Md. Khorshed	Zonal Manager (BBF)	17-19 Dec-2018	stove production, Stove installation, trainings, Information flow, data Management, record keeping, Financial Management, staff training,	

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
					sales database	
14	Sarker	Md. Bulmazun	Zonal Manager (BBF)	17-19 Dec-2018	stove production, Stove installation, trainings, Information flow, data Management, record keeping, Financial Management, staff training, sales database	
15	Bari	Md. Khalequl	Zonal Manager (BBF)	17-19 Dec-2018	stove production, Stove installation, trainings, Information flow, data Management, record keeping, Financial Management, staff training, sales database	
16	-	Hadisuzzaman	Zonal Manager (BBF)	17-19 Dec-2018	stove production, Stove installation, trainings, Information flow, data Management, record keeping, Financial Management, staff training, sales database	
17	Hossain	Md. Ismail	Zonal Manager (BBF)	17-19 Dec-2018	stove production, Stove installation, trainings, Information flow, data Management, record keeping, Financial Management, staff training, sales database	
18	Chandra Mondal	Bikash	Zonal Manager (BBF)	17-19 Dec-2018	stove production, Stove installation, trainings, Information flow, data Management, record keeping, Financial Management, staff training,	

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
					sales database	
19	Alam	Md. Ashraful	AGM-Database (BBF)	17-19 Dec-2018	stove production, Stove installation, trainings, Information flow, data Management, record keeping, Financial Management, staff training, sales database	
20	Sardar	Md. Hasan	AGM-Monitoring (BBF)	17-19 Dec-2018	stove production, Stove installation, trainings, Information flow, data Management, record keeping, Financial Management, staff training, sales database	
21.	Parvin	Evana	Manager-Monitoring (BBF)	17-19 Dec-2018	Data entry, data management, and analysis of raw data to form the final installation database	
22.	Hossain	Jakir	Manager-Monitoring (BBF)	17-19 Dec-2018	Data entry, data management, and analysis of raw data to form the final installation database	
23.	Tahora	Sharaban	Deputy Manager-Database (BBF)	17-19 Dec-2018	Data entry, data management, and analysis of raw data to form the final installation database	
24.	Chowdhary	Antara	Officer-Database (BBF)	17-19 Dec-2018	Data entry, data management, and analysis of raw data to form the final installation database	
25.	Akter	Swety	Officer-Database (BBF)	17-19 Dec-2018	Data entry, data management, and analysis of raw data to form the final installation database	

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
26.	Golder	Dipantika	Officer-Database (BBF)	17-19 Dec-2018	Data entry, data management, and analysis of raw data to form the final installation database	
27.	Akhter Oni	Nazmin	Program Assistant (BBF)	17-19 Dec-2018	Data entry, data management, and analysis of raw data to form the final installation database	
28.	Akter	Nasrin	Officer-Database (BBF)	17-19 Dec-2018	Data entry, data management, and analysis of raw data to form the final installation database	
29.	Ali	Mohar	Officer-Monitoring (BBF)	17-19 Dec-2018	Data entry, data management, and analysis of raw data to form the final installation database	
30.	Begum	Asma	Stove User (Survey + WBT sample)	17-19 Dec-2018	Date of installation, number of person in house hold, number of stoves (BBF and any other), after sales service, Usage rate, Stove performance, Use of baseline stove	
31.	Kumar Das	Borun	Stove User (Survey + WBT sample)	17-19 Dec-2018	Date of installation, number of person in house hold, number of stoves (BBF and any other), after sales service, Usage rate, Stove performance, Use of baseline stove	
32.	Begum	Mumtaz	Stove User (Survey + WBT sample)	17-19 Dec-2018	Date of installation, number of person in house hold, number of stoves (BBF and	

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
					any other), after sales service, Usage rate, Stove performance, Use of baseline stove	
33.	Pal	Kartik	Stove User (Survey + WBT sample)	17-19 Dec-2018	Date of installation, number of person in house hold, number of stoves (BBF and any other), after sales service, Usage rate, Stove performance, Use of baseline stove	
34.	Begum	Rosina	Stove User (Survey + WBT sample)	17-19 Dec-2018	Date of installation, number of person in house hold, number of stoves (BBF and any other), after sales service, Usage rate, Stove performance, Use of baseline stove	
35.	Abdul	Skheikh	Stove User (Survey + WBT sample)	17-19 Dec-2018	Date of installation, number of person in house hold, number of stoves (BBF and any other), after sales service, Usage rate, Stove performance, Use of baseline stove	
36.	Khatoon	Nasima	Stove User (Survey + WBT sample)	17-19 Dec-2018	Date of installation, number of person in house hold, number of stoves (BBF and any other), after sales service, Usage rate, Stove performance, Use of baseline stove	
37.	Goni	Md.Abdul	Stove User	17-19 Dec-	Date of	

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
			(Survey + WBT sample)	2018	installation, number of person in house hold, number of stoves (BBF and any other), after sales service, Usage rate, Stove performance, Use of baseline stove	
38.	Alim	Abdul	Stove User (Survey + WBT sample)	17-19 Dec-2018	Date of installation, number of person in house hold, number of stoves (BBF and any other), after sales service, Usage rate, Stove performance, Use of baseline stove	
39.	Kha	Nazmul	Stove User (survey sample)	17-19 Dec-2018	Date of installation, number of person in house hold, number of stoves (BBF and any other), after sales service, Usage rate, Stove performance, Use of baseline stove	
40.	Das	Additto Kumar	Stove User (non-sample)	17-19 Dec-2018	Date of installation, number of person in house hold, number of stoves (BBF and any other), after sales service, Usage rate, Stove performance, Use of baseline stove	
41.	Das	Kowsik	Stove User (non-sample)	17-19 Dec-2018	Date of installation, number of person in house hold, number of stoves (BBF and any other), after sales service, Usage rate, Stove	

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
					performance, Use of baseline stove	
42.	Das	Bilash	Stove User (non-sample)	17-19 Dec-2018	Date of installation, number of person in house hold, number of stoves (BBF and any other), after sales service, Usage rate, Stove performance, Use of baseline stove	
43.	Das	Preeti	Stove User (non-sample)	17-19 Dec-2018	Date of installation, number of person in house hold, number of stoves (BBF and any other), after sales service, Usage rate, Stove performance, Use of baseline stove	
44.	Molla	Md. Jinder	Stove User (Survey + WBT sample)	17-19 Dec-2018	Date of installation, number of person in house hold, number of stoves (BBF and any other), after sales service, Usage rate, Stove performance, Use of baseline stove	
45.	Sheikh	Md. Ahad	Stove User (Survey + WBT sample)	17-19 Dec-2018	Date of installation, number of person in house hold, number of stoves (BBF and any other), after sales service, Usage rate, Stove performance, Use of baseline stove	
46.	Baroy	Komal	Stove User (survey sample)	17-19 Dec-2018	Date of installation, number of person in house hold, number of	

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
					stoves (BBF and any other), after sales service, Usage rate, Stove performance, Use of baseline stove	
47.	Sabukunna dhar	Syed	Stove User (survey sample)	17-19 Dec-2018	Date of installation, number of person in house hold, number of stoves (BBF and any other), after sales service, Usage rate, Stove performance, Use of baseline stove	
48.	Bala	Suzola	Stove User (survey sample)	17-19 Dec-2018	Date of installation, number of person in house hold, number of stoves (BBF and any other), after sales service, Usage rate, Stove performance, Use of baseline stove	
49.	- Md.	Josimuddin	Stove User (survey sample)	17-19 Dec-2018	Date of installation, number of person in house hold, number of stoves (BBF and any other), after sales service, Usage rate, Stove performance, Use of baseline stove	
50.	- Md.	Shabuddin	Stove User (survey sample)	17-19 Dec-2018	Date of installation, number of person in house hold, number of stoves (BBF and any other), after sales service, Usage rate, Stove performance, Use of baseline stove	



#### D.4. Sampling approach

##### D.4.1 Sampling during monitoring by the PP:

<input type="checkbox"/>	No sampling approach has been used by the PP to determine the monitored parameters				
<input checked="" type="checkbox"/>	A sampling approach has been taken for the following monitored parameter(s):				
	Parameter	Sampling approach <sup>1)</sup>	Sampling Type <sup>2)</sup>	Population	Sample Size
	$N_{yi,j}$ (Number of project devices of type i and batch j operating during year y)	StRS	PS	50,775 (10,808 1-Pot and 39,967 2-Pot)	90 (36 1-Pot, 54 2-Pot)
	$\eta_{new,i,j}$ (Efficiency of the project device of each type i and batch j)	StRS	PS	50,775 (10,808 1-Pot and 39,967 2-Pot)	14 (4 1-Pot and 10 2-Pot)
	$\mu_y$ (Adjustment to account for any continued use of pre-project devices during the year y)	StRS	PS	50,775 (10,808 1-Pot and 39,967 2-Pot)	90 (36 1-Pot and 54 2-Pot)

<sup>1)</sup>Sampling Approaches:

- SiRS: Simple Random Sampling  
 StRS: Stratified Random Sampling  
 SS: Systematic Sampling  
 CS: Cluster Sampling  
 MSS: Multi-stage Sampling

<sup>2)</sup>Sampling Types:

- PS: Parameter Sampling

#### Sampling design

- Objectives and reliability: The objective is to determine the parameter of interest of project stoves during the monitoring period with a 95/10 confidence/precision.
- Target population: Project households with Bondhu Chulha installed (50,775).
- Sampling methods: a stratified random sampling, with stove type (1-Pot / 2-Pot with year of installation, 2018) as strata, was applied for sampling. In line with registered monitoring plan, PP has considered both vintage and stove type for stratification. Thus, the population was divided into following strata:
  - 1-pot (stove type), 2018 (Vintage) and
  - 2-pot (stove type), 2018 (Vintage)

The end user data (including specific stove location) has been made available to the verification team for each of the 50,775 Bondhu chulhas as verified from the installation databases submitted and maintained at the BBF office.

- Sample size: the sample size is calculated based on project developer's knowledge and experience in line with para 12(b) and 12(c) of the Sampling and surveys for CDM project activities and programmes of activities, Version 07.0.

A representative sampling was adopted by the CME for Sampling of CPA under monitoring. The sampling plan consisted of monitoring of mainly following three parameters:

Parameter	Total population (N)	Expected results	Reliability	Sample Size (n) required <sup>2</sup>	Samples covered during monitoring
$\eta_{\text{new,1 pot, 2018}}$	10,808	33.0% (mean); 3.3% (SD)	95/10	2	4
$\eta_{\text{new,2 pot, 2018}}$	39,967	34.0% (mean); 3.4% (SD)	95/10	6	10
$N_{y,1 \text{ pot, 2018}}$	10,808	0.95 (proportion)	95/10	7	36
$N_{y,2 \text{ pot, 2018}}$	39,967	0.95 (proportion)	95/10	24	54
$\mu_{y,1 \text{ pot}}$	10,808	0.90 (proportion)	95/10	10	36
$\mu_{y,2 \text{ pot}}$	39,967	0.90 (proportion)	95/10	34	54

Based on the registered monitoring plan, 95/10 reliability level is selected for CPA specific sampling for all the parameters listed above at monitoring frequency prescribed in CPA-DD. The target population for the three parameters stated above are total Installed Bondhu chulha (1-pot & 2-Pot) covered under the monitoring period as recorded in the project installation database i.e. 50,775.

Sample size calculation is assessed to be in accordance with registered sampling plan in PoA-DD/CPA-DD and the guideline "Sampling and surveys for CDM project activities and programme of activities ": version 04.0 for sampling.

Every individual Bondhu Chulha under the CPA (observed to be uniquely identifiable by its ID number) was observed to be allocated a sample number, started at 1 and increased up to the total number of ICS in the strata (1-pot with year 2018 and 2-pot with year 2018) which is assessed to be appropriate.

CME/PP has submitted sample size calculation spreadsheet and random number generator where it was demonstrated that samples are drawn randomly using stratified random sampling technique with the help of online random number generators.

#### D.4.2 Sampling approaches during verification

<input type="checkbox"/>	No sampling approach has been used by the VT to verify the monitored parameters
<input checked="" type="checkbox"/>	A sampling approach has been applied by the VT for the following monitored parameter(s):

Parameter	Sampling approach <sup>1)</sup>	Sampling Type <sup>2)</sup>	Population	Sample Size
$N_{y,i,j}$ (Number of project devices of type i and batch j operating during year y)	SiRS	AS	90 (36 1-Pot, 54 2-Pot)	17 <sup>3</sup> (8 1-Pot, 9 2-Pot)
$\eta_{\text{new},i,j}$ (Efficiency of the project device of each type i and batch j)	SiRS	AS	14 (4 1-Pot, 10 2-Pot)	11 (2 1-Pot, 9 2-Pot)
$\mu_y$ (Adjustment to account for any continued use of pre-project devices during the year y)	SiRS	AS	90 (36 1-Pot, 54 2-Pot)	17 (8 1-Pot, 9 2-Pot)

<sup>2</sup> In case of mean parameters, the 'sample size required' mentioned above is the Student T-distribution adjusted sample size, as the initially calculated sample size was less than 30. This is in accordance with para 13 of Sampling and surveys for CDM project activities and programmes of activities, Version 07.0

<sup>3</sup> In addition to the aforesaid 17 samples selected by DoE, from PP samples, during on-site audit, verification team also randomly selected 4 more Bondhu Chulha users from ICS Installation database to further confirm the reliability of results obtained through sample based monitoring and concluded the samples to be representing the ICS population under the concerned CPA

Parameter	Sampling approach <sup>1)</sup>	Sampling Type <sup>2)</sup>	Population	Sample Size
-----------	---------------------------------	-----------------------------	------------	-------------

<sup>1)</sup>Sampling Approaches:

SiRS:	Simple Random Sampling
StRS:	Stratified Random Sampling
SS:	Systematic Sampling
CS:	Cluster Sampling
MSS:	Multi-stage Sampling

<sup>2)</sup>Sampling Types:

AS:	Acceptance Sampling
PS:	Parameter Sampling
COM:	Full data check at higher data aggregation levels and sampling at original data levels

During the on-site verification, a sampling approach has been used to verify the reported values of the monitored parameters on sampling basis.

The sampling approach conducted is in accordance with “Guidelines for Sampling and Surveys for CDM Project Activities and Programme Activities” and the “Standard for Sampling and Surveys for CDM Project Activities and Programme Activities”. As the population is relatively homogeneous (for a given stove type) with respect to the object of the sampling effort, simple random sampling method is adopted for verification of the parameters.

Since the CPA included in the PoA implements technologies/measures with high degree of standardization and the stove capacities in terms of energy savings per year in the CPAs are smaller than 1% of small scale CDM thresholds, the verification team decided to draw samples mainly from the project samples selected by PP. i.e. the acceptance sampling approach has been applied.

The verification team followed the “Standard for Sampling and Surveys for CDM Project Activities and Programme Activities” version 07, para 29 and 33, esp. for taking a samples out of the CME’s sample. VT has adopted the acceptance sampling in accordance with § 29 and 33 of the Sampling Standard by considering AQL 1% and UQL 20% (in line § 29 of Standard). Producer risk 10% and consumer risk 20% (as per § 33 a) and § 33 c) have been adopted as per standard for sampling and survey for CDM project activities and programme of the activities version 07. Being this PoA in a LDC (host country of Bangladesh, which is in line with § 33 c) a total of 08 sample were required with “Acceptance number C=0”. Thus, verification team has verified minimum 8 samples from each stratum (09 from 1 pot and 8 from 2-pot) from CME samples during onsite visit. 17 samples in total were randomly selected (from PP samples) by verification team using random excel function from the CME’s samples (separately for 1-Pot and 2-Pot). Also, the verification team additionally assessed 04 samples, which were not part of CME samples but the total ICS population (50,775) to further assess the implementation of the CPA and to confirm that the monitoring results are representative of the entire population. The list of interviewed end users/BBF chulha users have been presented under section D.3 above.

No CME sampling monitoring records/data results were found discrepant during the DOE verification site-visit. All the 17 samples visited by the verification team were reported as operational in CME monitoring records and were also found to be operational during onsite audit visit an in line with PP survey and WBT results. Further, the verification team reviewed all the primary monitoring records on-site to assess the consistency of information with ER calculation spreadsheet and found the monitoring data to be correctly transcribed into the ER sheet and MR. Based on that, verification team concludes that sampling results and values presented by CME in the MR and spread sheet and results of survey and WBT are consistent with the onsite observation and interview with the end users/BBF Chulha users.

Table 7: Applied sampling standard

AQL	01%
UQL	20%
Producer risk	10%
Consumer risk	20%
Sample size	08
Acceptance Number	1

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

<b>Areas of verification findings</b>	<b>No. of CL</b>	<b>No. of CAR</b>	<b>No. of FAR</b>
<b>General</b>			
Compliance of the monitoring report with the monitoring report form	0	1	0
Remaining forward action requests from validation and/or previous verification	0	0	0
CPA(s) considered for verification and covered in this report	0	0	0
<b>Programme of activities</b>			
Compliance of the programme implementation with the registered PoA-DD	0	0	1
Implementation and operation of the management system	0	0	0
Post-registration changes			
<ul style="list-style-type: none"> <li>Temporary deviations from the registered monitoring plan, applied methodology or applied standardized baseline</li> </ul>	0	0	0
<ul style="list-style-type: none"> <li>Corrections</li> </ul>	0	0	0
<ul style="list-style-type: none"> <li>Inclusion of a monitoring plan</li> </ul>	0	0	0
<ul style="list-style-type: none"> <li>Permanent changes to the registered monitoring plan or permanent deviation of monitoring from the applied methodology, standardized baseline or other applied standards or tools</li> </ul>	0	0	0
<ul style="list-style-type: none"> <li>Changes to the programme design or project design</li> </ul>	0	0	0
<ul style="list-style-type: none"> <li>Change of coordinating/managing entity</li> </ul>			
<ul style="list-style-type: none"> <li>Changes specific to afforestation and reforestation activities</li> </ul>	0	0	0
<b>Component project activities</b>			
Compliance of the CPA implementation with the included CPA design document	0	0	0
Post-registration changes			
<ul style="list-style-type: none"> <li>Temporary deviations from registered monitoring plan, applied methodology or applied standardized baseline</li> </ul>	0	0	0
<ul style="list-style-type: none"> <li>Corrections</li> </ul>	0	0	0
<ul style="list-style-type: none"> <li>Changes to the start date of the crediting period of component project activities</li> </ul>	0	0	0
<ul style="list-style-type: none"> <li>Inclusion of a monitoring plan</li> </ul>	0	0	0
<ul style="list-style-type: none"> <li>Permanent changes to the registered monitoring plan or permanent deviation of monitoring from the applied methodology, standardized baseline or other applied standards or tools</li> </ul>	0	0	0
<ul style="list-style-type: none"> <li>Changes to the programme design of project design</li> </ul>	0	0	0
<ul style="list-style-type: none"> <li>Changes specific to afforestation and reforestation component project activities</li> </ul>	0	0	0
Compliance of the registered monitoring plan with the methodology including applicable tool(s) and standardized baseline	0	0	0
Compliance of monitoring activities with the registered monitoring plan			
<ul style="list-style-type: none"> <li>Data and parameters fixed ex ante or at renewal of crediting period</li> </ul>	0	0	0
<ul style="list-style-type: none"> <li>Data and parameters monitored</li> </ul>	0	0	0
<ul style="list-style-type: none"> <li>Implementation of sampling plan</li> </ul>	0	0	0

Compliance with the calibration frequency requirements for measuring instruments	0	1	1
Assessment of data and calculation of emission reductions or net removals	1	0	0
• Calculation of baseline GHG emissions or baseline net GHG removals by sinks	0	0	0
• Calculation of project GHG emissions or actual net GHG removals by sinks	0	0	0
• Calculation of leakage GHG emissions	0	0	0
• Summary of calculation of GHG emission reductions or net GHG removals by sinks	0	0	0
• Comparison of actual GHG emission reductions or net GHG removals by sinks with estimates in included CPA	0	0	0
• Remarks on difference from estimated value in included CPA	0	0	0
Assessment of reported sustainable development co-benefits	-	-	-
Global stakeholder consultation	0	0	0
Others (please specify)	0	0	0
<b>Total</b>	<b>1</b>	<b>2</b>	<b>2</b>

## SECTION E. Verification findings

### E.1. General

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

<b>Means of verification</b>	<p>A draft monitoring report was submitted to the verification team by the CME. The DOE has made this report publicly available prior to the start of the verification activities. No comments were received.</p> <p>By means of the UNFCCC website it has been checked that the latest applicable MR template CDM-PoA-MR-FORM has been used.</p> <p>Further it has been checked whether the latest instructions for filling out the MR template have been followed. Every section has been checked against the respective guidance.</p> <p>The following sources of information have been used in this context:</p> <ul style="list-style-type: none"> <li>• /MR/</li> <li>• /MRT/</li> <li>• /unfccc/</li> </ul>		
<b>Findings</b>	<input checked="" type="checkbox"/>	The latest reporting template CDM-PoA-MR-FORM as listed on the UNFCCC website has been used for the Monitoring Report to be uploaded.	
	<input type="checkbox"/>	The latest instructions for filling out the MR have been followed. No adverse finding has been identified in the course of this verification.	
	<input checked="" type="checkbox"/>	The respective requirements have widely been complied with; however; the following issues needed to be addressed in this context: CAR 01	
<b>Conclusion</b>	<input type="checkbox"/>	No CARs/CLs have been raised in this context. No correction was required in the context. The project is in line with the respective requirements.	
	<input checked="" type="checkbox"/>	The raised CARs/CLs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.	
		Final revised MR is assessed to be completed in accordance with latest instructions for filling out the MR in the template.	

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

&gt;&gt;

During the validation, the validating DOE might have raised issues that could not be closed or resolved during the validation stage. For this purpose, FARs might have been raised. Likewise, FARs might have been raised in the course of previous verifications.

In the course of this verification the latest version of the last issued MR<sup>/MR/</sup> and the PoA Verification report<sup>/VER/</sup>, have been checked in order to identify any remaining forward action requests. For the current monitoring period the following applies:

(i) Open issues from validation:

<input checked="" type="checkbox"/>	There were no open issues which have been addressed in the latest version of the validation report.
<input type="checkbox"/>	All open issues from the validation have been appropriately addressed in the context of previous verifications.
<input type="checkbox"/>	All issues related to the validation have been appropriately addressed in the course of the current monitoring period (for details please refer to appendix 4)
<input type="checkbox"/>	The following issues related to the validation have <b>not</b> yet been appropriately addressed (for details please refer to appendix 4):
	- N/A

(ii) Open issues from previous verifications:

<input checked="" type="checkbox"/>	N/A – as this is the first monitoring period for this CDM project activity.
<input type="checkbox"/>	There were no open issues which have been addressed in the previous verification report
<input type="checkbox"/>	All issues related to the previous verification have been appropriately addressed in the course of the current monitoring period (for details please refer to appendix 4)
<input type="checkbox"/>	The following issues related to the previous verification have <b>not</b> yet been appropriately addressed (for details please refer to appendix 4):
	- N/A

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

Title and UNFCCC reference number of the CPA included in the PoA as of the end of this monitoring period	Is the CPA considered for this verification? (yes/no)	The date when the CPA was included	Version of the PoA-DD	Confirmation that a request for issuance including the CPA has been published for the previous monitoring period (Y/N)
CPA 10431-0001	Y	31/08/2018	4.0	Y

**E.2. Programme of activities**

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

<b>Means of verification</b>	<p>By means of an in-depth review of the PoA-DD in its latest form – as downloaded from the UNFCCC project site - and the checks carried out during the on-site visit and interviewed assessment, whether the project has been implemented and operated in line with the latest approved version of the PoA-DD and whether all physical features of the project are in place. The following were checked:</p> <ul style="list-style-type: none"> <li>Implemented technology, project equipment as well as monitoring plan in line with registered monitoring plan and equipment.</li> <li>Interviews with operational personnel were carried out, QMS records, maintenance records were checked in this context.</li> <li>Special focus was laid to determine whether a potential phase wise implementation has occurred within the crediting period or any delays with respect to the starting dates have occurred.</li> </ul>
------------------------------	---

	<ul style="list-style-type: none"> <li>• Further it has been checked whether any observed deviations from the registered project design have been correctly addressed as PRCs.</li> </ul> <p>The following sources of information have been used in this context:</p> <ul style="list-style-type: none"> <li>• /PoA-DD/</li> <li>• /CPA-DD/</li> <li>• /MR/</li> <li>• /VVS/</li> <li>• /XLS/</li> <li>• /QMS/</li> <li>• /unfccc/</li> </ul>	
<b>Findings</b>	<input checked="" type="checkbox"/>	The project has been implemented as described in the latest version of the PoA-DD as well as in section B.1 of the monitoring report. No deviations thereof have been identified in the course of this verification.
	<input type="checkbox"/>	The following deviations from the registered / approved project design and or the project description in the MR have been identified in the course of this verification (for further details please refer to section E.4): - N/A
	<input type="checkbox"/>	In this context the following CARs, CLs have been raised:
		<i>In case of phased implementation:</i>
	<input checked="" type="checkbox"/>	N/A
	<input type="checkbox"/>	The phased implementation has correctly and in sufficient detail been described in the latest version of the PoA-DD.
	<input type="checkbox"/>	The description in section 3.1 of the MR differs in content or the level of detail from the latest version of the PoA-DD. However, the description in the MR is correct and reflects the situation during the site inspection.
	<input type="checkbox"/>	The project description in the PoA-DD/MR is not deemed sufficient. The detailed implementation timeline is as follows: N/A or add as appropriate
<b>Conclusion</b>	<input checked="" type="checkbox"/>	No CARs/CLs have been raised in this context. No correction was required in the context. The project is in line with the respective requirements.
	<input type="checkbox"/>	The raised CARs/CLs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.
		During the verification an onsite visit was carried out. On the basis of this site visit and the reviewed project documentation it can be confirmed that w.r.t. the realized energy efficiency measures, the project has been implemented as described in the registered CPA-DDs

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

<b>Means of verification</b>	The verification team carried out onsite visits for the CPA included during this monitoring period (CPA-01) and interviewed key personnel and several households. Interviewees included the CME, stove manufacturer/local partners, and project developer. It was established that the programme management system has been implemented and operated as described in the registered PoA-DD and CPA-DD.
<b>Findings</b>	N/A
<b>Conclusion</b>	The management system is implemented as per the registered PoA-DD & CPA-DDs.

### E.2.3. Post-registration changes

- ☒ By means of site visit, document check and interview it could be verified that the project is implemented and operated in line with the registered PoA-DD and the applied methodology.
- ☐ Post registration changes have been identified and are assessed in detail in the subsequent steps.

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

&gt;&gt;

It has been checked whether Temporary deviations from the registered monitoring plan (TDfrMP) or Temporary deviations from monitoring methodology or standardized baseline (TDfMM) have been applied during this monitoring period. The result is summarized in the table below.

<input checked="" type="checkbox"/>	No Temporary deviations from the registered monitoring plan (TDfrMP) or Temporary deviations from monitoring methodology or standardized baseline (TDfMM).have been submitted to the UNFCCC prior to the current monitoring period.									
<input type="checkbox"/>	The following TDfrMP or TDfMM have been approved or are under approval by the UNFCCC									
	1	<table border="1"> <tr> <td>Title</td> <td></td> </tr> <tr> <td>Status</td> <td><input type="checkbox"/>under approval;<input type="checkbox"/>approved (approval No.:      )</td> </tr> <tr> <td>Appr.date</td> <td></td> </tr> <tr> <td>Ref. No.</td> <td></td> </tr> </table>	Title		Status	<input type="checkbox"/> under approval; <input type="checkbox"/> approved (approval No.:      )	Appr.date		Ref. No.	
Title										
Status	<input type="checkbox"/> under approval; <input type="checkbox"/> approved (approval No.:      )									
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Ref. No.										
	2	<table border="1"> <tr> <td>Title</td> <td></td> </tr> <tr> <td>Status</td> <td><input type="checkbox"/>under approval;<input type="checkbox"/>approved (approval No.:      )</td> </tr> <tr> <td>Appr.date</td> <td></td> </tr> <tr> <td>Ref.No.</td> <td></td> </tr> </table>	Title		Status	<input type="checkbox"/> under approval; <input type="checkbox"/> approved (approval No.:      )	Appr.date		Ref.No.	
Title										
Status	<input type="checkbox"/> under approval; <input type="checkbox"/> approved (approval No.:      )									
Appr.date										
Ref.No.										
<input checked="" type="checkbox"/>	During the verification of the current MP no need for a TDfrMP or TDfMM has been identified. The monitoring plan is in accordance with the approved methodology applied by the PA									
<input type="checkbox"/>	An approval of the following TDfrMP or TDfMM is to be requested from the EB for the current MP as appendix 1 of the project standard does not apply. Please refer to the related PRC report submitted along with this issuance request for further details w.r.t. the assessment of the PRC.									
	1	Issue: <table border="1"><tr><td></td></tr></table>								
	2	Issue: <table border="1"><tr><td></td></tr></table>								
<input type="checkbox"/>	The following TDfrMP or TDfMM for which appendix 1 of the PS is applicable have been applied:									
	1	Issue: <table border="1"><tr><td></td></tr></table>								
	2	Issue: <table border="1"><tr><td></td></tr></table>								

### E.2.3.2. Corrections

&gt;&gt;

It has been checked whether any corrections to project information or parameters fixed at validation have been approved during this monitoring period or submitted with this monitoring report. The result is summarized in the table below.

<input checked="" type="checkbox"/>	During this verification of the current MP no need for corrections has been identified.
<input type="checkbox"/>	The following corrections have been applied:
	NA
	<input type="checkbox"/> A related post registration change has been submitted prior to the issuance request. <input type="checkbox"/> No related post registration change is submitted along with this issuance request. Please refer to the related PRC report submitted along with this issuance request for further details w.r.t. the assessment of the PRC.



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

&gt;&gt;

<input checked="" type="checkbox"/>	N/A - as this monitoring plan was part of the registered PoA-DD /CPA-DD
<input type="checkbox"/>	In line with PS § 281 or § 282 the PP has forwarded a monitoring plan to the DOE for validation. No prior approval of the monitoring plan was required as the PP in line with PS § 282 wished to submit the monitoring plan together with the request for issuance for the first monitoring period. Please refer to the related PRC report submitted along with this issuance request for further details w.r.t. the assessment of the PRC.
<input type="checkbox"/>	In line with § 282 the PP submitted a monitoring plan prior to the submission of the request for issuance for validation to the DOE. A DOE has assessed the monitoring plan in line with related VVS requirements and submitted a related PRC report for prior approval. The approval has been received on DD/MM/YYYY via approval number

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

&gt;&gt;

It has been checked whether any permanent changes from the registered monitoring plan (PCfrMP) or applied methodologies (PCfMM) including standardized baselines (PCfSB) have been approved prior or during this monitoring period or submitted with this monitoring report. The result is summarized in the table below.

<input checked="" type="checkbox"/>	No PCfrMP, PCfMM or PCfSB have been submitted to the UNFCCC prior to the current monitoring period	
<input type="checkbox"/>	The following PCfrMP, PCfMM or PCfSB have been approved or are under approval by the UNFCCC	
	Title	
	Status	<input type="checkbox"/> under approval; <input type="checkbox"/> approved
	Ref. No.	PRC-10431-0001
<input checked="" type="checkbox"/>	During the verification of the current MP no need for a PCfrMP, PCfMM or PCfSB has been identified. The monitoring plan is in accordance with the approved methodology applied by the PA	
<input type="checkbox"/>	An approval of the following PCfrMP, PCfMM or PCfSB is to be requested from the EB for the current MP as appendix 1 of the project standard does not apply.	
	1	Issue:
	2	Issue:
<input type="checkbox"/>	The following PCfrMP, PCfMM or PCfSB for which appendix 1 of the PS is applicable have been applied:	
	1	Issue:
	2	Issue:

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

&gt;&gt;

It has been checked whether any changes to the project design (CoPD) have been approved prior or during this monitoring period or submitted with this monitoring report. The result is summarized in the table below.

<input checked="" type="checkbox"/>	No CoPD has been submitted to the UNFCCC prior to the current monitoring period
-------------------------------------	---

<input type="checkbox"/>	The following CoPD have been approved or are under approval by the UNFCCC		
1	Title		
	Status	<input type="checkbox"/> under approval; <input type="checkbox"/> approved	
	Appr.date		
	Ref. No.		
2	Title		
	Status	<input type="checkbox"/> under approval; <input type="checkbox"/> approved	
	Appr.date		
	Ref.No.		
<input checked="" type="checkbox"/>	During the verification of the current MP no need for a CoPD has been identified. The monitoring plan is in accordance with the approved methodology applied by the PA		
<input type="checkbox"/>	An approval of the following CoPD.is to be requested from the EB for the current MP as appendix 1 of the project standard does not apply.		
1	Issue:		
2	Issue:		
<input type="checkbox"/>	The following CoPD for which appendix 1 of the PS is applicable have been applied:		
1	Issue:		
2	Issue:		

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

>>  
N/A

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

>>

<input checked="" type="checkbox"/>	N/A - as this monitoring plan was part of the registered CPA-DD
-------------------------------------	---

**E.3. Component project activities****E.3.1. Compliance of the CPA implementation with the included CPA design document**

<b>Means of verification</b>	The Verification Team has carried out onsite visits and interviews. The MR has been checked and compared to the PoA-DD and CPA-DDs.
<b>Findings</b>	N/A
<b>Conclusion</b>	The CPAs have been implemented as per registered PoA-DD and respective CPA-DDs

**E.3.2. Post-registration changes**

- ☒ By means of site visit, document check and interview it could be verified that the project is implemented and operated in line with the registered CPA-DDs and the applied methodology.
- ☐ Post registration changes have been identified and are assessed in detail in the subsequent steps.

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

>>

It has been checked whether Temporary deviations from the registered monitoring plan (TDfrMP) or Temporary deviations from monitoring methodology or standardized baseline (TDfMM) have been applied during this monitoring period. The result is summarized in the table below.

<input checked="" type="checkbox"/>	No Temporary deviations from the registered monitoring plan (TDfrMP) or Temporary deviations from monitoring methodology or standardized baseline (TDfMM) have been submitted to the UNFCCC prior to the current monitoring period.		
<input type="checkbox"/>	The following TDfrMP or TDfMM have been approved or are under approval by the UNFCCC		
	1	Title	
		Status	<input type="checkbox"/> under approval; <input type="checkbox"/> approved (approval No.: )
		Appr.date	
		Ref. No.	
	2	Title	
		Status	<input type="checkbox"/> under approval; <input type="checkbox"/> approved (approval No.: )
		Appr.date	
		Ref.No.	
<input checked="" type="checkbox"/>	During the verification of the current MP no need for a TDfrMP or TDfMM has been identified. The monitoring plan is in accordance with the approved methodology applied by the PA		
<input type="checkbox"/>	An approval of the following TDfrMP or TDfMM is to be requested from the EB for the current MP as appendix 1 of the project standard does not apply. Please refer to the related PRC report submitted along with this issuance request for further details w.r.t. the assessment of the PRC.		
	1	Issue:	
	2	Issue:	
<input type="checkbox"/>	The following TDfrMP or TDfMM for which appendix 1 of the PS is applicable have been applied:		
	1	Issue:	
	2	Issue:	

### E.3.2.2. Corrections

>>

It has been checked whether any corrections to project information or parameters fixed at validation have been approved during this monitoring period or submitted with this monitoring report. The result is summarized in the table below.

<input checked="" type="checkbox"/>	During the verification of the current MP no need for corrections has been identified.		
<input type="checkbox"/>	The following corrections have been applied:		
	1	Issue:	
	2	Issue:	
	<input type="checkbox"/> A related post registration change has been submitted prior to the issuance request. <input type="checkbox"/> A related post registration change is submitted along with this issuance request. Please refer to the related PRC report submitted along with this issuance request for further details w.r.t. the assessment of the PRC.		

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

&gt;&gt;

Not applicable

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

&gt;&gt;

<input checked="" type="checkbox"/>	N/A - as this monitoring plan was part of the included CPA-DD
<input type="checkbox"/>	In line with PS § 281 or § 282 the PP has forwarded a monitoring plan to the DOE for validation. No prior approval of the monitoring plan was required as the PP in line with PS § 282 wished to submit the monitoring plan together with the request for issuance for the first monitoring period. Please refer to the related PRC report submitted along with this issuance request for further details w.r.t. the assessment of the PRC.
<input type="checkbox"/>	In line with § 282 the PP submitted a monitoring plan prior to the submission of the request for issuance for validation to the DOE. A DOE has assessed the monitoring plan in line with related VVS requirements and submitted a related PRC report for prior approval. The approval has been received on DD/MM/YYYY via approval number

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

&gt;&gt;

It has been checked whether any permanent changes from the registered monitoring plan (PCfrMP) or applied methodologies (PCfMM) including standardized baselines (PCfSB) have been approved prior or during this monitoring period or submitted with this monitoring report. The result is summarized in the table below.

<input checked="" type="checkbox"/>	No PCfrMP, PCfMM or PCfSB have been submitted to the UNFCCC prior to the current monitoring period									
<input type="checkbox"/>	The following PCfrMP, PCfMM or PCfSB have been approved or are under approval by the UNFCCC									
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Status	<input type="checkbox"/> under approval; <input type="checkbox"/> approved									
Appr.date										
Ref. No.										
	2	<table border="1"> <tr> <td>Title</td> <td></td> </tr> <tr> <td>Status</td> <td><input type="checkbox"/>under approval;<input type="checkbox"/>approved</td> </tr> <tr> <td>Appr.date</td> <td></td> </tr> <tr> <td>Ref. No.</td> <td></td> </tr> </table>	Title		Status	<input type="checkbox"/> under approval; <input type="checkbox"/> approved	Appr.date		Ref. No.	
Title										
Status	<input type="checkbox"/> under approval; <input type="checkbox"/> approved									
Appr.date										
Ref. No.										
<input checked="" type="checkbox"/>	During the verification of the current MP no need for a PCfrMP, PCfMM or PCfSB has been identified. The monitoring plan is in accordance with the approved methodology applied by the PA									
<input type="checkbox"/>	An approval of the following PCfrMP, PCfMM or PCfSB is to be requested from the EB for the current MP as appendix 1 of the project standard does not apply.									
	1	Issue:								
	2	Issue:								
<input type="checkbox"/>	The following PCfrMP, PCfMM or PCfSB for which appendix 1 of the PS is applicable have been applied:									
	1	Issue:								
	2	Issue:								

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

&gt;&gt;

It has been checked whether any changes to the project design (CoPD) have been approved prior or during this monitoring period or submitted with this monitoring report. The result is summarized in the table below.

<input checked="" type="checkbox"/>	No CoPD has been submitted to the UNFCCC prior to the current monitoring period		
<input type="checkbox"/>	The following CoPD have been approved or are under approval by the UNFCCC		
	1	Title	
		Status	<input type="checkbox"/> under approval; <input type="checkbox"/> approved
		Appr.date	
		Ref. No.	
	2	Title	
		Status	<input type="checkbox"/> under approval; <input type="checkbox"/> approved
		Appr.date	
		Ref.No.	
<input checked="" type="checkbox"/>	During the verification of the current MP no need for a CoPD has been identified. The monitoring plan is in accordance with the approved methodology applied by the PA		
<input type="checkbox"/>	An approval of the following CoPD is to be requested from the EB for the current MP as appendix 1 of the project standard does not apply.		
	1	Issue:	
	2	Issue:	
<input type="checkbox"/>	The following CoPD for which appendix 1 of the PS is applicable have been applied:		
	1	Issue:	
	2	Issue:	

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

&gt;&gt;

<input checked="" type="checkbox"/>	N/A - as this registered PoA is not an afforestation and reforestation activity
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**E.3.3. Compliance of the registered monitoring plan with the methodology including applicable tool(s) and standardized baseline**

<b>Means of verification</b>	By means of comparison of the MR with (i) the applied CDM methodology (ii) all applicable CDM Meth tools and (iii) if applicable, a standardized baseline the verification team has checked whether the MP is in compliance with the MP related requirements of the applied methodology/tools/SB.  The following sources of information have been used in this context: • /MR/ • /AMSII.G/ • /unfccc/	
<b>Findings</b>	<input checked="" type="checkbox"/>	The MP is completely in accordance with the approved methodology applied by the CDM PoA project (last registered/approved version of the PoA-DD)

	<input type="checkbox"/>	The breakdown of MP accordance of the referenced guidelines is as follows:		
		1	Title (of the guideline)	
			MP compliance	<input type="checkbox"/> full compliance <input type="checkbox"/> findings have been raised <input checked="" type="checkbox"/> N/A (for MP)
		2	Title (of the tool)	[Name_SB]
			Version	[Version_SB]
			MP compliance	<input type="checkbox"/> full compliance <input type="checkbox"/> findings have been raised <input checked="" type="checkbox"/> N/A
	<input type="checkbox"/>	The breakdown of MP accordance of the applicable SB is as follows:		
		1	Title (of the SB)	Name of SB
			Version	
	<input type="checkbox"/>		MP compliance	
In this context the following CARs, CLs, FARs have been raised:				
<b>Conclusion</b>	<input checked="" type="checkbox"/>	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.		
	<input type="checkbox"/>	The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.		
	The applied methodology is consistent with the versions on the UNFCCC website. No tools have been applied. No standardised baseline is applied.			

### E.3.4. Compliance of monitoring activities with the registered monitoring plan

#### E.3.4.1. Data and parameters fixed ex ante or at renewal of crediting period

<b>Means of verification</b>	By means of comparison of the MR and the ER calculation with the latest version of the revised and approved CPA-DD, the verification team has checked whether all parameters fixed ex-ante or at renewal of the crediting period have been applied correctly. Further it has been checked whether the GWP for the respective period have been correctly applied. The following sources of information have been used in this context: <ul style="list-style-type: none"> <li>• /MR/</li> <li>• /XLS/</li> <li>• /PoA-DD/</li> <li>• /CPA-DD/</li> <li>• /PS/</li> <li>• /VVS/</li> </ul>	
<b>Findings</b>	<input checked="" type="checkbox"/>	The MR and the ER calculation have considered the parameters fixed ex-ante correctly, no deviations have been observed.
	<input type="checkbox"/>	The following deviations from the parameters fixed ex-ante or at renewal of crediting period have been identified in the course of this verification: - N/A
	<input type="checkbox"/>	In this context the following CARs, CLs, FARs have been raised:  
<b>Conclusion</b>	<input checked="" type="checkbox"/>	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.
	<input type="checkbox"/>	The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out.

	The data and parameters listed in the section E.1 of MR were cross checked with the applied methodology, subscribed tools, registered CPA-DDs, ER calculation spread sheets and found consistent. By this the applied parameters fixed are correct and values used are consistent with the related registered CPA-DD.
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### E.3.4.2. Data and parameters monitored

<b>Means of verification</b>	During the verification all relevant monitoring parameters (as listed in the CPA-DDs) have been verified with regard to the <ul style="list-style-type: none"> <li>(i) appropriateness of the applied measurement / determination method,</li> <li>(ii) the correctness of the values applied for ER calculation,</li> <li>(iii) the accuracy, and applied QA/QC measures.</li> </ul> The results as well as the verification procedure are described parameter-wise in the project specific verification checklist (Appendix 5).
<b>Findings</b>	CAR1
<b>Conclusion</b>	<div> <input type="checkbox"/> No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.         </div> <div> <input checked="" type="checkbox"/> The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.         </div> <p>During the verification all relevant monitoring parameters (as listed in chapter D.7.1 of the registered CPA-DD) have been verified with regard to the appropriateness of the applied measurement / determination method, the correctness of the values applied for ER calculation, the accuracy, and applied QA/QC measures. The results as well as the verification procedure are described parameter-wise in the project specific verification checklist (Appendix 5). After appropriate corrections were carried out by the project participant it can be confirmed that all monitoring parameters have been measured / determined without material misstatements and in line with all applicable standards and relevant requirements.</p>

### E.3.4.3. Implementation of sampling plan

<b>Means of verification</b>	<p>The verification team checked whether the PP applied a sampling approach to determine the monitored values. Further it has been checked whether the PP correctly applied the implemented sampling plan including</p> <ul style="list-style-type: none"> <li>(i) description of the implemented sampling design</li> <li>(ii) collected data</li> <li>(iii) analysis of collected data</li> <li>(iv) demonstration on whether the required confidence/precision has been met.</li> </ul> <p>The following sources of information have been used in this context:</p> <ul style="list-style-type: none"> <li>• /MR/</li> <li>• /RC/</li> <li>• /XLS/</li> <li>• /FMR/</li> <li>• /WBT/</li> <li>• /PoA-DD/</li> <li>• /CPA-DD/</li> </ul>						
<b>Findings</b>	<div> <input type="checkbox"/> The PPs have not applied sampling approaches for the parameters monitored.         </div> <div> <input checked="" type="checkbox"/> The PPs have applied sampling approaches for the following parameters monitored.         <table border="1"> <tr> <td>1. Parameter:</td><td><b>N<sub>yl,j</sub></b></td></tr> <tr> <td>Name:</td><td>Number of project devices of type i and batch j operating during year y</td></tr> <tr> <td>Description on how the sampling efforts and survey comply with</td><td>The CPA implementer is maintaining database of all the stove installed under the CPA. A monitoring survey was conducted in Oct 2018 to determine the number of operating stoves of type i and batch j on a sampling basis. The formula used to calculate the number of operational stoves of type i and batch j is as follows:</td></tr> </table> </div>	1. Parameter:	<b>N<sub>yl,j</sub></b>	Name:	Number of project devices of type i and batch j operating during year y	Description on how the sampling efforts and survey comply with	The CPA implementer is maintaining database of all the stove installed under the CPA. A monitoring survey was conducted in Oct 2018 to determine the number of operating stoves of type i and batch j on a sampling basis. The formula used to calculate the number of operational stoves of type i and batch j is as follows:
1. Parameter:	<b>N<sub>yl,j</sub></b>						
Name:	Number of project devices of type i and batch j operating during year y						
Description on how the sampling efforts and survey comply with	The CPA implementer is maintaining database of all the stove installed under the CPA. A monitoring survey was conducted in Oct 2018 to determine the number of operating stoves of type i and batch j on a sampling basis. The formula used to calculate the number of operational stoves of type i and batch j is as follows:						

		the validated sampling plan:	<p> <math display="block">N_{y,i,j} = ( n_{i,j,operational} / n_{i,j,total} ) * N_{y,i,j,installed}</math>           Where:            N = number of stoves            n = number of samples         </p> <p>At the point of Bondhu Chulha installation, the presence of existing Bondhu Chulha, if any, is checked in the ICS installation record. Subsequent (second) Bondhu Chulha, if any, is not included in the CPA.</p> <p>Also, the presence of one Bondhu Chula per household is further cross-checked on sampling basis during the Ex-post monitoring survey.</p> <p>All sampled stoves were monitored and reported as operational and hence, <math>n_{i,j,operational} / n_{i,j,total} = 1</math>. Thus, <math>N_{y,i,j} = N_{y,i,j,installed}</math>.</p> <p>A sample size was calculated based on estimated proportion values based on project developer's knowledge and experience in line with para 12(b) and 12(c) of the Sampling and surveys for CDM project activities and programmes of activities, Version 07.0. The samples were drawn from the installation database of project stoves for the year 2018 using online random number generator. A total of 100 samples ((40 1-Pot and 60 2-Pot) in line with Standard: Sampling and surveys for CDM project activities and programmes of activities, Version 07.0 were identified by PP with expected response rate of 90%. Subsequently, 90 stove users out of hundred samples identified were surveyed <sup>/XLS/</sup>.</p> <p>Procedures for sampling have been duly articulated in the monitoring report, and a sample of survey questionnaires has been furnished to verification team.</p>
		2. Parameter:	$\eta_{new,i,j}$
		Name:	Efficiency of the project device of each type i and batch j
		Description on how the sampling efforts and survey comply with the validated sampling plan:	<p>The objective is to determine the mean thermal efficiency of stoves installed (50,775) in the current monitoring period with a 95/10 confidence/precision.</p> <p>Following the Guideline: Sampling and surveys for CDM project activities and programmes of activities, version 04.0, a stratified random sampling, with stove type (1-Pot / 2-Pot) and batch (2018) as strata, was applied for target population. The sample size is calculated based on estimated efficiency values and variance based on project developer's knowledge and experience in line with para 12(b) and 12(c) of the Sampling and surveys for CDM project activities and programmes of activities, Version 07.0.</p> <p>The sample is drawn from the BBF Bondhu Chulha installation records using stratified random sampling approach. The samples were selected randomly after arranging them in chronological order of date of sale and assigning a sampling number to each ICS in each stratum.</p> <p>Random numbers were generated using online random number generator available at <a href="http://stattrek.com/statistics/random-number-generator.aspx">http://stattrek.com/statistics/random-number-generator.aspx</a> separately for each strata and the ICS</p>



			<p>corresponding to random number received were selected from sampling strata for monitoring.</p> <p>The verification team can therefore confirm that the number of stoves tested is higher compared to when n is calculated using the z-value or respective t-values as read from the t-distribution table<sup>/tdist/</sup>. The sample size for the stove efficiency test is therefore conservative and in line with §13 of the Sampling Standard version 7.</p> <p>CME has also demonstrated the reliability check analysis for all tests conducted e.g. sample size calculation and reliability check for Water boiling test. Based on the assessment of spreadsheet, which DOE has assessed and found to be appropriate and in line with registered monitoring plan, applied methodology and Standard for Sampling and Survey for PA and PoA version 07.</p>
	2.	Parameter:	$\mu_y$
		Name:	Adjustment to account for any continued use of pre-project devices during the year y
		Description on how the sampling efforts and survey comply with the validated sampling plan:	<p>The sampled households are checked for presence of baseline stove and if it was being used along with project stove for cooking. For samples where baseline stove was found not being used, <math>\mu_y = 1.0</math></p> <p>For samples where the baseline stove is found to be in use, <math>\mu_y</math> shall be determined as:</p> <p>ratio of frequency of usage (i.e. number of meals cooked on ICS Vs Total number of meals cooked on ICS and baseline stove)</p> <p>For example, during the survey if was found that total average use of project ICS is 3 times per day and that of baseline stove is 5 times per week,</p> <p><math>\mu_y = 3*7 / (3*7 + 5)</math>.</p> <p>A sample size was calculated based on estimated proportion values based on project developer's knowledge and experience in line with para 12(b) and 12(c) of the Sampling and surveys for CDM project activities and programmes of activities, Version 07.0. The samples were drawn from the installation database of project stoves for the year 2018 using online random number generator. A total of 100 samples (40 1-Pot and 60 2-Pot) in line with Standard: Sampling and surveys for CDM project activities and programmes of activities, Version 07.0 were identified by PP with expected response rate of 90%. Subsequently, 90 stove users out of hundred samples identified were surveyed <sup>//XLS/</sup>.</p> <p>Procedures for sampling have been duly articulated in the monitoring report, and a sample of survey questionnaires has been furnished to verification team.</p>
	<input type="checkbox"/>	In this context the following CARs, CLs, FARs have been raised:	
<b>Conclusion</b>	<input checked="" type="checkbox"/>	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.	
	<input type="checkbox"/>	The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.	
	Based on the assessment of WBT records including analysis sheet for the thermal efficiencies test and Monitoring Survey records for survey related parameters, it is		

	<p>concluded that all the parameters have been monitored correctly in accordance with registered monitoring plan and applied methodology.</p> <p>The verification team concludes that all samples monitored parameters have been calculated correctly in line with the registered CPA-DDs and the sampling standard.</p> <p>For the parameters, the achieved relative precision of the 95% confidence level is demonstrated to be met.</p> <p>Based on all the analysis and assessment of WBT record and monitoring survey records along with the onsite visit and interview and physical inspection of the project stoves installation in Bangladesh, verification team concludes the approach and result deemed appropriate and acceptable.</p>
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#### E.3.4.4. Compliance with the calibration frequency requirements for measuring instruments

<b>Means of verification</b>	<p>During the verification, the relevant monitoring equipment has been checked whether the calibration requirements have been met; especially if the calibration frequency is in line with the requirements of the validated CPA-DD and/or the applicable calibration standards.</p> <p>The results as well as the verification procedure are described equipment-wise in the project specific verification checklist (Appendix 5).</p> <p>The following sources of information have been used in this context:</p> <ul style="list-style-type: none"> <li>• /MR/</li> <li>• /XLS/</li> <li>• /CAL/.</li> </ul>								
<b>Findings</b>	<table border="1"> <tr> <td><input checked="" type="checkbox"/></td><td>Based on the details listed in appendix 6 the verification team can confirm that all installed monitoring equipment has been duly calibrated for this entire monitoring period.</td></tr> <tr> <td><input type="checkbox"/></td><td>Based on the assessment and information as per appendix 6 delay(s) in calibration have been identified. The PP has applied the maximum permissible error of the instrument to the measured values taken during the period between the scheduled date of calibration and the actual date of calibration. From the related calibration certificates and emission reduction calculation the verification team confirms that the maximum permissible error has been applied in a conservative manner so that the adjusted measured values due to the delayed calibration result in fewer claimed emission reductions. For details please refer to appendix 6</td></tr> <tr> <td><input type="checkbox"/></td><td>In this context the following CARs, CLs, FARs have been raised:</td></tr> <tr> <td></td><td>-</td></tr> </table>	<input checked="" type="checkbox"/>	Based on the details listed in appendix 6 the verification team can confirm that all installed monitoring equipment has been duly calibrated for this entire monitoring period.	<input type="checkbox"/>	Based on the assessment and information as per appendix 6 delay(s) in calibration have been identified. The PP has applied the maximum permissible error of the instrument to the measured values taken during the period between the scheduled date of calibration and the actual date of calibration. From the related calibration certificates and emission reduction calculation the verification team confirms that the maximum permissible error has been applied in a conservative manner so that the adjusted measured values due to the delayed calibration result in fewer claimed emission reductions. For details please refer to appendix 6	<input type="checkbox"/>	In this context the following CARs, CLs, FARs have been raised:		-
<input checked="" type="checkbox"/>	Based on the details listed in appendix 6 the verification team can confirm that all installed monitoring equipment has been duly calibrated for this entire monitoring period.								
<input type="checkbox"/>	Based on the assessment and information as per appendix 6 delay(s) in calibration have been identified. The PP has applied the maximum permissible error of the instrument to the measured values taken during the period between the scheduled date of calibration and the actual date of calibration. From the related calibration certificates and emission reduction calculation the verification team confirms that the maximum permissible error has been applied in a conservative manner so that the adjusted measured values due to the delayed calibration result in fewer claimed emission reductions. For details please refer to appendix 6								
<input type="checkbox"/>	In this context the following CARs, CLs, FARs have been raised:								
	-								
<b>Conclusion</b>	<table border="1"> <tr> <td><input checked="" type="checkbox"/></td><td>No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.</td></tr> <tr> <td><input type="checkbox"/></td><td>The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.</td></tr> </table> <p>Though the applied methodology and registered PoA monitoring plan do not make provision for calibration, however, it was checked during the verification onsite visit and interview with Water Boiling testing team that all the equipment used for WBT were duly calibrated (during the year test conducted). All the relevant equipment including thermometer (02), moisture meters (02), weighing scale (02) and sensors (02) were duly purchased (purchase receipt dated 08-10-2018. BBF/PP has submitted all purchase receipts during the onsite verification audit for all the relevant tools and equipment<sup>CAL</sup>. These tools and equipment were assessed and found to be working properly and accurately. Test conducted were also verified to be in line with WBT protocol requirement.</p>	<input checked="" type="checkbox"/>	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.	<input type="checkbox"/>	The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.				
<input checked="" type="checkbox"/>	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.								
<input type="checkbox"/>	The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.								

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

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

<b>Means of verification</b>	<p>During the verification, the calculation of baseline GHG emissions has been checked. In detail the following has been verified:</p> <ul style="list-style-type: none"> <li>• <i>Transparency</i>: It has been checked whether the calculation of baseline emissions is fully traceable and, where used, the Excel calculation provides all calculation formulae.</li> <li>• <i>Parameter consistency</i>: It has been checked whether all internal and external parameters and data used for the calculation are applied consistently in the monitoring report and the calculation spreadsheet.</li> <li>• <i>Correctness</i>: It has been checked whether the applied formulae and methods for calculating baseline emissions are in accordance with the monitoring plan and the approved methodology.</li> <li>• <i>Completeness</i>: It has been checked whether all calculations are complete and without omissions.</li> </ul> <p>The following sources of information have been used in this context:</p> <ul style="list-style-type: none"> <li>• /MR/</li> <li>• /PoA-DD/</li> <li>• /CPA-DD/</li> <li>• /XLS/</li> </ul>	
<b>Findings</b>	<input checked="" type="checkbox"/>	<p>The calculation of the baseline emissions was found to be fully compliant with the above stated principles.</p> <p>The calculations of baseline GHG emissions or baseline net GHG removals have been carried out in accordance with the formulae and methods described in the registered monitoring plan, the applied methodology and, where applicable, the applied standardized baseline. Any assumptions used in emission or removal calculations have been justified. Appropriate emission factors, IPCC default values, GWPs and other reference values have been correctly applied.</p> <p>No errors, miscalculations, omissions, misstatements or incomplete information has been identified.</p>
		<input type="checkbox"/> The verification team has identified mistakes in the baseline emissions calculation or the underlying calculation approaches.
	<input type="checkbox"/>	In this context the following CARs, CLs, FARs have been raised:
<b>Conclusion</b>	<input checked="" type="checkbox"/>	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.
	<input type="checkbox"/>	The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 5.
	MR is assessed to be presented the calculation inline with registered CPA-DD and PoA DD so that it can be confirmed that the baseline calculation is overall correct.	

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

<b>Means of verification</b>	<p>During the verification, the calculation of project GHG emissions has been checked. In detail the following has been verified:</p> <ul style="list-style-type: none"> <li>• <i>Transparency</i>: It has been checked whether the calculation of project emissions is fully traceable and, where used, the Excel calculation provides all calculation formulae.</li> <li>• <i>Parameter consistency</i>: It has been checked whether all internal and external parameters and data used for the calculation are applied consistently in the monitoring report and the calculation spreadsheet.</li> <li>• <i>Correctness</i>: It has been checked whether the applied formulae and methods for calculating project emissions are in accordance with the monitoring plan and the approved methodology.</li> <li>• <i>Completeness</i>: It has been checked whether all calculations are complete and without omissions.</li> </ul> <p>The following sources of information have been used in this context:</p> <ul style="list-style-type: none"> <li>• /MR/</li> </ul>	
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		<ul style="list-style-type: none"> <li>• /PoA-DD/</li> <li>• /CPA-DD/</li> <li>• /XLS/.</li> </ul>
<b>Findings</b>	<input checked="" type="checkbox"/>	<p>The calculation of the project emissions was found to be fully compliant with the above stated principles.</p> <p>The calculations of project GHG emissions or actual net GHG removals have been carried out in accordance with the formulae and methods described in the registered monitoring plan, the applied methodology and, where applicable, the applied standardized baseline. Any assumptions used in emission or removal calculations have been justified. Appropriate emission factors, IPCC default values, GWPs and other reference values have been correctly applied.</p> <p>No errors, miscalculations, omissions, misstatements or incomplete information have been identified.</p>
	<input type="checkbox"/>	The verification team has identified mistakes in the project emissions calculation or the underlying calculation approaches.
	<input type="checkbox"/>	In this context the following CARs, CLs, FARs have been raised:
<b>Conclusion</b>	<input checked="" type="checkbox"/>	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.
	<input type="checkbox"/>	The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.
		The methodological equation 1 applied by the CPAs does not consider PE <sub>y</sub> separately. Instead, emission reductions are calculated directly using one equation, that takes into account B <sub>y,savings</sub> . All requirements in the registered CPA-DD and PoA-DD were demonstrated appropriately so that it can be confirmed that the baseline/project emission (not applicable for the project type) calculation is overall correct.

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

<b>Means of verification</b>	<p>During the verification the calculation of leakage has been checked. In detail the following has been verified:</p> <ul style="list-style-type: none"> <li>• <i>Transparency</i>: It has been checked whether the calculation of leakage is fully traceable and, where used, the Excel calculation provides all calculation formulae.</li> <li>• <i>Parameter consistency</i>: It has been checked whether all internal and external parameters and data used for the calculation are applied consistently in the monitoring report and the calculation spreadsheet.</li> <li>• <i>Correctness</i>: It has been checked whether the applied formulae and methods for calculating project emissions are in accordance with the monitoring plan and the approved methodology.</li> <li>• <i>Completeness</i>: It has been checked whether all calculations are complete and without omissions.</li> </ul> <p>The following sources of information have been used in this context:</p> <ul style="list-style-type: none"> <li>• /MR/</li> <li>• /CPA-DD/</li> <li>• /PoA-DD/</li> <li>• /XLS/</li> <li>• /AMSII/</li> </ul>
<b>Findings</b>	<p>The calculation of the leakage was found to be fully compliant with the above stated principles.</p> <p>The calculations of leakage GHG emissions or actual net GHG removals have been carried out in accordance with the formulae and methods described in the registered monitoring plan, the applied methodology and, where applicable, the applied standardized baseline. Any assumptions used in emission or removal calculations have been justified. Appropriate emission factors, IPCC default values, GWPs and other reference values have been correctly applied.</p> <p>No errors, miscalculations, omissions, misstatements or incomplete information have been identified.</p>

	<input type="checkbox"/>	The verification team has identified mistakes in the project emissions calculation or the underlying calculation approaches.
	<input type="checkbox"/>	In this context the following CARs, CLs, FARs have been raised:
	<input checked="" type="checkbox"/>	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.
	<input type="checkbox"/>	The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.
<b>Conclusion</b>		The CME has opted to apply the adjustment factor of 0.95 to $B_{old}$ for leakage emission as an alternative to conduct a leakage assessment. This is in line with §13 a) and 22 c) of the applied methodology.

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

<b>Means of verification</b>	<p>The verification team has checked if the MR includes a summary table of the emission reductions calculation specifying separately.</p> <ul style="list-style-type: none"> <li>- Total leakage,</li> <li>- Total emission reductions.</li> </ul> <p>Section F.4 of MR demonstrate the summary of GHG emission reductions for the monitoring period and calculated according to the applied methodology AMS-II.G version 08 as follows:</p> $ER_{y,i,j} = B_{y,savings,i,j} \times N_{y,i,j} \times \mu_y \times f_{NRB,y} \times NCV_{biomass} \times EF_{projected\_fossil\ fuel}$ <p>Where,</p> <p><math>B_{y,savings,i,j}</math> = Quantity of woody biomass that is saved in tonnes per cook stove device of type <math>i</math> and batch <math>j</math> during year <math>y</math></p> <p><math>f_{NRB,y}</math> = Fraction of woody biomass that can be established as non-renewable biomass using survey methods or government data or default country specific fraction of non-renewable woody biomass (fNRB) values available on the CDM website</p> <p><math>NCV_{biomass}</math> = Net calorific value of the non-renewable woody biomass that is substituted (IPCC default for wood fuel, 0.015 TJ/tonne, based on the gross weight of the wood that is 'air-dried')</p> <p><math>EF_{projected\_fossilfuel}</math> = Emission factor for the fossil fuels projected to be used for substitution of non-renewable woody biomass by similar consumers. Use a value of 81.6 t CO<sub>2</sub>/TJ</p> <p><math>N_{y,i,j}</math> = Number of project devices of type <math>i</math> and batch <math>j</math> operating during year <math>y</math></p> <p><math>\mu_y</math> = Adjustment to account for any continued use of pre-project devices during the year <math>y</math> when applying equations 6 (fraction).</p> $B_{y,savings,i,j} = B_{old,i,j} \times \left( 1 - \frac{\eta_{old,i,j}}{\eta_{new,i,j}} \right)$ <p>Where</p>
------------------------------	--

$B_{old,i,j}$  = Annual quantity of woody biomass that would have been used in the absence of the project activity to generate useful thermal energy equivalent to that provided by the project device type  $i$  and batch  $j$

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

$\eta_{old,i,j}$  = Efficiency of pre - project device, which is a three-stone fire using firewood (not charcoal), or a conventional device with no improved combustion air supply or flue gas ventilation, that is without a grate or a chimney;

$$B_{old,i,j} = B_{old,HH} = B_{old,p} \times N_{p,HH}$$

Where

$B_{old,HH}$  = Annual quantity of woody biomass that would have been used in the household in the absence of the project activity to generate useful thermal energy equivalent to that provided by the project devices

$B_{old,p}$  = Annual quantity of woody biomass that would have been used per person in the household in the absence of the project activity to generate useful thermal energy equivalent to that provided by the project devices

$N_{p,HH}$  = Average number of persons served per household prior to the project implementation

Data Ex Ante	Unit	Value
$B_{old,p}$	tonnes/person/ year	0.50
$N_{p,HH}$	Number	4.60
$B_{old,i,j} = B_{old,HH}$	tonnes/household/ year	2.30
$f_{NRB,y}$	Fraction	0.84
$E_{f,project\_fossil\ fuel}$	tCO <sub>2e</sub> /TJ	81.60
$LAF_y$	Fraction	0.95
$NCV_{biomass}$	TJ/tonne	0.015
$\eta_{old,i,j}$	Percentage	11.00%

Data Ex Post	Unit	Value
$N_{y,1\ Pot,2018,Installed}$	Number	10808
$N_{y,2\ Pot,2018,Installed}$	Number	39967
$B_{old,i,j}$	Tonnes/HH/year	2.19
$B_{old - 2\ Pot,2018}$	Tonnes/HH/year	2.19
$\eta_{new\ 1\ Pot,\ 2018}$	Percentage	33.68%
$\eta_{new\ 2\ Pot,\ 2018}$	Percentage	34.25%
$B_{y,saving,\ 1\ Pot,2018}$	Tonnes/year	1.47
$B_{y,saving,\ 2\ Pot,2018}$	Tonnes/year	1.48
$Stove_{year}$	fraction	0.030
$\mu_{y,1\ Pot}$	fraction	1.00
$\mu_{y,2\ Pot}$	fraction	1.00
$N_{y,1\ Pot,2018,operational}$	Number	10808
$N_{y,2\ Pot,2018,operational}$	Number	39967
$ER_y$	tCO <sub>2</sub>	2338
<b>Emission Reduction (ER)</b>	<b>tCO<sub>2e</sub></b>	<b>2,338</b>

	<p>It has been assessed whether the values presented in MR and emission reduction calculation spreadsheet are correct, all reference sources, including installation database, survey records including WBT records and ex-ante fixed values in the registered CPA-DD and found to be correct.</p> <p>The following sources of information have been used in this context:</p> <ul style="list-style-type: none"> <li>• /MR/</li> <li>• /XLS/</li> <li>• /WBT/</li> <li>• /SUR/</li> <li>• /CPA-DD/</li> <li>• /PoA-DD/</li> <li>• /AMSII/</li> </ul>	
<b>Findings</b>	<input checked="" type="checkbox"/>	Section F.4 of the MR includes in a summary table of the emission reductions calculation.
	<input checked="" type="checkbox"/>	The summary table specified the total baseline, project and leakage emissions as well as the total emission reductions separately.
	<input checked="" type="checkbox"/>	The values as specified in the ER summary table are correct; no issues have been identified during the verification which requires changes in the ER calculation.
	<input type="checkbox"/>	During the verification issues with impact on the ER calculation have been identified. NA
<b>Conclusion</b>	<input checked="" type="checkbox"/>	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.
	<input type="checkbox"/>	The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.
	The summary table in the MR has been filled correctly and the values are in line with the related emissions reduction calculation spreadsheet. The ERs result in <b>2,338tCO<sub>2</sub>e</b> .	

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) achieved in the monitoring period		
				Up to 31/12/2012	From 01/01/2013	Total amount
10431-0001	2,338	0	0 <sup>4</sup>	0	2,338	2,338
<b>Total</b>	2,338	0	0	0	2,338	2,338

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

<b>Means of verification</b>	The verification team has checked if the MR includes a comparison of actual values of the monitoring period with the estimations in the registered PoA-DD. It has further checked which of the below listed cases is applicable for the calculated ER of the current monitoring period.	
<b>Findings</b>	<input checked="" type="checkbox"/>	Case 1: The ex-ante estimated value was found to be proportionally higher than the ex-post determined value. No further action is deemed

<sup>4</sup> 0.95 (adjustment factor applied to B<sub>old</sub> when calculating ER)

		required.
	<input type="checkbox"/>	Case 2: The ex-ante estimated value fits very good to the actually monitored value. No further justification is deemed required.
	<input type="checkbox"/>	Case 3: The ex-ante estimated value was found to be proportionally lower than the ex-post determined value.
	<input type="checkbox"/>	In this context the following CARs, CLs, FARs have been raised:
Conclusion	<input checked="" type="checkbox"/>	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.
	<input type="checkbox"/>	The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.
	-	

CPA UNFCCC reference number	Amount achieved during this monitoring period (t CO <sub>2</sub> e)	Amount estimated ex ante (t CO <sub>2</sub> e)
10431-0001	2,338	45,963
Total	2,338	45,963

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

Means of verification	On the basis of the above comparison of actual values of the monitoring period with the estimations in the registered PoA-DD (E.8.5) and section F.5 of the MR, the verification team has checked whether (in case 2) an appropriate explanation is included in the MR.	
Findings	<input checked="" type="checkbox"/>	No further justification or explanation is deemed required as actual emissions of this MP do not exceed significantly the ex-ante calculated emission reductions (applicable for case 1 and 2).
	<input type="checkbox"/>	For case 3: The PP has provided a related justification in the MR. The reasons for the increase are as follows: - N/A
	<input type="checkbox"/>	In this context the following CARs, CLs, FARs have been raised:
Conclusion	<input checked="" type="checkbox"/>	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.
	<input type="checkbox"/>	The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.
	It is concluded the ex-post emission reductions are lower than the ex-ante estimated values in the approved revised and registered CPA-DD. The estimated ER for CPA is higher than that of achieved ERs during the current monitoring period.	

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

Means of verification	N/A
Findings	
Conclusion	

#### E.3.7. Global stakeholder consultation

Means of verification	By means on PoA web page assessment and verification, no comments from the Global Stakeholders were received during the webhosting period.
Findings	N/A
Conclusion	No comments received during the GSC period.



**SECTION F. Internal quality control**

Before the submission of the final verification report a technical review of the whole verification procedure was carried out. The technical reviewers are competent GHG auditors where at least one is being appointed for the scope this project falls under. The technical reviewers are not considered to be part of the verification team and thus not involved in the decision-making process up to the technical review.

As a result of the technical review process the verification opinion and the topic specific assessments as prepared by the verification team leader may have been confirmed or revised. Furthermore, reporting improvements might have been achieved.

After the successful technical review an overall (esp. procedural) assessment of the complete verification has been carried out by a senior assessor located in the accredited premises of TÜV NORD.

After this step the submission for requesting for issuance is conducted.

**SECTION G. Verification opinion**

Ecoeye Co., Ltd. (EECL) has commissioned the TÜV NORD JI/CDM Certification Program to carry out the 1<sup>st</sup> periodic verification of the CDM Programme of Activities (CDM-PoA) (10431):

“Improved cookstove program in Bangladesh supported by the Republic of Korea”  
with regard to the relevant requirements for CDM PoAs.

This verification covers the period from 31/08/2018 – 10/09/2018(both days included)

The programme of activities reduces GHG emissions by disseminating biomass based improved cookstoves (“Bondhu Chulha”) to households / SMEs in Bangladesh. The relevant CPA under consideration (CPA 10431-0001) reduces GHG by disseminating biomass based improved cookstoves (“Bondhu Chulha”) to households / SMEs in Bangladesh. Bondhu chulha of two types (1 pot and 2 pots) have been installed in project households in Bangladesh, replacing the cookstoves used in the baseline scenario (3 stone fire / traditional unimproved clay stoves).

As a result of this verification, the verifier confirms that:

- all operations of the project are implemented and installed as planned and described in the validated project design documents,
- the monitoring plan is in accordance with the applied approved CDM methodology, i.e., AMS-II.G. ver. 08.0,
- the installed equipment essential for measuring parameters required for calculating emission reductions are calibrated appropriately,
- the monitoring system is in place and functional. The project has generated GHG emission reductions,
- the GHG emission reductions are calculated without material misstatements in a conservative and appropriate manner.

TÜV NORD JI/CDM CP further confirms that the project has achieved emission reductions in the above mentioned reporting period as follows:

Emission reductions: **2,338 tCO<sub>2</sub>e**

**SECTION H. Certification statement**

As a duly accredited DOE, TÜV NORD CERT confirms that the CDM PoA  
“Improved cookstove program in Bangladesh supported by the  
Republic of Korea”

registered under

UNFCCC-No. : 10431

has achieved emission reductions in accordance with all applicable requirements for registered CDM  
PoA during the current monitoring period

MP-No.: 1

from: 31/08/2018

to: 10/09/2018

(including both days) as follows:

Emission reductions: **2,338 tCO<sub>2</sub>e**

New Delhi, 22/02/2019



Prakash Kumar Mishra  
Team Leader  
TÜV NORD JI/CDM Certification Program

## Appendix 1. Abbreviations

Abbreviations	Full texts
ADM	Assistant District Managers
DM	District Managers
BBF	Bangladesh Bondhu Foundation
CA	Corrective Action / Clarification Action
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
CME	Coordinating/Managing Entity
CO <sub>2</sub>	Carbon dioxide
CO <sub>2eq</sub>	Carbon dioxide equivalent
CL	Clarification Request
DOE	Designated Operational Entity
DVerR	Draft Verification Report
EECL	Ecoeye Co., Ltd.
ER	Emission Reduction
FAR	Forward Action Request
FMR	Field Monitoring Records
GHG	Greenhouse gas(es)
ICS	Improved Cookstove
IM	Interview Memo
IRC	Information & Reporting Check by UNFCCC Secretariat
MP	Monitoring Plan
MR	Monitoring Report
PA	Project Activity
POA-DD	Project of Activities Design Document
CPA-DD	Component Project Activities Design Document
PP	Project Participant
QA/QC	Quality Assurance / Quality Control
RC	Reliability check work sheets for WBT and field monitoring test
SD	Standard deviation
UNFCCC	United Nations Framework Convention on Climate Change
VT	Verification Team
VVS	Validation and Verification Standard
WBT	Water Boiling Test
WBTP	Water Boiling Test Protocol
XLS	Emission Reduction Calculation Spread Sheet
ZMs	Zonal Managers

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



### Statement of Competence

Appointment and authorization according to the procedures of the TUV NORD JRCOM Certification Program

Mr. Stefan Winter

SCHEME	STATUS	VALID UNTIL
CDM	Senior Assessor (Validation, Verification) Technical Reviewer	2020-07-27
VCS	Senior Assessor (Validation, Verification) Technical Reviewer	2020-07-27

Authorization status for technical areas within sectoral scopes:

CODE	TECHNICAL AREA
1.1	Thermal energy generation
1.2	Renewables
2.1	Energy distribution
3.1	Energy demand
4.1	Cement and lime production
4.2	Paper
5.2	Caprolactam, nitric and adipic acid
9.1	Aluminium and magnesium production
9.2	Iron, steel and Ferro-alloy production
13.1	Solid waste and wastewater
13.2	Manure

163 – Rev. 5, Date: 2017-07-20

163\_001-VA060-F20\_2017-07-20\_rev5

001-VA060-F20 rev3 / 2012-10-25



### Statement of Competence

Appointment and authorization according to the procedures of the TUV NORD JRCOM Certification Program

Mr. Prakash Kumar Mishra

SCHEME	STATUS	VALID UNTIL
CDM	Senior Assessor (Validation, Verification) Technical Reviewer	2020-12-17
VCS / ISO 14064-2	Senior Assessor Technical Reviewer	2020-12-17

Authorization status for technical areas within sectoral scopes:

CODE	TECHNICAL AREA
1.2	Renewables
3.1	Energy demand

146 - Rev. 6, Date: 2018-11-21

146\_001-VA060-F20\_2018-11-21\_rev6.doc

001-VA060-F20 rev3 / 2012-10-25

### Appendix 3. Documents reviewed or referenced

No.	Author	Reference	Title	References to the document	Provider
1	UNFCCC	<b>/AMSII-G/</b>	<ul style="list-style-type: none"> <li>AMS-II.G: Energy efficiency measures in thermal applications of non-renewable biomass”, version 08.0</li> </ul>		Other
2	PP	<b>/CAL//INV/</b>	Thermometers, weighing scales, scanner, moisture meters photos and purchase invoice dated 08-10-2018		Other
3	PP	<b>/CPA-DD/</b>	CPA-DD titled “Improved cookstove program in Bangladesh supported by the Republic of Korea		Other
4	PP	<b>/DB//DATA/</b>	Installation Databases (2018)		Other
5	DOE	<b>/CPM/</b>	TÜV NORD JI / CDM CP Manual (incl. CP procedures and forms)		Other
6	PP	<b>/FMR/</b>	Field monitoring survey records including survey and WBT dated Oct 2018		Other
7	IPCC	<b>/IPCC/</b>	<ol style="list-style-type: none"> <li>1996 IPCC Guidelines for National Greenhouse Gas Inventories: work book</li> <li>2006 IPCC Guidelines for National Greenhouse Gas Inventories: work book</li> </ol>	<a href="http://www.ipcc-nggip.iges.or.jp">www.ipcc-nggip.iges.or.jp</a>	Other
8	UNFCCC	<b>/KPI/</b>	Kyoto Protocol (1997)	<a href="http://unfccc.int/kyoto_protocol/items/2830.php">http://unfccc.int/kyoto_protocol/items/2830.php</a>	Other
09	UNFCCC	<b>/MA/</b>	Decision 3/CMP. 1 (Marrakesh – Accords)	<a href="http://cdm.unfccc.int/Reference/COPMOP/index.html">http://cdm.unfccc.int/Reference/COPMOP/index.html</a>	Other
10	UNFCCC	<b>/MR/</b>	Monitoring Report titled “Improved cookstove program in Bangladesh supported by the Republic of Korea” <ul style="list-style-type: none"> <li>Version 1.0, dated 12/11/2018</li> <li>Version 2.0, dated 02/01/2019</li> <li>Version 3.0 dated 11/01/2019</li> <li>Version 4.0 dated 21/02/2019</li> </ul>		Other
11	UNFCCC	<b>/MRT/</b>	Monitoring Report Form (CDM-PoA-MR-FORM), Version 02.0	<a href="https://cdm.unfccc.int/Reference/PDDs_Forms/index.html">https://cdm.unfccc.int/Reference/PDDs_Forms/index.html</a>	Other
12	UNFCCC	<b>/PoA-DD/</b>	Project Design Document for CDM PoA project: “Improved cookstove program in Bangladesh supported by the Republic of Korea” version 04.0, dated 21/06/2018		Other
13	UNFCCC	<b>/PS/</b>	CDM Project Standard for PoA (Version 2.0)	<a href="http://cdm.unfccc.int/Reference/Standards/index.html">http://cdm.unfccc.int/Reference/Standards/index.html</a>	Other

No.	Author	Reference	Title	References to the document	Provider
14	PP	/SS/	<ul style="list-style-type: none"> <li>Sample Survey Questionnaire</li> <li>Internal Audit Report – 2018</li> <li>Random number generator detail</li> </ul>		Other
15	PP	/VAL/	Validation Report for CPA 0001 project <i>“Improved cookstove program in Bangladesh supported by the Republic of Korea”</i> , dated 29/08/2018		Other
18	UNFCCC	/VVS/	CDM Validation and Verification Standard (Version 2.0)	<a href="http://cdm.unfccc.int/Reference/Standards/index.html">http://cdm.unfccc.int/Reference/Standards/index.html</a>	Other
19	PP	/WBT/	<ul style="list-style-type: none"> <li>Water Boiling Test Records including analysis spreadsheet Dated Oct-2018</li> <li>WBT recording forms dated Oct-2018</li> </ul>		Other
20	PP	/WBTD/	<ul style="list-style-type: none"> <li>wbt_data-calculation and WBT forms with source data collected during Oct-2018</li> </ul>		Other
21	PP	/WBTP/	<ul style="list-style-type: none"> <li>The Water Boiling Test protocol, version 4.2.3</li> <li>Guidelines for Testing Charcoal Stoves with WBT 4.2.2 June 14, 2013</li> </ul>		Other
22	PP	/AGR/	End-User/Customre's Agreements form for installation of Bondhu Chulha (project stove), including carbon waiver for the entire monitoring period for entire monitoring period		Other
24	UNFCCC	/SAMPLE/	<ul style="list-style-type: none"> <li>“Guidelines for Sampling and Surveys for CDM Project Activities and Programme Activities” (Version 04.0)</li> <li>“Standard for Sampling and Surveys for CDM Project Activities and Programme Activities” (version 7)</li> </ul>	<a href="https://cdm.unfccc.int/Reference/Guidclarif/index.html">https://cdm.unfccc.int/Reference/Guidclarif/index.html</a>  <a href="http://cdm.unfccc.int/Reference/Standards/index.html">http://cdm.unfccc.int/Reference/Standards/index.html</a>	Other
25	UNFCCC	/GOT/	Glossary “CDM terms” (version 09.1)	<a href="https://cdm.unfccc.int/filestorage/e/x/t/extfile-20150226124447549-glos_CDM.pdf/glos_CDM.pdf?t=UmZ8bnFjODI3fDCW9A3vJwR03kQQh4sbLiYu">https://cdm.unfccc.int/filestorage/e/x/t/extfile-20150226124447549-glos_CDM.pdf/glos_CDM.pdf?t=UmZ8bnFjODI3fDCW9A3vJwR03kQQh4sbLiYu</a>	Other
26	PP	/XLS/	Emission Reduction calculation worksheet  Version 01  Version 02	-	PP

No.	Author	Reference	Title	References to the document	Provider
28	UNFCCC	<b>/unfccc/</b>	UNFCCC	<a href="http://cdm.unfccc.int">http://cdm.unfccc.int</a>	Other
29	IPCC	<b>/ipcc/</b>	IPCC publications	<a href="http://www.ipcc-nggip.iges.or.jp">www.ipcc-nggip.iges.or.jp</a>	Other
30		<b>/rs/</b>	RAOsoft Sample Size calculator	<a href="http://www.raosoft.com/samplesize.html">http://www.raosoft.com/samplesize.html</a>	Other
31		<b>/tdist/</b>	t-distribution tables	<a href="http://uregina.ca/~gingrich/tt.pdf">http://uregina.ca/~gingrich/tt.pdf</a>  <a href="http://compbio.ucdenver.edu/77112015/Kechris%20t-table.pdf">http://compbio.ucdenver.edu/77112015/Kechris%20t-table.pdf</a>	Other
32	PP	<b>/TRG/</b>	Training records of imparted for below fields : <ul style="list-style-type: none"> <li>Manufacturing of BBF Chulha including local Partners</li> <li>WBT and Survey team</li> <li>ADM/DM's/ZMs and all involved personnel</li> </ul>		Other

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

Table 1. Remaining FARs from validation and/or previous 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> XX/XX/XXXX
<b>Documentation provided by CME</b>				
<input type="checkbox"/>	Changes in the PoA-DD	Section(s):	New version No.:	
<input type="checkbox"/>	Changes in the CPA-DD	Section(s):	New version No.:	
<input type="checkbox"/>	Changes in MR	Section(s):	New version No.:	
<input type="checkbox"/>	Changes in XLS	Worksheet(s):	New version No.:	
<input type="checkbox"/>	Other:			
<b>DOE assessment</b>				<b>Date:</b>
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>		<input type="checkbox"/> Additional action should be taken (finding remains open) <input type="checkbox"/> The finding is closed		

Table 3. CLs from this verification

<b>CL ID</b>	1	<b>Section no.</b>	E.2, ER sheet	<b>Date:</b> 31/12/2018
<b>Description of CL</b>				
The PP shall clarify the use of $B_{old,HH}$ value of 2.30 in ER calculations given that this has been established per household and not per device. How does the PP ensure that only 1 ICS is credited per household.				
<b>CME response</b>				<b>Date:</b> 02/01/2019
As per the registered PoA-DD (page 14) and CPA-DD (page 8), $B_{old,HH} = B_{old,i,j}$ as only 1 Bondhu Chula per household is allowed to be installed. This is ensured and confirmed at multiples stages in the PoA. At the				

point of Bondhu Chula installation, an agreement is signed with each Bondhu Chula customer wherein the presence of any other Bondhu Chula in the household is checked. In case there is an existing Bondhu Chula in the same household, no second Bondhu Chula is installed. Hence, a Bondhu Chula gets added to the PoA database only when there is no other existing Bondhu Chula installed in the concerned household.

It is worth noting that EECL has fully financed all improved cooking stoves distributed to the households (The total project cost per stove is USD 10, including BDT 450 subsidy a stove and CPA implementation costs to BBF). This financing is against future carbon credits from the PoA and hence CME / CPAI ensure that the requisite installation conditions are being met properly.

Subsequent to Bondhu Chula installation by the local partner, BBF further conducts an inspection visit to confirm that the installation has been done correctly and there is only one Bondhu Chula. Only, once the aforesaid is confirmed, EECL (via BBF) releases the subsidy token amount of BDT 350 to the local partner for Bondhu Chula fabrication and BDT 100 to the local administration for creating market awareness and demand for Bondhu Chula. Also, the CPA Implementation funding to BBF (CPAI) is released only after the Bondhu Chula installation data has been QA/QC'ed and submitted to EECL. This incentive mechanism ensures that only one Bondhu Chula gets installed in any given household and only 1 Bondhu Chula is credited per household.

Although, the aforesaid ensures that no household can have more than one Bondhu Chula under the PoA, it is further checked at the time of ex-post monitoring on sampling basis. If any sample is found having more than one Bondhu Chula, the entire population is provisioned to get discounted by the % of samples reporting more than one Bondhu Chula in a given household.

In the current monitoring, none of the samples reported having more than one Bondhu Chula, hence no discount to stove population is required.

#### Documentation provided by CME

Sample End user / customer agreement forms  
ICS installation database  
Agreement between EECL (CME) and BBF (CPA Implementer) regarding subsidy  
Subsidy disbursement challans

#### DOE assessment

Date: 07/01/2019

During the onsite audit visit, the DoE confirmed the aforesaid by review of end user agreements, personal interviews with the local partners / end users and physical inspection of monitored samples. Besides, the DoE also made visits to randomly picked Bondhu Chula users from the ICS installation database (and not part of PP sample based monitoring) and confirmed the presence of only one Bondhu Chula in the project households.

Thus, the justification provided by the PP is assessed to be appropriate and verification team accepts that  $B_{old,HH} = B_{old,i,j}$

#### Conclusion

Tick the appropriate checkbox

- ☐ Additional action should be taken (finding remains open)  
☒ The finding is closed

Table 4. CARs from this verification

CAR ID	1	Section no.	CDM PoA-MR-Form, A	Date:	31/12/2018
Description of CAR					
A consolidated CAR is raised with regards to requirements laid down in the Attachment: Instructions for completing this form (CDM-POA-MR-Form), (Version 02.0) and CDM PoA Project Standard (Version 01.0)					
<b>Front page and Section A:</b>					
<ol style="list-style-type: none"> <li>1. Front page of the MR under "Duration of this monitoring period" does not mention the inclusion of first and last dates of this applied monitoring period.</li> <li>2. Amount of GHG emission reductions estimated ex ante for this monitoring period provided in the MR (front page) is not justified with the calculation and basis of adjustment for the comparable period (11 days)</li> <li>3. Section A.1 of the monitoring report does not specifically describe about the GHG emission reduction or net anthropogenic removals and hence, not inline with specific instructions for completing CDM-PoA-MR-FORM version 02.0</li> </ol>					



4. Section A.1.1 lacks information on applied standardized baseline as required by CDM-PoA-MR-FORM template and instruction version 02.0

**Section B of MR:**

1. Information on BBF chulha technologies (1 pot and 2 pots) production and related training to the partners in accordance with registered PoA is found missing in the MR in particular to the section B.1, section C and E.3 of the MR.
2. The section B.1 of MR does not provide information on how the management system described in the PoA-DD is implemented.

**Section C of MR:**

1. Section C.1 of the webhosted MR lacks in description of installed technologies including operational life time and rated / design thermal efficiency.
2. The Map in Section C.2 of the MR is not clear and reference is missing.

**Section D of MR:**

The Section D of MR lacks description of monitoring system as per the monitoring plans in the registered CPA-DD wrt trainings of the monitoring personnel. This is not in line with CDM PoA Project standards § 262.

**Section E.2 of MR:**

1. Under section E.2 of webhosted monitoring report, PP shall provide the option selected for determination of following parameters in line with applied methodology and registered PoA-DD :

- I)  $\mu_y$
- II)  $\eta_{new,i,j}$

**Section F of MR and ER sheet and database:**

1. Number of stoves (1 pot) in the installation summary does not match with stoves installation database for the month of March & April 2018..
2. The annual quantity of woody biomass used in the household in the absence of the project activity for 1 pot stove is written as  $\mu_{old,i,j}$  in the ER calculation sheet in ER calculator, which is incorrect as per the registered CPA DD.

**Project participant response (1<sup>st</sup> round)****Date:** 02/01/2019**Front page and Section A:**

1. The front page of the MR under "Duration of this monitoring period" has been revised accordingly.
2. The calculation of amount of GHG emission reduction estimated ex-ante for this monitoring period is given under "Ex-ante estimation" tab in ER Calculator. A reference to same has been added on the cover page of revised MR.
3. The MR has been revised to state how it reduced GHG emissions.
4. No standardized baseline has been applied to the PoA. The section A.1.1 of the revised monitoring report confirms the same.

**Section B of MR:**

1. Section B.1 of the MR has been revised to include partner responsibilities in compliance with PoA management system. The partner training manual training event photographs and training attendance records are being submitted.
2. Section B.1 of the monitoring report has been revised accordingly.

**Section C of MR:**

1. The thermal efficiency and design operational lifetime of installed technologies has been added under section C.1 of the monitoring report.
2. The map in section C.2 of the MR has been revised and corresponding reference has been added.

**Section D of MR:**

Section D of the MR has been revised to include information on the monitoring system. The training manual, photographs and sample attendance sheet for the training conducted for partners (Bondhu Chulha manufacturing and production), union parishad members (awareness and demand generation), village 'stove doctors' (Bondhu Chula installation, after sales maintenance and service), BBF Staff (data recording archiving, post installation check etc) is being submitted.

**Section E.2 of MR:**

Section E.2 of the MR has been revised to specify the options used for the parameters  $\eta_{new,i,j}$  and  $\eta_{new,i,j}$

**Section F of MR and ER sheet and database:**

1. The number of 1 Pot stoves under the "ICS installation summary" in the ER calculator has been made consistent with the ICS installation database for the months of March and April 2018.
2. The annual quantity of woody biomass used in the household in the absence of the project activity for 1 Pot stove has been corrected to  $B_{old,1\ pot, 2018}$  under the "ER calculation" tab in ER calculator.

**Documentation provided by project participant (1<sup>st</sup> round)**

<input type="checkbox"/>	Changes in the PoA-DD	Section(s):	New version No.:
<input type="checkbox"/>	Changes in the CPA-DD	Section(s):	New version No.:
<input checked="" type="checkbox"/>	Changes in MR	Section(s): Entire MR	New version No.: 2.0 date 02/01/2019
<input checked="" type="checkbox"/>	Changes in XLS	Worksheet(s): Entire Xls	New version No.: 1.1 date 02/01/2019
<input type="checkbox"/>	Other:		

**DOE assessment (1<sup>st</sup> round)****Date: 07/01/2019**

Necessary corrections to various sections of MR has been executed by PP.

**Front page and Section A:**

1. Front page of the MR under "Duration of this monitoring period" has been revised to confirm that both dates are inclusive in the revised monitoring report, version 02. CAR point 1 is closed out.
2. Amount of GHG emission reductions estimated ex ante for this monitoring period has now been justified with the calculation for adjustment of ER (in the spread sheet) and the revised MR which is assessed to be correct and acceptable. CAR point 2 is closed successfully.
3. Section A.1 of the monitoring report has been assessed to be revised appropriately to describe, how the CPA reduces GHG emission reduction or net anthropogenic removals. CAR point closed.
4. Revised MR under Section A.1.1 confirms that no standardized baseline has been applied. CAR point is closed out.

**Section B of MR:**

1. The PoA management system has been appropriately revised in the MR version 02 under section B. A review of training documents (manual, photographs and attendance log) confirms that the PoA management system specified in the PoA-DD has been implemented and is in line with the registered PoA-DD. Car point is closed out.
2. Section B.1 of the revised monitoring report has been assessed to be revised with regards to related trainings and management system and hence, CAR point is closed out.

**Section C of MR:**

1. The thermal efficiency and design operational lifetime of installed technologies has been found added under section C.1 of the revised monitoring report and found to be consistent with the submitted efficiency certificates and lifetime certificate. CAR point is closed out.
2. The map in section C.2 of the revised MR has been clearly provided and corresponding reference has been added. CAR point is closed out.

**Section D of MR:**

The training manual, photographs and sample attendance sheet for the training conducted for partners (Bondhu Chulha manufacturing and production), union parishad members (awareness and demand generation), village 'stove doctors' (Bondhu Chula installation, after sales maintenance and service), BBF Staff (data recording archiving, post installation check etc) were reviewed and assessed to be complying with the PoA management system. CAR point is closed out.

**Section E.2 of MR:**

Section E.2 of the revised MR has been found to specify the options used for the parameters and  $\eta_{new,i,j}$ . Car point is closed

**Section F of MR and ER sheet and database:**

The inconsistency with regards to number of ICS has found to be corrected. CAR point is closed

**Conclusion**

*Tick the appropriate checkbox*

- ☐ Additional action should be taken (finding remains open)  
☒ The finding is closed

<b>CAR ID</b>	02	<b>Section no.</b>	E	<b>Date:</b> 31/12/2018
<b>Description of CAR</b>				
Below documents are requested by the Verification Team:				
<ul style="list-style-type: none"> <li>• Technical specification of the installed improved cookstoves</li> <li>• ICS installation database in chronological order</li> <li>• End user / Customer's agreement forms to cross check the ICS Installation Database</li> <li>• Sampling Survey records (for each technology type)</li> <li>• Sampling WBT records (for each technology type)</li> <li>• Training records of personnel employed for survey of Operational Units and conducting WBT as per the registered PoA-DD and CPA-DD</li> <li>• Copy of the training procedure (if any)</li> <li>• Copy of Questionnaire for undertaking the Sampling Survey</li> </ul>				
<b>Project participant response (1<sup>st</sup> round)</b>				<b>Date:</b> 02/01/2019
The requested documents are being submitted:				
<b>Documentation provided by project participant (1<sup>st</sup> round)</b>				
<input type="checkbox"/>	Changes in the PoA-DD	Section(s):	New version No.:	
<input type="checkbox"/>	Changes in the CPA-DD	Section(s):	New version No.:	
<input type="checkbox"/>	Changes in MR	Section(s): Entire MR	New version No.:	
<input type="checkbox"/>	Changes in XLS	Worksheet(s): Entire Xls	New version No.:	
<input checked="" type="checkbox"/>	Other			
<b>DOE assessment (1<sup>st</sup> round)</b>				<b>Date:</b> 07/01/2019
The requested documents have been received and assessed to be acceptable. CAR 02 is closed.				
<b>Conclusion</b>				
<i>Tick the appropriate checkbox</i>		<input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed		

Table 5 Findings after IRC 1:

<b>CAR ID</b>	IRC 1	<b>Section no.</b>	Incompleteness question	<b>Date:</b> 20/02/2019
<b>Description of CAR</b>				
A CAR IRC 1 is raised as following:				
<ol style="list-style-type: none"> <li>1. The CPA-DD (page 21) has provided the stove specifications to be implemented (i.e. project stoves shall be fixed or portable type with a fuel grate and/or a chimney). However, the monitoring report does not provide technical specifications of the stoves implemented (refer to the PS-PoA ver. 02 para 259 (c)).</li> <li>2. The surveys for the thermal efficiency were conducted in October 2018. It is noted that, for the parameters "operational ICS and continued use of the baseline devices", the survey was conducted in 2018. However, no information is provided in the monitoring report to evidence when (dates) the surveys were conducted (refer to the PS-PoA ver. 02 para 263 (c)).</li> </ol>				
<b>Project participant response (1<sup>st</sup> round)</b>				<b>Date:</b> 21/02/2019
<ol style="list-style-type: none"> <li>1. Section C.1 of the monitoring report has been revised to include the technical specifications of the ICS implemented.</li> <li>2. The surveys referred on page 15 of MR, pertain to questionnaire-based surveys conducted for determination of parameters "operational ICS and continued use of the baseline devices". For measuring thermal efficiency, no surveys were conducted but field water boiling tests (WBTs) were conducted as mentioned in the MR. The usage surveys and WBTs were conducted during 12 – 20 Oct 2018. This has been now clarified in more detail in the revised MR.</li> </ol>				

Documentation provided by project participant (1 <sup>st</sup> round)		
<input type="checkbox"/> Changes in the PoA-DD	Section(s): C.1	New version No.:
<input type="checkbox"/> Changes in the CPA-DD	Section(s): E.3	New version No.:
<input checked="" type="checkbox"/> Changes in MR	Section(s): Entire MR	New version No.: 4
<input type="checkbox"/> Changes in XLS	Worksheet(s): Entire Xls	New version No.:
<input type="checkbox"/> Other		
DOE assessment (1 <sup>st</sup> round)		Date: 22/02/2019
<div> <div> <b>Conclusion</b>  Tick the appropriate checkbox </div> <div> <input type="checkbox"/> Additional action should be taken (finding remains open)  <input checked="" type="checkbox"/> The finding is closed </div> </div>		

CL ID	IRC 2	Section no.	IRC question	Date: 20/02/2019
<b>Description of CAR</b>				
The included CPA-DD 10431-0001 (page 16) described that "to calculate efficiency loss, CPAs can use any one of the following options given in para 25 of AMS II.G. version-08 paragraph 25 (c) or (d) of the applied methodology". PP shall clarify the application of the option (d) as used for monitoring of the parameter $\eta_{new,i,j}$				
<b>Project participant response (1<sup>st</sup> round)</b>				Date: 21/02/2019
<p>Both option (c) and (d) as per para 25 of AMS II.G. are applicable after completion of annual period of given stove batch. In the concerned monitoring period, there is only one batch (2018 stove population) which was less than one year old, at the time of monitoring.</p> <p>Thus, the CME/PP, monitored the thermal efficiency of 1-pot and 2-pot stoves after the end of first monitoring period and used the measured actual efficiency (loss rate) values for determination of <math>\eta_{new,1-pot,2018}</math> and <math>\eta_{new,2-pot,2018}</math> for this monitoring period.</p> <p>In light of aforesaid, Option (d) as per CPA-DD, page 16 is <b>deemed used</b> to determine <math>\eta_{new,i,j}</math>, given actual efficiency for <math>\eta_{new,1-pot,2018}</math> and <math>\eta_{new,2-pot,2018}</math> were measured for this monitoring period.</p> <p>Subsequently, when the annual period of first batch gets completed, the CME shall determine <math>\eta_{new,i,j}</math> as per option (c) of para 25 of AMS II.G version 8, for all future monitoring periods of this CPA and shall apply the values obtained, to subsequent batches of corresponding ages.</p> <p>The aforesaid has also been clarified in the revised MR.</p>				
<b>Documentation provided by project participant (1<sup>st</sup> round)</b>				
<input type="checkbox"/> Changes in the PoA-DD	Section(s):	New version No.:		
<input type="checkbox"/> Changes in the CPA-DD	Section(s):	New version No.:		
<input checked="" type="checkbox"/> Changes in MR	Section(s): Entire MR	New version No.: 4		
<input type="checkbox"/> Changes in XLS	Worksheet(s): Entire Xls	New version No.:		
<input type="checkbox"/> Other				
DOE assessment (1 <sup>st</sup> round)				Date: 22/02/2019
<p>Given monitoring period covers only 11 days and the end of year 1 for batch 2018 is not completed, hence, CME's approach of monitoring the thermal efficiency at the end of monitoring period to determine <math>\eta_{new,i,j}</math> is deemed appropriate.</p> <p>Although the CME has categorised the monitoring under option (d), the monitoring approach is assessed to be corresponding to both the options (c) and (d) of § 25 of AMS II.G version 8.0 as the monitoring has been conducted before end of year 1 for batch 2018 / end of annual period.</p> <p>The verification team acknowledges that CME shall be using option (c) of § 25 of AMS II.G version 8.0 consistently throughout the crediting period of the CPA and shall not switch between the two sporadically over the course of crediting period.</p> <p>This clarification is converted in to A FAR as below:  FAR: The verifying DoE shall check that parameter <math>\eta_{new,i,j}</math> is determined using option (c) of § 25 of AMS II.G version 8, for all future monitoring periods of the CPA 10431-0001.</p>				
<b>Conclusion</b>		<input type="checkbox"/> Additional action should be taken (finding remains open)		

Tick the appropriate checkbox	<input type="checkbox"/> The finding is closed
<b>Project participant response (2<sup>nd</sup> round)</b>	<b>Date: 21/02/2019</b>
The FAR is accepted.	

Table 5. FARs from this verification

<b>FAR ID</b>	01	<b>Section No.</b>		<b>Date: 10/01/2019</b>
<b>Description of FAR</b>				
DOE during next verification should observe that measurement equipment for determination of $\eta_{new}$ "Efficiency of the project device of each type i and batch j" is purchased newly as there is currently no entity in the host country able to conduct required calibrations.				
<b>CME response</b>				<b>Date: XX/XX/XXXX</b>
<b>Documentation provided by CME</b>				
<b>DOE assessment</b>				<b>Date: XX/XX/XXXX</b>
<b>Conclusion</b> Tick the appropriate checkbox				
<input checked="" type="checkbox"/> To be checked during next periodic verification				

<b>FAR ID</b>	02	<b>Section No.</b>	E.3, IRC1	<b>Date: 22/02/2019</b>
<b>Description of FAR</b>				
The verifying DoE shall check that parameter $\eta_{new,i,j}$ is determined using option (c) of § 25 of AMS II.G version 8, for all future monitoring periods of the CPA 10431-0001.				
<b>CME response</b>				<b>Date: XX/XX/XXXX</b>
<b>Documentation provided by CME</b>				
<b>DOE assessment</b>				<b>Date: XX/XX/XXXX</b>
<b>Conclusion</b> Tick the appropriate checkbox				
<input checked="" type="checkbox"/> To be checked during next periodic verification				

## Appendix 5. Monitored Parameters

**Table A-5:** Periodic Verification Checklist – Monitored Parameters

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<b>A. <math>N_{y,i,j}</math></b>		<b>Number of project devices of type i and batch j operating during year y</b>		
<p><b>a) Measurement / Determination method (VVS, §§ 345-349)</b>  Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)). Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.  Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.</p>	<p>/IM01/  /IM03/  /PoA-DD/  /CPA-DD/  /MR/  /AMSII/  /DB/  /RC/  /FMR/</p>	<p><i>Description:</i> The parameter is monitored to determining the baseline emissions. The number of operating stoves is tracked through Sales Database and monitoring survey and recorded appropriately by the CPA implementer. The monitoring (at time of installation) also involves the recording of any existing ICS in the user's household. The CPA implementer excludes the subsequent ICS from the ER calculations, in case an existing Bondhcu Chulha is found at the household. For the applied monitoring period no ICS were eliminated from the ER calculation. This is verified by the Assessment Team.</p> <p>CPA implementer undertook surveys to apply cross check by the sampling. Based on the survey result and installation records the ICS/BBF Chulha population is correctly presented.</p> <p><b>Sampling Approach:</b>  Data was collected with custom designed survey form to enable surveyors to collect applicable and necessary information during site visit. Procedures for sampling have been duly articulated in the field monitoring report, and a sample of survey questionnaires furnished to DOE. The survey form was verified by the Verification Team and deemed as complete and relevant with respect to the monitoring requirements.</p> <p>The verification team confirms that each ICS in the target strata, was identified by uniquely identifiable Stove ID number and sample number was allocated accordingly. The sampling methodology as stated under section E.3 of MR is checked and</p>	CAR-1	OK

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		<p>verified and deemed as correct. It is further noted that a higher number of samples were selected for monitoring than that required to ensure that the desired precision / confidence is achieved as well as have cover for no-responses.</p> <p><b>Pot1:</b> A sample size n = 7 whereas survey of 36 stoves was carried out for the population of N = 10,808.</p> <p><b>Pot2:</b> A sample size n = 24 whereas survey of 54 stoves was carried out for the population of N = 39,967.</p> <p>Inconsistency in reporting is identified and CAR 1 has been raised.</p> <p><i>Verifier's action:</i> The verification team pulled stored random sales records and compared the details with the information in the provided end user database. Furthermore, the team randomly selected households from the database and conducted direct visits to compare the information in the database with the actual stoves being used. The results of the survey and installation record were compared.</p> <p><i>Conclusion:</i> The way of recording all stoves data (including end user detail) complies with the registered monitoring plan. However, as per the assessment, number of stoves (1 pot) in the installation summary does not match with the stove installation database for the month of March and April 2018. Appropriate corrections are requested. CAR 1 has been raised accordingly.</p>		
<p><b>b) Accuracy and QA/QC Procedure (VVS, §§ 350-356)</b> <i>In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.</i> <i>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring</i></p>	<p>/DB/ /TRG/ /MR/ /Training/</p>	<p><i>Description:</i> The number of stoves installed is ensured by check of the Installation database, survey records and onsite verification by contacting end users. The Verification Team assessed the training records of team prior monitoring and it is confirmed that the monitoring staff had the appropriate skills and expertise to administer relevant surveys / tests and quality checks, ensuring the integrity of information flow to the CME.</p> <p><i>Verifier's action:</i></p>	CAR-1	OK

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equipment has been carried out in line with the latest EB guidance. Include calibration dates and information in validity of the installed monitoring equipment in the table in Annex 2.		The verifier cross-checked all documents: Installation Records and Sampling surveys and carried out onsite interviews.  <i>Conclusion:</i> No significant discrepancies were noted except CAR 1.		
<b>c) Correctness (VVS, §§ 345-349)</b> Determine whether the value given in the monitoring report is correct or determined in a conservative manner. In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given. In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.	/MR/ /DB/ /XLS/	<input type="checkbox"/> Correct <input checked="" type="checkbox"/> Not correct (initial assessment)  <i>Description:</i>  Inconsistency is identified and CAR 1 has been raised.  <i>Verifier's action:</i>  The verification team compared the totals in the databases with information given in the MR  <i>Conclusion:</i>  The reported values are deemed as not correct. Please refer CAR 1.	CAR 1	OK
Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<b>B. <math>\mu_y</math></b>		<b>Adjustment to account for any continued use of pre-project devices during the year y</b>		
<b>a) Measurement / Determination method (VVS, §§ 345-349)</b> Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)). Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements. Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.	/IM01/ /IM03/ /PoA-DD/ /CPA-DD/ /SAMPL E/ /FMR/	<i>Description:</i>  This is the adjustment to account for any continued use of pre-project stoves during year y. The parameter is determined from sampling surveys with prescribed frequency in the registered monitoring plan of the CPA-DD. The value for 1 pot and 2 pot stoves is found as 1.  The parameter was determined through monitoring surveys, drawing a representative stratified random sample. The determination method includes ratio of frequency of usage (number of meals cooked on ICS Vs total meal cooked on ICS and baseline stove. The data was checked during the survey in Oct 2018 at 95/10 confidence/precision  <b>Sampling Approach:</b>	OK	OK



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		<p>Already assessed as above.</p> <p><b>Pot1:</b> A sample size n = 10 whereas survey of 36 stoves was carried out for the population of N = 10,808.</p> <p><b>Pot2:</b> A sample size n = 35 whereas survey of 54 stoves was carried out for the population of N = 39,967.</p> <p>CAR 1 has been raised as the section E.2 of MR lacks the transparency pertaining to determination of the parameter (inline with the applied methodology and registered PoA-DD).</p> <p><i>Verifier's action:</i></p> <p>The verifier checked the field report and procedures to calculate the sample, in line with CDM sampling guidelines.</p> <p><i>Conclusion:</i></p> <p>The applied monitoring procedures are appropriate; however, inconsistency is identified and CAR 1 has been raised.</p>		
<p><b>b) Accuracy and QA/QC Procedure (VVS, §§ 350-356)</b></p> <p><i>In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.</i></p> <p><i>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.</i></p> <p><i>Include calibration dates and information in validity of the installed monitoring equipment in the table in Annex 2.</i></p>	<p>/DB/ /TRG/ /MR/ /Training/</p>	<p><i>Description:</i></p> <p>Monitoring surveys were conducted using stratified random sampling (year as stratum) following the Sampling and surveys for CDM project activities and programme of activities. As described above, it can be said that sampling was accurate. The Verification Team assessed the training records of team prior to monitoring and it is confirmed that the monitoring staff had the appropriate skills and expertise to administer relevant surveys / tests and quality checks, ensuring the integrity of information flow to the CME.</p> <p><i>Verifier's action:</i></p> <p>The VT has carried out desktop reviews of the field monitoring reports to establish if the sample sizes and procedures were carried out correctly. Interviews with staff were also conducted onsite</p>	OK	OK

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		<p><i>Conclusion:</i></p> <p>The CME has followed the sampling plan and procedures for determination of factor for "Adjustment to account for any continued use of pre-project devices during the year y"</p>		
<p><b>c) Correctness</b> <b>(VVS, §§ 345-349)</b> Determine whether the value given in the monitoring report is correct or determined in a conservative manner. In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given. In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.</p>	<p>/MR/ /rs/ /FMR/ /IM03/</p>	<p><input type="checkbox"/> Correct      <input checked="" type="checkbox"/> Not correct (initial assessment)</p> <p><i>Description:</i> The parameter has been measured correctly in line with</p> <p><i>Verifier's action:</i> The values given per year were checked against the excel report and calculations.</p> <p><i>Conclusion:</i> The values presented in the MR is in accordance with the verified survey data analysis sheet and onsite visit and interview with the team conducted the field monitoring survey except inconsistency identified under CAR 1.</p>	CAR-1	OK
Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<b>C. <math>\eta_{new,i,j}</math></b>		<b>Efficiency of the project device of each type i and batch j</b>		
<p><b>a) Measurement / Determination method</b> <b>(VVS, §§ 345-349)</b> Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)). Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements. Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.</p>	<p>/IM01/ /IM03/ /PoA-DD/ /CPA-DD/ /AMSII/ /WBT/ /WBTP/ /XLS/ /PRC/ /CAL/ /TRG/</p>	<p><i>Description:</i> The efficiency The efficiency of stoves was determined by conducting water boiling tests (WBT), in line with option(d) (Additional comment) of registered CPA-DD page 21. The PP employed newly purchased instruments (which are factory calibrated at the time of purchase). The instruments include Digital Thermometer, Digital Weighing Scale and Digital Moisture Meter. The technical specification of the meters are stated under the section E.2 of MR and duly verified by the Verification Team and deemed accurate and acceptable.</p> <p><b>Sampling Approach:</b> Already assessed as above.</p> <p><b>Pot1:</b> A sample size n = 2 whereas WBT of 4 stoves was carried out for the population of N = 10,808.</p> <p><b>Pot2:</b></p>	CAR-1	FAR2

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		<p>A sample size <math>n = 6</math> whereas WBT of 10 stoves was carried out for the population of <math>N = 39,967</math>.</p> <p><i>Verifier's action:</i> The verification team has reviewed the step-by-step protocol followed in determining the sample size per age group, selecting appropriate test conditions and conducting the overall WBTs. The key personnel of WBTs were interviewed on procedures, recording calculation and analysis of result and associated training. The WBT records have been analysed.</p> <p><i>Conclusion:</i> The calculations of sample sizes and measurement procedures have largely followed the GACC (Global Alliance for Clean Cooking) WBT protocol and followed the excel calculation sheets, however during course of verification CAR 01 has been raised and closed successful.</p>		
<p><b>b) Accuracy and QA/QC Procedure (VVS, §§ 350-356)</b> In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs. Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance. Include calibration dates and information in validity of the installed monitoring equipment in the table in Annex 2.</p>	<p>/CAL/ /WBT/ /IM01/ /IM03/</p>	<p><i>Description:</i> The equipment used in conducting the WBTs (Thermometers, scales, anemometer, hygrometer) were newly purchased (factory calibrated at the time of purchase) and applied as per product specifications.</p> <p><i>Verifier's action:</i> The audit team visited and interviewed the WBT expert team along with other relevant staff members present. Questions included testing procedures, QA/QC measures, calculations and testing conditions. The stoves selected, and their ages were checked and compared with the information in the WBT records.</p> <p><i>Conclusion:</i> It is concluded that the WBT procedures were followed to ensure that the results are as accurate as possible. It was also observed that all the above-mentioned equipment were brand new at the time of conducting WBTs (purchased on 08/10/2018) and all the equipment were factory calibrated at the time of purchase. Further, PP confirmed that measurement equipment will not be recalibrated but for each subsequent measurement new equipment will be purchased. This is reasonable as there is no related entity in the host country as per DOE host country knowledge and experience which is able to</p>	GAR-4	FAR 1

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		conduct related calibrations. Therefore equipment had to be send abroad and calibration would be more expensive than a new purchase of the measurement equipment. Therefore also no validity of calibration is stated in MR which is reasonable and plausible. As verified from the WBT records and subsequent interviews during visit, the WBTs were conducted from 12/10/2018 to 20/10/2018, thus, ensuring that measurement taken were reliable and accurate. Purchase records were verified by the assessment team and found to be duly purchased and hence, appropriate.		
<p><b>c) Correctness</b>  <b>(VVS, §§ 345-349)</b>  <i>Determine whether the value given in the monitoring report is correct or determined in a conservative manner. In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.</i>  <i>In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.</i></p>	<p>/MR/  /IM03/  /IM01/</p>	<p> <input type="checkbox"/> Correct <input checked="" type="checkbox"/> Not correct (initial assessment) </p> <p><i>Description:</i>  Values have been presented in section E.2 of the MR and as per the provided excel calculations. The protocol has been followed and therefore the values are deemed to be correct. Still CAR 1 is raised.</p> <p><i>Verifier's action:</i>  The random sampling procedures as well as testing procedures have been interrogated.</p> <p>The stove thermal efficiency values were verified by the DoE based on the following:</p> <ol style="list-style-type: none"> <li>1. Review of the WBT protocol</li> <li>2. Review of the WBT data recording sheet and its compliance wrt to WBT protocol</li> <li>3. Review of measuring equipment used during WBTs for calibration and accuracy.</li> <li>4. Review of original test observation sheets and corresponding WBT calculator and ER calculaltor to verify correct transfer of information from point of monitoring to ER calculator</li> <li>5. Review of WBT calculator for correctnes of calculations in line with WBT protocol.</li> <li>6. By conducting interviews of the WBT mointoring team on the following: <ol style="list-style-type: none"> <li>a. Review of the monitoring team prior experience on conducting WBTs.</li> <li>b. Test procedure followed while conducting WBTs to verify their competence towards performing</li> </ol> </li> </ol>	CAR-1	OK

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		<p>WBTs correctly and accurately and in line with WBT protocol.</p> <ul style="list-style-type: none"> <li>c. Usage and handling of the monitoring equipment to verify that the measurements were taken by the monitoring staff correctly and accurately.</li> <li>d. Knowledge of the WBT test observation sheet to verify that measured data was recorded accurately and correctly.</li> </ul> <p>7. Additionally, during the field visit the audit team leader interviewed the ICS users (of WBT samples) on the following points:</p> <ul style="list-style-type: none"> <li>a. The date of visit of WBT team for testing stove, and cross verified that with date of test specified on corresponding test observation sheet</li> <li>b. The time taken by the WBT team to complete the test and cross verified that with duration of tests specified on corresponding test observation sheet</li> <li>c. The number of test cycles conducted by the WBT team to be 3 rounds of Cold Start + Hot start each</li> <li>d. The general test procedure followed by the WBT team to verify that tests were performed in the field properly and in line with the WBT protocol</li> <li>e. Review of photographs taken by the WBT monitoring team at the time of conducting tests and cross verifying the same during the actual visit (for type of stove and serial number of stove).</li> </ul> <p>Thus, through document review, interviews of WBT team and interviews of end user, the DoE verified the stove thermal efficiency and found it acceptable.</p> <p><i>Conclusion:</i> The calculations have been checked, and the verification team has no significant doubt about the correctness of the presented values. The conformance on the values is subjected to closure of CAR1.</p>		
Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
D. Date of commissioning of project device i		Actual date of commissioning of project device		

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<p><b>a) Measurement / Determination method (VVS, §§ 345-349)</b>  Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)). Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements. Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.</p>	<p>/IM01/ /PoA-DD/ /CPA-DD/ /MR/ /ER/</p>	<p><i>Description:</i> Actual date of commissioning of project device is determined from the sales records.</p> <p><i>Verifier's action:</i> The verifier checked the sampling records, MR and ER worksheet</p> <p><i>Conclusion:</i> The parameter is appropriately reported.</p>	<p>OK</p>	<p>OK</p>
<p><b>b) Accuracy and QA/QC Procedure (VVS, §§ 350-356)</b>  In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs. Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance. Include calibration dates and information in validity of the installed monitoring equipment in the table in Annex 2.</p>	<p>/MR/ /ER/</p>	<p><i>Description:</i> No QA/ QC procedures are required as parameter is determined based on the Installation Database.</p> <p><i>Verifier's action:</i> The verifier checked the sampling records, MR and ER worksheet</p> <p><i>Conclusion:</i> The parameter is appropriately reported</p>	<p>OK</p>	<p>OK</p>
<p><b>c) Correctness (VVS, §§ 345-349)</b>  Determine whether the value given in the monitoring report is correct or determined in a conservative manner. In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given. In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.</p>	<p>/MR/ /ER/</p>	<p><input checked="" type="checkbox"/> Correct      <input type="checkbox"/> Not correct (initial assessment)</p> <p><i>Description:</i> The parameter has been measured correctly in line with</p> <p><i>Verifier's action:</i> The values given are correct.</p> <p><i>Conclusion:</i> No further findings are raised.</p>	<p>OK</p>	<p>OK</p>

## Appendix 6. Calibration dates and validity of installed monitoring equipment

**Table A-6:** Periodic Verification Checklist – Calibration details

Monitoring equipment	Related monitoring parameter as per applicable registered monitoring plan	Serial number	Type	Accuracy or accuracy class	Previous calibration (last calibration before start of this monitoring period)	Calibration date(s) during this monitoring period	Validity of calibration(s)	Delay in calibration: yes/no	Period of delayed calibration
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<input type="checkbox"/> No <input type="checkbox"/> Yes	From: To:
-	-	-	-	-	-	-	-	<input type="checkbox"/> No <input type="checkbox"/> Yes	From: To:

**Document information**

<i>Version</i>	<i>Date</i>	<i>Description</i>
02.0	29 December 2017	Revision to align with the requirements of the “CDM validation and verification standard for programme of activities” (version 01.0).
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