



**Validation report form for inclusion of component
project activities
(Version 03.0)**

Complete this form in accordance with 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 reference: 10431	
Version number of the validation report	1.0	
Completion date of the validation report	12/03/2020	
Version numbers of the PoA-DD to which this report applies	4.0	
Title and reference number of each CPAs to be included	CPA Ref. no.	Title
	10431-P1-0002-CP1	Improved cookstove program in Bangladesh supported by the Republic of Korea – CPA 02
	10431-P1-0003-CP1	Improved cookstove program in Bangladesh supported by the Republic of Korea – CPA 03
Applied methodologies and standardized baselines for each CPA	CPA Ref. no.	Applied methodologies and standardized baselines
	10431-P1-0002-CP1	AMS II.G. - Small-scale methodology: Energy efficiency measures in thermal applications of non-renewable biomass, version 08.0
	10431-P1-0003-CP1	
Sectoral scopes for each CPA	CPA Ref. no.	Sectoral scopes (indicate mandatory and conditional sectoral scopes)
	10431-P1-0002-CP1	3: Energy demand
	10431-P1-0003-CP1	
Coordinating/managing entity (CME)	Ecoeye Co., Ltd.	
Host Parties	Republic of Bangladesh	
Estimated amount of annual average greenhouse gas (GHG) emission reductions or GHG removals by sinks in the crediting period (tCO₂e), per CPA	CPA Ref. no.	tCO₂e
	10431-P1-0002-CP1	2,708,779 tCO ₂ e
	10431-P1-0003-CP1	2,708,779 tCO ₂ e
Name and UNFCCC reference number of the DOE	Earthood Service Private Limited E-0066	

Name, position and signature of the approver of the validation report	
	Dr. Kaviraj Singh Managing director

SECTION A. Executive summary

The CPAs (CPA 02 and CPA 03) involve the dissemination of improved cookstoves in Bangladesh. The cook stoves disseminated through the CPAs, will replace the inefficient baseline stove, combust wood more efficiently, and improve thermal energy transfer to pots, hence reducing non-renewable fuel consumption and lowering greenhouse gas emissions. It will lead to a reduction in fuel consumption, improvement in health through smoke reduction, and further reducing deforestation in Bangladesh. Thus, the CPAs will reduce a significant amount of emissions that would have been generated in the baseline scenario.

The CME of the PoA is Ecoeye Co., Ltd. (EECL). Bangladesh Bondhu Foundation (the implementer for the CPAs) is also involved as the Project participant in the PoA. Both the entities have mutually agreed that the sole beneficiary of carbon credits from this PoA would be the CME, Ecoeye Co., Ltd. (EECL).

Scope of Validation

The scope of the services provided by Earthood Services Private Limited for the project is to perform validation of CPAs. The scope of validation is to assess the claims and assumptions made in the CPA DDs against the UNFCCC criteria, including but not limited to, CDM PS for PoA version 2.0, CDM VVS for PoA version 2.0, applied methodology AMS-II.G. version 8.0, PoA DD and other relevant rules and requirements established for CDM project activities.

Validation Process

The validation process is undertaken by the validation team that involves the following:

1. The desk review of documents and evidence submitted by the project participant in the context of the reference CDM rules and guidelines issued by CDM EB,
2. Reporting audit findings concerning clarifications and non-conformities and the closure of the findings, as appropriate
3. Preparing a draft validation report for the inclusion of CPAs complying with the CDM requirements
4. An independent Technical Review team reviews the validation report prepared by the validation team. The final validation report that is accepted by Technical Reviewer is then approved on behalf of Earthood Services Private Limited and processed further as per CDM procedures.

Conclusion

The review of the CPA DDs, supporting documentation and subsequent follow-up actions have provided Earthood with sufficient evidence to determine the fulfilment of stated criteria. Earthood is of the opinion that the CPAs titled "Improved cookstove program in Bangladesh supported by the Republic of Korea-CPA 02" and "Improved cookstove program in Bangladesh supported by the Republic of Korea-CPA 03" as described in the final CPA DDs version 3.0, dated 03/03/2020 meets all relevant requirements of CDM, meets host country criteria and has correctly applied the methodology AMS II.G.- Small-scale methodology: Energy efficiency measures in thermal applications of non-renewable biomass, version 08.0. Therefore, the project is being recommended to CDM EB for request for inclusion.

SECTION B. Validation team, technical reviewer and approver

B.1. Validation team member

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	Interviews	Validation findings
1.	Team Leader	IR	Mahala	Deepika	Central Office	Y	N	Y	Y

CDM-CPA-VAL-FORM

2.	Validator	IR	Mahala	Deepika	Central Office	Y	N	Y	Y
3.	Technical Expert (3.1)	IR	Mahala	Deepika	Central Office	Y	N	Y	Y
4.	Methodology Expert	IR	Mahala	Deepika	Central Office	Y	N	Y	Y
5.	Trainee	IR	Sahni	Rahi	Central Office	Y	N	Y	Y
6.	Local Expert	EI	Biswas	Amresh Chandra	Central Office	Y	N	N	N

B.2. Technical reviewer and approver of the validation report

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)
1.	Technical reviewer	IR	Garg	Shreya	Central Office
2.	Technical Expert to Technical reviewer	IR	Garg	Shreya	Central Office
3.	Approver	IR	Singh	Kaviraj	Central Office

SECTION C. Means of validation**C.1. Desk/document review**

The validation of the Programme of Activities is performed primarily as a document review of the CPA design documents for CPA 02 and CPA 03, version 1.0 dated 19/02/2020 and the final version 3.0, dated 03/03/2020. The cross checks between information provided in the PoA DD and information from sources other than those used, if available, the validation team's sectoral or local expertise and, if necessary, independent background investigations.

The complete list of documents/evidence assessed by validation team is included under Appendix 3

C.2. On-site inspection

In accordance with paragraph 183 and 184 of VVS-PoA, version 2.0/5/, an on-site inspection has not been conducted because the implementation of the CPAs is yet to begin. The DOE conducted the site visit on 11/03/2018 at the time of PoA validation and inclusion of CPA 01. All the information related to the baseline scenario and other information related to the PoA was validated at that time. Moreover, the values for the majority of the parameters have either been sourced from the methodology or published data already available. The values have been cross-checked during the desk review stage and were found to be appropriately applied. Additionally, the CPAs have not been implemented yet and there was no key information that was required to be captured during the on-site verification.

However, DOE has ensured that alternative means of information has been appropriately used to present the validation opinion. A telephonic interview has been conducted with several representatives of Bangladesh Bondhu Foundation and Climate Secure Services to understand in depth about the technology that will be disseminated in the CPAs, the implementation status and procedures concerning the CPAs. Furthermore, relevant evidence have been procured from the CME to confirm the technical specifications of the stoves, training agenda, ODA declaration and the demonstration of the values applied to the parameters. The DOE believes that the alternative means applied are sufficient for validation of the CPAs.

The DOE has also raised FAR #05 to ensure the implementation is done in line with the PoA.

C.3. Interviews

A video conferencing was conducted on 12/03/2020 with the representatives of Bangladesh Bondhu Foundation, Climate Secure Services to confirm the procedures related to the implementation of the CPAs. Bangladesh Bondhu Foundation is the CPA Implementer and Climate Secure Services was contracted by the CME to assess the implementation procedures of the CPAs and for the info and reporting of the respective CPA-DDs:

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.		Dr. Md. Khalequzaman	Founder, BBF	12/03/2020	CPA Implementation; baseline scenario, documentation procedures	Deepika Mahala Rahi Sahni
2.	Alam	Md. Ashraful	Database Manager, BBF	12/03/2020	Database entry and Management System	Deepika Mahala Rahi Sahni
3.	Joya	Sirajum Munira	Communication Manager	12/03/2020	Communication procedures	Deepika Mahala Rahi Sahni
4.	Lohia	Rohit	Climate Secure Services	12/03/2020	Technology to be used in the CPAs; ICS distribution procedure; CPAs implementation status	Deepika Mahala Rahi Sahni

C.4. Sampling approach

Not Applicable.

C.5. Clarification requests (CLs), corrective action requests (CARs) and forward action requests (FARs) raised

Areas of validation of compliance (SECTION D)	No. of CL	No. of CAR	No. of FAR
Titles of the CPAs and corresponding generic CPAs			
Compliance with CPA-DD form			
General description of the CPAs		CAR#02	FAR#05
Application of methodologies and standardized baselines			
Reference to methodologies and standardized baselines			

• Project boundary, sources and GHGs			FAR#05
• Baseline scenario			FAR#05
Estimation of emission reductions or net anthropogenic removals			
• Equations and parameters applied to calculate GHG emission reductions or net anthropogenic GHG removals			
• Data and parameters fixed ex ante	CL#01		
• Ex ante calculation of GHG emission reductions or net anthropogenic GHG removals			
• Summary of ex ante estimates of GHG emission reductions or net anthropogenic GHG removals			
Monitoring plan			
• Data and parameters to be monitored			FAR#06
• Description of the monitoring plan		CAR#03	FAR#05
Start date, crediting period type and duration		CAR#04	
Environmental impacts			
Local stakeholder consultation			
Eligibility for inclusion		CAR#02	FAR#05,
Others (please specify)			
Total	01	03	02

SECTION D. Validation findings

D.1. Proposed CPAs and corresponding generic CPAs

CPA title and reference number	Version number of the CPA-DD	Host Party	Generic CPA title, identification/reference number	Version number of the PoA-DD into which the CPA is included
Improved cookstove program in Bangladesh supported by the Republic of Korea – CPA 02 10431-P1-0002-CP1	3.0	Republic of Bangladesh	Improved cookstove program in Bangladesh supported by the Republic of Korea – CPA XX	4.0
Improved cookstove program in Bangladesh supported by the Republic of Korea – CPA 03 10431-P1-0003-CP1	3.0	Republic of Bangladesh	Improved cookstove program in Bangladesh supported by the Republic of Korea – CPA XX	4.0

D.2. Compliance with CPA-DD form

Means of validation	The CPA DDs/6,7/ have been prepared using the latest version of CDM-CPA-DD-FORM, i.e. version 9.0/10/. It has been checked from the UN website that the form used is the latest form applicable for the CPAs. Each section of the CPA-DDs was also checked with the guidelines stated in the form/10/ and found to be fulfilling it.
Findings	No findings.
Conclusion	The CPA-DDs /6,7/ are found to comply with the latest applicable form with all the sections filled are in line to the form guidelines.

D.3. General description of the CPAs

Means of valid	CPA 02 and CPA 03 involves dissemination of ICSs in Bangladesh. The improved cookstoves disseminated under the CPAs will replace the traditional biomass stoves and consume less non-renewable biomass fuel. This will lead to a reduction in GHG emissions.
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The coordinating and managing entity (CME) for the proposed project is Ecoeye Co., Ltd. and BBF is the CPA implementer for both the CPAs. A contractual agreement/20/ between the CME and the CPA implementer was checked for the roles and responsibilities of both the organization. Ecoeye Co., Ltd., Korea Impact Carbon Corporation and/or other Korean Entity(ies) will provide for all implementation costs for the CPA. Ecoeye Co., Ltd., Korea Impact Carbon Corporation and/or other Korean Entity(ies) will provide subsidy to make ICS affordable to households, as well as for the operation & maintenance costs of ICS production and distribution to CME and CPA implementers, to operate the CPA in a financially sustainable condition. The agreement also confirmed that the sole beneficiary of the carbon credit is the CME of the PoA.

The ICS distribution as per the project boundary will be done in the Republic of Bangladesh. In accordance with the monitoring plan, the CME will maintain a sales database capturing the exact location and address of the households. This will be verified during the first verification of the CPAs to ensure that the implementation of the CPAs is done in accordance with the project boundary. Thus, the CPA is implemented in only one host country i.e. Bangladesh as validated from the GPS Coordinates of Dhaka which are as follows:
23°42'37.44"N, 90°24'26.78"E.

The geocoordinates have been confirmed from <https://latitudelongitude.org/bd/dhaka/> as mentioned in the CPA-DDs and have also been additionally verified from Google maps (<https://www.google.com/maps/place/23%C2%B042'37.4%22N+90%C2%B024'26.8%22E/@23.7103915,90.4053775,17.08z/data=!4m5!3m4!1s0x0:0x0!8m2!3d23.7104!4d90.4074389>)

Pre-project / Baseline scenario:
In absence of the CPAs, the households would use traditional stove with equivalent fuel to meet the equivalent amount of thermal energy demands.
During the first verification of both the CPAs, it will be checked whether the end-users were using inefficient biomass stoves in the baseline and the new ICS has been built after breaking the traditional one.
The CPA will disseminate the types of the stoves listed in the table below

	Model of stove	Efficiency	Average Lifetime
1.	One-pot Bondhu Chulha	34% as checked from the efficiency test certificate /23/.	5 – 7 years as checked via declaration/25/ from BBF (manufacturer of the stove) mentioning the operational lifetime.
2.	Two-pot Bondhu Chulha	34.62% as checked from the efficiency test certificate /24/.	5 – 7 years as checked via declaration/25/ from BBF (manufacturer of the stove) mentioning the operational lifetime.

Technical description
The proposed CPAs aim to disseminate ICSs with thermal efficiency greater than 20% i.e., 34% for One Pot Bondhu Chulha and 34.62% for the Two Pot Bondhu Chulha with a concrete chimney for improved combustion as corroborated from the thermal efficiency certificate/23,24/ and technical drawings of the stove/22/.

The design operational lifetime of the project devices is less than the crediting period (10 year fixed), therefore, the CME will either replace these devices after the end of their operational lifetime or otherwise, will claim emission reductions only for operational life span of the project devices.

Each unit shall be a micro-scale unit as defined under section C of the PoA DD/1/ to demonstrate the CPA to be auto-additional. These are also part of eligibility criteria met by proposed CPAs in line with the generic CPA DD/1/. The criteria were found to be met by the CPAs as shown in the ER

sheet/8,9/. The technical drawings of the stoves/22/ aimed to be disseminated under CPA 02 and CPA 03 and thermal efficiency certificate/23,24/ of the stoves were checked and were found to meet the methodology requirements/2/.

The implementation of the CPAs is yet to begin and is expected to start on 15/03/2020. The proposed start date of the CPAs is 15/03/2020 which is the date of installation of the first ICS and it is in compliance with the paragraph 185 of PS-PoA version 2.0/4/ which states that start date of the proposed CPA is on or after the start date of the registered CDM PoA (15/02/2018). Since, no event has occurred for the CPAs which would comply with the definition of start date given in the glossary of CDM terms and also as per the eligibility criteria given for start date in the registered PoA DD/01/, therefore, a FAR has been raised in this regard.

The start date of the crediting period is 15/03/2020 or the date of inclusion of CPAs in the registered PoA, whichever is later.

Moreover, the type (fixed) and duration (10 years) complies with the details as specified in the corresponding generic CPA-DD/6,7/. The proposed implementation of the CPA is as follows:

Year 1: 1,000,000 units.

Year 2: 1,000,000 units

However, the CPAs shall be limited to an aggregate installation of 2,000,000 ICS units each.

The UN website was checked for the project activities of similar technology within the same project boundary to confirm that the CPAs have not been included in another registered PoA or registered as PA.

<https://cdm.unfccc.int/Projects/projsearch.html>

<https://cdm.unfccc.int/ProgrammeOfActivities/registered.html>

Based on DOE's assessment following are the PoAs that share the same technology as the proposed CPAs:

CDM PoA Reference	Title	Methodology
4791	Improved Cooking Stoves in Bangladesh	AMS-II.G. ver. 3
10512	IDCOL Improved Cook Stove Program	AMS-II.G. ver. 10.0

The stoves disseminated by the aforementioned PoAs were of a different make and were utilized for commercial distribution. The manufacturer of the ICS to be disseminated under the proposed CPAs is Bangladesh Bondhu Foundation. The CME will maintain a database capturing the serial number of the stoves. The stoves shall be identified by the unique serial number which shall be displayed at the beneficiary location. The proposed CPAs comply with the following conditions from paragraph 166 of PS-PoA version 2.0:

- It utilizes both a different measure and a different technology from those of the former project;
- It does not share or utilize any of the assets of the former project;
- It utilizes a different resource type compared to the former project.

The CME will ensure during the implementation of the CPAs that each cookstove is assigned a unique serial number for identification and tracking. Therefore, the validation team was able to confirm that the CPA will not lead to discontinuation of other registered activities.

CME has chosen a fixed crediting period of 10 years. It was found to be in line with the PoA-DD/1/ and generic CPA DD/1/.

Both the CPAs are expected to reduce 27,087,790 tCO₂e of carbon emissions independently throughout the entire crediting period of 10 years, making an annual average to be 2,708,779 tCO₂e for both the CPAs. The calculation of estimated ERs was found to comply with the methodology/2/ and PoA-DD/1/.

The CPAs are not making use of any public funding which was verified through the ODA declaration provided by CME/21/

Debundling check:

The CPA DD of both CPA02 and CPA 03 have demonstrated in the respective ER sheets/8,9/ that all the ICSs disseminated under the PoA are of microscale unit. Thus, as per para 124(m) of PS for PoA version 2.0/4/, CME is not required to demonstrate SSC threshold or debundling check.

Findings

CAR#02 was raised and resolved. FAR#05 was raised.

Conclusion	The validation team confirms that the information provided is complete and correct concerning the description of technology(ies) and/or measures to be used, the description is as per the registered PoA DD and is following the CDM PS including a description of the purpose of the CPAs and explanation how the CPAs will reduce GHG emissions. The validation team confirms that: (a) Only one host Party is present i.e. Bangladesh; (b) The coordinating and managing entity (CME) for the proposed project is Ecoeye Co., Ltd. and BBF is the CPA implementer (c) It has neither been registered as a CDM project activity nor included in another registered CDM PoA. Thus, meeting the requirements of VVS for PoA version 2.0/5/
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D.4. Application of methodologies and standardized baselines

D.4.1. Reference to methodologies and standardized baselines

Means of validation	Applicability criteria	DoE assessment
	This methodology comprises efficiency improvements in thermal applications of non-renewable biomass. Examples of applicable technologies and measures include the introduction of high efficiency biomass fired project devices (cook stoves or ovens or dryers) to replace the existing devices and/or energy efficiency improvements in existing biomass fired cook stoves or ovens or dryers.	The CPA 02 and 03 will disseminate following two types of ICS as listed in the CPA DDs: One-pot Bondhu Chulha(34% as checked from the efficiency test certificate /23/.) Two-pot Bondhu Chulha(34.62% as checked from the efficiency test certificate /24/.) Both technologies are cookstoves, thus falling under the category listed in the applied methodology. Thus, the criterion is met.
	In the case of cook stoves, the methodology is applicable to introduction of single pot or multi pot portable or in-situ cook stoves with rated efficiency of at least 20 per cent.	The CPA 02 and 03 will disseminate following two types of ICS as listed in the CPA DDs: One-pot Bondhu Chulha(34% as checked from the efficiency test certificate /23/.) Two-pot Bondhu Chulha(34.62% as checked from the efficiency test certificate /24/.) Both the stoves have efficiency higher than 20% as checked from the efficiency test certificates /23,24/. Thus, the criterion is met.
	The aggregate energy savings of a single project activity shall not exceed the equivalent of 60 GWh per year or 180 GWhth per year in fuel input	The ICSs disseminated under both the CPAs i.e., CPA 02 and CPA 03 are microscale units as demonstrated in the ER sheets/8,9/. Thus, the demonstration of SSC threshold limit as per para 124(m) of Standard: CDM project standard for programmes of activities, version 2.0/4/ is not required.
	Non-renewable biomass has been used in the project region since 31 December 1989, using survey methods or referring to published literature, official reports or statistics	The Statistical Year Book Bangladesh 2015, published in September 2016, Chapter 10: Prices and Wages Section 10.09/40/ was reviewed to confirm that there has been an increase in fuel wood prices indicating a

		scarcity of fuel-wood over the last decade. Hassan et al. in Springer 'Energy, Sustainability and Society' states 2013/41/ that the rural households have started using an inferior type of biomass due to scarce supply of biomass instead of the most preferred biomass-wood. This confirms para 29(d) of the applied methodology/2/. Further, a review of non-renewable usage of biomass is given for 1990 and 2015 levels in Global FRA report/45/ was done by the assessment team. The CME has correctly applied the tool to calculate the fraction of non-renewable biomass/33/ and transparently presented that the fraction of non-renewable biomass has decreased from 1990 to 2015. The calculation in fNRB calculation sheet/34/ is in line to the tool/33/ and the values used for the calculation are sourced from Global FRA report/45/. Thus, the DoE confirms that Non-renewable biomass has been in use in the project region since 31/12/1989.
	For cases where the biomass is sourced from renewable sources, the project participants should use a corresponding Type I methodology	The PoA does not involve the use of renewable biomass. As demonstrated above that the fuel used in the project stove is non-renewable. Thus, type II methodology has been applied.
Findings	No findings	
Conclusion	The validation team confirms that both the CPAs i.e., CPA 02 and CPA 03 meet all the applicability conditions of the applied methodology AMS-II.G. version 8.0/2/.	

D.4.2. Project boundary, sources and GHGs

Means of validation	As per para 13 of the applied methodology AMS-II.G. version 8.0/2/, the CPA project boundary is the physical, geographical site of the efficient devices that utilize biomass. The ICS distribution as per the project boundary will be done in the Republic of Bangladesh. Following the monitoring plan, the CME will maintain a sales database capturing the exact location and address of the households. This will be verified during the first verification of the CPAs to ensure that the implementation of the CPAs is done following the project boundary(See FAR#05). The boundary has been defined as per the selected methodology/2/. The sources of the GHG in the baseline scenario are inefficient traditional cook stove using the fuelwood. The sources of the GHG in the project activity are use of efficient cook stove, combusting of same fuel, to generate energy. The sources for cooking activity considered CO₂ as major gas emitted from the process in both the scenarios. It will be identified during the subsequent verifications of both the CPAs any emission sources that will be affected by the implementation of the CPAs and which are expected to contribute more than 1% of the overall expected average annual emission reductions, that are not addressed by the selected approved methodology/2/.
Findings	FAR#05 has been raised.
Conclusion	The spatial extent of the boundary of the CPAs, which is the geographical boundary of Bangladesh, is clearly defined in the final CPA-DD/6,7/ in line with AMS-II.G. Version 08/2/. The greenhouse gases emission source in both - the baseline & project scenario, is CO₂. During the validation stage, implementation of the CPA has not started. Referring to paragraph 34 of CDM VVS for PoAs, version 02.0/5/, during 1st periodic verification, the verifying DOE shall check/review the project implementation in accordance with the CPA-DDs including checking of all the technologies to be implemented in the CPAs and its compliance with the requirements of the PoA.

D.4.3. Baseline scenario

Means of validation	Para 14, of the applied methodology AMS-II.G., version 8.0/2/ states that the baseline scenario would be the use of fossil fuels for meeting similar thermal energy needs in the absence of the project activity. In absence of the PA, the households will use non-renewable biomass in traditional stove. <u>Pre-project scenario:</u> In absence of the CPAs, the households would use traditional stove with same fuel to meet the equivalent amount of energy demands. Country Action Plan for Clean Cookstoves, November 2013, Power Division, Ministry of Power, Government of the People's Republic of Bangladesh, page 39/42/ was reviewed. The document revealed that more than 90% households still use traditional stoves for cooking. Another paper published in PNAS, July 3, 2012, vol. 109, no. 27, 10815–10820, "Low demand for non-traditional cookstove technologies" by Mobarak et al/43/ was referred to confirm that 98–99% of Bangladesh rural population burns biomass fuels by using traditional cookstoves for cooking and heating and they construct these traditional cookstoves themselves with local materials available. The impact of cooking in the traditional stove has also been reported in Special Report on Restoring Balance: Bangladesh's Rural Energy Realities, Executive Summary/44/. Several policies/12-18/ relevant to the proposed PoA were reviewed such as: • Renewable Energy Policy 2008 • Bangladesh climate change strategy and action plan 2009 • National Energy policy 2004 • Energy efficiency action plan 2012 • Sustainable renewable energy development authority(SREDA) act 2012
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	- Energy efficiency and conservation master plan up to 2030(March 2015) - Bangladesh National Women policy 2011 However, as per para 106 of PS for PoA version, 2.0/4/, E+ policies before 1997 and E- policies implemented since 2001 shall be considered. No relevant policies from this period were identified.
Findings	FAR#05 has been raised.
Conclusion	The validation team confirms that the baseline scenario established and described for the proposed CPAs is in accordance with the modalities in the corresponding generic CPA/1/.

D.5. Estimation of emission reductions or net anthropogenic removals

D.5.1. Equations and parameters applied to calculate GHG emission reductions or net anthropogenic GHG removals

Means of validation	The validation team has checked the equations for ex-ante calculation applied on the ER sheets of both the CPAs/8,9/ and found it to be in line with the generic CPA DD/1/. The equation being used are as follows: $ER_y = \sum_i \sum_j ER_{y,i,j} - LE_y$ <table border="1"> <tr> <td>ER_y</td><td>Emission reductions during year y in t CO₂e</td></tr> <tr> <td>$ER_{y,i,j}$</td><td>Emission reductions by project device of type i and batch j during year y in t CO₂e</td></tr> <tr> <td>LE_y</td><td>Leakage emissions in the year y</td></tr> <tr> <td>I</td><td>Indices for the situation where more than one type of project device is introduced to replace the pre-project devices</td></tr> <tr> <td>J</td><td>Indices for the situation where there is more than one batch of project device</td></tr> </table> $ER_y = By_{savings} * Ny_{i,j} * \mu_y * fNRB_y * NCV_{biomass} * EF_{projected_fossilfuel}$ <table border="1"> <tr> <td>$By_{savings}$</td><td>Quantity of woody biomass that is saved in tonnes per cook stove device of type i and batch j during year y</td></tr> <tr> <td>$Ny_{i,j}$</td><td>Number of project devices of type i and batch j operating during year y</td></tr> <tr> <td>μ_y</td><td>Adjustment to account for any continued use of pre-project devices during the year y when applying equations 6 (fraction).</td></tr> <tr> <td>$fNRB_y$</td><td>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</td></tr> <tr> <td>$NCV_{biomass}$</td><td>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')</td></tr> <tr> <td>$EF_{projected_fossilfuel}$</td><td>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 CO₂/TJ</td></tr> </table> $By_{savings} = Bold_{i,j} * (1 - \eta_{old,i,j} / \eta_{new,i,j})$ <table border="1"> <tr> <td>$Bold_{i,j}$</td><td>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</td></tr> <tr> <td>$\eta_{old,i,j}$</td><td>Efficiency of the device of each type i and batch j implemented as part of the project activity</td></tr> </table>	ER_y	Emission reductions during year y in t CO ₂ e	$ER_{y,i,j}$	Emission reductions by project device of type i and batch j during year y in t CO ₂ e	LE_y	Leakage emissions in the year y	I	Indices for the situation where more than one type of project device is introduced to replace the pre-project devices	J	Indices for the situation where there is more than one batch of project device	$By_{savings}$	Quantity of woody biomass that is saved in tonnes per cook stove device of type i and batch j during year y	$Ny_{i,j}$	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).	$fNRB_y$	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	$Bold_{i,j}$	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	$\eta_{old,i,j}$	Efficiency of the device of each type i and batch j implemented as part of the project activity
ER_y	Emission reductions during year y in t CO ₂ e																										
$ER_{y,i,j}$	Emission reductions by project device of type i and batch j during year y in t CO ₂ e																										
LE_y	Leakage emissions in the year y																										
I	Indices for the situation where more than one type of project device is introduced to replace the pre-project devices																										
J	Indices for the situation where there is more than one batch of project device																										
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$Ny_{i,j}$	Number of project devices of type i and batch j operating during year y																										
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$fNRB_y$	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')																										
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$Bold_{i,j}$	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																										
$\eta_{old,i,j}$	Efficiency of the device of each type i and batch j implemented as part of the project activity																										

	$\eta_{new,i,j}$	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;
	Default values sourced from methodology/2/ have been used for the parameter, NCVbiomass, EFprojected_fossilfuel and Bold,p. By,saving is calculated as an adjustment to Bold for the decrease in efficiency over the period of time.	
	Where Bold,i,j=Bold,H,H= Bold,p*Np,HH	
	Bold,H,H	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
	Bold,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
	Np,HH	Average number of persons served per household prior to the project implementation
	Default values sourced from methodology/2/ have been used for the parameter, NCVbiomass, EFprojected_fossilfuel and Bold,p. By,saving is calculated as an adjustment to Bold for the decrease in efficiency over the period of time.	
Findings	No findings.	
Conclusion	The validation team confirms that the equations and parameters applied to calculate GHG emission reductions or net anthropogenic GHG removals for CPAs are in line with the generic CPA DD/1/ and the applied methodology/2/.	

D.5.2. Data and parameters fixed ex ante

Means of validation	Parameter	Means of validation
	Bold,p (tonnes/person/year) 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	The value of the parameter is 0.50, and it is sourced from the applied methodology, page 11/2/. The applied value was checked and found to be correct.
	Np,HH(Number), Average number of persons served per household prior to the project implementation,	The value of the parameter is 4.3, which is sourced from a recently published report "Multiple Cluster Survey"/32/. The Multiple Cluster Survey are household surveys implemented by countries under the program developed by the United Nations Children's Fund to provide internationally comparable, statistically rigorous data on the situation children and women. The survey has been conducted in collaboration with Government of People's Republic of Bangladesh and Bangladesh Bureau of Statistics. The same value can be used by the subsequent CPAs instead of fresh assessments in absence of new data. The approach was found to be in line with the applied methodology para 11/2/. The applied value was assessed during the validation stage and it was found to be sourced from the most recent and reliable data

		available at the time of inclusion.
	Bold,HH(tonnes/household/year), 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	The value of the parameter is 2.15, which is calculated through the multiplication of Bold,p and Np,HH. The approach was found to be in line with the applied methodology para 11-12/2/. Although, the CME aims to disseminate one stove in each house, however, if during the stove installation, the presence of existing project ICS is found, it will be monitored and the subsequent (second) ICS will not be included in the CPAs. The applied value was checked and found to be correct.
	fNRB, (Fraction), Fraction of woody biomass saved by the project activity during year y that can be established as non-renewable biomass	The value of the parameter is 0.843, which has been calculated through Tool: Calculation of the fraction of non-renewable biomass, EB 97, Annex 9. The CME has correctly applied the tool to calculate the fraction of non-renewable biomass/33/ and transparently presented the obtained value of the fraction of non-renewable biomass which is applied for ex-ante calculation. In accordance with paragraph 18 and 19 of the applied tool/33/, all the values included have been sourced from the Global FRA Report 2015/45/. It has been assessed during the validation stage that Global FRA report from where the values have been sourced is the most recent and reliable data available at the time of inclusion. In order to maintain conservative estimates, CME has ensured that the values are used from the same vintage (2010). The calculation in fNRB calculation sheet/34/ is in line to the tool/33/ and the applied value was checked and found to be correct.
	EFproject_fossil fuel (tCO ₂ e/TJ), Emission factor for the fossil fuels projected to be used for substitution of non-renewable woody biomass by similar consumers	The value of the parameter is 81.6, is sourced from the applied methodology, page 5/2/. The applied value was checked and found to be correct.
	LAFy, (Fraction), Leakage adjustment factor	The value of the parameter is 0.95, is sourced from the applied methodology/2/. The applied value was checked and found to be correct.
	NCV biomass (TJ/tonne), Net calorific value of the non-renewable woody biomass, briquettes or charcoal used in project devices	The value of the parameter is 0.015, is sourced from the applied methodology, page 17/2/. The applied value was checked and found to be correct.
	$\eta_{old,i,j}$ (Fraction), Efficiency of pre - project device, which is a three-stone fire using fuelwood (not charcoal), or a conventional device with no improved combustion air supply or flue gas ventilation	The value of the parameter is 0.11 and it has been determined by taking weighted average of defaults of 0.1(for any traditional stove) or 0.2 (for stove with grate or chimney) and their penetration rates. The approach was

	found to be in line with the applied methodology para19/2/. The applied value was checked and found to be correct.
Findings	CL#01 was raised and resolved.
Conclusion	The validation team confirms through means of validation written above that: (a) The equation and parameters applied to calculate GHG emission reductions or net anthropogenic GHG removals for the CPA in accordance with the modalities in the corresponding generic CPA/1/; (b) The data and parameters fixed ex ante that is used in the equations to calculate GHG emission reductions or net anthropogenic GHG removals for the CPA in accordance with the modalities in the corresponding generic CPA/1/; (c) The baseline methodology was applied correctly to calculate baseline, project and leakage GHG emissions as well as GHG emission reductions or net anthropogenic GHG removals in accordance with the modalities in the corresponding generic CPA/1/;

D.5.3. Ex ante calculation of GHG emission reductions or net anthropogenic GHG removals

Means of validation	Ex-ante calculation is depicted transparently in the ER sheets of CPA02 and CPA03/8,9/ using the formulas stated above. The ex-ante and ex-post parameter used in the calculation has been assessed under section D.5.2 and D.6.1 of this report respectively.
Findings	No findings.
Conclusion	The validation team confirms that (a) The data and parameters fixed ex ante that is used in the equations to calculate GHG emission reductions or net anthropogenic GHG removals for both the CPAs is in accordance with the modalities in the corresponding generic CPA/1/; (b) The baseline methodology was applied correctly to calculate baseline, project and leakage GHG emissions as well as GHG emission reductions or net anthropogenic GHG removals in accordance with the modalities in the corresponding generic CPA/1/; (c) The ex ante estimates of baseline, project and leakage GHG emissions, as well as GHG emission reductions or net anthropogenic GHG removals, are in accordance with the modalities in the corresponding generic CPA/1/.

D.5.4. Summary of ex ante estimates of GHG emission reductions or net anthropogenic GHG removals

Means of validation	The summary of ex ante estimates of GHG emission reductions or net anthropogenic GHG removals for both the CPAs is as follows:		
	CPA	Estimated GHG reductions over the crediting period of 10 years	Estimated annual average GHG reductions
	CPA 02	27,087,790 tCO ₂ e	2,708,779 tCO ₂ e
	CPA 03	27,087,790 tCO ₂ e	2,708,779 tCO ₂ e
	The calculation of estimated ERs was found to be in compliance with the methodology/2/ and PoA-DD/1/.		
Findings	No findings.		
Conclusion	The validation team confirms that the ex ante estimates of baseline, project and leakage GHG emissions, as well as GHG emission reductions or net anthropogenic GHG removals, are in accordance with the modalities in the corresponding generic CPA/1/.		

D.6. Monitoring plan

D.6.1. Data and parameters to be monitored

Means of validation	Ex-post parameters:	
	Parameter	Means of validation
	Ny,i,j(Number), Number of project devices	The value of the parameter will be as follows:

	of type i and batch j operating during year y	$N_{y,i,j} = (n_{i,j,operational} / n_{i,j,total}) * N_{y,i,j,installed}$ Where: N = number of stoves n = number of samples number of stove will be determined through sales database and number of samples operational and total will be determined through survey. The parameter shall be monitored at least once in two years following the sampling requirements set as per the “Standard: Sampling and surveys for CDM project activities and programme of activities” version 7.0/11/. <table><tr><th>CPA</th><th>Number of project devices dissemination aimed</th></tr><tr><td>CPA 02</td><td>2,000,000</td></tr><tr><td>CPA 03</td><td>2,000,000</td></tr></table> Both the CPAs are limited to an aggregate installation of of 2,000,000 number of ICS units (1,000,000 stoves in Year 1 and 1,000,000 in Year 2) Assuming all to be operational the value of the parameter used in calculation estimated ERs is 2,000,000.	CPA	Number of project devices dissemination aimed	CPA 02	2,000,000	CPA 03	2,000,000
CPA	Number of project devices dissemination aimed							
CPA 02	2,000,000							
CPA 03	2,000,000							
	μ_y(Fraction), Adjustment to account for any continued use of pre-project devices during the year y	The parameter shall be measured as per option 2 of the applied methodology/2/, i.e. monitoring survey. For the samples where the baseline stove would be found to be still in use a ratio of the frequency of usage (i.e. number of meals cooked on ICS Vs Total number of meals cooked on ICS and baseline stove) would be used as the fraction. Otherwise, for the rest of the cases, the value would be 1. If no information is available on relative usage levels of baseline stove and ICS a default adjustment fraction of 50:50 shall be applied to those samples. The parameter shall be monitored at least once in two years following the sampling requirements set as per the “Standard: Sampling and surveys for CDM project activities and programme of activities” version 7.0/11/. For ex-ante calculation of ERs, value=1 has been applied, all stoves are operational at the time of installation.						
	$\eta_{new,i,j}$(Fraction), Efficiency of the project device of each type i and batch j	The CPAs has determined the efficiency based on certification by a national standards body. The efficiency tests were conducted under Bangladesh Council of Scientific and Industrial Research by the Institute of Fuel Research and Development (IFRD) and Institute of Energy affiliated by the University of Dhaka. Both the institutions are renowned national institutions involved in R&D procedures and hence the efficiency						

		certificates were found to be reliable. The thermal efficiency was higher than 20%. This was checked from the efficiency test certificate for one-pot bondhuchula for which the efficiency was determined as 34% /23/ and two-pot bondhuchula for which the efficiency was 34.62% /24/. Since the ratio of one pot and two pot bondhu chulha is not currently known and it is based on actual distribution, the lower value out of the two values has been applied as a conservative approach. The value of the parameter applied is 0.34. <table><tr><th>CPA</th><th>Value applied</th></tr><tr><td>CPA 02</td><td>0.34</td></tr><tr><td>CPA 03</td><td>0.34</td></tr></table> The parameter will be recorded at the time of commissioning/distribution and adjusted for loss in efficiency as per para 25(c) and (d) of the applied methodology/2/.	CPA	Value applied	CPA 02	0.34	CPA 03	0.34
	CPA	Value applied						
	CPA 02	0.34						
CPA 03	0.34							
Date of commissioning of project device i	As discussed, the implementation of both the CPAs is yet to begin and is expected to start from 15/03/2020. The CME will record each sale in sales database along with the name of recipient, contact details, location of household (village, district etc) at the time of installation. This will be checked during the first verification of the CPAs.							
Findings	CAR#03 was raised and resolved.							
Conclusion	The validation team confirms that the data and parameters to be monitored or estimated on implementation that is used in the equations to calculate GHG emission reductions or net anthropogenic GHG removals for the CPA DDs /6,7/ were assessed in accordance with the modalities in the corresponding generic CPA and were found to be consistent with generic CPA DD/1/.							

D.6.2. Description of the monitoring plan

Means of validation	<u>Monitoring plan:</u> All the parameters required by the applied methodology/2/ were identified and assessed under section D.6.1 and D.5.3 of this report. By reviewing and comparing the monitoring details of each parameter it was confirmed that the monitoring plan contains all necessary parameters and the means of monitoring described in the plan comply with the requirements of the applied methodologies. It will be confirmed during the first verification of both the CPAs that(See FAR#05): (i)The monitoring arrangements described in the monitoring plan are feasible within the project design; (ii)The means of implementation of the monitoring plan, including the data management and quality assurance and quality control procedures, are sufficient to ensure that GHG emission reductions achieved from corresponding CPAs can be reported ex-post and verified <u>Sampling plan:</u> The CME will apply cross CPA sampling, following the requirements of Standard: Sampling and surveys for CDM project activities and programmes of activities, version 7.0/11/. The required confidence/precision of 95/10 shall be met by the CME. In case, the desired precision is not met, the CME shall either use the lower bound value of the corresponding confidence or repeat/expand the survey.
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	<u>Sampling methodology:</u> Stratified sampling will be carried out over the sampling frames of the target population (total population served under the PoA) to deduce the value of monitoring parameters. Formulas stated in Guideline for Sampling and Surveys for CDM Project Activities and Programme of Activities/46/ and sampling approaches Standard: Sampling and surveys for CDM project activities and programmes of activities, version 7.0/11/ will be followed to determine the sample size. The formulas stated in the PoA DD/1/ are in line with the above stated guideline/46/. Thus, it can be confirmed that the sampling plan will provide the parameter value estimates in an unbiased and reliable manner, where the coordinating/managing entity will apply a sampling approach to determine data and parameters in accordance with the “Standard: Sampling and surveys for CDM project activities and programme of activities version 7.0/11/. <u>other elements of the added monitoring plan:</u> • Specific sales database for each CPA with the name of the recipient, contact details, location of household (village, district etc) at the time of installation will be maintained. • Single sample set will be drawn and the required precision would be met • Design of survey questionnaire will include only non-intrusive and easy to comprehend questions. • All the monitoring staff will be trained to perform their allotted task appropriately as checked from training manuals/28/, photographs of training/26/ and training attendance/27/. • The CME may select sub-sample within the common survey sample (as per stratification requirements) for determining the thermal efficiency in line with para 41 of the methodology/2/ • Third-party will be checked for skills and experience. The elements outlined above comply with the applied methodology/2/ and PS for PoA version 2.0/4/
Findings	FAR#05 has been raised.
Conclusion	The validation team confirms that the description of the monitoring plan was assessed in accordance with the modalities in the corresponding generic and was found to be consistent in the CPA DDs /6,7/.

D.7. Start date, crediting period type and duration

Means of validation	The implementation of both the CPAs is yet to begin and the expected start date is 15/03/2020. The assessment team could not identify any event for the CPAs which would comply with the definition of start date given in the glossary of CDM terms and is in accordance with the eligibility criterion mentioned for start date in the registered PoA DD. Therefore, the assessment team has raised a FAR to ensure that the start date is determined in accordance with the glossary of CDM terms and the eligibility criteria for start date in PoA-DD which states that the start date is the date on which the first ICS is installed. Additionally, Bangladesh Bondhu Foundation has provided a declaration for the start date/47/ which states that the CPAs have not started yet and are expected to start on 15/03/2020. Therefore, the assessment team is able to ensure that the start date of the proposed CPAs is on or after the start date of the registered CDM-PoA.
Findings	CAR#04 was raised and resolved. FAR#05 has been raised.
Conclusion	The validation team confirms that • The start date of the CPA will be the date for the installation of the first ICS which is as per the eligibility criteria of the PoA. • The selected type (fixed) and the duration of the crediting period (10 years) of the proposed CPA is as specified in the corresponding generic CPA/1/ • The start date of the proposed CPAs is after the start date of the

	registered CDM-PoA. The start date of the crediting period is 15/03/2020 or the date of inclusion of CPAs in the registered PoA, whichever is later.
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D.8. Environmental impacts

Means of validation	EIA has been demonstrated at PoA level.
Findings	Not Applicable.
Conclusion	Not Applicable.

D.9. Local stakeholder consultation

Means of validation	LSC has been demonstrated at PoA level.
Findings	Not Applicable.
Conclusion	Not Applicable.

D.10. Eligibility for inclusion**Criterion1. Geographic Boundary**

Means of validation	Required condition: The ICS under the CPAs must operate within the geographical boundary of the PoA i.e. Republic of Bangladesh <u>DoE assessment:</u> The host country approval binds all the CPA under the PoA to distribute the products only within the geographical boundary of Bangladesh. The implementation of both the CPAs has not yet started thus the dissemination of the stoves in the Republic of Bangladesh will be checked during the first verification of both the CPAs.
Findings	FAR#05 has been raised.
Conclusion	The eligibility of the criterion will be checked at the time of first verification of both the CPAs.

Criterion2. Double Counting

Means of validation	Required condition: Carbon emission reductions claimed by the CPAs should be unique and not counted more than once <u>DoE assessment:</u> CME will ensure that each ICS has a unique ID number board/sticker pasted on the wall of their kitchen or on the door of the house or on the ICS chimney, which ensures the this ICS will not be counted twice, thus avoids double counting of the same ICSSs.
Findings	FAR#05 has been raised.
Conclusion	The eligibility of the criterion will be checked at the time of first verification of both the CPAs.

Criterion3. Exclusiveness of CPA

Means of validation	Required condition: The CPA shall not be previously registered as a CDM project activity, included as a CPA in any other registered PoA, or deregistered as a CPA of a PoA <u>DoE assessment:</u> The UN website was checked to confirm that both the CPAs have not been included in another registered PoA or registered as PA.
Findings	CAR#02 was raised and resolved.
Conclusion	The criterion is met.

Criterion4. Specifications of Technology/Measure

Means of validation	Required condition: The program will promote the dissemination of wood-fuel ICS in Bangladesh. The stoves shall have a fuel grate and/or a chimney The rated efficiency of technologies included under the program will be at least 20 per cent. <u>DoE assessment:</u> The proposed CPAs disseminate ICSSs with thermal efficiency greater than 20%
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	with a grate/chimney for improved combustion as corroborated from the thermal efficiency certificate/23,24/ and technical drawings of the stove/22/.
Findings	No findings.
Conclusion	The criterion is met.

Criterion5. Start date

Means of validation	Required Condition: Date on which first ICS was installed under the CPA. The start date of any proposed CDM CPA will be on or after the start date of the proposed CDM PoA <u>DoE assessment:</u> The implementation of both the CPAs is yet to begin and the expected start date is 15/03/2020. The assessment team could not identify any event for the CPAs which would comply with the definition of start date given in the glossary of CDM terms and is in accordance with the eligibility criterion mentioned for start date in the registered PoA DD. Therefore, the assessment team has raised a FAR to ensure that the start date is determined in accordance with the glossary of CDM terms and the eligibility criteria for start date in PoA-DD which states that the start date is the date on which the first ICS is installed. Additionally, Bangladesh Bondhu Foundation has provided a declaration for the start date/47/ which states that the CPAs have not started yet and are expected to start on 15/03/2020. Therefore, the assessment team can ensure that the start date of the proposed CPAs is on or after the start date of the registered CDM-PoA.
Findings	FAR#05 has been raised in this regard.
Conclusion	The eligibility will be checked during the first verification of both the CPAs.

Criterion6. Applicability of the methodologies

Means of validation	Required Condition: CPA must follow AMS.II-G ver 08.0. The applicability of methodology at the CPA level has already been demonstrated in section D.4.1. above. Technology related requirements have been specified in criteria #3 above <u>DoE assessment:</u> Both the CPAs meet all the applicability criteria. The detailed assessment of which has been given under section D.4.1 of this report
Findings	No findings.
Conclusion	The criterion is met.

Criterion7. Additionality

Means of validation	Required Condition: ICS shall be installed at households or SMEs The rated annual thermal energy savings of ICS included under the CPA shall not be more than 1.8GWhth <u>DoE assessment:</u> The CPAs have demonstrated in the respective ER sheets/8,9/ that the units disseminated have annual thermal energy saving of less than 1.8GWhth to be auto-additional.
Findings	No findings.
Conclusion	The criterion is met.

Criterion8. LSC and EIA

Means of validation	Required Condition: The local stakeholder consultation is conducted at the PoA level (Section F of the PoA-DD). An environmental impact analysis is not required (section E of the PoA-DD) <u>DoE assessment:</u> LSC and EIA have been Conducted at PoA level as checked from the PoA DD/1/.
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Findings	No findings.
Conclusion	The criterion is met.

Criterion9. Public Funding

Means of validation	Required Condition: Affirmation that funding from Annex I Parties, if any, does not result in a diversion of official development assistance <u>DoE assessment:</u> CME has provided declaration/21/ to confirm that the CPAs have not received ODA.
Findings	No findings.
Conclusion	The criterion is met.

Criterion10. Target Group and Distribution Mechanism

Means of validation	Required Condition: Target Group: Households / SMEs Distribution Mechanism: Via local partners <u>DoE assessment:</u> A sales database will be prepared by the CME and it will be checked during the first verification if the CPAs that the target group is households and SMEs and distribution is done through local partners.
Findings	FAR#05 has been raised.
Conclusion	The eligibility of the criterion will be confirmed during the time of the first verification of both the CPAs.

Criterion11. Sampling

Means of validation	Required Condition: CPAs under the program will adhere to all requirements as mentioned in Standard: Sampling and surveys for CDM project activities and programme of activities <u>DoE assessment:</u> Sampling plan given in the specific CPA DDs/6,7/ includes that Standard: Sampling and surveys for CDM project activities and programme of activities version/11/ will be followed during monitoring. The detailed assessment of sampling plan is given above under section D.6.2. of this report.
Findings	No findings.
Conclusion	The eligibility criterion was found to be met.

Criterion12. SSC Threshold

Means of validation	Not Applicable.
Findings	Not Applicable.
Conclusion	Not Applicable.

Criterion13. Debundling Check

Means of validation	Not Applicable.
Findings	Not Applicable.
Conclusion	Not Applicable.

SECTION E. Internal quality control

A draft inclusion report prepared by validation team is reviewed by an independent technical review team (one or more members) to confirm whether all the internal procedures established and implemented by ESPL were duly complied with and such opinion/conclusion was reached in an objective manner that complies with the applicable CDM rules/requirements. The technical review team is collectively required to possess the technical expertise of all the technical area/sectoral scope the project activity relates to. All team members of the technical review team are independent of the validation team.

During the technical review process, additional findings may be identified or the closed-out findings may be opened, which needs to be satisfactorily resolved before the request for issuance is submitted to UNFCCC. The independent technical reviewer may either approve the report as such or reject/return the same in such case providing the comments/findings/issues that need to be resolved by the verification team. The decision taken by the Technical Reviewer is final and is authorized by the Managing Director on behalf of Earthood Services Private Limited.

SECTION F. Validation opinion

Earthood has performed the validation of CPAs titled “Improved cookstove program in Bangladesh supported by the Republic of Korea-CPA02” and “Improved cookstove program in Bangladesh supported by the Republic of Korea-CPA03” in Bangladesh. The validation was performed on the basis of rules and requirements defined by UNFCCC for the CDM project activities.

The review of the CPA-DDs, supporting documentation and subsequent follow-up actions have provided Earthood sufficient evidence to determine the fulfilment of stated criteria. The proposed CPA is meeting all the requirements of the PS for PoA version 2.0, VVS for PoA version 2.0 and PCP for PoA version 2.0. The host Party is Bangladesh, which fulfils the participation criteria and has approved the PoA “Improved cookstove program in Bangladesh supported by the Republic of Korea” and authorized Ecoeye Co., Ltd. as the Coordinating Managing Entity. The project correctly applies the approved baseline and monitoring methodology AMS.II-G version 8.0.

The project activity includes two small-scale CPAs (“SSC-CPAs”) which involve the installation of improved cook stoves by Ecoeye Co., Ltd. with the help of PP (BBF) in Bangladesh. The current cooking practice in Bangladesh is the use of the traditional cooking stove. By installing improved cook stove, the project results in reductions of CO₂e emissions that are real, measurable and give long-term benefits to the mitigation of climate change. It is demonstrated that the baseline scenario is equal to current practice and the emission reductions attributable to the project are, hence, additional to any that would occur in the absence of the proposed CDM project activity.

Appendix 1. Abbreviations

Abbreviations	Full Texts
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
CL	Clarification Request
CME	Coordinating / Managing Entity
CO ₂	Carbon dioxide
CO ₂ e	Carbon dioxide equivalent
CPA	Component Project Activity
CPA DD	Component Project Activity Design Document
DNA	Designated National Authority
DO	Distribution Organisation
DOE	Designated Operational Entities
DRB	Demonstrably renewable woody biomass
EB	CDM Executive Board
EIA	Environmental Impact Assessment
FAO	Food and Agriculture organization
FAR	Forward Action Request
GHG	Greenhouse gas(es)
ICS	Improved Cook Stoves
IPCC	Intergovernmental Panel on Climate Change
LAF	Leakage Adjustment Factor
LSC	Local Stakeholder Consultation
NRB	Non-Renewable Biomass
PA	Project Activity
PoA	Programme of Activities
PoA DD	CDM Programme of Activities Design Document
UID	Unique Identification number

Appendix 2. Competence of team members and technical reviewers

Competence Statement	
Name	Deepika Mahala
Country	India
Education	M. Sc. (Environmental Management), GGSIP University B.Sc. Hons. (Chemistry), Sri Venkateshwar College, DU
Experience	3 Years +
Field	Climate Change
Approved Roles	
Team Leader	YES
Validator	YES
Verifier	YES
Methodology Expert	ACM0002, AMS.I.D., AMS.I.A, AMS.III.AV, AMS.II.G
Local expert	YES (India)

Financial Expert	NO		
Technical Reviewer	YES		
TA Expert	YES (TA 1.2 & TA 3.1)		
Reviewed by	Shreya Garg	Date	14/09/2018
Approved by	Anshika Gupta	Date	14/09/2018

Competence Statement			
Name	Shreya Garg		
Country	India		
Education	M.Sc. (Climate Science & Policy), TERI University		
Experience	6 Years +		
Field	Climate Change		
Approved Roles			
Team Leader	YES		
Validator	YES		
Verifier	YES		
Methodology Expert	AMS.I.A., AMS.I.C., AMS.I.D., AMS.I.F., AMS.II.D., AMS.II.G., AMS.II.J., AMS.III.AV., ACM0002, ACM0012		
Local expert	YES (India)		
Financial Expert	NO		
Technical Reviewer	YES		
TA Expert	YES (TA 1.2, TA 3.1)		
Reviewed by	Abhishek Mahawar	Date	01/03/2018
Approved by	Ashok Gautam	Date	01/03/2018

Competence Statement			
Name	Amresh Chandra Biswas		
Country	Bangladesh		
Education	Bachelor of Science, Satpar Govt. Nazrul College Gopalgoanj		
Experience	6 years		
Field	Environment		
Approved Roles			
Team Leader	No		
Validator	No		
Verifier	No		
Methodology Expert	No		
Local expert	Bangladesh		
Financial Expert	No		
Technical Reviewer	No		
TA Expert	No		
Reviewed by	Abhishek Mahawar	Date	01/03/2018
Approved by	Ashok Kumar Gautam	Date	01/03/2018

Competence Statement			
Name	Rahi Sahni		
Education	M.Sc Environment Science and Technology, Bharati Vidyapeeth University, Pune		
Experience	4 months		
Field	Climate Change and Environment		
Approved Roles			
Team Leader	NO		
Validator	NO		
Verifier	NO		
Methodology Expert	NO		
Local expert	NO		
Financial Expert	NO		
Technical Reviewer	NO		
TA Expert	NO		
Trainee	Validator/Verifier		
Reviewed by	Shreya Garg	Date	01/10/2019
Approved by	Anshika Gupta	Date	03/10/2019

Appendix 3. Documents reviewed or referenced

No.	Author	Title	References to the document	Provider
1	UNFCCC	PoA DD Generic CPA DD	Version 4.0 Version 4.0 Dated: 21/06/2018	UNFCCC
2	UNFCCC	Applied methodology: AMS-II.G.	Version 8.0	Other
3	UNFCCC	PCP for PoA	Version 2.0	Other
4	UNFCCC	PS for PoA	Version 2.0	Other
5	UNFCCC	VVS for PoA	Version 2.0	Other
6	CME	Specific CPA DD- CPA02	Version 2.0 Dated: 28/02/2020	CME
7	CME	Specific CPA DD- CPA03	Version 2.0 Dated: 28/02/2020	CME
8	CME	ER sheet- CPA02	Pertaining to CPA DD	CME
9	CME	ER sheet- CPA03	Pertaining to CPA DD	CME
10	UNFCCC	CDM-CPA-DD-FORM	Version 09.0	Other
11	UNFCCC	Standard: Sampling and surveys for CDM project activities and programmes of activities	version 7.0	Other
12	Ministry of Power, Energy and Mineral resources,	Renewable Energy policy	2008	CME

	Government of people's republic of Bangladesh			
13	Government of people's republic of Bangladesh	Bangladesh climate change strategy and action plan	2009	CME
14	Ministry of Power, Energy and Mineral resources, Government of people's republic of Bangladesh	National Energy policy	2004	CME
15	Ministry of Power, Energy and Mineral resources, Government of people's republic of Bangladesh	Energy efficiency action plan	2012	CME
16	Government of people's republic of Bangladesh, Ministry of Law, Justice and Parliamentary affairs	Sustainable renewable energy development authority(SREDA) act	2012	CME
17	Ministry of Power, Energy and Mineral resources, Government of people's republic of Bangladesh and Sustainable renewable energy development authority(SREDA)	Energy efficiency and conservation master plan up to 2030	2015	CME
18	Government of people's republic of Bangladesh	Bangladesh National Women policy	2011	CME
19	UNFCCC	The General Guidelines for SSC methodologies	version 22.1 dated 15 April 2016, paragraph 4.17	Other
20	Ecoeye Co., Ltd. (EECL) and Bangladesh Bondhuchula Foundation	Joint agreement for ICS dissemination &GHG mitigation CDM project in Bangladesh Contractual agreement between Ecoeye Co., Ltd. (EECL) and Bangladesh Bondhuchula Foundation	20/11/2017	CME

21	Ecoeye.Co., Ltd.	No ODA declaration by Ecoeye Co., Ltd.	-	CME
22	BBF	Technical drawings of one-pot and two-pot bondhuchula(stove)	-	CME
23	Institute of fuel research and development(IFRD)	One-pot bondhuchula (stove) efficiency certificate	18/03/2018	CME
24	Institute of Energy	Two-pot bondhuchula (stove) efficiency certificate	17/11/2016	CME
25	BBF	Operational lifetime of Bondhuchula models	16/03/2018	CME
26	BBF	Photographs of training local partners involved in manufacturing of ICS and staff involved in inspection	-	CME
27	BBF	Training attendance	18/02/2018	CME
28	BBF	Training Manual	March 2015	CME
29	CME	Evaluation/feedback form	12/01/2018	CME
30	UNFCCC	CPA-01 Validation report	Version 4.0 Dated: 29/08/2018	UNFCCC
31	UNFCCC	CDM Glossary terms	Version 09.1, page 20	Other
32	MICS	Bangladesh Multiple Indicator Cluster Indicator Survey 2019 report	December 2019	CME
33	UNFCCC	Tool: Calculation of the fraction of non-renewable biomass, EB 97, Annex 9	Version 1.0	Other
34	CME	fNRB calculation sheet	-	CME
35	UNFCCC	Default Values of Fraction of Non-Renewable Biomass for Least Developed Countries and Small Island Developing States, Information Note – SSC WG 35 meeting report Annex 20	approved in EB 67, Annex 22	Other
36	UNFCCC	Country specific default values suggested by the CDM EB / DNA	-	Other
37	UNFCCC	Tool: Demonstration of additionality of small scale project activities,	Version 11.0	Other
38	Government of the People's Republic of Bangladesh Ministry of Environment and Forest	Environmental Conservation Rules, 1997 https://www.elaw.org/system/files/Bangladesh++Environmental+Conservation+Rules,+1997.pdf	1997	Other
39	Earthhood	Contract signed between the DoE and the CME	19/02/2020	Other
40	Government of people's republic of Bangladesh	The Statistical Year Book Bangladesh 2015, Chapter 10: Prices and Wages Section 10.09	Published in September 2016	Other
41	Hassan et al	Hassan et al. in Springer 'Energy, Sustainability and Society 2013	2013	Other
42	Power Division, Ministry of Power, Government of the People's Republic of Bangladesh	Country Action Plan for Clean Cookstoves,	November 2013, page 39	Other

43	Mobarak et al	"Low demand for non-traditional cookstove technologies"; Paper on "" published in PNAS, vol. 109, no. 27, 10815–10820	03/07/2012	Other
44	Energy Sector Management Assistance program (M.Asaduzzaman, Douglas F. Barnes)	Special Report: Energy and Poverty - Restoring Balance: Bangladesh's Rural Energy Realities, Executive Summary, page xx	03/2009	CME
45	Forest Department, Dhaka, Bangladesh Ad Development Planning Unit, Banbhaban, Bangladesh	Global Forest Resource Assessment report 2015 Country Report	2014	Other
46	UNFCCC	Guideline: Sampling and Surveys for CDM Project Activities and Programme of Activities	Version 4.0	Other
47	BBF	Start date declaration	Dated: 11/03/2020	CME

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

Table 1. CLs from this validation

CL ID	01	Section no.	D.5.2.	Date : 28/02/2020
Description of CL				
1. For parameter Np,HH (Average number of persons served per household prior to the project implementation): The generic CPA DD, page 13 quotes "As per registered PoA-DD, assessments, information and results established in initial CPAs may be used in subsequent CPAs in lieu of conducting fresh assessments at each CPA level in absence of new data". The parameter value is sourced from a document dated 2015. CME shall justify why no new assessment has conducted to determine the value of the parameter considering the inclusion is being requested in 2020. 2. For parameter fNRB (Fraction of woody biomass saved by the project activity during year y that can be established as non-renewable biomass): The generic CPA DD, page 14 quotes "As per registered PoA-DD, assessments, information and results established in initial CPAs may be used in subsequent CPAs in lieu of conducting fresh assessments at each CPA level in absence of new data". CME shall provide the detailed calculation sheet and justify why no new assessment has conducted to determine the value of the parameter considering the inclusion is being requested in 2020.				
Project participant response				Date : 28/02/2020

1. CME has conducted assessment to determine if new value of parameter $N_{p,HH}$ exists. CME found a more recent value of $N_{p,HH}$ as 4.3 sourced from recently published report "Multiple Indicator Cluster Survey", in December, 2019. The value of $N_{p,HH}$ has been updated in the revised PDDs and Ex-ante ER Calculators. The MICS report, revised PDDs and Ex-ante ER Calculators are being submitted.
2. CME has conducted fresh assessment to determine the parameters required to calculate f_{NRB} . The data source used for calculating f_{NRB} As per the "Tool 30: Calculation of the fraction of non-renewable biomass", data sources to be used are "Global Forest Resources Assessment 2015" report and "Global Forest Resources Assessment 2000". No more recent reports than Global Forest Resources Assessment 2015 exists for Bangladesh (<http://www.fao.org/forest-resources-assessment/documents/en/>). Hence the use of f_{NRB} as established in CPA-01 is deemed applicable to CPA02 and CPA 03

Documentation provided by project participant

1. PoA 10431 CPA02-DD ver 2.0 28022020
2. PoA 10431 CPA03-DD ver 2.0 28022020
3. PoA 10431 CPA02-Ex-ante ER Calculator ver 2.0 28022020
4. PoA 10431 CPA03-Ex-ante ER Calculator ver 2.0 28022020
5. Bangladesh-MICS-2019-SFR_English

DOE assessment**Date:** 29/02/2020

1. CME has now used a more recent value (4.3) for the parameter $N_{p,HH}$ from a recently published report "Multiple Indicator Cluster Survey", in December, 2019. The DOE finds this approach appropriate and the finding is now closed. The value was checked from the source and found to be correct.
2. CME has conducted a new assessment for the determination of the parameters required to calculate f_{NRB} . It has been appropriately demonstrated that no more recent reports than Global Forest Resources Assessment 2015 exists for Bangladesh (<http://www.fao.org/forest-resources-assessment/documents/en/>). During assessment, the DOE also could not trace the availability of any recent data meant for the calculation of f_{NRB} . Hence, the use of value established in CPA-01 is justified and accepted in absence of new data.

Thus, the finding is now closed.

Table 2. CARs from this validation

CAR ID	02	Section no.	D.3., and D.10.	Date : 28/02/2020
Description of CAR				
As per para 165 of PS for PoA version 2.0, The coordinating/managing entity shall declare, if applicable, the existence of a registered CDM project activity or a CPA under a registered CDM PoA whose crediting period has or has not expired (hereinafter referred to as former project) in the same geographical location as that of the proposed CPA.				
Under section A.7. of the CPA DD, the CME has identified and listed all the PoAs to demonstrate how the project will not lead to the discontinuation or modification of the former projects and does not decrease the GHG emission reductions or net anthropogenic GHG removals by the former PoA. However, PP has not considered CDM registered PoA "IDCOL Improved Cook Stove Program"(UN reference number 10512) in this section.				
Project participant response				Date : 28/02/2020
The registered CDM PoA "IDCOL Improved Cook Stove Program" (CDM Ref No. 10512) in the CPA boundary has been added in section A.7 of the CPA-DD. The revised CPA-DD is being submitted.				
Documentation provided by project participant				
PoA 10431 CPA02-DD ver 2.0 28022020 PoA 10431 CPA03-DD ver 2.0 28022020				
DOE assessment				Date: 29/02/2020
1. CME has now included the CDM PoA "IDCOL Improved Cook Stove Program" (CDM Ref No. 10512) in section A.7 of the CPA DDs for CPA 02 and CPA 03. The finding now stands closed.				

CAR ID	03	Section no.	D.6	Date : 03/03/2020
Description of CAR				
For the parameter $\eta_{\text{new},i,j}$, the value applied has been mentioned as 0.34. However, PP has not taken into account the efficiency of the model Two pot Bondhu Chulha which is 34.62%.				
Project participant response				Date : 03/03/2020
For the parameter $\eta_{\text{new},i,j}$, the value of 0.34 has been applied as a conservative measure as the ratio of one pot and two pot Bondhu Chula is not currently known and is based on actual ex-post distribution. The PP has used the lower of two values for ex-ante calculations.				
Documentation provided by project participant				
DOE assessment				
CME has applied a more conservative value by using 0.34 which is the certified efficiency of one pot bondhu chulha. The approach is found suitable and the finding is therefore closed.				

CAR ID	04	Section no.	D.7	Date : 03/03/2020
Description of CAR				
- In accordance with paragraph 184 and 185 of PS-PoA version 2.0, "The coordinating/managing entity shall determine the start date of the proposed CPA and provide a description of how the start date has been determined in accordance with the definition of start date in the "Glossary: CDM terms". - In accordance with paragraph 190 of PS-PoA version 2.0, "The coordinating/managing entity shall state the start date of the crediting period of the proposed CPA in the format dd/mm/yyyy, and shall not attach any qualifications to the start date, such as "expected".				
Project participant response				Date : 03/03/2020
- The start date of the CPA is the date of installation of first ICS in the CPA - The start date of the crediting period is 15/03/2020 (same as the CPA start date). No qualifications are attached to the same. However, the CPA-DD mentions that the crediting period start date shall be later of 15/03/2020 or date of inclusion of the CPA in case the inclusion takes place after the start date of the CPA.				
Documentation provided by project participant				
DOE assessment				
- PP has now determined that the start date of the CPA is the date of installation of first ICS in the CPA which is in accordance with paragraph 184 of PS-PoA version 2.0. The finding now stands closed. - PP has determined that the start date of the crediting period for the CPAs will be 15/03/2020 and it has been confirmed that no qualifications are attached while determining the date. The finding is closed.				

Table 3. FARs from this validation

FAR ID	05	Section No.	D.3., D.4.2., D.4.3., D.6.2., D.10.	Date : 28/02/2020
Description of FAR				
During the Validation stage, the implementation of the CPA has not started. Referring to paragraph 34 of CDM VVS for PoAs, version 02.0, during 1st periodic verification, the verifying DOE shall check/review the project implementation in accordance with the CPA-DDs including checking of all the technologies to be implemented in the CPAs and its compliance with the requirements of the PoA. Also, the DOE shall confirm following: - Geographical location - No double counting - Database management - Date of installation of first ICS				
Project participant response				Date : 28/02/2020
ok				

Documentation provided by project participant	
XX	
DOE assessment	Date: DD/MM/YYYY
XX	

FAR ID	06	Section No.	D.6.1.	Date : 04/03/2020
Description of FAR				
The verifying DoE shall check that for the parameter $\eta_{new,i,j}$, the CME shall choose between one of the two options (c and d) stated in the CPA-DD, during the first verification of the CPA, and the chosen option shall be consistently followed throughout the crediting period of that CPA.				
Project participant response				Date : 12/03/2020
Ok				
Documentation provided by project participant				
Xx				
DOE assessment				Date: DD/MM/YYYY
Xx				

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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 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	4 May 2015	Initial publication.
Decision Class: Regulatory Document Type: Form Business Function: Registration Keywords: component project activity, validation report		