Verification and certification report form for CDM programme of activities

(Version 03.0)

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

BASIC INFORMATION		
Title and UNFCCC reference number of the programme of activities (PoA)	Improved cookstove program in Bangladesh supported by the Republic of Korea UNFCCC ID: 10431	
Version number(s) of the PoA-DD(s) to which this report applies	4.0	
Version number of the verification and certification report	1.0	
Completion date of the verification and certification report	06/04/2020	
Monitoring period number and duration of this morning period	2 (Second monitoring period) 11/09/2018 – 10/09/2019 (both days included)	
Number and version number of the monitoring report to which this report applies	1 Version 3.0	
Coordinating/managing entity (CME)	Ecoeye Co., Ltd.	
Host Parties	Host Parties of the PoA	Is this a host Party to a CPA covered in this report?(yes/no)
	Bangladesh	Yes
Applied methodologies and standardized baselines	AMS II.G. – "Energy efficiency measures in thermal applications of non-renewable biomass" (version 08.0) Standardized Baseline: Not applicable	
Mandatory sectoral scopes	3: Energy Demand	
Conditional sectoral scopes, if applicable	NA	
Estimated amount of GHG emission reductions or GHG removals for this monitoring period in the included CPAs covered in this report	**CPA**	**Estimated amount (t CO_2e)**
	Total	1,616,688
Certified amount of GHG emission reductions or GHG removals for this monitoring period for the included CPAs covered in this report	**CPA**	**Amount achieved (t CO_2e)**
	Total	355,543
Name and UNFCCC reference number of the DOE	TÜV NORD CERT GmbH E-0022	
Name, position and signature of the approver of the verification and certification report	Final Approver Stefan Winter	

SECTION A. Executive summary

Ecoeye Co., Ltd. (EECL) has commissioned the TÜV NORD JI/CDM Certification Program to carry out the 2nd periodic verification of the CDM Programme of Activities:

"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 11/09/2018 – 10/09/2019 (both days included).

The programme of activities and relevant CPA reduces GHG emissions by disseminating high efficiency biomass based improved cookstoves ("Bondhu Chulha") to households / SMEs in Bangladesh. Under the CPA 01, two types of Bondhu Chulha (1 pot and 2 pots models) have been installed in project households in Bangladesh, replacing the inefficient cookstoves used in the baseline scenario (mainly 3 stone fired).
EECL, SK Securities Investment Asia Limited and/or other Korean Entity(ies) has fully financed all improved cooking stoves distributed to the households under the CPA (The total project cost per stove is USD 10, including BDT 450 subsidy a stove and CPA implementation costs to BBF).

The CPA implementer of the implemented CPA 01 (10431-P1-0001-CP1) is Bangladesh Bondhu Foundation (BBF). EECL and BBF ensured that the PoA's Operational and Management Plan, as given in the registered PoA-DD, is duly implemented for the concerned CPA.

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

Table A-1: Project Location of CPA 01: Improved cookstove program in Bangladesh supported by the Republic of Korea

No.	Project Location
Host Country	Republic of Bangladesh
Region:	All across Bangladesh
Project location address:	Whole country where CPA 01 is implemented

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

Table - A-2: Technical data of the CPA 0001: Improved cookstove program in Bangladesh supported by the Republic of Korea

Parameter	Unit	Value
Average Thermal Efficiency as per registered 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)
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 2nd periodic verification of CPA 01(Improved cookstove program in Bangladesh supported by the Republic of Korea), 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 achieved during the monitoring period: 355,543 tCO_2e

SECTION B. Verification team, technical reviewer and approver

B.1. Verification team members

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)	Involvement in			
						Desk/ document review	On-site inspection	Interview(s)	Verification findings
1.	Team Leader+ Technical Expert	IR	Mishra	Prakash Kumar	TÜV NORD CERT	x	x	x	x

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

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)
1.	Technical reviewer	EI	Lubanga	David	-
2.	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
☐	**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[1];**
☐	**1 %**	**Emission reductions or removals for registered CDM project activities achieving a total emission reduction or removal of between 300,000 and 500,000 tonnes of carbon dioxide equivalent per year;**

[1] A year refers to a period of 12 consecutive months.

	Threshold	Related to
☐	**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;**
☒	**5 %**	**Emission reductions or removals for registered small-scale CDM PoA other than registered CDM PoA covered under next category below;**
☐	**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 on-site visit.

C.2. Consideration of materiality in conducting the verification

Based on the verification planning, verification process is carried out. The concept of materiality 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
$N_{y,i,j}$ (Number of project devices of type i and batch j operating during year y)	*SPL*	☒	CAR 02, CAR 05	☒	Not material
μ_y (Adjustment to account for any continued use of pre-project	*SPL*	☐	-	☐	--

Parameter	Approach+	Errors* detected	Findings reference	Corrected	Remaining verification risk
devices during the year y)					
$\eta_{new,i,j}$ (Efficiency of the project device of each type i and batch j)	*CDC*	☒	*CL 02, FAR 01, FAR 02*	☒	Not material
Date of commissioning of project device i	*CDC*	☐	*N/A-*	☐	-
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 risk mentioned in section C.1, the verification team has conducted a thorough cross check and verification as follows:

I. Analysis and transfer of data from sales records, household usage Survey and WBT Reports for parameters under monitoring to MR and excel ER spreadsheet: The verification team reviewed and compared available data at CME office (total installation records/ database, Usage Survey, WBT reports etc.) for which CERs are claimed under the current monitoring period. Total installation records / database presented were assessed and verified at CME office/premises during onsite verification audit. CME conducts monitoring (surveys and tests) every year in accordance with registered monitoring plan. Verification team assessed the value of parameters monitored ($N_{y,i,j}$, $\eta_{new,i,j}$ and μ_y) against the Installation / survey / WBT records presented to the verification team by the CME. The survey records for surveys (for parameters $N_{y,i,j}$ and μ_y,**)** conducted in September and October 2019 were assessed and cross-checked with physical observations and interview responses received from the sampled project technologies users during onsite visit. The value of $\eta_{new,i,j}$, i.e. "Efficiency of the system being deployed as part of the project activity" is compared with WBT test Reports (February and September 2019) submitted. Based on the above, verification team has issued findings (CAR/CLs) which can be referred in table above and in Appendix-4 and Appendix-5 of this report. Certain data was assessed to be inconsistent (Inconsistent values of project stoves in databases and ER/MRs; please refer the corresponding findings under Appendix4).

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:

- Registered PoA-DD including the monitoring plan/PoA-DD/,
- PoA Validation Report/VAL/
- Registered CPA-DD/CPA-DD/
- CPA validation report/VAL/,
- the monitoring report, including the claimed emission reductions for the PoA/MR/,
- Field Monitoring Report and related work sheets/RC/
- Water Boiling Test Report/WBT/ and related work sheets
- the emission reduction calculation spreadsheet/XLS/.
- CPA Distribution Records/ and Sales Receipts
- Sample size calculation spreadsheet for Usage Survey and WBT
- Total Installation Database

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

D.2. On-site inspection

Duration of on-site inspection: 10/02/2020 to 14/02/2020				
No.	**Activity performed on-site**	**Site location**	**Date**	**Team member**
1.	• Assessment of the installation database • Assessment of sample end-user/customer's agreements • Comparison of end-user/customer's agreements with information in the database (dates, serial numbers, names, locations) • Assessment of data management system, QA/QC procedures • Interviews with local stove manufacturers • Interviews with CME and BBF management • Interview with operation manager of BBF/CPA implementer • Interviews with CME representative • Discussion of emission reductions and supporting documentation • Telephonic interview with ceramic liner producer • 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	BBF office, Dhaka Bangladesh	10/02/2020 to 14/02/2020	Prakash Kumar Mishra (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	10/02/2020 to 14/02/2020	
3.	Discussion on MR and supporting documents and final closing meeting	CME/consultant /PP	14/02/2020	

D.3. Interviews

No.	Interviewee			Date	Subject	Team member
	Last name	**First name**	**Affiliation**			
1.	Md.	Khalequzza	CPA (BBF)	10/02/2020 to	CPA development, QM,	PKM

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
		man	Implementer-Representative	14/02/2020	Organisational structure, QA/QC, raw data, sales database	
2.	Alam	Md. Ashraful	AGM-Database, (BBF)	10/02/2020 to 14/02/2020	Trainings, Information flow, data Management, record keeping, Financial Management, staff training, sales database	
3.	Kumar Sarkar	Dr. Animesh	CEO (BBF)	10/02/2020 to 14/02/2020	CPA development, QM, Organisational structure, QA/QC, raw data, sales database	
4.	Lohia	Rohit	Principal Consultant (CSS)	10/02/2020 to 14/02/2020	MR development, ER calculation and monitoring aspects including Sampling & Survey and WBT analysis	
5.	Kumar	Ritesh	Associate Consultant (CSS)	10/02/2020 to 14/02/2020	MR development, ER calculation and monitoring aspects including Sampling & Survey and WBT analysis	
6.	Hossain	Kamal	DGM (BBF)	10/02/2020 to 14/02/2020	WBT procedures Equipment Calibration, training	
7.	Shuvro	Mushfiqr Mahbub	Manager-Admin, (BBF)	10/02/2020 to 14/02/2020	Administration, Financial Management, staff training	
8.	Biswas	Primal	DSM (BBF)	10/02/2020 to 14/02/2020	Stove installation, Data entry, record keeping, sales database	
9.	Mondal	Samir Kumar	ADM (BBF)	10/02/2020 to 14/02/2020	Stove installation, Data entry, record keeping, sales database	
10.	Md.	Farhad	ADM (BBF)	10/02/2020 to 14/02/2020	Stove installation, Data entry, record keeping, sales database	
11.	Biswas	Debasis	DSM (BBF)	10/02/2020 to 14/02/2020	Stove installation, record keeping, sales database	
12.	Md.	Mujahidul	ADM (BBF)	10/02/2020 to 14/02/2020	Stove installation, record keeping, sales database	
13.	Bisng	Biswajit	ADM (BBF)	10/02/2020 to 14/02/2020	Stove installation, record keeping, sales database	
14.	Hoque	Md. Mozammez	ADM (BBF)	10/02/2020 to 14/02/2020	Stove installation, record keeping, sales database	
15.	Goni	Md. Osman	ADM (BBF)	10/02/2020 to 14/02/2020	Stove installation, record keeping, sales database	
16.	Khan	Md. Nishad	ADM (BBF)	10/02/2020 to 14/02/2020	Stove installation, record keeping, sales database	
17.	Paul	Partha Pratim	ADM (BBF)	10/02/2020 to 14/02/2020	Stove installation, record keeping, sales database	
18	Kumar Saha	Atanu	DGM (BBF)	10/02/2020 to 14/02/2020	WBT procedures Equipment Calibration, training	
19.	Munira	Sirajum Joya	Communication Officer (BBF)	10/02/2020 to 14/02/2020	trainings, Information flow, record keeping,	

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
					staff training, sales database	
20.	Chandra Pal	Netai	Partner (BBF)	10/02/2020 to 14/02/2020	Manufacturing and installation of ICS	
21.	Siddique	Abubaker	Partner (BBF)	10/02/2020 to 14/02/2020	Manufacturing and installation of ICS	
22.	Md	Kamrujjaman	Stove User (Survey Sample)	10/02/2020 to 14/02/2020	Date of installation, number of persons in household, number of stoves (BBF and any other) in the household, Usage rate, Stove performance, Use of baseline stove, WBT tests, as applicable etc.	
23.	Islam	Asadul	Stove User (Survey Sample)	10/02/2020 to 14/02/2020		
24.	Master	Sudhir	Stove User (Survey Sample)	10/02/2020 to 14/02/2020		
25.	Gazi	Ahmmed	Stove User (Non-Sample)	10/02/2020 to 14/02/2020		
26.	Gazi	Md. Siddik	Stove User (Survey Sample)	10/02/2020 to 14/02/2020		
27.	Sordar	Liton	Stove User (Survey Sample)	10/02/2020 to 14/02/2020		
28.	Sordar	Abul	Stove User (Non-Sample)	10/02/2020 to 14/02/2020		
29.	Sordar	Abdulla	Stove User (Non-Sample)	10/02/2020 to 14/02/2020		
30.	Sardar	Md. Rafiqul	Stove User (Survey + WBT Sample)	10/02/2020 to 14/02/2020		
31.	Sarkar	Satish	Stove User (Non-Sample)	10/02/2020 to 14/02/2020		
32.	Sarkar	Orun	Stove User (Non-Sample)	10/02/2020 to 14/02/2020		
33.	Islam	Md. Robiul	Stove User (Survey Sample)	10/02/2020 to 14/02/2020		
34.	Rohoma	Tobibur	Stove User (Survey Sample)	10/02/2020 to 14/02/2020		
35.	Arafat	Easin	Stove User (Survey + WBT Sample)	10/02/2020 to 14/02/2020		
36.	Md.	Arman	Stove User (Survey Sample)	10/02/2020 to 14/02/2020		
37.	Md.	Feroj	Stove User (Non-Sample)	10/02/2020 to 14/02/2020		
38.	Kumar Mandol	Nishikanto	Stove User (Survey Sample)	10/02/2020 to 14/02/2020		
39.	Haq	Md. Mominul	Stove User (Survey Sample)	10/02/2020 to 14/02/2020		
40.	Hossain	Sohorab	Stove User (Survey + WBT Sample)	10/02/2020 to 14/02/2020		
41.	Ray	Jita	Stove User (Survey	10/02/2020 to 14/02/2020		

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
			Sample)			
42.	Md.	Juwel	Stove User (Survey Sample)	10/02/2020 to 14/02/2020		
43.	Md.	Juyel	Stove User (Survey Sample)	10/02/2020 to 14/02/2020		
44.	Gazi	Md. Selim	Stove User (Survey Sample)	10/02/2020 to 14/02/2020		
45.	Sek	Serajul	Stove User (Survey Sample)	10/02/2020 to 14/02/2020		
46.	Awyal	Abdul	Stove User (Survey Sample)	10/02/2020 to 14/02/2020		
47.	Rahman	Md. Mojibur	Stove User (Survey + WBT Sample)	10/02/2020 to 14/02/2020		
48.	Md.	Riajuddin	Stove User (Survey Sample)	10/02/2020 to 14/02/2020		
49.	Biswas	Babu	Stove User (WBT Sample)	10/02/2020 to 14/02/2020		
50.	Md.	Joyari	Stove User (Survey Sample)	10/02/2020 to 14/02/2020		
51.	Bapari	Samul	Stove User (Survey Sample)	10/02/2020 to 14/02/2020		
52.	Khandakar	Ibrahim	Stove User (WBT Sample)	10/02/2020 to 14/02/2020		
53.	Haq	Asadul	Stove User (WBT Sample)	10/02/2020 to 14/02/2020		
54.	Mia	Md. Rafiq	Stove User (WBT Sample)	10/02/2020 to 14/02/2020		
55.	Chandro	Shree Narayon	Stove User (WBT Sample)	10/02/2020 to 14/02/2020		
56.	Rahaman	Mahbobur	Stove User (WBT Sample)	10/02/2020 to 14/02/2020		
57.	Islam	Md. Rafiqul	Stove User (WBT Sample)	10/02/2020 to 14/02/2020		
58.	Alom	Rawsan	Stove User (Survey + WBT Sample)	10/02/2020 to 14/02/2020		
59.	Hang	Madam	Stove User (Survey + WBT Sample)	10/02/2020 to 14/02/2020		
60.	Lasker	Md. Mahabur	Stove User (WBT Sample)	10/02/2020 to 14/02/2020		
61.	Hosan	Md. Mehedi	Stove User (WBT Sample)	10/02/2020 to 14/02/2020		

D.4. Sampling approach

D.4.1 Sampling during monitoring:

☐	No sampling approach has been used by the PP to determine the monitored parameters

☒	A sampling approach has been taken for the following monitored parameter(s):						
	Parameter	**Sampling approach [1)]**	**Sampling Type [2)]**	**Population**		**Sample Size**	
	$N_{y,i,j}$	StRS	PS	Strata	Population	Sample Size (n) required	Samples covered
				$N_{y,1\ pot,\ 2018}$	46,048	4	12
				$N_{y,2\ pot,\ 2018}$	38,694	3	14
				$N_{y,1\ pot,\ 2019}$	325,825	25	48
				$N_{y,2\ pot,\ 2019}$	161,191	13	42
	μ_y	StRS	PS	Strata	Population	Sample Size (n) required	Sample covered
				$\mu_{y,1\ pot}$	371,873	28	59
				$\mu_{y,2\ pot}$	199,885	16	55
	$\eta_{new,i,j}$	StRS	PS	Strata	Population	Sample Size (n) required	Sample covered
				$\eta_{new,1\ pot,\ 2018(age\ 1)}$	46,048	4	5
				$\eta_{new,2\ pot,\ 2018(age\ 1)}$	38,694	4	4
				$\eta_{new,1\ pot,\ 2018(age\ 2)}$	46,048	4	4
				$\eta_{new,2\ pot,\ 2018(age\ 2)}$	38,694	4	5

[1)] Sampling Approaches:

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

[2)] 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 (571,758).
- Sampling methods: a stratified random sampling, with stove type (1-Pot / 2-Pot with year of installation, 2018 and 2019) 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. 1-pot (stove type), 2018 and 2019 (Vintage) and
  2. 2-pot (stove type), 2018 and 2019 (Vintage)

  The end user data (including specific stove location) has been made available to the verification team for each of the **571,758** Bondhu chulhas as verified from the installation databases submitted and maintained at the BBF office.
- Sample size: the sample size is calculated based on 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 and registered CPA-DD section B.5.2.

A representative sampling was adopted by the CME for Sampling. The sample size is determined using the following formulas:

$$n \geq \frac{z^2 * N * V}{(N-1) * precision^2 + z^2 * V}$$

Where,
n = number of ICS to be sampled
N = Total number of ICS in the population
Z = Constant referring to level of confidence (1.96 for 95 % confidence)
Precision = Required precision (e.g. 10% = 0.1)

For Proportion based parameters ($N_{y,i,j}$ and μ_y)

$$V = \frac{SD^2}{\bar{p}^2}$$ Where:

$$SD^2 = \frac{\sum_{i=1}^{k} g_i * p_i * (1 - p_i)}{N}$$

$$\bar{p} = \frac{\sum_{i=1}^{k} g_i * p_i}{N}$$

Where,
g_i = weight of strata i in the population
p_i = expected proportion of strata i in the population
k = total number of strata in the population

For Mean based parameters ($\eta_{y,i,j}$)

$$V = \left(\frac{SD}{Mean} \right)^2$$

Where

$$SD^2 = \frac{\sum_{i=1}^{k} g_i * SD_i^{\,2}}{N}$$

$$Mean = \frac{\sum_{i=1}^{k} g_i * m_i}{N}$$

Where

SD_i = expected standard deviation of strata i in the population

m_i = expected mean of strata i in the population

The samples sizes 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 ICS (Bondhu Chulha 1-Pot 1 & 2-Pot with vintages 2018 and 2019) covered under the monitoring period as recorded in the project installation database i.e. **571,758**.
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 project stove in the CPAs covered under this MR (observed to be uniquely identifiable by its ID number) was observed to be allocated a sample number. 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. DOE further has cross-checked the sampling approach by CME as per MR section E.3 against related PoA- and CPA-DD.

Additionally, the related population size have been checked with corresponding supporting documents. Input parameter for the sampling calculations have been checked for consistency with the stated approach and against registered PoA-DD, CPA-DD and the sampling guidance. Further, DOE has re-calculated the sample size according to the required confidence/precision and found the sample size correctly calculated. Also the achieved precision for every parameter was recalculated by the DOE and was found to be meeting the minimum desired precision levels. Several findings were raised during course of verification. Please refer Appendix-4 of this report.

D.4.2 Sampling approaches during verification

☐	No sampling approach has been used by the VT to verify the monitored parameters
☒	A sampling approach has been applied by the VT for the following monitored parameter(s):

Parameter	Sampling approach [1)]	Sampling Type [2)]	Population	DoE Sample Size
$N_{y,i,j}$	*StRS*	*AS*	116 (60 1-Pot, 56 2-Pot)	25 (15 1 Pot, 10 2 Pot)
μ_y	*StRS*	*AS*	114 (59 1-Pot, 55 2-Pot)	25 (15 1 Pot, 10 2 Pot)
$\eta_{new,i,j}$	*StRS*	*AS*	18 (09 1-Pot, 09 2-Pot)	15 (09 1 Pot, 06 2 Pot)

[1)] *Sampling Approaches:*

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

[2)] *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.

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 08, para 29 to 32, esp. for taking sample out of the CME’s sample. Verification team has adopted the acceptance sampling approach in accordance with § 29, 30, 31 and 32 of the Sampling Standard by considering AQL 1% and UQL 20% (in line § 30 of Standard). Producer risk of 10% and consumer risk of 10% (as per § 31 a) and § 33 b) have been adopted. Considering the above § under applied sampling standard, DOE should have verified 18 samples under the acceptance sampling approach with acceptance (c) number 01. However, verification team has verified total of 25 survey samples and 15 WBT samples. Although VT is doing acceptance sampling, and hence sampling frame should be the PP’s sample, but considering high number of distributed ICS of 571,758; model (1 pot/2 pot-371,873/199,885) and year of installation (2018 and 2019), it was decided to do over sampling and hence, both the models (15 1 Pot, 10 2 Pot) and year (2018 and 2019) strata was considered and verified. Thus, verification team has verified optimum number of samples from each stratum (15 from 1 pot and 10 from 2-pot; above minimum required samples) from CME samples during onsite visit. These samples 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 included

04 samples (1 pot and 2 Pot), which were not part of CME samples but the total ICS population (571,758) 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 above.

Table 7: Applied sampling standard

AQL	01%
UQL	20%
Producer risk	10%
Consumer risk	10%
Sample size	18
Acceptance Number	1

No CME sampling monitoring records/data results were found discrepant during the DOE verification site-visit. All the 25 survey samples and 15 WBT samples visited by the verification team were found to be operational/WBT tested 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 ER calculation spread sheet and results of survey and WBT are consistent with the onsite observation and interview with the end users/BBF Chulha users.

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

Areas of verification findings	No. of CL	No. of CAR	No. of FAR
General	-	-	-
Compliance of the monitoring report with the monitoring report form	0	0	0
Remaining forward action requests from validation and/or previous verifications	0	0	0
CPAs considered for verification and covered in this report	0	0	0
Programme of activities	-	-	-
Compliance of the programme implementation with the registered PoA-DD	0	0	0
Implementation and operation of the management system	0	0	0
Post-registration changes	-	-	-
• Corrections	0	0	0
• Inclusion of a monitoring plan	0	0	0
• Permanent changes to the registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines, or other methodological regulatory documents[2]	0	0	0
• Changes to the programme design	0	0	0
• Addition of CPA inclusion template	0	0	0
• Change of coordinating/managing entity			
• Changes specific to afforestation and reforestation activities	0	0	0
Component project activities	-	-	-
Compliance of the CPA implementation with the included CPA design document	0	0	0
Post-registration changes	-	-	-
• Temporary deviations from registered monitoring plan, applied methodologies, standardized baselines or other methodological regulatory	0	0	0

[2] Other standards, methodologies, methodological tools and guidelines (to be) applied in accordance with the applied(selected) methodologies are collectively referred to as the other (applied) methodological regulatory documents).

Areas of verification findings	No. of CL	No. of CAR	No. of FAR
documents			
• Corrections	0	0	0
• Changes to the start date-of the crediting period	0	0	0
• Inclusion of a monitoring plan	0	0	0
• Permanent changes to the registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines, or other methodological regulatory documents	0	0	0
• Changes to the project design	0	0	0
• Changes specific to afforestation and reforestation activities	0	0	0
Compliance of the registered monitoring plan with applied methodologies and standardized baselines	0	0	0
Compliance of monitoring activities with the registered monitoring plan	-	-	-
• Data and parameters fixed ex ante or at renewal of crediting period	0	2	0
• Data and parameters monitored	1	1	1
• Implementation of sampling plan	0	0	0
Compliance with the calibration frequency requirements for measuring instruments	1	0	1
Assessment of data and calculation of emission reductions or net removals	-	-	-
• Calculation of baseline GHG emissions or baseline net GHG removals by sinks	0	1	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	1	0
Total	**2**	**5**	**0[3]**

[3] The summation is set to zero as no new FAR is raised during current Verification assessment. FAR's (previously raised) are addressed.

SECTION E. Verification findings

E.1. General

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

Means of verification	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. By means of the UNFCCC website it has been checked whether the latest applicable MR template CDM-PoA-MR-FORM has been used. 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. The following sources of information have been used in this context: • /MR/ • /MRT/ • /unfccc/	
Findings	☒	The latest reporting template CDM-PoA-MR-FORM as listed on the UNFCCC website has been used for the Monitoring Report to be uploaded.
	☒	The latest instructions for filling out the MR have been followed. No adverse finding has been identified in the course of this verification.
	☐	The respective requirements have widely been complied with; however; the following issues needed to be addressed in this context:
		-
Conclusion	☒	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.
	☐	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.
	The latest instructions for filling out the MR 3.0 have been followed.	

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

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/MR/ and the PoA Validation report/VAL/, 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:

☒	There were no open issues which have been addressed in the latest version of the validation report.
☐	All open issues from the validation have been appropriately addressed in the context of previous verifications.
☐	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)
☐	The following issues related to the validation have not yet been appropriately addressed (for details please refer to appendix 4):

(ii) Open issues from previous verifications:

☐	N/A – as this is the first monitoring period for this CDM project activity.
☐	There were no open issues which have been addressed in the previous verification report
☒	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)
	The following issues related to the previous verification have not yet been appropriately addressed (for details please refer to appendix 4):

☐	

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
Improved cookstove program in Bangladesh supported by the Republic of Korea - CPA 01 10431-P1-0001-CP1	yes	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

Means of verification	By means of an in-depth review of the latest PoA-DD – as downloaded from the UNFCCC project site - and the checks carried out during the on-site visit an assessment has been carried out 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 has been checked: • Implemented technology, project equipment as well as monitoring plan in line with registered monitoring plan and equipment. • Interviews with operational personnel were carried out, QMS records, maintenance records were checked in this context. • 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 Further it has been checked if relevant technical equipment of the project activity has been exchanged or modified during the monitoring period and consistent notations of key equipment (meters etc.) in PoA-DD, MR and calculation spreadsheet are applied. Interviews with, CME, CPA implementer and operational personnel have been carried out, QMS records, maintenance records, instruments were checked in this context. Special focus has further been 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. Further it has been checked whether any observed deviations from the registered project design have been correctly addressed as PRC. The following sources of information have been used in this context: • /PoA-DD/ • /CPA-DD/ • /MR/ • /VVS/ • /XLS/ • /QMS/ • /unfccc/	
Findings	☒	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.
	☐	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):

	☐	In this context the following CARs, CLs have been raised:
		-
	In case of phased implementation:	
	☒	N/A
	☐	The phased implementation has correctly and in sufficient detail been described in the latest version of the PoA-DD.
	☐	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.
	☐	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
Conclusion	☒	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.
	☐	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

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

E.2.3. Post-registration changes

E.2.3.1. 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.

☒	During this verification of the current MP no need for corrections has been identified.
☐	The following corrections have been applied:
	☐ A related post registration change has been submitted prior to the issuance request. ☐ 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.2.3.2. Inclusion of a monitoring plan

☒	N/A - as this monitoring plan was part of the registered PoA-DD /CPA-DD
☐	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.
☐	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.2.3.3. Permanent changes to the registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines, or other methodological regulatory documents

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.

☒	No PCfrMP, PCfMM or PCfSB have been submitted to the UNFCCC prior to the current monitoring period		
☐	The following PCfrMP, PCfMM or PCfSB have been approved or are under approval by the UNFCCC		
	1	Title	
		Status	☐under approval; ☐approved
		Approval	
		Ref. No.	
☒	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		
☐	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:	
☐	The following PCfrMP, PCfMM or PCfSB for which appendix 1 of the PS is applicable have been applied:		
	1	Issue:	
	2	Issue:	

E.2.3.4. Changes to the programme design

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.

☒	No CoPD has been submitted to the UNFCCC prior to the current monitoring period		
☐	The following CoPD have been approved or are under approval by the UNFCCC		
	1	Title	
		Status	☐under approval; ☐approved
		Appr.date	
		Ref. No.	
	2	Title	
		Status	☐under approval; ☐approved
		Appr.date	
		Ref.No.	

☒	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		
☐	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:	
☐	The following CoPD for which appendix 1 of the PS is applicable have been applied:		
	1	Issue:	
	2	Issue:	

E.2.3.5. Addition of CPA inclusion template

N/A

E.2.3.6. Change of coordination/managing entity

Not applicable. The registered PoA-DD mentions Ecoeye Co., Ltd. (EECL) as the CME.

E.2.3.7. Changes specific to afforestation and reforestation activities

☒	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

Means of verification	By means of an in-depth review of the latest CPA-DD – as downloaded from the UNFCCC project site - and the checks carried out during the on-site visit an assessment has been carried out whether the project has been implemented and operated in line with the latest approved version of the CPA-DD and whether all physical features of the project are in place. The following has been checked: implemented technology i.e. project stoves, project monitoring and implemented monitoring plan in line with approved monitoring plan in the PoA-DD and corresponding CPA-DDs. Further it has been checked if relevant technical equipment of the project activity has been exchanged or modified during the monitoring period and consistent notations of key equipment (meters etc.) in CPA-DD, MR and calculation spreadsheet are applied. Interviews with operational personnel have been carried out, QMS records, maintenance records, instrument specifications were checked in this context. Special focus has further been 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. Further it has been checked whether any observed deviations from the registered project design have been correctly addressed as PRCs. The following sources of information have been used in this context: • /CPA-DD/ • /MR/ • /VVS/ • /XLS/ • /unfccc/
Findings	-
Conclusion	The verification team confirms that the CPAs under this MP are implemented and operated in line with latest approved versions of CPA-DDs and all physical feature

	of the project are in place. However, during course of verification findings were raised and closed successfully. Please refer Appendix-4 of this report.

E.3.2. Post-registration changes

E.3.2.1. Temporary deviations from the registered monitoring plan, applied methodologies, standardized baselines or other methodological regulatory documents

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.

☒	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.		
☐	The following TDfrMP or TDfMM have been approved or are under approval by the UNFCCC		
	1	Title	
		Status	☐under approval; ☐approved (approval No.:)
		Appr.date	
		Ref. No.	
	2	Title	
		Status	☐under approval; ☐approved (approval No.:)
		Appr.date	
		Ref.No.	
☒	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		
☐	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:	
☐	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.

☒	During the verification of the current MP no need for corrections has been identified.		
☐	The following corrections have been applied:		
	1	Issue:	
	2	Issue:	
	☐ A related post registration change has been submitted prior to the issuance request.		

	☐ 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

N/A

E.3.2.4. Inclusion of a monitoring plan

☒	N/A - as this monitoring plan was part of the included CPA-DD
☐	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.
☐	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 PRC-XXXX-00Z.

E.3.2.5. Permanent changes to the registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines, or other methodological regulatory documents

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.

☒	No PCfrMP, PCfMM or PCfSB have been submitted to the UNFCCC prior to the current monitoring period		
☐	The following PCfrMP, PCfMM or PCfSB have been approved or are under approval by the UNFCCC		
	1	Title	
		Status	☐under approval; ☐approved
		Appr.date	
		Ref. No.	
	2	Title	
		Status	☐under approval; ☐approved
		Appr.date	
		Ref. No.	
☒	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		
☐	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:	
☐	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 project design

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.

☒	No CoPD has been submitted to the UNFCCC prior to the current monitoring period		
☐	The following CoPD have been approved or are under approval by the UNFCCC		
	1	Title	
		Status	☐under approval; ☐approved
		Appr.date	
		Ref. No.	
	2	Title	
		Status	☐under approval; ☐approved
		Appr.date	
		Ref.No.	
☒	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		
☐	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:	
☐	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 activities

☒	N/A - as this registered PoA is not an afforestation and reforestation activity

E.3.3. Compliance of the registered monitoring plan with applied methodologies and standardized baselines

Means of verification	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/ • /AMS II. G./ • /unfccc/			
Findings	☒	The MP is completely in accordance with the approved methodology applied by the CDM PoA project (last registered/approved version of the PoA-DD)		
	☐	The breakdown of MP accordance of the referenced guidelines is as follows:		
		1	Title (of the guideline)	
			MP compliance	☐ full compliance

				☐ findings have been raised ☒ N/A (for MP)
		2	Title (of the tool)	
			Version	
			MP compliance	☐ full compliance ☐ findings have been raised ☒ N/A
	☐	The breakdown of MP accordance of the applicable SB is as follows:		
		1	Title (of the SB)	Name of SB
			Version	
			MP compliance	
	☐	In this context the following CARs, CLs, FARs have been raised:		
Conclusion	☒	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.		
	☐	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.3.4. 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

Means of verification	By means of comparison of the MR and the ER calculation with the latest version of the registered PoA-DD, the verification team has checked whether all parameters fixed ex-ante or at renewal of the crediting period have been applied correctly. Parameters which are fixed ex-ante are listed as below have been found to be adequately provided in the section E.1 of the MR. Corresponding values in the ER sheet are also verified to be correct. 1. $B_{old,p}$ 2. $N_{p,HH}$ 3. $B_{old,HH}$ 4. $f_{NRB,y}$ 5. $EF_{project\_fossilfuel}$ 6. LAF_y 7. $NCV_{biomass}$ 8. $\eta_{old,i,j}$ The following sources of information have been used in this context: • /MR/ • /XLS/ • /PoA-DD/ • /CPA-DD/ • /PS/ • /VVS/ • /unfccc/ • /METH/ • /AMS II. G./	
Findings	☒	The MR and the ER calculation have considered the parameters fixed ex-ante or at the renewal of the crediting period correctly, no deviations have been observed.
	☐	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
		In this context the following CARs, CLs, FARs have been raised:

	☒	CAR 01 For details please refer to appendix 4
Conclusion	☐	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.
	☒	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 fixed ex-ante parameters corresponding with the provisions of CPA-DD are appropriately applied for the ER calculation.	

E.3.4.2. Data and parameters monitored

Means of verification	During the verification all relevant monitoring parameters (as listed in the PoA-DD) have been verified with regard to the (i) appropriateness of the applied measurement / determination method, (ii) the correctness of the values applied for ER calculation, (iii) 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).	
Findings	CL 01, CAR 01, CAR 03, CAR 05 are raised	
Conclusion	☐	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.
	☒	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.
	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.	

E.3.4.3. Implementation of sampling plan

Means of verification	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 (i) description of the implemented sampling design (ii) collected data (iii) analysis of collected data (iv) demonstration on whether the required confidence/precision has been met. The following sources of information have been used in this context: • /MR/ • /RC/ • /XLS/ • /WBT/ • /PoA-DD/ • /CPA-DD/		
Findings	☐	The PPs have not applied sampling approaches for the parameters monitored.	
	☒	The PPs have applied sampling approaches for the following parameters monitored.	
		$N_{y,i,j}$	
		Name:	Number of project devices of type i and batch j operating during year y
		Description on how the sampling	The CPA implementer is maintaining database of all the stove installed under the CPA. At the point of Bodhu Chulha installation, the presence of existing Bondhu Chulha, if any, is checked in the

		efforts and survey comply with the validated sampling plan:	ICS installation record. Subsequent (secondary) Bondhu Chulha, if any, is not included in the CPA. A review of the total installation database confirms that absence of other project ICS is ensured at the time of installation and only one ICS is installed per household. A monitoring survey was conducted in Sep - Oct 2019 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: $N_{y,i,j} = (n_{i,j,operational} / n_{i,j,total}) * N_{y,i,j,installed}$ Where: N = total number of stoves in population n = number of samples monitored For Proportion based parameters ($N_{y,i,j}$ and μ_y) $V = \frac{SD^2}{\overline{p}^2}$ Where: $SD^2 = \frac{\sum_{i=1}^{k} g_i * p_i * (1 - p_i)}{N}$ $\overline{p} = \frac{\sum_{i=1}^{k} g_i * p_i}{N}$ Where, g_i = weight of strata i in the population p_i = expected proportion of strata i in the population k = total number of strata in the population 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. The samples were drawn from the installation database of project stoves for the aforesaid 4 strata using online random number generator. A total of 125 samples ((65 1-Pot and 60 2-Pot) in line with Standard: Sampling and surveys for CDM project activities and programme of activities, were identified by PP with expected response rate of 90%. Subsequently, 116 stove users out of 125 samples identified were surveyed /SURVEY/ as illustrated below:

Strata	Total population (N)[4]	Reli-ability	Sample Size (n) required	Samples covered during monitoring
$N_{y,1\ pot,\ 2018}$	46,048	95/10	4	12
$N_{y,2\ pot,\ 2018}$	38,694	95/10	3	14
$N_{y,1\ pot,\ 2019}$	325,825	95/10	25	48
$N_{y,2\ pot,\ 2019}$	161,191	95/10	13	42

Also, the presence of one Bondhu Chulha in a household is further cross-checked on sampling basis during the ex-post monitoring

[4]These are rounded figures of total strata population for calculating sample size only.

			survey. A review of complete survey records confirms that all monitored samples have only one project ICS installed in the corresponding households. Procedures for sampling have been duly articulated in the field monitoring excel report and spreadsheet, and complete survey records has been furnished to verification team. However, during course of verification, relevant findings were raised and same can be referred in detail in Appendix-4 of this report.
		μ_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:	The sampled households are checked for presence of baseline stove and if it is being used along with project stove for cooking. For samples where baseline stove was found not being used, $\mu_y = 1.0$. For samples where the baseline stove is found to be in use, μ_y is determined as ratio of frequency of usage (i.e. number of meals cooked on ICS Vs Total number of meals cooked on ICS and baseline stove). A monitoring survey was conducted in Sep - Oct 2019 to determine the "Adjustment to account for any continued use of pre-project devices during the year y" on a sampling basis. The formula used to calculate the number of operational stoves of type i and batch j is as follows: $n \geq \frac{z^2 * N * V}{(N-1) * precision^2 + z^2 * V}$ Where, n = number of ICS to be sampled N = Total number of ICS in the population Z = Constant referring to level of confidence (1.96 for 95 % confidence) Precision = Required precision (e.g. 10% = 0.1) For Proportion based parameters ($N_{y,i,j}$ and μ_y) $V = \frac{SD^2}{\bar{p}^2}$ Where: $SD^2 = \frac{\sum_{i=1}^{k} g_i * p_i * (1-p_i)}{N}$ $\bar{p} = \frac{\sum_{i=1}^{k} g_i * p_i}{N}$ Where, g_i = weight of strata i in the population p_i = expected proportion of strata i in the population k = total number of strata in the population 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. A total of 125 samples ((65 1-Pot and 60 2-Pot) in line with Standard: Sampling and surveys for CDM project activities and programme of activities, were identified by PP with expected response rate of 90%. Subsequently, 114 stove users out of 125 samples identified were surveyed SUR/ as illustrated below:

Strata	Total population (N)	Reliability	Sample Size (n) required	Samples covered during monitoring
μ_y,1 pot	371,873	95/10	28	59
μ_y,2 pot	199,885	95/10	16	55

Procedures for sampling have been duly articulated in the field monitoring survey spreadsheet and corresponding survey forms containing survey records were furnished to DOE for assessment.

However, Findings were raised on this during the verification process and CME has sufficiently taken the appropriate action and hence all findings could be resolved. For more detail, Appendix-4 of this report can be referred.

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:	Efficiency of the project device of each type i and batch j was determined using option c of para 25 of the applied methodology AMS II.G Ver 08.0. Thus, the WBTs were conducted for first batch of stoves (2018) only and the values were applied to subsequent batches as applicable (2019). The sample size has been calculated according to the following equations: $$n \geq \frac{z^2 * N * V}{(N-1) * precision^2 + z^2 * V}$$ Where, n = number of ICS to be sampled N = Total number of ICS in the population Z = Constant referring to level of confidence (1.96 for 95 % confidence) Precision = Required precision (e.g. 10% = 0.1) Where: $$V = \left(\frac{SD}{Mean}\right)^2$$ Where $$SD^2 = \frac{\sum_{i=1}^{k} g_i * SD_i^2}{N}$$ $$Mean = \frac{\sum_{i=1}^{k} g_i * m_i}{N}$$ Where SD_i = expected standard deviation of strata i in the population m_i = expected mean of strata i in the population 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.

WBTs were conducted in February 2019 to determine the efficiency for ICS which are in first year of their operation i.e. ICS installed in 2019.

WBTs were conducted in Sep 2019 to determine the efficiency for ICS deployed in 2018 i.e. age 2. CME's approach of monitoring the thermal efficiency at the end of monitoring period to determine $\eta_{new,i,2019(age\ 1)}$, $\eta_{new,i,2018(age\ 2)}$ is assessed to be deemed appropriate and in accordance with § 25, options (c) of applied methodology (AMS II.G version 8.0).

A total of 10 samples ((5 1-Pot and 5 2-Pot) in line with Standard: Sampling and surveys for CDM project activities and programme of activities, were identified by PP with expected response rate of 90% for each monitoring event / batch (in Feb 2019 and in Sep 2019). Subsequently, 9 stove users out of 10 samples identified were tested/XLS/ as illustrated below:

Feb 2019

Strata	Total population (N)	Reli-ability	Sample Size (n) required	Samples covered during monitoring
1 Pot,2018 (age 1)	46,048	95/10	4	5
2 Pot,2018 (age 1)	38,694	95/10	4	4

Sep 2019

Strata	Total population (N)	Reli-ability	Sample Size (n) required	Samples covered during monitoring
1 Pot,2018 (age 2)	46,048	95/10	4	4
2 Pot,2018 (age 2)	38,694	95/10	4	5

* ICS Installed in 2019 are in first year of their age and denoted as 2018 (age 1) and ICS installed in 2018 are in second year of their age, hence denoted as 2018 (age 2) accordingly.

Procedures for sampling have been duly articulated in the field monitoring survey spreadsheet and corresponding survey forms containing survey questionnaires furnished to DOE for assessment.

Monitoring WBTs were conducted by trained personnel using stratified random sampling following the standard and guideline for Sampling and surveys for CDM project activities and programme of activities version 08. As described above, it can be said that sampling was accurate. However, Findings were raised on this during the verification process and CME has sufficiently taken the appropriate action and hence all findings could be resolved.

For more detail, Appendix-4 of this report can be referred.

	☐	In this context the following CARs, CLs, FARs have been raised:
Conclusion	☒	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.
	☐	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 survey and sampling records including WBT and their analysis sheets for the related parameters, it is concluded that all the parameters have been monitored correctly in accordance with registered monitoring plan and the applied methodology. The verification team concludes that all sampled parameters have been calculated correctly in line with the registered corresponding CPA-DDs and the sampling standard. For all the parameters, the achieved relative precision of 10% and 95% confidence level is demonstrated to be met. Based on above along with the onsite visit and interview and physical inspection of the project stoves installation in Bangladesh, the verification team concludes the approach and result deemed appropriate and acceptable.

E.3.5. Compliance with the calibration frequency requirements for measuring instruments

Means of verification	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. The results as well as the verification procedure are described equipment-wise in the project specific verification checklist (Appendix 6). The following sources of information have been used in this context: • /MR/ • /XLS/ • /CAL/ • /PoA-DD/ • /CPA-DD/	
Findings	☒	Calibration is not under the purview of the CME, however, third party WBT agency has provided the complete calibration detail of the equipment in the report which were also checked during onsite inspection by the verification team and found to be appropriate. Thus, the verification team can confirm that all installed monitoring equipment has been duly calibrated for this entire monitoring period.
	☐	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
	☒	In this context the following CARs, CLs, FARs have been raised:
		CL 02, FAR 02
Conclusion	☐	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.
	☒	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.
	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, moisture meters, weighing scale and sensors were duly purchased (purchase receipt dated 08/10/2018 and 08/09/2019). BBF/PP has submitted all purchase receipts during the onsite verification audit for all the relevant tools and equipment/CAL/. 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.	

E.3.6. Assessment of data and calculation of emission reductions or net removals

E.3.6.1. Calculation of baseline GHG emissions or baseline net GHG removals by sinks

Means of verification

During the verification the calculation of baseline GHG emissions has been checked. In detail the following has been verified:

- *Transparency:* It has been checked whether the calculation of baseline emissions is fully traceable and, where used, the Excel calculation provides all calculation formulae.
- *Parameter* consistency: 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.
- *Correctness*: 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.
- *Completeness*: It has been checked whether all calculations are complete and without omissions.

The quantity of woody biomass i.e. saved due to the project activity is calculated as follows:-

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

Where

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

$\eta_{new,i,j}$ = 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;

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

$B_{old,HH}$ = 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

The calculation of baseline emission reduction and emission reduction is further addressed under section E.3.6.4 of this report below:

The following sources of information have been used in this context:

- /MR/
- /PoA-DD/
- /CPA-DD/
- /XLS/
- /USAGE/

	• /WBT/	
Findings	☒	The calculation of the baseline emissions was found to be fully compliant with the above stated principles. 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 other reference values have been correctly applied. No errors, miscalculations, omissions, misstatements or incomplete information has been identified.
	☐	The verification team has identified mistakes in the baseline emissions calculation or the underlying calculation approaches.
	☒	In this context the following CARs, CLs, FARs have been raised:
		CAR 02, CAR 03
Conclusion	☐	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.
	☒	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.
	Based on above and verification of all input values (fixed ex-ante), it can be concluded by verification team that, baseline GHG emissions calculation presented in the MR and corresponding ER sheet is deemed as appropriate.	

E.3.6.2. Calculation of project GHG emissions or actual net GHG removals by sinks

Means of verification	During the verification the calculation of project GHG emissions has been checked. In detail the following has been verified: • *Transparency*: It has been checked whether the calculation of project emissions is fully traceable and, where used, the Excel calculation provides all calculation formulae. • *Parameter consistency*: 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. • *Correctness*: 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. • *Completeness*: It has been checked whether all calculations are complete and without omissions. The following sources of information have been used in this context: • /MR/ • /PoA-DD/ • /CPA-DD/ • /XLS/.	
Findings	☐	The calculation of the project emissions was found to be fully compliant with the above stated principles. 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 and other reference values have been correctly applied. No errors, miscalculations, omissions, misstatements or incomplete information have been identified.
	☐	The verification team has identified mistakes in the project emissions calculation or the underlying calculation approaches.
	☐	In this context the following CARs, CLs, FARs have been raised:
		-

Conclusion	☒	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.
	☐	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.
	Project emissions are not applicable by the applied methodology for the registered PoA	

E.3.6.3. Calculation of leakage GHG emissions

Means of verification	During the verification the calculation of leakage has been checked. In detail the following has been verified: • *Transparency*: It has been checked whether the calculation of leakage is fully traceable and, where used, the Excel calculation provides all calculation formulae. • *Parameter consistency*: 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. • *Correctness*: 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. • *Completeness*: It has been checked whether all calculations are complete and without omissions. Leakage is to be considered by the methodology for non-renewable woody biomass. This can be done either via survey or by applying a default factor of 0.95 to the parameter B_{old}. As per PoA-DD as well as generic and specific CPA-DD PP has applied the default factor to the parameter B_{old}. Besides, leakage is to be considered in case equipment is transferred from outside the boundary to the project activity. The following sources of information have been used in this context: • /MR/ • /CPA-DD/ • /XLS/ • /AMS II.G./	
Findings	☒	The calculation of the leakage was found to be fully compliant with the above stated principles. 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. Any assumptions used in emission or removal calculations have been justified. Appropriate emission factors, IPCC default values and other reference values have been correctly applied. No errors, miscalculations, omissions, misstatements or incomplete information have been identified.
	☐	The verification team has identified mistakes in the project emissions calculation or the underlying calculation approaches.
	☐	In this context the following CARs, CLs, FARs have been raised: -
Conclusion	☒	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.
	☐	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.
	PP has applied related default factor correctly to the parameter B_{old}. Therefore, no further leakage emission result is separately indicated in monitoring report or this report. Besides, DOE could not identify that any equipment is transferred from outside the boundary to the project activity, based on interviews taken and households visited	

	as well as check of PoA set-up and organisation. Cookstoves are newly produced before distribution.

E.3.6.4. Summary of calculation of GHG emission reductions or net GHG removals by sinks

Means of verification

The verification team has checked if the MR includes a summary table of the emission reductions calculation specifying separately.

- Total baseline emissions,
- Total project emissions,
- Total leakage,
- Total emission reductions.

The MR demonstrate the summary of GHG emission reductions for the monitoring period and calculated according to the applied methodology AMS-II.G as follows:

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

Where

i	=	Indices for the situation where more than one type of project device is introduced to replace the pre-project devices[7]
j	=	Indices for the situation where there is more than one batch of project device
ER_y	=	Emission reductions during year *y* in t CO_2e

$$ER_{y,i,j} = B_{y,savings,i,j} \times N_{y,i,j} \times \mu_y \times f_{NRB,y} \times NCV_{biomass} \times EF_{projected\_fossil\,fuel}$$

$ER_{y,i,j}$	=	Emission reductions by project device of type *i and* batch *j* during year *y* in t CO_2e
LE_y	=	Leakage emissions in the year *y*

Where

$$ER_{y,i,j} = B_{y,savings,i,j} \times N_{y,i,j} \times \mu_y \times f_{NRB,y} \times NCV_{biomass} \times EF_{projected\_fossil\,fuel}$$

Where

$B_{y,savings,i,j}$	=	Quantity of woody biomass that is saved in tonnes per cook stove device of type *i* and batch *j* during year *y*
$f_{NRB,y}$	=	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
$NCV_{biomass}$	=	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')
$EF_{projected\_fossilfuel}$	=	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_2/TJ

Data Ex-ante	Value CPA-1	Unit
$B_{old,p}$	0.50	tonnes/person/ year
$N_{p,HH}$	4.60	Number
$B_{old,i,j} = B_{old,HH}$	2.30	tonnes/household/ year
$f_{NRB,y}$	0.84	Fraction
$Ef_{project\_fossil\ fuel}$	81.60	tCO_2e/TJ
LAF_y	0.95	Fraction
$NCV_{biomass}$	0.015	TJ/tonne
$\eta_{old,i,j}$	0.11	Fraction

$N_{y,i,j}$	=	Number of project devices of type *i* and batch *j* operating during year *y*
μ_y	=	Adjustment to account for any continued use of pre-project devices during the year *y* when applying equations 6 (fraction).

Data Ex Post	Value	Unit
$N_{y,1\ Pot,2019,Installed}$	325,825	Number
$N_{y,2\ Pot,2019,Installed}$	161,191	Number
$N_{y,1\ Pot,2018,Installed}$	46,048	Number
$N_{y,2\ Pot,2018,Installed}$	38,694	Number
$B_{old,1\ Pot,2019}$	2.19	Tonnes/HH/year
$B_{old,2\ Pot,2019}$	2.19	Tonnes/HH/year
$B_{old,1\ Pot,2018}$	2.19	Tonnes/HH/year
$B_{old,2\ Pot,2018}$	2.19	Tonnes/HH/year
$\eta_{new\ 1\ Pot,\ age\ 0}$	0.3400	Fraction
$\eta_{new\ 2\ Pot,\ age\ 0}$	0.3462	Fraction
$\eta_{new\ 1\ Pot,2018(age\ 1)}$	0.3331	Fraction
$\eta_{new\ 2\ Pot,2018(age\ 1)}$	0.3375	Fraction
Efficiency Loss $_{1\ Pot,2018(age\ 1)}$	0.0069	Fraction
Efficiency Loss $_{1\ Pot,2018(age\ 1)}$	0.0087	Fraction
$\eta_{new\ 1\ Pot,2018(age\ 2)}$	0.3321	Fraction
$\eta_{new\ 2\ Pot,2018(age\ 2)}$	0.3366	Fraction
Efficiency Loss $_{1\ Pot,2018(age\ 2)}$	0.0079	Fraction
Efficiency Loss $_{1\ Pot,2018(age\ 2)}$	0.0096	Fraction
$B_{y,saving,\ 1\ Pot,2019}$	1.464	Tonnes/year
$B_{y,saving,\ 2\ Pot,2019}$	1.473	Tonnes/year
$B_{y,saving,\ 1\ Pot,2018}$	1.461	Tonnes/year
$B_{y,saving,\ 2\ Pot,2018}$	1.471	Tonnes/year
$Stove_{year}$	0.416	fraction
$\mu_{y,1\ Pot}$	1.00	fraction
$\mu_{y,2\ Pot}$	1.00	fraction
$N_{y,1\ Pot,2019,operational}$	325,825	Number
$N_{y,2\ Pot,2019,operational}$	161,191	Number
$N_{y,1\ Pot,2018,operational}$	42,211	Number
$N_{y,2\ Pot,2018,opeartioanl}$	35,930	Number
ER_y	**355,543**	**tCO_2e**

It has been assessed whether the values are correct or need to be revised as a consequence of issues identified during the desktop reviews and onsite assessments. Findings have been raised and all monitored parameters have been duly verified.

The following sources of information have been used in this context:

- /MR/
- /XLS/
- /CPA-DD/
- /PoA-DD/

	• /AMS II.G/ • /USAGE/ • /WBT/	
Findings	☒	Section F.4 of the MR includes in a summary table of the emission reductions calculation.
	☐	The summary table specified the total baseline, project and leakage emissions as well as the total emission reductions separately.
	☐	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.
	☒	During the verification issues with impact on the ER calculation have been identified.
		CAR 02, CAR 03 and CAR 04
Conclusion	☐	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.
	☒	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 MR has ben filled correctly and the values are inline with related emission reduction calculation spreadsheet.	

Title and UNFCCC reference number of the CPA	**Baseline emissions or baseline net GHG removals by sinks (tCO_2e)**	**Project emissions or actual net GHG removals by sinks (tCO_2e)**	**Leakage (tCO_2e)**	**GHG emission reductions or net GHG removals by sinks (tCO_2e)**		
				Amount achieved before 1 January 2013	**Amount achieved from 1 January 2013**	**Amount achieved in the entire monitoring period**
Improved cookstove program in Bangladesh supported by the Republic of Korea - CPA 01 10431-P1-0001-CP1	355,543	0	0	0	355,543	355,543
Total	**355,543**	**0**	**0**	**0**	**355,543**	**355,543**

E.3.6.5. Comparison of actual GHG emission reductions or net GHG removals by sinks with estimates in included CPA

Means of verification	The verification team has checked if the MR includes a comparison of actual values of the monitoring period with the estimations in the included CPA-DD. It has further checked which of the below listed cases is applicable for the calculated ER of the current monitoring period.	
Findings	☒	*Case 1:* The ex-ante estimated value was found to be proportionally higher than the ex-post determined value. No further action is deemed required.
	☐	*Case 2:* The ex-ante estimated value fits very good to the actually monitored value. No further justification is deemed required.
	☐	*Case 3:* The ex-ante estimated value was found to be proportionally lower than the ex-post determined value.
	☐	In this context the following CARs, CLs, FARs have been raised:
		-
Conclusion	☒	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.

	☐	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.
	-	

Title and UNFCCC reference number of the CPA	Actual values achieved by the CPAs during this monitoring period (tCO2)	Value estimated in ex ante calculation in the included CPA-DD(s) (tCO2)[5]
Improved cookstove program in Bangladesh supported by the Republic of Korea - CPA 01 10431-P1-0001-CP1	**355,543**	**1,616,688**

E.3.6.6. 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 3) an appropriate explanation is included in the MR.	
Findings	☒	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).
	☐	*For case 3:* The PP has provided a related justification in the MR. The reasons for the increase are as follows: - N/A
	☐	In this context the following CARs, CLs, FARs have been raised:
		-
Conclusion	☒	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.
	☐	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.3.7. Assessment of reported sustainable development co-benefits

Means of verification	☒	N/A – as the PP has not monitored the sustainable development co-benefits of the registered CDM project activity or not requested the DOE to verify them.
	☐	The project participants have monitored the sustainable development co-benefits of the registered CDM project activity and requested the DOE to verify them. The following sources of information have been used in this context: • /MR/ • /PoA-DD/ • /CPA-DD/ • /unfccc/.
Findings	☒	N/A – as the PP has not monitored the sustainable development co-benefits of the registered CDM project activity or not requested the DOE to verify them.
	☐	Therefore, the DOE has assessed and confirms that: (a) The monitoring has been carried out in accordance with the document for monitoring sustainable development co-benefits, if such document was

[5]The estimated amount covers the time from CP start of each CPA (which is within this MP) until the end of MP. The calculation is done on pro-rata basis, as per ER calculation spreadsheet submitted by CME. The estimated ER are appropriately calculated as
= (1,525,139[5]*(354[5]/365)) + (4,575,416[5]*(11[5]/366))
= 1,616,688 tCO_2e

		developed and published on the UNFCCC CDM website in accordance with the "CDM project standard for project activities"; (b) The reported monitoring results correspond to the sustainable development co-benefits of the project activity as observed by the DOE.
	☐	In this context the following CARs, CLs, FARs have been raised:
		-
Conclusion	☒	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.
	☐	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.
	☒	N/A – as the PP has not monitored the sustainable development co-benefits of the registered CDM project activity or not requested the DOE to verify them.
	-	

E.3.8. Global stakeholder consultation

Means of verification	In accordance with the PCP the DOE has submitted the initial version of the monitoring report provided by the PP for this monitoring period to be published on the UNFCCC webpage. The monitoring report has been published for the period from 06/02/2019. The following sources of information have been used in this context: • /MR/ • /unfccc/.	
Findings	☒	No comments have been received on the published monitoring report for this monitoring period.
	☐	Comments have been received and the DOE has concluded that comments are related to issues outside the CDM rules and requirements. Please refer to the list provided under Conclusion of this Section below for related information.
	☐	Comments have been received. The DOE has - requested further information from the submitters of the comments - informed the project participants of the comments received, and requested their feedback within a specified timeframe, - considered the input received and has assessed whether such comments are relevant to the CDM project activity, - acknowledged receipt of all submitted comments on the MR of the proposed CDM project activity, - assessed whether the comments are related to the CDM rules and requirements (if so related findings have been raised as per below), - used all possible means to determine the authenticity of the name and contact details of the individual or organization on whose behalf the comments have been submitted, - contacted the secretariat to make them publicly available (if only addressed to the DOE), - determined whether authentic and relevant comments in the global stakeholder consultation were taken into due account in the PDD of the proposed CDM project activity.
	☐	In this context the following CARs, CLs, FARs have been raised, i.e. as the DOE concludes that the comments are related to the CDM rules and requirements:
		-
Conclusion	☒	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.
	☐	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.
	☒	No comments received during the stakeholder consultation process.

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. has commissioned the TÜV NORD JI/CDM Certification Program to carry out the 2nd periodic verification of the CDM PoA: "***Improved cookstove program in Bangladesh supported by the Republic of Korea***", with regard to the relevant requirements for CDM Programme of Activities. The PoA reduces GHG emissions due to dissemination of fuel-efficient wood stoves compared to the baseline scenario.

This verification covers the period from 11/09/2018 – 10/09/2019 (both days included).

The programme of activities reduces GHG emissions by disseminating biomass based improved cookstoves ("Bondhu Chulha") to households / SMEs in Bangladesh. The CPA under consideration (CPA 10431-P1-0001-CP1) reduces GHG by disseminating biomass based improved cookstoves ("Bondhu Chulha") to households / SMEs in Bangladesh. Bondhu Chulha of two types (1-pot and 2-pot) 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. Version 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: **355,543 tCO_2e**

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 project activities during the current monitoring period

MP-No.:	2
from:	11/09/2018
to:	10/09/2019

(including both days) as follows:

Emission reductions: **355,543 tCO_2e**

New Delhi, 06/04/2020

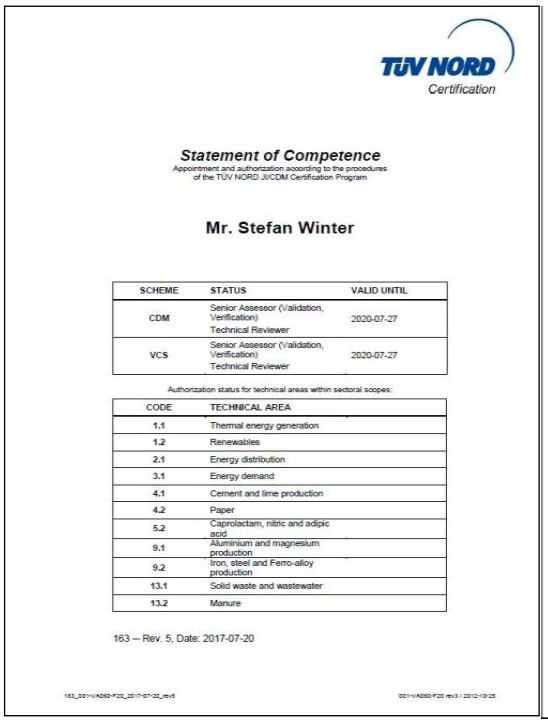
Prakash

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_2	Carbon dioxide
CO_{2eq}	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



TÜV NORD Certification

Statement of Competence

Appointment and authorization according to the procedures of the TÜV NORD JI/CDM Certification Program

Mr. Stefan Winter

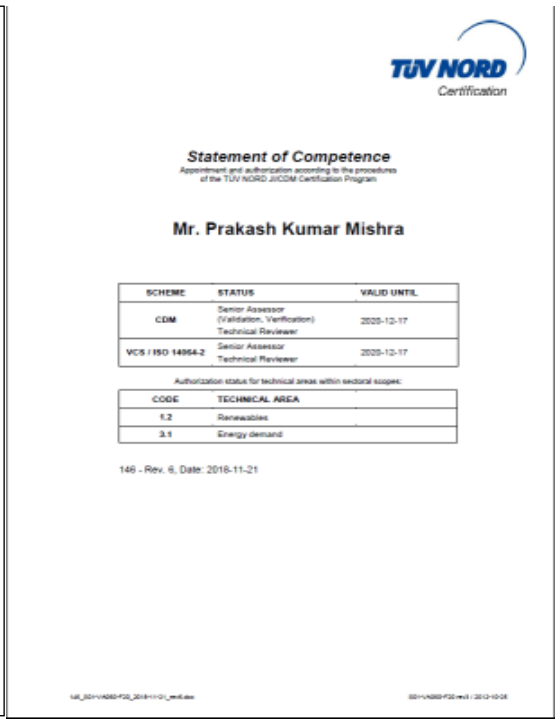
SCHEME	STATUS	VALID UNTIL
CDM	Senior Assessor (Validation, Verification) Technical Reviewer	2020-07-27
VCS	Senior Assessor (Validation, Verification) Technical Reviewer	2020-07-27

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_501-VA060-F20_2017-07-20_rev5 501-VA060-F20 rev3 / 2012-10-25



TÜV NORD Certification

Statement of Competence

Appointment and authorization according to the procedures of the TÜV NORD JI/CDM Certification Program

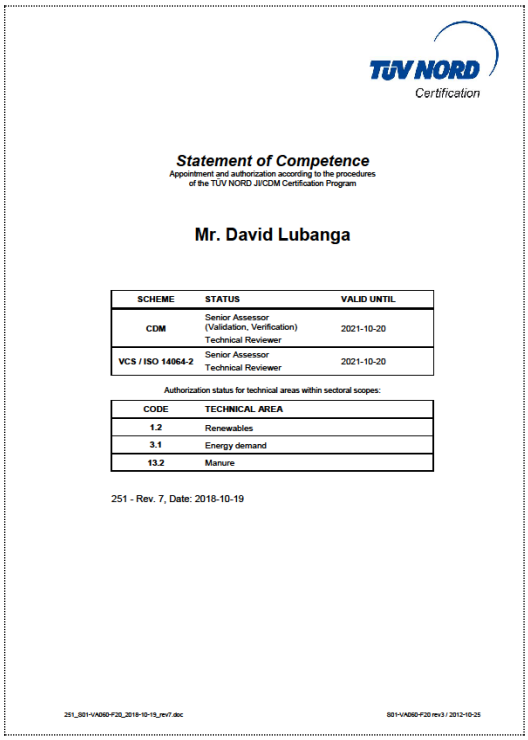
Mr. Prakash Kumar Mishra

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



TÜV NORD Certification

Statement of Competence

Appointment and authorization according to the procedures of the TÜV NORD JI/CDM Certification Program

Mr. David Lubanga

SCHEME	STATUS	VALID UNTIL
CDM	Senior Assessor (Validation, Verification) Technical Reviewer	2021-10-20
VCS / ISO 14064-2	Senior Assessor Technical Reviewer	2021-10-20

Authorization status for technical areas within sectoral scopes:

CODE	TECHNICAL AREA
1.2	Renewables
3.1	Energy demand
13.2	Manure

251 - Rev. 7, Date: 2018-10-19

251_501-VA060-F20_2018-10-19_rev7.doc 501-VA060-F20 rev3 / 2012-10-25

Appendix 3. Documents reviewed or referenced

No.	Author	Reference	Title	References to the document	Provider
1	UNFCCC	**/AMS.II-G/**	AMS-II.G: Energy efficiency measures in thermal applications of non-renewable biomass", version 08.0		Other
2	PP	**/CAL//INV/**	Thermometers, weighing scales, scanner, moisture meters photos and purchase invoice dated 08/10/2018 and 08-09-2019		Other
3	PP	**/CPA-DD/**	CPA-DD titled `Improved cookstove program in Bangladesh supported by the Republic of Korea - CPA 01, version 5.1, dated 29/08/2018		Other
4	DOE	**/CPM/**	TÜV NORD JI / CDM CP Manual (incl. CP procedures and forms)		Other
5	IPCC	**/IPCC/**	1. 1996 IPCC Guidelines for National Greenhouse Gas Inventories: work book 2. 2006 IPCC Guidelines for National Greenhouse Gas Inventories: work book	www.ipcc-nggip.iges.or.jp	Other
6	UNFCCC	**/KP/**	Kyoto Protocol (1997)	http://unfccc.int/kyoto_protocol/items/2830.php	Other
7	UNFCCC	**/MA/**	Decision 3/CMP. 1 (Marrakesh – Accords)	http://cdm.unfccc.int/Reference/COPMOP/index.html	Other
8	UNFCCC	**/MR/**	Monitoring Report titled `Improved cookstove program in Bangladesh supported by the Republic of Korea" • Version 1.0, dated 09/01/2020 • Version 1.1, dated 26/02/2020 • Version 2.0, dated 17/03/2020 • Version 3.0, dated 06/04/2020		Other
9	UNFCCC	**/MRT/**	Monitoring Report Form (CDM-PoA-MR-FORM), Version 03.0	https://cdm.unfccc.int/Reference/PDDs_Forms/index.html	Other
10	UNFCCC	**/PoA-DD/**	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
11	UNFCCC	**/PS/**	CDM Project Standard for PoA (Version 2.0)	http://cdm.unfccc.int/Reference/Standards/index.html	Other
12	PP	**/DB/**	1. Customer Database sheet 2. Contractual agreement in between the CME and the DO		

			3. Customer terms & conditions document provided as Proof of Carbon Credits waiver by End user 4. Sample Invoice-Cookstove document provided as proof of Stoves sales receipt 5. Evidence for random number generator for sampling		
13	PP	**/SSQ/**	• Sample Monitoring Survey Forms • CPA Distribution Records		Other
14	PP	**/WBTP/**	• The Water Boiling Test protocol, version 4.2.3 • Guidelines for Testing Charcoal Stoves with WBT 4.2.2 June 14, 2013	-	
15	PP	**/WC/**	End-User Warranty Cards	-	Other
16	PP	**/RC/**	Reliability Check • Sample size and Reliability check for WBT integrated into the ER worksheet	-	PP
17	PP	**/TRG/**	Training records of imparted for below fields : • BBF Partner Training Manual.pdf • BBF Training Attendance Sheets.pdf • BBF Partner Traning Workshop Photographs • BBF Training Attendence Sheets.pdf • WBT team training records • Usage Survey team • Training Presentation pdf provided as proof for Sales and marketing team and all relevant personnel involved in GHG monitoring		Other
18	PP	**/VAL/**	Validation Report for CPA-DD Title-" Improved cookstove program in Bangladesh supported by the Republic of Korea" Version 2.0 Dated 29/08/2018		PP
19	PP	**/XLS/**	**PoA 10431 MP2 ER Calculator** • PoA 10431 MP2 ER Calculator version 1.1 26022020.xlsx • PoA 10431 MP2 ER Calculator version 2.0 17032020.xlsx		PP

			• PoA 10431 MP2 ER Calculator version 3.0 06042020.xlsx		
20	UNFCCC	**/VVS/**	CDM validation and verification standard for programmes of activities (Version 2.0)	http://cdm.unfccc.int/Reference/Standards/index.html	
21	PP	**/SUR/**	1. Sample Usage Survey Forms, 2. Monitoring Survey Forms 3. Monitoring Survey worksheets 4. Reliability check spreadsheet 5. Standard: Sampling and Survey for project activity and PoA version 08.0	-	Other
22	PP	/WBT/	1. WBT Results February 2019, 2. WBTs Results September 2019	-	Other

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

Table 3. Remaining FARs from validation and/or previous verification

FAR ID	**01**	**Section no.**	-	**Date:10/01/2019**
Description of FAR$_{\text{first verification}}$				
DOE during next verification should observe that measurement equipment for determination of η_{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.				
CME response				**Date:**17/03/2020
The measurement equipment used for conducting WBTs for determination of $\eta_{new,i,j}$ were newly purchased so that the measurement were done with necessary guarantees. Using option (c) of para 25 of the methodology, WBTs were conducted in February 2019 and September 2019. For the WBTs conducted in February 2019, the testing equipment were purchased in October 2018 and were barely 6 months old at the time of testing. For the WBTs conducted in September 2019, new set of equipment were bought in September 2019, although the equipment bought in Oct 2018 were good enough to be used. The purchase invoices for the testing equipment are being submitted. The equipment details have been added in the revised MR.				
Documentation provided by the CME				
1. WBT Equipment Receipts Oct 2018 2. WBT Equipment Receipts Sep 2019 3. PoA 10431 MP2 MR version 2.0 17032020				
DOE assessment				**Date:**20/03/2020
The Assessment Team is in receipt of the purchase receipts of the equipment's and confirms that the equipment's were purchased before the date of conducting the WBT (conducted in the month of February 2019, September 2019). Thus, the requirement of additional calibration is no more needed as equipment's are already calibrated by manufacturer. Also, the corresponding equipment details are found listed in the revised MR and found in line with onsite verification of the purchase receipts of the equipment used for monitoring and hence, adequate.				
Conclusion *Tick the appropriate checkbox*	☐ Additional action should be taken (finding remains open) ☒ The FAR is closed			

FAR ID	02	Section no.	-	Date:22/02/2019
Description of FAR$_{\text{first verification}}$				
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.				
CME response				**Date:**17/03/2020
The parameter $\eta_{new,i,j}$ has been determined using option (c) of § 25 of AMS II.G version 8 indeed. The MR has been revised to remove the inconsistency.				
Documentation provided by the CME				
1. PoA 10431 MP2 MR version 2.0 17032020				
DOE assessment				**Date:**20/03/2020
As per requirements the CME has appropriately calculated the parameter by following Option C. The CME has duly evaluated the rate of efficiency drop for a representative sample of the first batch of project device i in year y and assumed that same rate of loss in efficiency applies to all other batches. Thus, the degradation of the efficiency measured in a representative sample of the first batch of project devices (2018 ICS) has been applied to all subsequent batches (2019 ICS) by the CME through representative sampling. During the assessment process, the ER and MR was further updated and the version 03 of ER and MR provides more clarity on the nomenclature and calculation methodology on applied approach.				

Conclusion *Tick the appropriate checkbox*	☐ Additional action should be taken (finding remains open) ☒ The FAR is closed

Table 4. CLs from this verification

CL ID	01	Section no.	D and E.3	Date:03/03/2020
Description of CL				
The section B.5.3 of CPA-DD states " The CPA Implementer makes every effort to retrieve this information (paper form or electronically (eg. SMS)) but cannot guarantee the collection of information for each ICS due to challenges such as high rates of illiteracy and logistical challenges". Clarification is requested if CME faced any limitation to monitor any of the relevant information during the applied monitoring period.				
CME response				**Date:**17/03/2020
CPAI has collected data of each ICS installed under the CPA. Hence CPAI/CME did not face any limitation to monitor any of the requisite information during the applied monitoring period. The Installation database includes the end user data of each ICS installed under the CPA.				
Documentation provided by the CME				
10431 MP#2 Installation and Sampling Database 19022020				
DOE assessment				**Date:**20/03/2020
Sales database of the Bondhu Chulha (ICS) was reviewed during onsite assessment. Thus, the response of CME is accepted.				

Conclusion *Tick the appropriate checkbox*	☐ Additional action should be taken (finding remains open) ☒ The finding is closed

CL ID	02	Section no.	E.2	Date:03/03/2020
Description of CL				

As per assessment of webhosted MR, it was observed that the parameter " $\eta_{new,i,j}$" is applying option d of para 25 of applied methodology which is contradictory with the FAR 02 raised during First Periodic Verification.

In addition, below information is requested.

- Details of the calibration of monitoring equipment and associated entity as there was no no entity in the host country able to conduct required calibrations.
- Details of the newly purchased monitoring equipment
- Accuracy of the instruments compared to the instruments utilized for testing during first periodic verification
- Comparison of fuel types, test condition etc. between last verification and present verification.
- Detailed justification for the increase in the efficiency of aged project device (how the efficiency of device in 2019 is greater than 2018?)

CME response | **Date:**17/03/2020

The CME/PP monitored the thermal efficiency of sampled 1-pot and 2-pot ICS units, using option (c) para 25 of methodology. Please refer revised MR where this inconsistency has been rectified.

- Please refer response to FAR ID 01 above. Calibration of WBT equipment is not applicable as the measuring equipment are newly purchased.
- Please refer response to FAR ID 01 above. The purchase invoices for the WBT equipment are being submitted.
- The accuracy class of the WBT equipment used in MP1 and MP2 is similar and has been included in the revised MR.
- The project ICS are woodfuel based improved stoves. Further, the ICS are fixed stoves, hence the fuel and test conditions during first verification and the present verification is deemed similar.
- The CME/PP, monitored the thermal efficiency of sampled 1-pot and 2-pot ICS units, in line with option (c) para 25 of methodology, as follows:

$\eta_{new,i,j}$	Monitored Value (%)	Comment
$\eta_{new,\ 1\ Pot,\ 2018(age\ 1)}$ or $\eta_{new,\ 1\ Pot,\ 2019}$	33.31%	Monitored in February 2019, applied to ICS installed in 2019
$\eta_{new,\ 2\ Pot,\ 2018(age\ 1)}$ or $\eta_{new,\ 2\ Pot,\ 2019}$	33.75%	
$\eta_{new,\ 1\ Pot,\ 2018(age\ 2)}$ or $\eta_{new,\ 1\ Pot,\ 2018}$	33.21%	Monitored in September 2019, applied to ICS installed in 2018
$\eta_{new,\ 2\ Pot,\ 2018(age\ 2)}$ or $\eta_{new,\ 2\ Pot,\ 2018}$	33.66%	

$ICS_{(age\ 1)}$ are younger compared to $ICS_{(age\ 2)}$. The value of thermal efficiency applied to ICS_{2019} is taken from ICS installed in 2018 with age upto 1 year. The value of thermal efficiency applied to $ICS_{(age\ 2)}$ is taken from ICS installed in year 2018 with age greater than 1 year and less than 2 year. Given the $\eta_{new,\ 1\ Pot,\ 2019} > \eta_{new,\ 1\ Pot,\ 2018}$ due to standard ageing effects, hence $\eta_{new,i,2019} > \eta_{new,i,2018}$.

Documentation provided by the CME

1. PoA 10431 MP2 MR version 2.0 17032020
2. WBT Equipment Receipts

DOE assessment | **Date:** 20/03/2020

- Please refer assessment under FAR 1
- Please refer assessment under FAR 1
- Accuracy class of the instruments found accurately mentioned in the revised MR.
- The explanation provided by CME/PP is found appropriate. The higher efficiency of 2019 ICS being younger than 2018 ICS is justified.

Conclusion *Tick the appropriate checkbox*	☐ Additional action should be taken (finding remains open) ☒ The finding is closed

Table 5. CARs from this verification

CAR ID	01	Section no.	E.1	**Date:03/03/2020**

Description of CAR

Please justify/revise/correct as the below parameters mentioned under the section E.1 of MR found inconsistent with CPA-DD as:

Parameter	**Row under the Monitoring table**	**CPA-DD**	**ER**	**Present MR**
$B_{old,p}$	Purpose of data/parameter	To calculate baseline emission (For parameter $B_{old,HH}$)	-	Inconsistency identified
$\eta_{old,i,j}$	Unit	Fraction	Mentioned in percentage	-
ηnew,i,j	Data/Parameter	$\eta_{new,i,j}$	η_{new}	-

CME response **Date:**17/03/2020

The inconsistencies in the parameters have been corrected as per the instructions mentioned in the above table.

Documentation provided by the CME

1. PoA 10431 MP2 MR version 2.0 17032020
2. PoA 10431 MP2 ER Calculator version 2.0 17032020

DOE assessment **Date:**20/03/2020

The verification Team verified the modification in the MR and ER worksheet and confirms that appropriate changes are now included and consistency between MR section E.1, CPA-DD section B.4.2 and revised ER worksheet.

Conclusion *Tick the appropriate checkbox*	☐ Additional action should be taken (finding remains open) ☒ The finding is closed

CAR ID	02	Section no.	E.2	**Date:03/03/2020**

Description of CAR

The registered PoA-DD, page 14, states the following:
"During the stove installation, the presence of existing project ICS, if any, shall be monitored and in case an existing project ICS is found installed in the same household, the subsequent (second) ICS will not be included in the CPA. Alternatively, the presence of multiple project ICS in a household may be determined ex-post during surveys and the total ICS population shall be discounted by the fraction of sampled household found using more than one project ICS."

The CME/PP shall justify compliance with aforesaid.

CME response **Date:**17/03/2020

The need to monitor multiple project ICS in a household is attributed to the fact that the baseline is defined as biomass consumption per household whereas ERs are calculated based on number of project ICS installed instead of number of households served. Thus, this highlights an inherent assumption that only one project ICS must be credited per household. This shall ensure that number of ICS and number of households served become equivalent to each other. More than one project ICS in a household results in double counting of CERs as per the PoA design. Thus, $N_{y,i,j}$ is concerned with additional units of project ICS (Bondhu Chulha) in a project household.

Having said that, please note that presence of additional stove (project ICS/ non project ICS) is checked at the time of ICS installation itself to ensure that any project household receives only one project ICS unit. Also, the baseline stove is destroyed at the time of installation of project ICS. Refer to the sample installation cum end user agreement form (English translation) wherein it is confirmed that the beneficiary has no other stove in the beneficiary household, other than the ICS being installed.

At the time of monitoring, the presence of multiple project ICS is rechecked on sampling basis to avoid any residual risks and ensures a foolproof system to credit only one ICS unit per household Please refer monitoring survey records. Thus, the PoA is compliant with Page 14 of PoA-DD.

Documentation provided by the CME

Sample end user agreement with English translation
MP2 Monitoring survey records

DOE assessment **Date:** 20/03/2020

The Assessment Team considered below onsite observations along with the CME justification

- Practically only one Bondhu Chulha can exist in home as it requires cement ducting and occupies significant space in the kitchen. Thus, the above statement of CME " number of ICS and number of households served become equivalent to each other " is matching with onsite observations.
- The presence of existing cookstove and its type can be easily identified in the kitchen at time of installation. The User Agreement under para 7 mandates identification of baseline stove and subjective subsequent installation of ICS. During the onsite visit the Bondhu Chulha users were interviewed and above statements and system was reconfirmed with interviewed users.
- The Assessment Team also interviewed the enumerator and verified the sampling database and confirms that presence of multiple project ICS is rechecked.

The Assessment Team is thus satisfied with the justification provided by CME and closes the raised CAR.

Conclusion *Tick the appropriate checkbox*	☐ Additional action should be taken (finding remains open) ☒ The finding is closed

CAR ID	03	Section no.	E.2	**Date:03/03/2020**

Description of CAR

The section E.3 of webhosted MR states " Random numbers were generated (70 for 1 pot stove population and 70 for 2 pot stove population separately) using online random number generator and the numbers obtained were used to identify the samples from the corresponding strata for monitoring" however, actual number of samples are 60 for 1-pot stove and 56 for 2-pot stove. Correction/ justification as appropriate are requested.

CME response **Date:**17/03/2020

There is typographical error in the MR wrt the number of random numbers generated as mentioned in the section E.3 of webhosted MR.

The total number of random numbers generated using online random number generator are 125 as follows:

ICS category	Random numbers generated	Samples monitored
1 Pot_{2018}	15	12
1 Pot_{2019}	50	48
2 Pot_{2018}	15	14
2 Pot_{2019}	45	42
Total	**125**	**116**

The MR has been revised to rectify the inconsistency.

Documentation provided by the CME

1. 10431 MP#2 Installation and Sampling Database 19022020
2. PoA 10431 MP2 ER Calculator version 2.0 17032020
3. Random Number Evidence

DOE assessment **Date:**20/03/2020

The response is consistent with the submitted ER worksheet.

Conclusion *Tick the appropriate checkbox*	☐ Additional action should be taken (finding remains open) ☒ The finding is closed

CAR ID	04	**Section no.**	Various sections	**03/03/2020**

Description of CAR

Below Documents are requested

- Sales Database of disseminated CPA's (Refer Inclusion Criteria 1,10)like name and identification of end-user, Geographical location / address, contact number (if available), Model of cookstoves being distributed, Date of distribution, serial ID number of cookstoves)
- Declaration Statement by CPA implementer that the CPA is not part of any other project activity in line with the Inclusion Criteria 3
- Technical specifications of Stove for models disseminated monitoring periodin line with the Inclusion Criteria 4
- End user agreement/voucher for the first ICSin line with the Inclusion Criteria 5
- End-User/Customer's Agreements form for installation of project stove, including carbon waiver for the entire monitoring period
- Stoves sales receipt (Sample evidences)

- Survey questionnaire and monitoring records / report
- Evidence for random number generator for sampling
- Manuals for the monitoring equipment e.g. thermometer, weighing machine, moisture meter etc. used for monitoring of the stove efficiency along with evidence of purchase of new instruments
- WBT conducting methodology for the cook stoves
- Evidence for display of programme logo on the stoves
- Invoices/shipping details of the stoves used in the CPAs under verification for this monitoring period
- Distribution records for Stoves
- WBT monitoring records / Report/ Analysis
- Monitoring data tab under submitted ER sheet is incomplete with Geographical location, contact number (if available), date of distribution)
- Training records of the personnel on the following aspects
    - Introduction to project technologies
    - Overview of monitoring & sampling plan
    - understanding of survey questionnaire
    - Evaluation of user response and feedback
    - Assessing stove usage
    - Measurement instruments
    - Recording and archiving of data

CME response	Date:17/03/2020

The following documents are being submitted:

Sl. No.	**Document Requested**	**Document being submitted**
1	Sales Database of disseminated CPA's (Refer Inclusion Criteria 1,10 including ICS details like name and identification of end-user, Geographical location / address, contact number (if available), Model of ICS being distributed, Date of distribution, serial ID number of ICS etc.)	10431 MP#2 Installation and Sampling Database 19022020 – The database lists all ICS being credited under the monitoring period including details like name, address, contact number of user, ICS model, unique serial number, date of installation etc.)
2	Declaration Statement by CPA implementer that the CPA is not part of any other project activity in line with the Inclusion Criteria 3	The Declaration is being submitted
3	Technical specifications of Stove for models disseminated monitoring period in line with the Inclusion Criteria 4	Refer Bondhu Chulha - Technical Specifications
4	End-User/Customer's Agreements form for installation of project stove, including carbon waiver for the entire monitoring period	Refer Sample End user agreement Template with English Translation
5	Stoves sales receipt (Sample evidences)	Refer Sample End user agreement Forms (from PP samples)
6	Sample survey questionnaire and Monitoring Survey Records / report	Refer PoA 10431 MP2 Survey Forms, PoA 10431 MP2 ER Calculator version 2.0 170322020 (for statistical analysis)
7	Evidence for random number generator for sampling	Refer Random Number snapshots taken from www.stattrek.com
8	Manuals for the monitoring equipment e.g. thermometer, weighing machine, moisture meter etc. used for monitoring of the stove efficiency along with evidence of purchase of new instruments	Refer WBT Equipment Receipts
9	WBT conducting methodology for the cook stoves	Refer WBT Protocol
10	Evidence for display of programme logo on the stoves	Refer Sample ICS nameplate photo

11	Invoices/shipping details of the stoves used in the CPAs under verification for this monitoring period	There is no stove shipping involved. The ICS are installed directly at user location. The applicable end user agreements are already submitted under 6 above.
12	Distribution records for Stoves	Same as 6 above
13	WBTMonitoring Records / Report/ Analysis	Refer WBT Records, PoA10431 MP2 WBT Efficiency Calculator Final 20022020 (for calculations), PoA 10431 MP2 ER Calculator version 2.0 170322020 (for statistical analysis)
14	Monitoring data tab under submitted ER sheet is incomplete with Geographical location, contact number (if available), date of distribution)	The location and contact details of the user is traceable in ICS distribution database via the ICS unique serial number. The revised PoA 10431 MP2 ER Calculator version 2.0 170322020 have been updated to specify the address of the sampled ICS beneficiary.
15	Training records of the personnel on the following aspects	1. BBF Partner Training Workshop Photographs 2. BBF Training Attendance sheets 3. BBF Partner Training Manual 4. Monitoring survey training Photos 5. Attendance of Monitoring survey training 6. BBF Experience - Field monitoring and performance testing

Documentation provided by the CME	
DOE assessment	Date: 20/03/2020
Above documents are submitted by CME and deemed as appropriate.	
Conclusion *Tick the appropriate checkbox*	☐ Additional action should be taken (finding remains open) ☒ The finding is closed

CAR ID	05	Section no.	E.2, E.3 and F.5.1	**Date:03/03/2020**
Description of CAR				
Following Inconsistencies needs to be addressed: • The date of WBT as stated in the MR, (September 2019) is inconsistent with actual submitted WBT which is performed in February 2019. • Number of project devices of type i and batch j operating during year y (Ny,i,j) is inconsistent with the verified number during the onsite visit. Appropriate corrections are requested. • Furthermore, Ex-ante calculation are unclear, appropriate corrections with transparency is missing in MR.				
CME response				**Date:**17/03/2020

- For the ICS' installed in 2018, the value $\eta_{new,i,j}$has been determined as $\eta_{new,i,2018(1\text{-}2\ year)}$. For determining this the WBT was performed on the sample stoves of vintage 2018 in the month of September 2019. For the ICS' installed in 2019, the value $\eta_{new,i,j}$has been determined as $\eta_{new,i,2018(0\text{-}1\ year)}$. For determining this WBT was performed on the sample stoves of vintage 2018 in the month of February 2019, hence there is a typographical error in the webhosted MR. Revised MR is being submitted.
- The MR has been revised to make it consistent with the ICS Installation database.
- For clarity in calculation of EX-ante value, foot note no. 8,9,10,11 have been added in the revised MR.

Documentation provided by the CME

1. PoA 10431 MP2 MR version 2.017032020

DOE assessment | **Date:**20/03/2020

- The assessment team has verified the changes under section E.3 of revised MR with section B.5.1 of CPA-DD. According to CPA -DD the WBT survey of the ICS is undertaken annually. As per the MR the WBT is considered yearly for the ICS and appropriate explanation of timelines of WBT is included under section E.3 of MR. Please also refer to closure of finding CL .2
- The parameter $N_{y,i,j}$ is now appropriately updated in the MR

$N_{y,i,j}$	Monitored Value
$N_{y,1Pot,2018}$	42,211
$N_{y,2\ Pot,2018}$	35,930
$N_{y,1Pot,2019}$	325,825
$N_{y,2\ Pot,2019}$	161,191

- The section F.5.1 of MR is updated appropriately and the ex-ante emission calculation is transparently reported.

Conclusion *Tick the appropriate checkbox*	☐ Additional action should be taken (finding remains open) ☒ The finding is closed

Table 6. FARs from this verification

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

Appendix 5. Monitored Parameters

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

Checklist Item (incl. guidance for the verification team)	Refe-rence	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
1. $N_{y,i,j}$		**Number of project devices of type i and batch j operating during year y**		
a) Measurement / Determination method (VVS, §§ 389-393) *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/ /MR/ /AMS II.G/ /DB/ /RC/ /XLS/ /VAL/	*Description:* 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 CPA implementer is maintaining database of all the ICS installed. A usage monitoring survey was conducted in September & October 2019 to determine the number of operating stoves of type i and batch j on a sampling basis. The formula used to calculate the monitored value of operational ICS of type i and batch j is as follows: $N_{y,i,j} = (n_{i,j,operational} / n_{i,j,total}) * N_{y,i,j,installed}$ Where: N = total number of stoves in population n = number of samples monitored 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 Bondhu 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. 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.	~~CAR 02, CAR 05~~	OK

		Sampling Approach: Data was collected with 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. 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		

		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. **1-Pot:** • A sample size n = 4 whereas survey of 12 stoves was carried out for the population of $N_{y,1\ pot,2018}$ = 46,048 • A sample size n = 25 whereas survey of 48 stoves was carried out for the population of $N_{y,1\ pot,2019}$ = 325,825 **2-Pot:** • A sample size n = 3 whereas survey of 14 stoves was carried out for the population of $N_{y,2\ pot,2018}$ = 38,694 • A sample size n = 13 whereas survey of 42 stoves was carried out for the population of $N_{y,2\ pot,2019}$ = 161,191 Inconsistency in reporting is identified and CAR 02 and CAR 05 has been raised. *Verifier´s action:* The verification team pulled 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 also compared. *Conclusion:* The way of recording all stoves data (including end user detail) complies with the registered monitoring plan. CAR on the treatment of multi ICS was raised, inconsistency in the number of devises between the verified data and actual data of ICS was identified. Accordingly, CAR 02 and CAR 05 have been raised.		

b) Accuracy and QA/QC Procedure (VVS, §§ 394-400) *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*	/DB/ /TRG/ /MR/ /Training/ /POA-DD/ /CPA-DD/ /AMS II.G/ /XLS/ /VERIF/ /VAL/ /WC/	*Description:* 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. *Verifier´s action:*	~~CAR 2~~ ~~CAR 5~~	OK

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 Appendix 6.*		The verifier cross-checked all documents: Installation Records and Sampling surveys and carried out onsite interviews. *Conclusion:* No significant discrepancies were noted except CAR 2 and CAR5		
c) Correctness ***(VVS, §§ 389-393)*** *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/ /POA-DD/ /CPA-DD/ /AMS II.G/ /VERIF/ /VAL/ /WC/	☐ Correct ☒ Not correct (initial assessment) *Description:* Inconsistency is identified and CAR 02 and CAR 05 has been raised. *Verifier´s action:* The verification team compared the totals in the databases with information given in the MR *Conclusion:* The reported values are deemed as not correct. Please refer CAR 02 and CAR 05.	~~CAR 02~~ ~~CAR 05~~	OK
2. μ_y		**Adjustment to account for any continued use of pre-project devices during the year y**		
a) Measurement / Determination method **(VVS, §§ *389-393*)** *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/ /SAMPLE/ /FMR/ /XLS/ /MR/	*Description:* This is the adjustment to account for any continued use of pre-project devices 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 monitoring survey in September and October 2019 . **Sampling Approach:**	OK	OK

		Already assessed as above. **1-Pot:** • A sample size n = 4 whereas survey of 12 stoves was carried out for the population of $N_{y,1\ pot,2018}$ = 46,048 • A sample size n = 25 whereas survey of 48 stoves was carried out for the population of $N_{y,1\ pot,2019}$ = 325,825 **2-Pot:** • A sample size n = 3 whereas survey of 14 stoves was carried out for the population of $N_{y,2\ pot,2018}$ = 38,694 • A sample size n = 13 whereas survey of 42 stoves was carried out for the population of $N_{y,2\ pot,2019}$ = 161,191 *Verifier´s action:* The verifier checked the field report and procedures to calculate the sample, in line with CDM sampling guidelines. *Conclusion:* The applied monitoring procedures are appropriate; No baseline stove was found being used in the monitored samples during the monitoring survey conducted in September & October 2019.		

b) Accuracy and QA/QC Procedure (VVS, §§ 394-400) *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 Appendix 6.*	/DB/ /TRG/ /MR/ /Training/ /PoA-DD/ /CPA-DD/ /IM01/ /XLS/	*Description:* 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. *Verifier´s action:* 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.	OK	OK

		Conclusion: 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"		
c) Correctness (VVS, §§ 389-393) 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/ /FMR/ /IM03/	☒ Correct ☐ Not correct (initial assessment) *Description:* The parameter has been measured correctly in line with monitoring plan. *Verifier´s action:* The values given per year were checked against the excel report and calculations. *Conclusion:* 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.	OK	OK
3. $\eta_{new,i,j}$		**Efficiency of the project device of each type i and batch j**		
a) Measurement / Determination method (VVS, §§ 389-393) *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/ /AMS II.G/ /WBT/ /WBTP/ /XLS/ PRC/ /CAL/ /TRG/ /MR/	*Description:* The efficiency of stoves was determined by conducting water boiling tests (WBT), in line with para 25, option (c) of applied version of AMS II.G. 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. **Sampling Approach:** Already assessed as above. **1-Pot:** • A sample size n = 4 whereas survey of 12 stoves was carried out for the population of $N_{y,1\ pot,2018}$ = 46,048 • A sample size n = 25 whereas survey of 48 stoves was carried out for the population of $N_{y,1\ pot,2019}$ = 325,825	~~FAR 01~~ ~~FAR 02~~ ~~CL 02~~	OK

		2-Pot: • A sample size n = 3 whereas survey of 14 stoves was carried out for the population of $N_{y,2\ pot,2018}$ = 38,694 • A sample size n = 13 whereas survey of 42 stoves was carried out for the population of $N_{y,2\ pot,2019}$ = 161,191		

		Verifier´s action: 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. *Conclusion:* 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 CL 02 has been raised and closed successful.		
b) Accuracy and QA/QC Procedure (VVS, §§ 394-400) *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 Appendix 6.*	/CAL/ /WBT/ /IM01/ /IM03/ /POA-DD/ /CPA-DD/ /AMS II.G/ /MR/	*Description:* 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. *Verifier´s action:* 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. *Conclusion:* 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 was brand new at the time of conducting WBTs (purchased on 08/10/2018 and 08/09/2019) 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	~~FAR 01~~ ~~FAR 02~~ ~~CL 02~~	OK

		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 as per above stated schedules, 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.		
c) Correctness ***(VVS, §§ 389-393)*** *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/ /IM03/ /IM01/	☐ Correct ☒ Not correct (initial assessment) *Description:* 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. *Verifier´s action:* The random sampling procedures as well as testing procedures have been interrogated. The stove thermal efficiency values were verified by the DoE based on the following: 1. Review of the WBT protocol 2. Review of the WBT data recording sheet and its compliance wrt to WBT protocol 3. Review of measuring equipment used during WBTs for calibration and accuracy. 4. Review of original test observation sheets and corresponding WBT calculator and ER calcualtor to verify correct transfer of information from point of monitoring to ER calculator 5. Review of WBT calculator for correctnes of calculations in line with WBT protocol. 6. By conducting interviews of the WBT mointoring team on the following: a. Review of the monitoring team prior experience on conducting WBTs. b. Test procedure followed while conducting WBTs to verify their competence towards performing	~~FAR 01~~ ~~FAR 02~~ ~~CL 02~~	OK

		WBTs correctly and accurately and in line with WBT protocol. c. Usage and handling of the monitoring equipment to verify that the measurements were taken by the monitring staff correctly and accurately. d. Knowledge of the WBT test observation sheet to verify that measured data was recorded accurately and correctly. 7. Additionally, during the field visit the audit team leader interviewed the ICS users (of WBT samples) on the following points: 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 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 c. The number of test cycles conducted by the WBT team to be 3 rounds of Cold Start + Hot start each 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 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). Thus, through document reivew, interviews of WBT team and interviews of end user, the DoE verified the stove thermal efficiency and found it acceptable. *Conclusion:* 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 FAR 01, FAR 02 and CL 02		
Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments (Means and results of assessment)**	**Draft Concl.**	**Final Concl.**
4. **Date of commissioning of project device i**		**Actual date of commissioning of project device**		

a) Measurement / Determination method (VVS, §§ 389-393) *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/ /PoA-DD/ /CPA-DD/ /MR/ /ER/	Description: Actual date of commissioning of project device is determined from the sales records. Verifier´s action: The verifier checked the sampling records, MR and ER worksheet Conclusion: The parameter is appropriately reported.	OK	OK
b) Accuracy and QA/QC Procedure (VVS, §§ 394-400) *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 6.*	/MR/ /ER/	Description: No QA/ QC procedures are required as parameter is determined based on the Installation Database. Verifier´s action: The verifier checked the sampling records, MR and ER worksheet Conclusion: The parameter is appropriately reported	OK	OK
c) Correctness (VVS, §§ 389-393) *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/ /ER/	☒ Correct ☐ Not correct (initial assessment) Description: The parameter has been measured correctly in line with Verifier´s action: The values given are correct. Conclusion: No further findings are raised.	OK	OK

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	☐ No ☐ Yes	From: To:
-	-	-	-	-	-	-	-	☐ No ☐ Yes	From: To:

* All equipments are calibrated by the supplier.

Document information

Version	*Date*	*Description*
03.0	31 May 2019	Revision to: • Ensure consistency with version 02.0 of the "CDM validation and verification standard for programmes of activities" (CDM-EB93-A08-STAN); • Make structural and editorial improvements.
02.0	29 December 2017	Revision to align with the requirements of the "CDM validation and verification standard for programme of activities" (version 01.0).
01.0	5June 2015	Initial publication.

Decision Class: Regulatory
Document Type: Form
Business Function: Issuance
Keywords: programme of activities, verifying and certifying