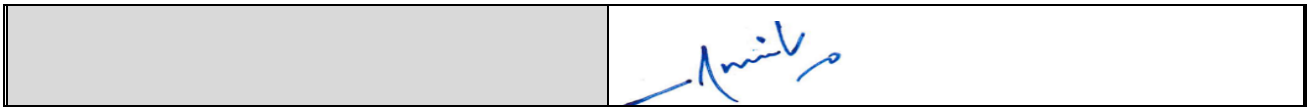
Validation report form for inclusion of component project activities

(Version 02.0)

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)	African Improved Cooking Stoves Programme of Activities PoA UNFCCC Ref. No.: 5342	
Version numbers of the PoA-DD to which this report applies	Version: 4.3; Dated: 07/06/2014	
Title and reference number of each CPAs to be included	CPA Ref. no.	**Title**
	5342 -00013	African Improved Cooking Stoves Programme of Activities CPA- 00013 (Liberia) supported by Republic of Korea
	5342 -00014	African Improved Cooking Stoves Programme of Activities CPA-00014 (Liberia) supported by Republic of Korea
	5342 -00015	African Improved Cooking Stoves Programme of Activities CPA-00015 (Liberia) supported by Republic of Korea
Sectoral scopes for each CPA	CPA Ref. no.	**Sectoral scopes**
	5342 -00013 5342 -00014 5342 -00015	Sectoral Scope 3: Energy demand
Applied methodologies and standardized baselines for each CPA	CPA Ref. no.	**Selected methodologies and standardized baselines**
	5342 -00013 5342 -00014 5342 -00015	AMS II.G (Version 3.0): Energy efficiency measures in thermal applications of non-renewable biomass Standardized baseline: Not Applicable
Version number of the validation report	04	
Completion date of the validation report	31/03/2019	
Coordinating/managing entity (CME)	Envirofit International Ltd.	
Host Party(ies)	Republic of Liberia	
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.	**tCO_2e**
	5342-00013	45,787
	5342-00014	45,787
	5342-00015	45,787
Name and UNFCCC reference number of the DOE	Carbon Check (India) Private Ltd. UNFCCC Ref. No.: E-0052	
Name, position and signature of the approver of the validation report	Amit Anand, CEO	



SECTION A. Executive summary

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Envirofit International Ltd. (hereafter referred as “CME”) has contracted Carbon Check (India) Private Ltd. (CCIPL) to perform validation of the three CPAs titled, “African Improved Cooking Stoves Programme of Activities CPA-00013 (Liberia) supported by Republic of Korea”, "African Improved Cooking Stoves Programme of Activities CPA-00014 (Liberia) supported by Republic of Korea” and “African Improved Cooking Stoves Programme of Activities CPA -00015 (Liberia), supported by Republic of Korea” (hereafter called “the three CPAs”) for inclusion in the registered PoA titled “African Improved Cooking Stoves Programme of Activities”. CCIPL was commissioned to assess the information in the CDM-CPA-DD-FORMs for the three CPAs against the requirements for including CPA to the registered PoA and further documentation requirements for including CPA to a PoA.

This report summarizes the findings of the validation of the small-scale Component Project Activity Design Document (CDM-CPA-DD-FORM), performed on the basis of UNFCCC criteria for the CDM, as well as criteria given to provide for consistent project operations, monitoring and reporting and eligibility criteria for inclusion of the CPAs as established in the PoA-DD /B03/. The term “UNFCCC criteria” refers to Article 12 of the Kyoto Protocol, the CDM modalities and procedures and the simplified modalities and procedures for small scale CDM project and the subsequent decisions by the COP/MOP and CDM Executive Board. In addition to these criteria, host country criteria are also taken into account.

The assessment of a CPA requesting to be included in a PoA shall ensure that all the requirements (as defined in the form of eligibility criteria) determined in the PoA are met. The assessment was performed on the basis of the eligibility and additionality criteria established in the PoA and the UNFCCC criteria for including CPA to a Programme of Activities (PoA) under the Clean Development Mechanism (CDM), as well as criteria given to provide for consistent project operations, monitoring and reporting according to AMS II G, Version 03.0 /B04/.

The main objective of the PoA and the CPA(s) is dissemination of improved cooking stoves (ICS) in the Republic of Liberia. The CPAs shall be implemented with more efficient improved cooking stoves using either firewood or charcoal as fuel. Thus, the CPAs will replace traditional cooking stoves using either firewood or charcoal with more efficient improved cooking stoves. The replacement of traditional stoves by ICSs reduces the GHG emissions.

The validation scope is defined as an independent and objective review of the Component Project Activity Design Documents (CPA-DDs /01-b/). The CPA-DDs /01-b/ are reviewed against the relevant UNFCCC CDM criteria for validation and registration of PoA. The validation team has, based on the recommendations in the Validation and Verification Standard for Programmes of Activities (VVS for PoAs), version 02.0 /B01-1/, employed a rule-based approach, focusing on the identification of significant risks for project implementation and the generation of CERs.

The validation is not meant to provide any consulting towards the project participants. However, stated requests for clarifications and/or corrective actions may have provided input for improvement of the project design.

While carrying out the validation, CCIPL determines if the CPAs comply with the requirements of UNFCCC, specifically the applicability conditions of the selected methodology and also assesses the claims and assumptions made in the CPA-DDs /01-b/ without limitation on the information provided by the project participants.

The report is based on the assessment of the CPA-DDs /01-b/ undertaken through discussions with CME, application of standard auditing techniques including but not limited to document reviews, and CME interviews, review of the applicable/applied methodology and its underlying formulae and calculations.

This report contains the findings and resolutions from the validation and a validation opinion on the proposed CPAs, thus confirming the project design as document is sound and reasonable and meets the stated requirements and identified criteria.

The validation process undertaken by the validation team includes:

1. The desk review of documents and evidences submitted by the CME in context of the reference CDM rules and guidelines issued by the CDM EB,
2. Undertaking interview or interactions with the representative of the CME, reporting audit findings with respect to clarifications and non-conformities and the closures of the findings, as appropriate.
3. Preparing a draft validation report for fixed crediting period complying with the CDM requirements
4. An Independent Technical Review team reviews the validation report prepared by the validating team. The final validation report that is accepted by the Technical Reviewer and approved on behalf of Carbon Check (India) Private Ltd. and process further as per CDM procedures.

CCIPL has performed the validation (inclusion of 3 CPAs) “African Improved Cooking Stoves Programme of Activities CPA-00013 (Liberia) supported by Republic of Korea”. “African Improved Cooking Stoves Programme of Activities CPA-00014 (Liberia) supported by Republic of Korea” and “African Improved Cooking Stoves Programme of Activities CPA-00015 (Liberia) supported by Republic of Korea”. The validation was performed on the basis of rules and requirements as defined by UNFCCC for the CDM PoA.

The review of the CPA-DDs /01-a/, /01-b/ subsequent follow-up, interviews, and further verification of references/evidences provided CCIPL, with sufficient evidence to determine the fulfilment of stated criteria in the registered PoA-DD /B03/. Hence, CCIPL is of the opinion that the CPA meets all relevant UNFCCC requirements for CDM and correctly applies the baseline and monitoring methodology AMS II.G, version 03.0, thus recommends the CPA for inclusion in the registered PoA “African Improved Cooking Stoves Programme of Activities”.

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 / Validator / Technical Expert	IR	Agarwalla	Sanjay Kumar	CCIPL	X		X	X
2.	Validator	IR	Singh	Jitendra Mohan	CCIPL	X		X	X

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	Dimri	Anubhav	CCIPL
2.	Approver	IR	Anand	Amit	CCIPL

SECTION C. Means of validation

C.1. Desk/document review

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The validation was performed primarily based on the review of the CPA-DDs /01-b/ and the supporting documentation. This process included review of data and information presented to verify their completeness and review of the monitoring plan and monitoring methodology. Documents reviewed or referenced during the verification are listed in Appendix 3 below.

C.2. On-site inspection

On -site inspection of the project is not carried out due to the following reasons:

- ✓ The estimated emission reduction from the project as per the CPA-DDs is less than 100,000 tCO_2/year.
- ✓ the CPA is not implemented (at the time of CPA inclusion validation) and there is no pre-project information that is relevant to the requirements for inclusion of the CPAs and that may not be traceable after the inclusion.
- ✓ there are no assessment required at on-site inspection due to the reason that all parameters which are fixed ex-ante are either based on already approved PoA-DD, included CPA-DDs or the applied baseline & monitoring methodology.
- ✓ There are no sampling/survey involved/carried out by CME, which requires assessment on site.
- ✓ As per PoA-DD, LSC was conducted for the earlier included CPA-DD (CPA 00006)/B11/ in Liberia and hence no LSC was required for current CPAs being included.

The validation was performed primarily based on the review of the CPA-DDs /01-b/ ,review of the supporting documentation and web-research. Validation team based on above justification confirms that validation based desk review are sufficient for the purpose of validation. This confirms the requirements of §184 of CDM VVS for PoA (version 02.0) /B01-1/.

C.3. Interviews

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Lohia	Rohit	Environfit International Ltd.	05/03/2019	Baseline scenario and additionality, methodology applicability, eligibility criteria for inclusion of CPAs in the PoA, Technology to be used in the CPAs; CPA implementation; ICS distribution procedure; Record keeping and monitoring plan and ER calculations	Sanjay Kumar Agarwalla Jitendra Mohan Singh

C.4. Sampling approach

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Not Applicable.

No baseline survey has been conducted for the CPA to fix the ex-ante parameters rather CME has used information and data available in public domain to confirm the baseline conditions stated in the methodology AMS II.G (Version 03) /B04/. Validation team confirms that the data source considered for all ex-ante parameters meets the requirements for applied methodology /B04/ and approved revised PoA /B03/.

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	-	01	-
Compliance with CPA-DD form	-	-	-
General description of the CPAs	04	01	-
Application of methodologies and standardized baselines	-	-	-
• Reference to methodologies and standardized baselines	01	-	-
• Project boundary, sources and GHGs		-	-
• Baseline scenario	-	-	-
Estimation of emission reductions	-	-	-
• Equations and parameters applied to calculate GHG emission reductions or net anthropogenic GHG removals	-	-	-
• Data and parameters fixed ex ante	-	03	-
• 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	01	-	-
Monitoring plan	-	-	-
• Data and parameters to be monitored	02	-	-
• Description of the monitoring plan	01	-	-
Start date, crediting period type and duration	02	-	-
Environmental impacts	-	-	-
Local stakeholder consultation	-	-	-
Eligibility for inclusion	-	02	-

Others	-	01	-
Total	11	08	-

SECTION D. Validation findings

D.1. Proposed CPAs and corresponding generic CPAs

Specific-case CPA title and reference number	Version number of the specific-case CPA-DD	Host Party	Generic CPA title, identification/reference number	Version number of the PoA-DD into which the CPA is included
• African Improved Cooking Stoves Programme of Activities CPA - 00013 (Liberia) supported by Republic of Korea • African Improved Cooking Stoves Programme of Activities CPA - 00014 (Liberia) supported by Republic of Korea • African Improved Cooking Stoves Programme of Activities CPA - 00015 (Liberia) supported by Republic of Korea	Each of the CPA-DDs are Version 4.0, dated 29/03/2019	The Republic of Liberia	African Improved Cooking Stoves Programme of Activities–Generic CPA	Version 4.3 , dated 07/06/2014

D.2. Compliance with CPA-DD form

Means of validation	DR, I
Findings	-
Conclusion	Through means of document review and interviews with CME, the validation team considers that the description of the CPAs in the three CPA-DDs (5342-00013, 5342-00014 and 5342-00015) as described in the CPA-DDs /01-b/ is accurate and complete; meets the requirements to be included in the PoA titled “African Improved Cooking Stoves Programme of Activities”/B03/ and correctly apply the baseline and monitoring methodology AMS II. G, Version 03.0 B04/ and requirements of CDM VVS for PoAs (version 02.0) /B01-1/. The validation team confirms that the requirements of the CDM-CPA-DD-FORM filling guidelines /B05/ and section 8.1 of CDM VVS for PoA (version 02.0) /B01-1/ have been appropriately met.

D.3. General description of the CPAs

Means of validation	DR, I
Findings	CL 01, CL 02, CL 03, CL 04 and CAR 02 had been raised and successfully resolved.. Refer to Appendix 4 for further details.
Conclusion	The following description of the proposed component project activities as per CPA-DDs /01-b/ is verified: The CPAs 5342-00013, 5342-00014 and 5342-00015 are developed under the Small-Scale Programme of Activities titled “African Improved Cooking Stoves Programme of Activities”/B03/, which is coordinated and managed by Envirofit International Ltd. The

CPAs of the PoA involve the promotion, distribution and sale of improved Cook Stoves (ICS) in the Republic of Liberia and as per the CPA-DDs /01-b/.

The physical boundary of the CPAs is geographical boundaries of Liberia. Three CPAs are being implemented in host country, Liberia.

The main objective of the PoA and the CPAs is dissemination of improved cooking stoves (ICS) in Liberia. The CPAs shall be implemented using either firewood and charcoal-fired energy efficient stove that would will replace traditional cooking devices – three stones fire, using either firewood or charcoal as fuel with a more efficient cooking stove using also either firewood or charcoal as fuel respectively. The pre-project scenario is the use of woody biomass, which can either be wood-fuel (fuel wood) or charcoal used in the traditional "three-stone" fire or in other conventional low efficient cooking regimes by low-average income households for cooking. This has been confirmed through review of publicly available reports /07/, /B09-15/, /B09-16/ The energy-efficient ICSs to be employed in this CPAs consume less woody biomass (when converted to charcoal) due to their design and technology. The amount of woody biomass that would be saved due to the implementation of the CPAs shall directly translate into reduction of GHG emissions. The CPAs shall also lead to a reduced pressure on forests and woody biomass resources, reduced indoor air pollution associated with use of traditional stoves.

The CPAs' implementer is CERPD Co., Ltd., as confirmed by reviewing the CPA-DDs /01-b/, agreement between the CME and the CPA implementer /12/ and interviews with the representative of the CME. The CME shall be responsible to perform quality control activities for the proposed CPAs and the same has been checked and confirmed by reviewing the CPA-DDs /01-b/ and interviews with the representative of the CME.

CME confirmed that all responsibilities for the physical operation / management of the CPAs shall be borne by the CME (Envirofit International) and DO (Envirofit) together. Thus, as per the PoA-DD/B03/, the responsibilities listed on name of CME will be borne by Envirofit International and DO will be borne by Envirofit. CERPD is rendered as CPA Implementer as the CPAs are getting implemented only because of financial support provided by CERPD. Validation team has checked the agreement/12/ between Envirofit and CERPD and confirms the same.

The Implementation Schedule /22/ for the CPAs is

Sr.No.	Year	No. of stoves to be sold in Liberia
1	2019	10,000
2	2020	8,500

The CPAs are not implemented (at the time of CPA Inclusion validation) and there is no pre-project information that is relevant to the requirements for inclusion of the CPAs that may not be traceable after the inclusion.

It is envisaged that five (05) different models of firewood and charcoal fired ICS with different thermal efficiencies will be deployed within these CPAs. The details of stove models and their respective thermal efficiencies are as:

Sr.No.	Envirofit Stove Model	Efficiencies
1.	SuperSaver GLWood(M5000)	29.7%
2.	Smart Saver Wood(Econofire)	30.2%
3.	Super Saver Charcoal(CH5300)	35.7%
4.	Smart Saver Charcoal(Econochar)	34.3%
5.	GoGrill Saver Charcoal (CH-5200)	36.1%

Thermal Efficiencies of the above mentioned five (05) models of firewood and charcoal fired ICS were verified through review of manufacturer catalogue (Envirofit ICS Catalogue /05/, which is in line with the requirement of footnote 1 of paragraph 1 of applied methodology AMS II.G, Version 03.0.

Efficiency of ICS is taken as 33.2% for ex-ante calculations, is the average efficiency of all five models planned to be deployed under the CPAs and thus is a conservative assumption. Actual ex-post emission reductions attained by these CPAs shall be calculated using a weighted average stove efficiency derived from actual deployment of ICS as indicated in the PoA database. Envirofit International Ltd has designed these ICSs and these have been tested according to Emission Performance Test Protocol (Biomass stove performance and development of an improved testing protocol) developed by Colorado State University /B08/.

The CPAs aim to support sustainable development in the host country of Liberia. This has been confirmed through review of the Letter of Approval /16/ dated 13/05/2013. There are no mandatory policies or regulations mandating the adoption and / or dissemination of ICS in Liberia. In fact, no such policies exist in Liberia according to local knowledge and sectoral expertise of the validation team. Moreover, through document review and interviews, the validation team further reveals there is no mandatory regulation mandating the adoption and /or dissemination of ICS in the host country. Furthermore, based on the review of the LoA /16/, the validation team also confirms voluntary participation of CME. Therefore, the validation team considers the CPAs are a voluntary action by the CPA Implementer.

CPAs are not yet started. The expected start date for the CPAs is 01/04/2019 as stated in the CPA-DDs /01-b/. CME has also provided a letter of confirmation that CPAs have not yet started /03/. The validation team confirms that the start date is after the start date of the PoA. This is in line with the approved revised PoA-DD /B03/ and requirements of §200 CDM VVS for PoAs, version 02.0/B01-1/ and hence deemed acceptable.

No baseline survey has been conducted for the CPAs to fix the ex-ante parameters rather CME has used information and data available in public domain to confirm the baseline conditions stated in the methodology AMS II.G (Version03.0) /B04/. Validation team confirms that the data source considered for all ex-ante parameters meets the requirements for applied methodology /B04/ and approved revised PoA-DD/B03/.

The validation team based on the review of the CPA-DDs /01-b/ and declaration from the CME/08/ confirms that there is no double counting of emission reductions due to the implementation/inclusion of the CPAs, as the CPAs do not belong to or are included in any other PoA or stand-alone CDM project. The validation team has cross-checked this from the UNFCCC website and interviews with representatives of CME and confirms that is no other similar PoA or CDM project occurring in the CPAs area and the CPAs are neither registered as an individual CDM project activity nor is part of another Registered PoA. Furthermore, the validation team based on the review of CPA-DDs /01-b/ and interview with CME representative confirms that in order to avoid double counting, the CME has adopted a provision of a record keeping system as mentioned the CPA-DDs/01-b/. Further, the double-counting risk is prevented by the unique serial number being assigned to each of the stoves to be distributed under the CPAs /11/. The record keeping system for the proposed CPAs under the PoA includes detailed sales information collected from end-user through review of sales receipt template (user agreement) /11/ reveals that it includes the following details of end user households:

User Name
Name of Distributor
Model of cook stoves
Purchase Date
Address of the customer (city/village)
Telephone Number
Type of stove replaced .
Serial number of stove

As per the approved revised PoA-DD/03/, CPAs are aimed at households as the target end users. The ICS models envisaged in the CPA are portable, small micro

	units designed for domestic purpose. Besides, the baseline has been established considering households service level and fixed ex-ante in the CPA-DDs/01-b/. The information from the stove sales receipt template (user agreement)/11/ is to be entered into the CPA distribution records. Double counting of emissions reductions will be avoided because each CPA and each ICS distributed will have a unique identification number. A CPA can be uniquely identified by its identification number allocated in the database and by the serial ID numbers associated with the ICS units that are distributed under that specific CPA. The identification of each ICS distributed is possible through the unique serial number attached to each stove, which will be uniquely assigned to an end user within the CPAs. Furthermore, the sales receipt template (end user agreement)/11/ contains a provision that the carbon credits generated from the use of ICS are transferred to the CME/CPA implementer. CME intend to disseminate about 18,500 stoves (a mix of all models) during the 10 years crediting period; and given that the CPAs would be implemented as described in the CPA-DDs, it is likely to achieve the estimated amount of 457,870 tCO_2e over the crediting period leading to an annual average of 45,787 tCO_2e as indicated in the CPA-DDs/1-b/ and also in ER calculator sheet /02-b/. Duration of the crediting period for all the three CPAs was confirmed to be fixed at 10 years and is as per requirements of § 201 of CDM VVS for PoAs (version 02) /B01-1/. Based on the information furnished by the CME, no ODA contributes to the financing of the three CPAs /10/. No external funding has been secured for the CPAs; the CPAs will be funded by the CME and also through the sales of stoves to the end users. The validation team has checked that the CPAs are not a de-bundled component of large scale project or PoA in line with the Guidelines on assessment of de-bundling for SSC project activities (version 04.0) /B06-3/ and the same has been described/demonstrated in the CPA-DDs /01-b/, checked and confirmed by the validation team. The description of the CPAs as provided in the CPA-DDs /01-b/ is in accordance with the registered PoA-DD /B03/. The validation team confirms that the description of the proposed CPAs in the CPA-DDs is accurate, complete, and provides an understanding of the proposed CPAs. The validation team took cognizance of §185-190 of VVS for PoA (version 02.0) /B01-1/.

D.4. Application of methodologies and standardized baselines

D.4.1. Reference to methodologies and standardized baselines

Means of validation	DR, I
Findings	CL 05 had been raised and successfully resolved. Refer to Appendix 4 for further details.
Conclusion	The validation team has reviewed the CPA-DDs /01-b/ along with relevant supporting documentation provided by the CME in regards to the applicability of the methodology AMS II.G, version 03.0. The compliance of the CPAs to the applicability conditions of the applied baseline and monitoring methodology /B04/ has been mentioned in the CPA-DDs /01-b/. The validation team has reviewed the CPA-DDs along with relevant supporting documentation provided by CME and the assessment (for the requirement to be checked during inclusion of CPAs in the PoA) is provided in Appendix 5. Hence the validation team confirms the applicability of the applied methodology AMS II.G, version 03.0 for the CPAs. This is in conformance with the requirements of §193 of CDM VVS for PoA (version 02.0) /B01-1/.

D.4.2. Project boundary, sources and GHGs

Means of validation	DR, I
Findings	CL 03 had been raised and successfully resolved. Refer to Appendix 4 for further details.
Conclusion	As per the applied methodology AMS II.G (version 03.0), "Energy efficiency measures in thermal applications of non-renewable biomass" /B04/, the boundary of a typical CPA under this PoA confines to "*the physical, geographical sites of the* efficient systems using biomass". The CPA boundary is defined as the geographical area of the host country within which the CPAs will be implemented i.e. Republic of Liberia in this case(as per §3 of the applied methodology). The information has been also correctly given in section B.2 of the CPA-DDs /01-b/. The physical delineation of the CPAs and the description of the emission sources and GHGs that are included in the CPAs boundary are appropriate for the purpose of calculating project and baseline emissions for the CPAs. A leakage factor of 0.95 has been considered to account for use/diversion of non-renewable woody biomass saved under the project activity by non-project households/users that previously used renewable energy sources. The value has been sourced from the default value provided in the applied methodology §13 of AMS II.G (version 03.0) /B04/. The methodology indicates CO_2 as the only GHG emission sources in the baseline as well as project activity in the project boundary. Validation team confirms that the justification provided by the CME is reasonable and evidenced. Besides, there are no other sources, which are impacted by the projects and not addressed by the applied methodology. This is in conformance with § 13 of the applied methodology /B04/ and §194 of CDM VVS for PoAs (version 02.0) /B01-1/.

D.4.3. Baseline scenario

Means of validation	DR, I
Findings	-
Conclusion	For the CPAs, the baseline scenario has been identified in accordance with the § 4 of the methodology AMS II.G Version 03.0 /B04/. As stated in the applied methodology AMS II.G, version 03.0 /B04/ and the CPA-DDs /01-b/, the baseline scenario would be the use fossil fuels for meeting similar thermal energy needs. Thus, the above baseline scenario is considered to be accurate and in conformance with the requirements of § 3 of the applied methodology /B04/ and §195 of CDM VVS for PoAs (version 02.0) /B01-1/.

D.5. Estimation of emission reductions

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

Means of validation	DR, I
Findings	-

Conclusion	The equations and choices provided in the applied methodology /B04/ are correctly quoted in the CPA-DDs /01-b/. The emission reductions of the CPAs of the PoA would be calculated using the formulae mentioned in the applied methodology AMS II.G (Version 03.0) /B04/. The parameters and equations presented in the PoA-DD /B03/, CPA-DDs /01-b/ and ER spread-sheets /02-b/ have been compared with the information and requirements presented in the methodology /B04/. Validation team based on the review of CPA-DDs/01-b/ and the ER spread sheets /02-b/ and other supporting documents, confirms that the formula are correctly presented for the determination of emission reductions at CPA level and the values of the input parameters used are accurate, appropriate and consistent. Thus, the equations and parameters applied to calculate the emission reductions are considered to be accurate and in conformance with the requirements of §197(a) of CDM VVS for PoAs (version 02.0) /B01-1/.

D.5.2. Data and parameters fixed ex ante

Means of validation	DR, I
Findings	CAR 03, CAR 04 and CAR 05 had been raised and successfully resolved. Refer to Appendix 4 for further details.
Conclusion	Ex-ante parameters provided under section B.4.2 of the CPA-DDs /01-b/ are found to be appropriate and in line with the applied methodology AMS II.G (version 03.0) /B04/. Ex-ante parameters of the proposed CPAs are as follows:

Parameter	Description	Verified Value	Verified Source
$Q_{biomass}$	Annual average biomass consumption per appliance	• 2.46 Tonnes/ year for firewood stoves	The value of $Q_{biomass}$ firewood value has been updated based on publicaly available recent data. The references of data are mentioned in ER calculator sheets/02-b/. The value of $Q_{biomass}$ firewood of Liberia has been established as 2.46 tonnes/year, based on firewood consumption data of 2004 which was available till 2004 only. Validation team has checked the UN website/B09-4/ and confirms the same. Thus, the firewood consumption in 2013 has been calculated using UN.org 2013 data for charcoal and converting it to firewood equivalent by multiplying it with a factor of 6 (charcoal of wood conversion factor). The approach is acceptable to the validation team as it gives an annual per capita firewood consumption value of 0.49, which is lower than the default 0.5 per capita per annum firewood consumption value specified by AMS II.G, latest version. With a household size of 5 as reported in DHS 2013/B09-14/, the firewood consumption per annum per household is 2.46 tonnes. Other data parameters like population of Liberia, % population using firewood for cooking, household size etc. is chosen from 2013. Population of Liberia is sourced from World Bank data/B09-11/ and % population using firewood Demographic and Health Survey (2013)/B09-14/. Charcoal consumption data is sourced from

			• 4.19 Tonnes/ year for charcoal stoves	UN Website/B09-5/ which is available upto year 2016, however the other data parameters like population of Liberia, % population using charcoal for cooking, household size etc. are sourced from DHS 2013/B09-14/, which is the latest Demographic Household Study available on the DHS website. Validation team has also reviewed the data availability from other sources and confirms that other data parameters like % population using charcoal for cooking, household size etc. are available only upto 2013. Only population of Liberia is available upto 2017. The $Q_{biomass}$ charcoal value in CPA 0006/B11/ was established as 648 kgs of charcoal per year per household giving a value of 3.89 tonnes per annum per household (using a charcoal to wood conversion factor of 6). However, the value of 648 was calculated by applying a 10% discount to the published value of charcoal consumption/23/. Thus, if the value of 720 kg, as published in Energy Sector I & FF Assessment Report/23/ is converted to wood equivalent (using a factor of 6), the value achieved is 4.32 tonnes per annum per household which is more than that established in proposed CPAs. Thus, $Q_{biomass}$ charcoal established in proposed CPAs is found acceptable. For further details please refer to CAR 03 in Appendix-4.
	$f_{NRB,y}$	Fraction of biomass saved by the project activity in year y, that can be established as non-renewable biomass	0.97	This values in sourced from CPA 00006 /B11/ in accordance with the revised PoA-DD/B03/ of the PoA. The validation team deemed the value to be appropriate and correct.
	$NCV_{biomass}$	Net calorific value of the non-renewable woody biomass that is substituted.	0.015	IPCC default value as per AMS II.G. (Version 03.0) /B04/. The validation team deemed the value to be appropriate and correct.
	$EF_{projected\_fossilfuel}$	Emission factor for the substitution of non-renewable biomass by similar consumers	81.6 tCO_2/ TJ	IPCC default value as per AMS II.G (Version 03.0) /B04/. The validation team deemed the value to be appropriate and correct.
	η_{old}	Efficiency of 3-stone fire or traditional pot support cooking method (system being replaced)	0.10	This value is sourced from Registered/included CPA DD/B11/ of the CPA 00006 (First CPA registered in Liberia). As per registered PoA-DD (page 45)/B03/, 10 years after the addition of the first CPA in the Liberia, the penetration rate shall be

				reassessed according to the latest data available. The validation team deemed the value to be appropriate and correct.
	L	Leakage Adjustment Factor	0.95	Default value as per AMS II.G (Version 03.0) /B04/. The validation team deemed the value to be appropriate and correct.

Thus, the data and parameters fixed ex-ante are considered to be accurate and in conformance with the requirements of §197(b) of CDM VVS for PoAs, version 02.0 /B01-1/.

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

Means of validation	DR, I
Findings	CAR 03, CAR 04 and CAR 05 had been raised and successfully resolved. Please refer to Appendix 4 for further details.
Conclusion	The equations and choices provided in the applied methodology /B04/ are correctly quoted in the CPA-DDs /01/. The emission reductions due to the CPAs have been calculated using the formulae mentioned in the applied methodology AMS II.G (Version 03.0) /B04/ and the approved revised PoA-DD /B03/. The total ex-ante emission reductions resulting from each of the three CPAs for the entire 10 years fixed crediting period is estimated to be 457,870 /02-b/ tCO_2e, leading to an annual average of 45,787 tCO_2e. The validation team reviewed the ER spread-sheets calculations /02-b/ and confirms the same to be correct. The validation team conducted assessment of emission reductions calculation. The parameters and equations presented in the CPA-DDs /01-b/, as well as other applicable documents, have been compared with the information stipulated in the methodology /B04/. The assumptions and data (both ex-ante and ex-post) used to determine the emission reductions are described in the CPA-DDs /01-b/ and all the sources have been checked and confirmed by validation team. Based on the reviewed information, it can be confirmed that the sources used are correctly quoted and interpreted in the CPA-DDs /01-b/. The values in the CPA-DDs /01-b/ are considered to be reasonable based on the documentation and references reviewed, as well as, the result of the interviews. The baseline methodology has been correctly applied according to the requirements.

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

Means of validation	DR, I
Findings	CL 05 had been raised and successfully resolved. Refer to Appendix 4 for further details.
Conclusion	The estimation of ER values is carried out based on equations given in the applied methodology AMS II.G (Version 03.0 /B04/and conforms to the requirements of section 8.3.4 (titled 'Estimation of emission reductions') of CDM VVS for PoAs, version 02.0 /B01-1/. The total ex ante emission reductions resulting from each of the three CPAs for the entire fixed crediting period of 10 years is estimated to be 457,870/02-b/ tCO_2e, leading to an annual average of 45,787 tCO_2e. The validation team reviewed the ER spread-sheets calculations /02-b/ and confirms the same to be correct.

D.6. Monitoring plan

D.6.1. Data and parameters to be monitored

Means of validation	DR, I
Findings	CL 06 and CL 07 had been raised and successfully resolved. Refer to Appendix 4 for further details.
Conclusion	The monitoring plan presented in the CPA-DDs /01-b/ complies with the

requirements of the PoA-DD /B03/ and the applied monitoring methodology /B04/. The validation team has verified all parameters in the monitoring plan against the requirements of the methodology and no deviations have been found.

The validation team through a document review and interviews with the relevant stakeholders has reviewed the procedures. The information provided has allowed the validation team to confirm that the proposed monitoring plan is feasible within the project design. The relevant points of monitoring plan have been discussed with the CME.

The parameters that are to be monitored ex-post are:

Parameter	Data unit	Description	Frequency
$\eta_{new,y}$	%	Efficiency of the device being deployed as part of the project activity in year y	Yearly (or biennially)
N_{all}	Number	Total number of stoves installed	Annually
SOF	Fraction	Stove Operation Fraction – used to determine the share of distributed stoves that are still operating, measured ex-post through sampling	Annually
μ_{old}	Kg/year	The amount of woody biomass consumption that is consumed through the continued use of old stoves	Annually
f_{old}	Fraction	Fraction of end users that are still using baseline stoves	Annually
$Stove_{year}$	Years	Calculated average stove operation years in the monitoring period. If stoves have been operating for 365 days then Stoveyear = 1.0. If less than 365 days, then $Stove_{year}$ is represented as a fraction of 365 (eg. 180 days= 0.5).	Annually

In summary, the parameter(s) to be monitored have been presented correctly according to requirements and are considered in accordance with the applied methodology /B04/ and revised PoA-DD /B03/. This is in conformance with the requirements of §198 (a) of CDM VVS for PoA (version 02.0) /B01-1/.

D.6.2. Description of the monitoring plan

Means of validation	DR, I
Findings	CL 08 had been raised and successfully resolved. Refer to Appendix 4 for further details.

Conclusion	The monitoring plan presented in the CPA-DDs /01-b/ comply with the requirements of the revised PoA-DD /B03/ and the applied monitoring methodology /B04/. The validation team of CCIPL has verified all parameters in the monitoring plan against the requirements of the methodology and no deviations have been found. The validation team through a document review and interviews with the relevant stakeholders has reviewed the procedures. The information provided has allowed the validation team to confirm that the proposed monitoring plan is feasible within the project design. The relevant points of monitoring plan have been discussed with the CME. The responsibilities and institutional arrangements for data collection and archiving have been clearly provided. The information provided in the CPA-DDs /01-b/ could be confirmed based on the interviews and also through the submitted documentary evidence namely CME management manual /06/ covering all requirements as stated in section B.5.1 and B.5.2 of CPA-DDs /01-b/. Based on the same, it can be confirmed that the CME and the CPA implementer will be able to implement the monitoring plan and the achieved emission reductions can be reported ex-post and verified.

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

Means of validation	DR, I
Findings	CL 09 and CL 10 had been raised and successfully resolved. Refer to Appendix 4 for further details.
Conclusion	The CPAs have not yet started. CME has mentioned the expected start date as 01/04/2019. CME has submitted “No Implementation Letter” /03/ confirming that CPAs are not yet started and expected to start from 01/04/2019. The validation team confirms that the start date is after the start date of the PoA. This is in line with the approved revised PoA-DD /B03/ and requirements of §200 CDM VVS for PoAs, version 02 and hence deemed acceptable. In addition, the duration of the crediting period for the CPAs was confirmed to be fixed (10 years) and is as per requirements of § 187 of CDM PS for PoAs, version 02.0 /B01-2/ and §201 of CDM VVS for PoAs, version 02.0 /B01-1/.

D.8. Environmental impacts

Means of validation	DR, I
Findings	CL 11 had been raised and successfully resolved. Refer to Appendix 4 for further details.
Conclusion	As mentioned in the PoA-DD /B03/, the environmental impact analysis is carried out at CPA level. The EIA law of Liberia i.e. An Act Adopting The Environmental Protection and Management Law of Liberia (Approved on 26/11/2002}”/18/ under Annex I list the type of projects for which EIA is required. The project activity i.e. distribution of Improved Cook Stoves (ICS) is not mentioned in Annex I of the document/18/ hence EIA is not required. The same was confirmed through the review of EIA law of Liberia/18/. This is in conformance with the requirements of §210 and §211 of CDM VVS for PoAs, version 02.0 /B01-1/ and deemed appropriate to the validation team.

D.9. Local stakeholder consultation

Means of validation	DR, I
Findings	-.
Conclusion	It has been indicated in the PoA-DD/03/ that the local stakeholder consultation will be conducted for the first CPA in each country and a LSC has already been conducted for the first CPA (5342-0006)/B11/. Hence no separate LSC was conducted for the three CPAs being proposed. This is deemed appropriate in the context of the PoA and is in accordance with the requirement of § 58 of CDM VVS for PoAs, version 02.0. /B01-1/.

D.10. Eligibility for inclusion

Means of validation	DR, I
Findings	CAR 06 and CAR 07 had been raised and successfully resolved. Refer to Appendix-4 for further details.
Conclusion	All the eligibility criteria required for the inclusion of the CPAs under the PoA have been addressed in the CPA-DDs /01-b/. The stated confirmation against each eligibility criteria has been checked / assessed and found acceptable by the validation team and complete assessment is provided in Appendix 7.

SECTION E. Internal quality control

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

SECTION F. Validation opinion

Under the validation (by means of document review and interviews with stakeholders), the validation team considers that the description of CPAs titled "African Improved Cooking Stoves Programme of Activities CPA -00013 (Liberia) supported by Republic of Korea", "African Improved Cooking Stoves Programme of Activities CPA -00014 (Liberia) supported by Republic of Korea" and African Improved Cooking Stoves Programme of Activities CPA-00015 (Liberia) supported by Republic of Korea", as described in the CPA-DDs /01-b/ is accurate and complete; meets the requirements to be included in the PoA titled "African Improved Cooking Stoves Programme of Activities"/B03/ and correctly applies the baseline and monitoring methodology AMS II.G ,Version 03 /B04/.

Standard auditing techniques have been used for the validation of the project. An analysis, as provided by the applied methodology, demonstrates that the proposed CPAs are not a likely baseline scenario. Emission reductions attributable to the CPAs are additional to any that would occur in the absence of the project activity. Given that the CPAs are implemented as designed, the project is likely to achieve the estimated amount of emission reductions as specified within the CPA-DDs /01-b/.

The validation is based on the information made available to CCIPL, as well as the engagement conditions detailed in this report. The validation has been performed following the CDM VVS for PoAs requirements, version 02 /B01-1/.

The validation was executed in the following steps so far:

- Receipt of CPA-DDs /01-a/
- Desk review of CPA-DDs applying AMS II.G "Energy efficiency measures in thermal applications of non-renewable biomass" Version 03.0
- Issue of checklist with corrective action requests (CARs) and clarification requests (CLs) and the draft validation report
- Interview with the CME
- Follow up actions (interviews) for cross checking data
- Review of responses for CARs/CLs
- Issue of the final validation report

The CPAs correctly apply the baseline and monitoring methodology of the PoA namely AMS II.G, version 03.0, "Energy efficiency measures in thermal applications of non-renewable biomass" /B04/.

The validation did not reveal any information that indicates that the CPAs can be seen as a diversion of ODA funding.

The CPA-DDs contain monitoring plan for the monitoring of the emission reductions from the project. The monitoring arrangements described in the monitoring plan are feasible within the project design and it is CCIPL's opinion that the project participants are able to implement the monitoring plan.

By the implementation of improved cooking stoves replacing the traditional cookstoves, the project activity will result in reductions of greenhouse gas (GHG) emissions that are real, measurable and provide long-term benefits to the mitigation of climate change.

During the course of validation, a total of Eight (08) Corrective Action Requests (CARs) and Eleven (11) Clarification Requests (CLs), for the CPAs, were identified on the initially submitted CPA-DDs /01-a/ which have been resolved by the CME.

The single purpose of this report is its use during the inclusion process (of the specific CPAs). The review of the CPA-DDs /01-b/, subsequent follow-up interviews and further verification of references have provided CCIPL, with sufficient evidence to determine the fulfilment of stated criteria in the PoA-DD/B03/ and the CPA-DDs /01-b/. In the opinion of CCIPL, the CPAs meet all relevant UNFCCC requirements for the CDM if the underlying assumptions do not change. CCIPL recommends the three CPAs for inclusion in the registered PoA.

Appendix 1. Abbreviations

Abbreviations	Full Texts
BE	Baseline Emission
CAR	Corrective Action Request
CCIPL	Carbon Check (India) Private Ltd.
CDM	Clean Development Mechanism
CDM EB	CDM Executive Board
CER	Certified Emission Reduction
CPA	Component Project Activity
CPA-DD	Component Project Activity Design Document
CL	Clarification Request
CME	Co-ordinating or Managing Entity
CO_2	Carbon Dioxide
CO_2e	Carbon Dioxide Equivalent
COP/MOP	Conference of Parties/ Meeting of Parties
DNA	Designated National Authority
DOE	Designated Operational Entity
DR	Document Review
EB	Executive Board
EIA	Environmental Impact Assessment
ER	Emission Reduction
FAO	Food and Agricultural Organization
FAR	Forward Action Request
GHG	Greenhouse Gas
GWh	Giga Watt Hours
I	Interview
ICS	Improved cook stoves
IPCC	Intergovernmental Panel on Climate Change
kW	Kilo Watt
kWh	Kilo Watt Hours
L	Leakage
LSC	Local Stakeholder Consultation
MoV	Means of Verification
MoC	Modalities of Communications
MW	Mega Watt
MWh	Mega Watt Hours
NCV	Net Calorific Value
NRB	Non-renewable Biomass
ODA	Official Development Assistance
OSV	On Site Visit
PE	Project Emission
PoA	Programme of Activities
PoA-DD	Programme of Activities design document
PP	Project Participant
PS	Project Standard
SD	Sustainable Development
t	Tonne
UNFCCC	United Nations Framework Convention on Climate Change
VVS	Validation and Verification Standard

Appendix 2. Competence of team members and technical reviewers

Carbon Check (India) Private Ltd.

Sanjay Agarwalla

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

For following functions:

Validator	☒	Team Leader	☒	Technical reviewer	☒
Verifier	☒	Technical Expert	☒	Local Expert[1]	☒

In the following Technical Areas:

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

Mr. Vikash Kumar Singh
Compliance Officer

Mr. Amit Anand
CEO

Date of Approval
24/12/2018

Valid Till
23/12/2019

Revision History of the Document

26/12/2014	Initial Adoption
24/12/2015	Annual Revision
20/01/2016	Interim Revision for office address change
23/12/2016	Annual Revision
24/12/2017	Annual Revision
24/12/2018	Annual Revision

[1] India

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Jitendra Mohan Singh

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For following functions:

Validator	☒	**Team Leader**	☐	**Technical reviewer**	☐
Verifier	☒	**Technical Expert**	☒	**Local Expert[1]**	☒

In the following Technical Areas:

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

Mr. Vikash Kumar Singh
Compliance Officer

Mr. Amit Anand
CEO

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Anubhav Dimri

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For following functions:

Validator	☒	Team Leader	☒	Technical reviewer	☒
Verifier	☒	Technical Expert	☒	Local Expert[1]	☒

In the following Technical Areas:

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

Mr. Vikash Kumar Singh
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CEO

Date of Approval
24/12/2018

Valid Till
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24/12/2017	Annual Revision
24/12/2018	Annual Revision

[1] India, South Africa

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Appendix 3. Documents reviewed or referenced

No.	Author	Title	References to the document	Provider
/01/	Envirofit International	a) Initial CPA-DDs: 5342-00013, 5342-00014, 5342-00015	Version 1.0, dated 20/11/2018	CME
		b) Final CPA-DDs: 5342-00013, 5342-00014, 5342-00015	Version 4.0, dated 29/03/2019	
/02/	Envirofit International Ltd.	a) Emission reduction calculation spread-sheets corresponding to /01-a/	Version 1.0, dated 20/11/2018	CME
		b) Emission reduction calculation spread-sheets corresponding to /01-b/	Version 4.0, dated 29/03/2019	
/03/	Envirofit International Ltd.	No Implementation Confirmation Letter issued by Envirofit International Ltd.	Dated: 06/03/2019	CME
/04/	Relevant country Govt. Authority	Certificate of Incorporation of the CPA implementer (CERPD Co., Ltd.)	-	CME
/05/	Envirofit International Ltd.	Envirofit ICS Catalogue: Evidence for the technical specifications of the ICS to be distributed in the CPAs including the project lifetime	-	CME
/06/	Envirofit International Ltd.	PoA Management / CME manual, version 1.1	Dated 31/12/2018	CME
/07/	Growing Forests Partnership	“Charcoal Shortage in Monrovia” by Yurfee B. Shaikalee	-	CME
/08/	Envirofit International Ltd.	A self-declaration from CME stating that the CPAs are not registered as any other individual CDM projects and are not CPAs in any other PoA		CME
/09/	Environfit International Ltd.	Warranty information note		CME
/10/	Envirofit International Ltd.	A self-declaration from the CME confirming that the CPAs do not use any investment which leads to diversion of ODA funds	Letter dated 06/03/2019	CME
/11/	Envirofit International Ltd.	Sample template of sales receipt (End User Agreement) with technology supplier and owner of each individual ICS clearly indicating the transfer of right of carbon credits to CME (eligibility criterion number 2 for avoiding double counting)	--	CME
/12/	Envirofit International	Agreement in between CME (Envirofit International Ltd.) and CPA implementer (CERPD Co., Ltd.)	Dated:01/11/2018	CME

/13/	Envirofit International Ltd.	Local Stakeholder Consultation Report a) Documents pertaining to Local Stakeholder Consultation (LSC): LSC Report b) List of attendees c) Meeting notes		CME
/14/	Ministry of Foreign Affairs (Republic of Liberia),Monrovia	An Act Adopting the Environment Protection and Management Law of the Republic of Liberia: November 2002.	26/11/2002	CME
/15/	Envirofit International Ltd	Training Manual for Accessing and Entering Data into Sales Order Data Entry Forms African Improved Cooking Stoves of Programme of Activities	-	CME
/16/	Envirofit International Ltd	LoA of Environmental Protection Agency, Republic of Liberia	Ref. No. ED/EPA-01/0508/13/RL dated 13/05/2013	CME
/17/	Envirofit International Ltd	CDM – SSC WG: Default values of fraction of non-renewable biomass for Parties with 10 or less registered CDM project activities as of 31 December 2010 (Annex 14 of 37th Meeting Report)	-	CME
/18/	FAO	Global Forest Resources Assessment report (2015) Country Report Liberia	-	CME
/19/	Ministry of Lands, Mines and Energy (MLME), Liberia	National Renewable Energy Action Plans(NREAPs) Liberia (Jun 2015)	Jun 2015	CME
/20/	CDM EB	Default values of fraction of non-renewable biomass for Least Developed Countries and Small Island Developing States (Annex 22 of EB 67)		
/21/	Ministry of Labour	Liberia Labour Force Survey 2010 report	Published in Feb 2011	CME
/22/	Envirofit International Ltd.	PoA 5342 Implementation plan	-	CME
/23/	UNDP	Assessment of Investment and Financial Flows to Mitigate Climate Change in the Energy Sector in Liberia (p.13 & P.18)	2011	CME
/B01/	UNFCCC	1. CDM Validation and Verification Standard for Programme of Activities (Version 02.0). 2. CDM Project Standard for Programme of Activities (Version 02.0) 3. CDM Project Cycle Procedure for Programme of Activities (Version 02.0)	http://cdm.unfccc.int/	UNFCCC

/B02/	UNFCCC	UNFCC project page weblink: For the PoA 5342: https://cdm.unfccc.int/ProgrammeOfActivities/poa_db/4R62VM8H3CFJDZTAXYQEL7I19NBPWO/view	http://cdm.unfccc.int/	UNFCCC
/B03/	Envirofit International Ltd	Approved Revised PoA-DD version 4.3, dated 07/06/2014 (PoA reference number 5342)	http://cdm.unfccc.int/	UNFCCC
/B04/	UNFCCC	AMS II.G (Version 03.0): Energy efficiency measures in thermal applications of non-renewable biomass	http://cdm.unfccc.int/	
/B05/	UNFCCC	1. Component project activity design document form for CDM component project activities (CDM-CPA-DD-FORM), (Version 08.1) 2. Instructions for filling out the component project design document form for CDM component project activities (Version 08.1)	http://cdm.unfccc.int/	UNFCCC
/B06/	UNFCCC	PoA Specific guidelines / standards / Forms published by UNFCCC: 1. PoA Standard: Demonstration of additionality, development of eligibility criteria and application of multiple methodologies for programme of activities (version 3.0) 2. Standard for Sampling and Surveys for CDM Project Activities and Programme of Activities (EB 69, Annex 4) 3. Guidelines on assessment of debundling for SSC project activities (Version 04.0) 4. Guidelines on the demonstration of additionality of small-scale project activities Version 09.0); Annex 27, EB 68	http://cdm.unfccc.int/	UNFCCC
/B07/	UNFCCC	Glossary of CDM terms (version 09.1)	http://cdm.unfccc.int/	UNFCCC
/B08/	SHEL & Envirofit	Emission Performance Test Protocol (Biomass stove performance and development of an improved testing protocol) developed by Colorado State University	-	CME

/B09/	1.UNFCCC 2. Google 3.IPCC 4. UN 5.UN 6.FAO 7.Envirofit 8.EECL 9.FAO 10FAO 11.World Bank 12.World Bank 13.LISGIS 14LISGIS 15.GEF/SGP 16.- 17. World Bank 18.FAO 19.IEA 20. FAO	Website Referred: 1. UNFCCC 2. Google Earth: 3. IPCC 4. UN data: Firewood Consumption(2004) 5. UN Data: Charcoal Consumption(2013) 6. FAO Data: Density of wood 7. Envirofit: 8. Engines and Energy Conversion Laboratory: 9. Food and Agriculture Organization of The United Nations: 10. Food and Agriculture Organization of The United Nations: FAO Forestry Paper (163): Global Forest Resources Assessment 2010 11. World Bank: Liberia Population (2017) 12. Word Bank Data:Liberian Population (2013) 13. Liberia Demographic and Health Survey 2007 14. Liberia Demographic and Health Survey 2013 15. Africa Adapt: Project Concept for a GEF/SGP Grant: Introducing Solar Cookers, Water Pasteurization Indicators, Improved Cookstoves, and Solar Lanterns in Liberia 16. Planning and implementation of gender activities of the MLME-NVE institutional cooperation program In Liberia – Best Practice: Challenges and Entry Points (Annex 8) 17.Liberia:Country Forest Notes 18 Food and Agriculture Organization of The United Nations: Global Forest Resources Assessment 2010: Country Report – Liberia. 19. International Energy Agency–Energy Access Outlook 2017 TABLE 5-A: LIBERIA CHARCOAL PRICES, Woodfuel review and assessment in Liberia	1.www.cdm.unfccc.int 2. http://www.google.com/earth/ 3. : www.ipcc.ch 4. http://data.un.org/Data.aspx?d=EDATA&f=cmID%3AFW%3BtrID%3A1231 5. http://data.un.org/Data.aspx?d=EDATA&f=cmID%3ACH 6. http://www.fao.org/docrep/013/i1756e/i1756e00.pdf 7. http://www.envirofit.org 8. http://www.eecl.colostate.edu 9. http://www.fao.org/docrep/013/i1756e/i1756e00.pdf 10. http://www.fao.org/3/i1757e/i1757e00.htm 11. https://data.worldbank.org/indicator/SP.POP.TOTL?locations=LR 12. https://data.worldbank.org/indicator/SP.POP.TOTL?locations=LR 13. https://dhsprogram.com/pubs/pdf/FR201/FR201.pdf 14. https://dhsprogram.com/pubs/pdf/fr291/fr291.pdf 15. http://www.africa-adapt.net/projects/156/ 16. https://research.utwente.nl/en/publications/planning-and-implementation-of-gender-activities-of-the-mlme-nve- 17. http://documents.worldbank.org/curated/en/233271527176589175/pdf/126565-Revised-WP-P164105-PUBLIC.pdf 18. http://www.fao.org/3/al551e/al551e.pdf 19. https://www.iea.org/newsroom/energysnapshots/average-number-of-hours-spent-collecting-fuel-per-day-per-household.html 20. http://www.fao.org/docrep/004/x6793e/X6793E10.htm#TopOfPage	-

/B10/	UNFCCC	Standard: Standard for sampling and surveys for CDM project activities and Programme of Activities, version 07.0	http://cdm.unfccc.int/	UNFCCC
/B11/	UNFCCC	African Improved Cooking Stoves Programme of Activities – CPA 00006 (Liberia)	http://cdm.unfccc.int/ProgrammeOfActivities/cpa_db/ILV1YG4H9TOZMBCUD3KAN5FJ8W2QR6/view	UNFCCC

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

Table 1. CLs from this validation

CL ID	01	**Section no.**	D.3	**Date:**21/01/2019
Description of CLs.				
CME has mentioned that CERPD participates in the CPA as the CPA implementer (CPAI) and Distributing Organization (DO). CME is requested to mention full name of the CERPD at least in once place in CPA-DDs				
CME response				**Date:**18/02/2019
CERPD is the CPA Implementer for CPA and Envirofit is the Distributing Organization. The full name of the CERPD is CERPD Co., Ltd. The CPA-DDs have been revised to mention full name of CERPD in section A.1				
Documentation provided by CME				
CERPD Business Registration Certificate Revised CPA-DDs				
DOE assessment				**Date:**20/03/2019
CME has updated the name of CPA Implementer "CERPD Co., Ltd." in revised CPA-DDs. Validation team has reviewed the CERPD Business Registration Certificate and confirms the same. Validation team has also reviewed the Agreement for CPA Implementation between Envirofit International Ltd and CERPD Co.. Ltd. The same has also been verified through the approved Modalities of communication at UNFCCC web site. Hence CL is closed.				

CL ID	02	**Section no.**	D.3	**Date:** 21/01/12019
Description of CL				
CME is requested to provide evidence of all the references used in support of baseline scenario in section A.1 of CPA-DDs.				
CME response				**Date:** 27/02/2019
All the references used in support of baseline scenario in section A.1 of Liberia CPA-DDs are being submitted.				
Documentation provided by CME				
1. Liberia: Country Forest Note, The World Bank Report, January, 2018 2. Liberia Demographic and Health Survey 2013 Report, published in August 2014 3. Liberia, National Renewable Energy Action Plans (NREAPs), June 2015				
DOE assessment				**Date:**20/03/2019
CME has provided the soft copy of above references and also updated the CPA-DDs. Validation team has reviewed the Liberia: Country Forest Note, The World Bank Report, January 2018 and confirms that the deforestation rate is estimated to be 0.46% per year during 2005 to 2015 as per latest data available. Furthermore, validation team has reviewed "Liberia Demographic and Health Survey 2013 Report, published in August 2014" and confirms that 98.0% of the households use solid fuel for cooking with wood being the primary source of solid fuel (54.1 % of household use). In rural areas, 90.2% household use firewood while 9.1% use coal/charcoal and in urban areas, 70.3% of household use coal/charcoal while 26.5% of households uses firewood for cooking. As per the Liberia National Renewable Energy Action Plans (NREAPs), the share of population use improved cook stove is only 15%. The same was verified through the publicly available report Liberia, National Renewable Energy Action Plans (NREAPs), June 2015. Hence CL is closed.				

CL ID	03	**Section no.**	D.3	**Date:** 29/01/12019
Description of CL				
CME has proposed to distribute 3,400 ICS units during 2018 and 10,000 ICS units during 2019 under CPA-DDs 000013 to CPA-DDs 000015. CME is requested to provide the implementation plan and status for the CPAs as on date. Also, the database for the stove distribution shall be provided to check the compliance with the PoA-DD.				
CMEresponse				**Date:**27/02/2019
The proposed implementation plan for each CPA is given under section A.1 of the revised CPA-DDs. The CPA in Liberia has not started yet.				
Documentation provided by CME				

Revised CPA-DDs
DOE assessment **Date:**20/03/2019
CME has revised the implementation plan in Section A.1 of the CPA-DDs. CME has proposed to distribute 12,400 stoves in each CPAs as follows: 2019–10,000 ICS units 2020- 8,500 ICS units Validation team confirms through interview of CME representative that proposed CPAs have not yet started. Hence CL is closed.

CL ID	04	**Section no.**	D.3.	**Date:**29/01/2019
Description of CL				
In section F of the CPA-DDs, under eligibility criterion #9, it has been stated that the end-user groups for the CPA are households. CME shall provide documentary evidences to substantiate the same.				
CMEresponse				**Date:**27/02/2019
Please refer the ICS catalogue shared. The size of the ICS in the catalogue is clearly mentioned as Household confirming that stoves envisaged in the CPA are designed for household usage only. Additionally, refer to the Stove User agreement – It mandates capturing the information of the household that will be using the stove thus ensuring that ICS distributed in the CPA are target group in the CPA is households.				
Documentation provided by CME				
ICS catalogue Template Stove user agreement Revised CPA-DD				
DOE assessment				**Date:**20/03/2019
CME has provided ICS Envirofit Catalogue and stove user agreement template as supporting evidence. Validation team has reviewed the technical specification in Catalogue and found that stoves are designed for households. Validation team has also checked the stove user agreement template where information has been captured for the households only. Thus, on the basis of review of catalogue, stove user agreement template, validation team confirms that end user groups are households. Hence, CL is closed.				

CL	05	**Section no.**	D.4.1	**Date:**29/01/2019
Description of CL				
In Sec B.1 of the CPA-DDs, web link of the applied methodology in CPA-DD is giving error. Also, Web link (reference 10) under eligibility criterion #4 is giving error. CME should update the link in all CPA-DDs.				
CMEresponse				**Date:**27/02/2019
All the weblinks given in the CPA-DDs have been updated. The revised CPA-DDs are being submitted.				
Documentation provided by project participant				
CPA-DDs Revised CPA-DDs				
DOE assessment				**Date**:20/03/2019
CME has updated the web links in the revised CPA-DDs. CL is closed.				

CL ID	06	**Section no.**	D.6.1	**Date:**29/01/2019
Description of CL				
In Section B.5.1 (page 14) of the CA-DDs, the amount of woody biomass consumption that is consumed through the continued use of old stoves is considered as 232.5 kg/year for Liberia. CME to further clarify how this value was obtained?				
CME response				**Date:**27/02/2019
The amount of woody biomass consumption that is consumed through the continued use of old stoves is 250.18 kg/year for Liberia in the revised CPA-DD. The amount of woody biomass consumption that is consumed through the continued use of old stoves (μ_{old}) is assumed ex-ante as 5% of average annual biomass consumption in a household. The average biomass consumption for Liberia is 5,004 kg/household/year hence it has been calculated as 250.18 kg/year (0.05*5,004) for Liberia. Ex-post this parameter shall be monitored as per the registered monitoring plan				
Documentation provided by CME				
CPA-DDs Revised CPA-DDs **ER Calculator**				

Revised ER calculator sheet
DOE assessment **Date**:20/03/2019
CME has updated the amount of woody biomass consumption that is consumed through the continued use of old stoves(μ_{old}) as 250.18 kg/year in the revised CPA-DDs. The value of μ_{old} is assumed ex-ante 5% of average annual biomass consumption in a household. . The same is deemed appropriate for ex-ante calculations.CME has calculated the average biomass consumption for Liberia is 3,322 kg/household/year which is average of $Q_{biomass-}$ Firewood and $Q_{biomass-}$ charcoal established in the CPA-DDs. Thus, the value was calculated to be 166.10 kg/year (0.05*3,322kg/household/year). Moreover, ex-post this parameter shall be monitored as per registered monitoring plan. DOE as checked the ER calculator and confirmed the same and found acceptable. Hence CL is closed.

CL ID	07	**Section no.**	D.6.1	**Date:**29/01/2019
Description of CL				
In section B.5.1 of CPA-DDs, CME has used a value of 33.2% for the parameter η_{new} **(**Efficiency of the system being deployed as part of the project activity) whereas the CPAs intend to distribute 4 different types of ICS within the CPAs. Clarification is requested.				
CME response				**Date:**27/02/2019
The ex-ante value of 33.2 % for$\eta_{new,y}$(Efficiency of the device being deployed as part of the project activity in year y) used in the CPA-DDs is average value of five ICS models proposed to be distributed in the CPAs. Ex-post, the value of $\eta_{new,y}$ shall be determined as weighted average of various ICS models distributed in the CPA.				
Documentation provided by project participant				
CPA-DDs Revised CPA-DDs. **ER Calculator** Revised ER calculator sheet.				
DOE assessment				**Date:**20/03/2019
CME has considered the ex-ante value of 33.2 % for $\eta_{new,y}$ (Efficiency of the device being deployed as part of the project activity in year y) which is average value of five ICS models proposed to be distributed in CPAs. The efficiencies of stoves are given in ER calculator sheet. The efficiencies of the ICS has been validated through the review of Envirofit ICS Catalogue and ER calculator sheet and found reasonable. Ex-post, the value of $\eta_{new,y}$ shall be determined as weighted average of various ICS models distributed in the CPA by estimation of a representative sample of end users using the deployed ICS, as conducted in line with the PoA Sampling Plan. Hence CL is closed.				

CL ID	08	**Section no.**	D.6.2	**Date:**29/01/2019
Description of CL				
CPA-DDs do not provide monitoring plan in detail in section B.5.3 in line with the PoA-DD.				
CME response				**Date:**27/02/2019
The monitoring plan in section B.5.3 of the CPA-DDs has been revised.				
Documentation provided by CME				
Revised CPA-DDs.				
DOE assessment				Date:20/03/2019
CME has included the monitoring plan in Section B.5.3 of the CPA-DDs which is in line with the PoA-DD. CL is closed.				

CL ID	09	**Section no.**	Section D.7	**Date:**29/01/2019
Description of CL				
CME has considered start date of CPAs as 20/10/2018 i.e. the date of first shipment of ICS to be distributed. CME shall provide the supporting document of start date of all the CPAs under consideration for validation.				
CMEresponse				**Date:**27/02/2019
The CPA in Liberia has not started yet. It is expected to start on 15/03/2019. A declaration for is being submitted.				
Documentation provided by CME				
Declaration				
DOE assessment				**Date:**20/03/2019
In the revised CPA-DDs submitted, CME has stated the expected start date of the CPAs as 01/04/2019. The CL remains open.				
CME response				**Date: 22/03/2019**

The revised declaration is being submitted
Documentation provided by CME
Declaration
DOE assessment **Date:**26/03/2019
CME has submitted a declaration letter in support of start date of CPAs stating that the expected start date is 01/04/2019. Hence CL is closed.

CL ID	10	**Section no.**	D.7	**Date:**29/01/2019
Description of CL				
CME is requested to update the start date of crediting period in Section C.3.2 of the CPA–DDs considering the current status of validation.				
CMEresponse				**Date:**27/02/2019
The start date of crediting period has been updated to 15/03/2019 in section C.3.2 of the CPA-DDs.				
Documentation provided by CME				
Revised CPA-DDs.				
DOE assessment				**Date:**20/03/2019
In the revised CPA-DDs submitted, CME has stated the expected start date of the crediting period as 01/04/2019. The CL remains open.				
CME response				**Date: 22/03/2019**
A revised declaration is being submitted				
Documentation provided by CME				
Declaration				
DOE assessment				**Date:**26/03/2019
CME has submitted a declaration letter in support of start date of crediting period stating that the expected start date is 01/04/2019. Accordingly, start date of crediting period has been updated in Section C.3.2 of CPA-DDs. Hence CL is closed.				

CL ID	11	**Section no.**	D.8	**Date:**29/01/2019
Description of CL				
In section D.1 of CPA-DDs, it is mentioned that EIA is not required for all CPAs proposed for inclusion in PoA under consideration for validation. CME is requested to provide the copy of Act adopting the environment protection and management law of the republic of Liberia (2002) to substantiate the same.				
CME response				**Date:**27/02/2019
Liberia does not require an Environmental Impact Assessment (EIA) for the proposed distribution of ICS as the project activity is not listed under the Act adopting the environment protection and management law of the republic of Liberia (2002) hence EIA is not deemed required. The act adopting the environment protection and management law of the republic of Liberia (2002) is being submitted.				
Documentation provided by project participant				
The Environment Protection and Management Law of the Republic of Liberia (2002)				
DOE assessment				**Date:**:20/03/2019
CME has provided the copy of the Act i.e. An Act Adopting The Environment Protection and Management Law of the republic of Liberia. The EIA law of Liberia i.e., “An Act Adopting The Environment Protection and Management Law of The Republic Of Liberia (Approved on 26/11/2002)” under Annex I lists the type of projects for which EIA is required. The project activity i.e., distribution of Improved Cook Stoves (ICS) is not mentioned in Annex I of the document and hence no EIA is required. The same was confirmed through review of EIA law of Liberia. Hence CL is closed.				

Table 2. CARs from this validation

CAR ID	01	**Section no.**	D.1	**Date:** 29/01/12019
Description of CAR				
CME has mentioned the title and reference number of the corresponding generic CPAs on cover page of CPA-DDs i.e. “African Improved Cooking Stoves Programme of Activities‑Generic CPA and sourced from Part II of revised PoA-DD version 4.3 dated:07/06/2014”. However, the same is not found in part II of revised PoA-DD version 4.3, dated: 07/06/2014. CME shall clarify the source of title and reference number of the corresponding generic CPA.				

CME response	Date: 27/02/2019
The title of the PoA is “African Improved Cooking Stoves Programme of Activities”. The generic component of CPA is available under Part II of the revised PoA-DD version 4.3 dated 07/06/2014. Therefore, the title and reference number of the corresponding generic CPA is mentioned as “African Improved Cooking Stoves Programme of Activities – Generic CPA, Part II of revised PoA-DD version 4.3 dated 07/06/2014. The generic CPA-DD is available at: https://cdm.unfccc.int/ProgrammeOfActivities/poa_db/4R62VM8H3CFJDZTAXYQEL7I19NBPWO/view	
Documentation provided by CME	
Revised CPA-DDs.	
DOE assessment	**Date:** 20/03/2019
The title of the PoA is “African Improved Cooking Stoves Programme of Activities”. The Generic component of CPA is available in Part II of the revised PoA-DD version 4.3 dated 07/06/2014. The CME has provided the link of Generic CPA-DD. Moreover, in PoA-DD there was no option to mention the tile of the corresponding generic CPA-DD in the template PoA-DD, Version 02.0 (EB 66,Annex 13) . Hence CAR is closed.	

CAR ID	02	Section no.	D.3	Date:29/01/2019
Description of CAR				
In section A.2 of CPA-DDs, unique identification such as geographical coordinates is not provided. CME shall clarify how Section A.2 of CPA-DDs comply the requirement of instructions for filling in section A.2 of CPA-DD Form.				
Project participant response				**Date:**27/02/2019
The GPS coordinates for Liberia has been added in section A.2 of the revised CPA-DDs.				
Documentation provided by CME				
Revised CPA-DDs.				
DOE assessment				**Date:**20/03/2019
CME has updated the GPS coordinate in Section A.2 of the revised CPA-DDs. CAR is closed.				

CAR ID	03	Section no.	D.5.2	Date:29/01/2019
Description of CAR				
In Sec B.4.2 of the CPA-DDs, parameter fixed ex ante, like biomass consumption per appliance has been sourced from CPA 6. CME needs to provide supporting evidences and spreadsheet. Further, annual biomass consumption per appliances ($Q_{biomass}$), is based on historical data, PoA-DD states that If credible new data becomes available after having established the baseline values in the first CPAs (either on the basis of literature values or surveys), then future CPAs shall use such updated data to define the baseline consumption value. CME shall confirm whether new data is available or not.				
CME Response				**Date:**27/02/2019
The $Q_{biomass}$ (annual average biomass consumption per appliance) has been updated based on the available literatures.				
Documentation provided by CME				
CPA-DDs Revised CPA-DDs. **ER Calculator** Revised ER calculator sheet.				
DOE assessment				**Date:**20/03/2019
For the value of per capita fire wood / charcoal consumption, CME has sourced data from the web site http://data.un.org/Data.aspx?d=EDATA&f=cmID%3AFW%3BtrID%3A1231” as the latest available data. But it is seen that the stated web site provides data upto the year 2016. Furthermore, for the ex-ante estimation of the emission reductions, CME has used the average value of $Q_{biomass}$ for firewood and charcoal. CME needs to clarify the methodology to be used for ex-post calculation of emission reductions for the firewood and charcoal fired stoves. The CAR remains open.				
CME response				**Date:22/03/2019**
Although the per-capita charcoal consumption, sourced from UN.org is available upto year 2016, the other data parameters like population of Liberia, % population using charcoal for cooking, household size etc. are soured from DHS 2013 which is the latest Demographic Household Study available. Thus, UN.org data pertaining to vintage same as that of DHS 2013 was selected for correct determination of $Q_{biomass}$Charocal. On the other hand, for firewood, the UN.org data provides firewood consumption value till 2004 only and no more recent data after 2004 is available. There have been 3 DHS surveys conducted in Liberia, in 1986,				

2007 and in 2013. The 1986 data is deemed too old to use, thus CME had an option to either use 2007 data or 2013 data from DHS Surveys to calculate the $Q_{biomass}$ firewood. The CME calculated the $Q_{biomass}$ firewood using both data vintages and found that 2013 dataset provides conservative outcome. Thus DHS 2013 instead has been used for establishing $Q_{biomass}$ firewood.

The average value of $Q_{biomass}$ for firewood and charcoal has been used for ex-ante calculations only. The CPA-DD however, in section, B.4.2 establishes the value for charcoal and biomass separately and shall be using the values corresponding to the fuel type (i.e. $Q_{biomass}$ for firewood stoves will be taken as 2.46 and for charcoal stoves will be taken as 4.19 separately as applicable).

Documentation provided by CME

Comparative Analysis $Q_{biomass}$ – Firewood

DOE assessment **Date:**31/03/2019

The value of $Q_{biomass}$ (annual average biomass consumption per appliance) which was established in first CPA (5342-0006) using latest country's data. The update of data has resulted in value higher than established value in CPA 0006. This is not deemed under control of CME and is dependent on demographical changes in the concerned country.

Description	Existing CPA-DD value (tonnes per year)	Proposed CPA-DD value (tonnes per year)
$Q_{biomass}$ Firewood	no existing CPA for firewood stoves	2.46
$Q_{biomass}$Charcoal	3.89	4.19

$Q_{biomass}$ Firewood of Liberia,the value has been established as 2.46 tonnes/year/ household. For firewood, the UN.org data provides firewood consumption value till 2004 only and no more recent data after 2004 is available. Validation team has checked the UN website (http://data.un.org/Data.aspx?d=EDATA&f=cmID%3AFW%3BtrID%3A1231) and confirms the same. Therefore, the firewood consumption in 2013 has been calculated using UN.org 2013 data for charcoal and converting it to firewood equivalent by multiplying it with a factor of 6 (charcoal of wood conversion factor). The approach is deemed conservative as it gives an annual per capita firewood consumption value of 0.49, which is lower than the default 0.5 per capita per annum firewood consumption value specified by applied methodology AMS II.G., Version 03.0.. With a household size of 5 as reported in DHS 2013, the value the firewood consumption was estimated as 2.46 tonnes/year/ household. Other data parameters like population of Liberia, % population using firewood for cooking, household size etc. is chosen from 2013. Population of Liberia is sourced from World Bank data(https://data.worldbank.org/indicator/SP.POP.TOTL?locations=LR) and % population using firewood Demographic and Health Survey (2013).The validation team has checked sources and found correct.
The DHS Study 2013 Liberia has been implemented by the Liberia Institute of Statistics and Geo-Information Services (LISGIS) Monrovia, Liberia and Ministry of Health and Social Welfare) i.e. Government of Liberia. The study presents data after interviews from ~9300 households in Liberia and is deemed a comprehensive and credible study as at date, on demographics and health in Liberia.

Charcoal consumption data is sourced from UN Website,(http://data.un.org/Data.aspx?d=EDATA&f=cmID%3ACH) which is available upto year 2016, however the other data parameters like population of Liberia, % population using charcoal for cooking, household size etc. are soured from DHS 2013, which is the latest Demographic Household Study available on DHS website. Validation team has also reviewed the data's availability from other sources too and confirms that other data parameters like % population using charcoal for cooking, household size etc. are available only upto 2013. Only population of Liberia is available upto 2017.

The $Q_{biomass}$ charcoal value in CPA 0006 was established as 648 kgs of charcoal per year per household giving a value of 3.89 tonnes per annum per household (using a charcoal to wood conversion factor of 6).
However, the value of 648 was calculated by applying a 10% discount to the published value of charcoal consumption (ENERGY SECTOR I&FF ASSESSMENT REPORT, UNDP 2010 (p.13)). Thus, if the value of 720 Kg,as published in ENERGY SECTOR I&FF ASSESSMENT REPORT is converted to wood equivalent (using a factor of 6), the value achieved is 4.32 tonnes per annum per household which is more than that established in proposed CPAs. Thus, $Q_{biomass}$ charcoal established in proposed CPAs is found acceptable.
The average value of $Q_{biomass}$ for firewood and charcoal has been used for ex-ante calculations only. Ex-post the values will be used separately for firewood and charcoal stoves (based on stove sales) for ER calculations.
Hence CAR is closed

CAR ID	04	Section no.	D.5.2	Date:29/01/2019

Description of CAR	
In the submitted CPA-DDs, CME has used the value f_{NRB} value of 0.97 in the CPAs 000013,000014,000015 has expired on 16 April 2017. Hence, suitability of the value i.e. 0.97 used for parameter $\mathbf{f_{NRB,y}}$ needs to be justified.	
CME response	**Date:**27/02/2019
As per registered PoA-DD, page number 44, for subsequent CPAs, the $f_{NRB,y}$ value established in the first CPA in that country shall apply, unless the default value has changed. In case no default value is available, 10 years after the addition of the first CPA in the country, the $f_{NRB,y}$ value has to be updated according to the latest data available. Thus, the parameter value fixed ex-ante in CPA 00006 for Liberia is deemed valid.	
Documentation provided by project participant	
CPA-DDs Revised CPA-DDs. **ER Calculator** Revised ER calculator sheet.	
DOE assessment	**Date:**20/03/2019
CME has used ex-ante f_{NRB} value 0.97 which established in CPA-00006. As per registered PoA–DD (page 44), the f_{NRB} value established in the first CPA in that country shall apply for subsequent CPAs, unless the default value has changed. In case no default value is available, 10 years after the addition of the first CPA in the country, the f_{NRB} value has to be updated according to latest data available. The first CPA in Liberia under the PoA is CPA-00006 and the inclusion date is 31/12/2014. Thus, f_{NRB} value fixed ex-ante is deemed reasonable and valid. Hence, CAR is closed.	

CAR ID	05	Section no.	D.5.2	Date:29/01/2019
Description of CAR				
In section B.4.2 of the CPA-DDs, suitability of the value used for parameter $\mathbf{\eta_{old}}$ needs to be justified. Further, CME needs to provide the evidence sources for "η_{old}".				
CME response				**Date:**27/02/2019
This value has already been established in CPA 00006 (first CPA in Liberia) by determining the penetration of improved stoves based on national statistics/literature data. As per page 45 of registered PoA-DD, 10years after the addition of the first CPA in a country, the penetration rate shall be reassessed according to the latest data available. Hence the parameter value fixed ex-ante in CPA 5342-0006 is deemed valid.				
Documentation provided by CME				
CPA-DDs Revised CPA-DDs. **ER Calculator** Revised ER calculator sheet.				
DOE assessment				**Date:**20/03/2019
The value used for the parameter "η_{old}" is established in CPA00006 which is the first CPA in Republic of Liberia the PoA by determining the penetration of improved stoves based on national statics/literature data. As per registered PoA-DD, 10 years after the addition of the first CPA in a country, the penetration rates shall be reassessed according to the latest data available. The first CPA in Liberia under the PoA is CPA-0006 and the inclusion date is 31/12/2014. Thus, η_{old} value fixed ex-ante is deemed valid. Hence, CAR is closed.				

CAR ID	06	Section no.	D.10	Date:29/01/2019
Description of CAR				
GPS coordinate are not mentioned in eligibility criterion # 1 (boundary and location of CPA). CME shall update the CPA-DDs to include the GPS coordinate.				
CME response				**Date:**27/02/2019
The GPS coordinates of Abuja, capital of Liberia has been added in section A.2 of the CPA-DD.				
Documentation provided by CME				
Revised CPA-DDs.				
DOE assessment				**Date:**20/03/2019
CME has updated the GPS coordinate in eligibility criterion # 1(boundary and location of CPA) in revised CPA-DD. CAR is closed				

CAR ID	07	Section no.	D.10	Date:29/01/2019
Description of CAR				
CME has mentioned in eligibility criterion # 6(Applicability of methodology AMS II. G - Non-renewable biomass in use since Dec 1989) that at least two of the factors listed in paragraph 17 of methodology AMS II. Gv.3 are shown to exist in the country (Non-renewable biomass in use since Dec 1989). This has not been				

reported in Appendix 3 of the CPA-DDs.
CMEresponse **Date:**27/02/2019
The applicability condition has already been met in first CPA, registered in Liberia (CPA-00006).
Documentation provided by CME
Revised CPA-DDs.
DOE assessment **Date:**20/03/2019
Ok. The reference to para 10 of the applied methodology is rectified in revised CPA-DDs against eligibility criterion #6. In line with registered PoA-DD. CME clarified that the first CPA in Liberia (CPA 0006) has already demonstrated the existence of non-renewable biomass in Republic of Liberia since 1989 as per "Eligibility Criterion – Required condition". CAR is closed.

CAR ID	08	**Section no.**	Others	**Date:**29/01/2019
Description of CAR				
Contact details of CPA implementer in not filled in Appendix 1 of CPA-DDs.				
CME Rresponse				**Date:**27/02/2019
Contact details of the CPA Implementer has been filled in Appendix 1 of the revised CPA-DDs.				
Documentation provided by CME				
Revised CPA-DDs.				
DOE assessment				**Date:**20/03/2019
CME has filled the contact details of CPA Implementer in Appendix 1 of revised CPA-DDs. CAR is closed.				

Table 2. FARs from this validation

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

Appendix 5. Assessment of methodology applicability of the CPA

S.No.	Methodology Applicability Criteria	DOE Assessment
1.	This category comprises appliances involving the efficiency improvements in the thermal applications of non-renewable biomass. Examples of these technologies and measures include the introduction of high efficiency biomass fired cook stoves or ovens or dryers and/or improvement of energy efficiency of existing biomass fired cook stoves or ovens or dryers.	The CPA will involve dissemination and implementation of Improved Cooking Stoves of SuperSaverGL Wood(M5000), SmartSaver Wood(Econofire) SuperSaver Charcoal(CH5300), SmartSaver Charcoal(Econochar) and GoGrill Saver Charcoal(CH-5200) models (as per CPA DDs) with an average thermal efficiency of 33.2% (for ex-ante purposes only). The technical description of each stove listed above was checked from the official website of Envirofit/B09-6/ and Envirofit ICS Catalogue/05/. Thus, the proposed CPAs comply with the requirements of this particular applicability criteria of the methodology.
2.	Project participants are able to show that non-renewable biomass has been used since 31 December 1989, using survey methods or referring to published literature, official reports or statistics.	Non-renewable biomass has been used in the Liberia, since 31 December 1989. This was confirmed based on the review of published literature in the form of FAOs Global Forest Resources Assessment report (2015) Country Report Liberia/18/ and information contained in the approved revised PoA-DD /B03/. Thus, the proposed CPA complies with the requirements of this particular applicability criteria of the methodology.
3.	The use of this methodology in a project activity under a programme of activities is legitimate if the following leakages are estimated and accounted for, if required on a sample basis using a 90/30 precision for the selection of samples, and accounted for: a) Use of non-renewable woody biomass saved under the project activity to justify the baseline of other CDM project activities can also be a potential source of leakage. If this leakage assessment quantifies a portion of non-renewable woody biomass saved under the project activity that is then used as the baseline of other CDM project activities then Bold is adjusted to account for the quantified leakage; b) Increase in the use of non-renewable woody biomass outside the project boundary to	Leakage has been accounted by multiplying B_{old} by a net to gross adjustment factor of 0.95. The same is in line with §23(c) of the applied methodology /B04/. This was confirmed based on the review of CPA-DDs /01-b/. Thus, the proposed CPAs comply with the requirements of this particular applicability criteria of the methodology.

	create non-renewable woody biomass baselines can also be a potential source of leakage. If this leakage assessment quantifies an increase in the use of nonrenewable woody biomass outside the project boundary then B_{old} is adjusted to account for the quantified leakage; c) As an alternative to subparagraphs (a) and (b), old B can be multiplied by a net to gross adjustment factor of 0.95 to account for leakages, in which case surveys are not required.	
4.	The following further conditions apply for the value of fraction of non-renewable (fNRB) applied in a component project activity (CPA) of a POA. The choice between (a) conduct own studies to determine the local fNRB value and then apply those values in the CPAs; and (b) use default national values approved by the Board; shall be made ex ante. A switch from national value i.e. choice (b) to sub-national values i.e. choice (a) is permitted, under the condition that the selected approach is consistently applied to all CPAs.	The value of non-renewable biomass fraction (f_{NRB}) is 0.97. This is as per the approved revised PoA DD. Thus, the proposed CPA complies with the requirements of this particular applicability criteria of the methodology.

Appendix 6. Assessment on CME's demonstration of CPAs compliance with the eligibility criteria

S.No.	Eligibility criterion - Category	Eligibility criterion - Required condition	Supporting evidence for inclusion	DOE Assessment
1	Boundary and location of the CPA	The CPA is located within the boundary of one of the countries within the PoA boundary.	Location and boundary are specified in the specific CPA-DDs and supported with GPS coordinates.	From the review of the CPA-DDs /01-b/ and the map provided in CPA-DDs /01-b/ and through the interview with the CME representatives /C.3-01/, it is confirmed that the boundary of the proposed CPAs lies within the geographical territory of the Republic of Liberia, validation team confirms the compliance of this eligibility criterion. **Conclusion:** Based on the above assessment, the validation team concludes that this eligibility criterion of the PoA is complied with the subject CPAs.
2	Avoiding double counting	The CPA includes a means of uniquely identifying the stoves to be distributed and the end-users who will receive stoves. This shall ensure no double counting of stoves within the PoA and ensure that stoves can be identified as belonging to this PoA and not to a PoA managed by any other CME.	Photo or similar proof that stoves have a unique serial ID number or other means of identification. For first CPA, document to be provided: stove sales receipt ("CPA Distribution Record") showing CME and DO logos, end user details including name and address and stove ID number. – For all subsequent CPAs, in addition to the sales receipt the programme logo shall be displayed on the stoves.	Based on review of Template of sales receipt (user agreement)/11/, Validation team confirms that each ICS in the CPAs shall have a unique serial number starting with prefix EA1H (Charcoal) or EF1H (Firewood). No individual serial number can be in more than one CPAs, so it will not be possible for one stove to be counted in two different CPAs. Furthermore, along with the stove serial number, the database shall also include the following details of end user households: • Model of cook stoves • Stove serial number • Purchase date of end users • Name of dealer • Name of customer • Address of customer (City / Village) • Mobile number • Type of stove replaced Validation team can therefore confirm that the measures are sufficient to avoid double counting of stoves in this PoA. This arrangement is considered sound and even without additional

				measures will prevent internal double counting between CPAs or PoAs managed by the CME. **Conclusion:** Based on the above assessment, validation team concludes that this eligibility criterion of the PoA is complied with the subject CPAs.
3	Applicability of Methodology AMS II. G - Technology type	The ICS uses one of the following fuel types: • Wood fuel Charcoal	Technical specification of ICS provided	Validation team has checked the stoves with the technical specification of ICS /05/, provided to validation team, which is also available at Envirofit International's website (www.envirofit.org)/B09-6/. All the ICS models planned to be distributed in the CPAs (SuperSaverGL Wood(M5000), SmartSaver Wood(Econofire), SuperSaver Charcoal(CH5300), SmartSaverCharcoal(Econochar) and GoGrill Saver Charcoal(CH-5200) are either wood fuel or charcoal fired. **Conclusion:** Based on the above assessment, validation team concludes that this eligibility criterion of the PoA is complied with the subject CPA.
4	Applicability of Methodology AMS II. G– Minimum ICS efficiency/ specifications of technology including the level and type of service	The ICS has a minimum efficiency of 20% (AMS II.G, Version 3, para 1)	Technical specification of ICS provided (either from manufacturer's specifications or test results using the Emissions & Performance Test Protocol (EPTP)[1]	The thermal efficiency of 4 ICS models distributed/planned to be distributed in this CPA are as • SuperSaver GL Wood(M5000) : 29.7% • SmartSaver Wood(Econofire) : 30.2% • SuperSaver Charcoal(CH5300): 35.7% • SmartSaver Charcoal(Econochar): 34.3% • GoGrill Saver Charcoal (CH-5200): 36.1% The same was confirmed through review of Envirofit ICS Catalogue /05/. This confirms that all the 5 ICS models planned to be distributed in these CPAs have a minimum thermal efficiency of 20%. **Conclusion:** Based on the above assessment, validation team concludes that

[1] Available at http://cleancookstoves.org/binary-data/DOCUMENT/file/000/000/73-1.pdf

				this eligibility criterion of the PoA is complied with the subject CPAs.
5	Start date of CPA	The CPA start date shall be after the PoA validation start date (i.e. not prior to 13 December 2011, which was the date the PoA was made available online on the UNFCCC website for global stakeholder consultation).	The start date of the CPA will be specified in each CPA-DD and an appropriate proof will be provided (e.g. this could include, but need not be limited to a document showing the stove shipping date, document showing date on which local assembly started or some other means such as the date of contract closure between the CME and DO).	The expected start date of the CPAs are indicated as 01/04/2019. Validation team can confirm that CPAs are not yet started. The start date is in conformance to the requirements of Glossary of CDM terms /B07/. Also, the CPA start date is after the start of GSC of PoA on 13/12/2011. **Conclusion:** Based on the above assessment, validation team concludes that this eligibility criterion of the PoA is complied with the subject CPAs.
6	Applicability of Methodology AMS II. G - Non-renewable biomass in use since Dec 1989	The first CPA in each country will demonstrate that non-renewable biomass has been in use since December 1989.	At least two of the factors listed in paragraph 10 of methodology AMS II. G v.3 are shown to exist in the country	As per PoA-DD, the first CPA (5342-0006) in country will demonstrate that non-renewable biomass has been in use since December 1989. The validation team based on the review of the baseline information provided in Appendix 3 of the CPA-DDs/01-b/ confirms that the households that have existed since 1989 have been using non-renewable biomass since this time. According to FAO (2015) data/18/, the forest cover in Liberia has been decreasing since 1990. The decrease is about 12.2% from 1990 to 2010 and it was confirmed through review of page 230 of "FAO Forestry Paper (163): Global Forest Resources Assessment 2015" /B09-11/. Furthermore, fulfillment of at least 2 conditions from § 10 of applied methodology /B04/, the first CPA in Liberia (CPA 0006) has demonstrated this already as per "Eligibility Criterion – Required condition". Furthermore, validation team confirms the following in addition to the above: ▪ **Depletion of Carbon Stocks:** Carbon stocks in Liberian forest have decreasing since 1990. There has been a decrease of about 12.2% in carbon stocks during 1990 – 2010. It was confirmed through review of FAO:

				Global Forest Resources Assessment (2015) Table 3e(page 25)"/18/. ▪ **Increase in fuel-wood prices:** It was confirmed through review of report titled "Charcoal Shortage in Monrovia" by Yurfee B. Shaikalee/07/, which clearly substantiates that there has been an increase in price of charcoal and the distance for collection of wood to be used for production of charcoal has increased in Liberia ▪ **Increase in time spent in collecting fuelwood:** It was confirmed through review of International Energy Agency – Energy Access Outlook 2017 report/B09-19/and the Liberia Labour Force Survey 2010 report/21/ that there has been an increase in time spent on fuelwood collection over time. **Conclusion:** Based on the above assessment, validation team concludes that this eligibility criterion of the PoA is complied with the subject CPA.
7	Additionality of CPAs	The CPA shall satisfy the latest version of the "Guidelines on the demonstration of additionality of small-scale project activities". Depending on whether the CPA is small scale or micro-scale, the CPA shall satisfy one of the two additionality tests below (test 1 is for micro-scale CPAs and test 2 is for small-scale CPAs): 1. If the CPA size is below 60 GWhth/year: (a) The geographic location of the project activity is an LDC/SID or special underdeveloped zone of the host country as identified by the Government before 28 May 2010; or (b) The project activity is an emission reduction activity with both conditions (i) and (ii) satisfied; (i) Each of	The level of energy savings from the individual sub-systems and the overall CPA are estimated using an Excel sheet or similar tool; the location of the CPA is defined in the CPA-DD; the end user groups are defined in the CPA-DD.	The adopted "Guidelines on the Demonstration of Additionality of Small Scale Project Activities" /B06-4/ has been appropriately applied in accordance with the stipulations in the revised approved PoA-DD /B03/ since: This CPA aims to achieve energy savings at a scale of no more than 180 GWhth per year. Based on the energy saving calculations included in the ER calculator sheet /02-b/, energy savings per ICS unit is confirmed to be 9.673 MWhth/year. Considering that 18500 ICS would be operational per year in each of the small-scale CPAs, this corresponds to 180 GWhth/year of energy savings per CPA which is the small-scale threshold; Each of the independent subsystems or measures (i.e. the ICS) in the CPA shall achieve an estimated annual energy savings equal to or less than 9 GWhth per year. In this case the end users of the subsystems or measures are households. Based on the energy saving calculations included in the ER calculation sheet/02-b/ energy saving as per ICS is about 9.673

		the independent subsystems / measures in the project activity achieves an estimated annual emission reduction equal to or less than 1.8 GWhth/year; and (ii) End users of the subsystems or measures are households/communities/SMEs. 2. If the CPA size is between 60 and 180 GWh_{th}/year: (a) End users of the subsystems or measures are households/communities/SMEs; and (b) Each of the independent subsystems/measures in the project activity achieves an estimated annual emission reduction equal to or less than 9 GWhth/year.		MWhth/year, which far below the 9 GWhth/year threshold. This CPA is therefore deemed to be automatically additional. **Conclusion:** Based on the above assessment, validation team concludes that this eligibility criterion of the PoA is complied with the subject CPA.
8	Official Development Assistance (ODA)	The CPA is either: a) not receiving any funding from Annex I parties; or b) the Annex I party funds do not result in a diversion of ODA.	a) Confirmation by the DO or CME b) Confirmed by the LoA of the host country	From the review of CPA-DDs/01-b/ and the declaration from the CME/10/, the validation team confirms that the proposed CPAs have not received any public funding. Conclusion: Based on the above assessment, validation team concludes that this eligibility criterion of the PoA is complied with the subject CPAs.
9	End-user group	- The CPA is either aimed at households, community organizations (e.g. schools) or small/medium enterprises.	The CPA-DD specifies the target end-user group and the appropriate baseline. (Also see EC#17). Supporting documents could include but need not be limited to a copy of the CME's contract with the DO and/or agreements with distributors used by the DO.	From the review of CPA-DDs /01-b/, template of stove user agreement (sales receipts) of ICS/11/, Envirofit ICS Catalogue/05/ and through interview with the CME representatives /C.3-01/, it is confirmed that the proposed CPA, target group are households. **Conclusion:** Based on the above assessment, validation team concludes that this eligibility criterion of the PoA is complied with the subject CPA.
10	Sampling	Sampling of stoves within the CPA must	The CPA-DD either specifies	As verified from the CPA-DDs/01-b/,CME has developed a 'PoA–

		meet the requirements of AMS II.G v.3 and the "Standard on Sampling and Surveys for CDM Projects and Programmes of Activities"	a) Sampling will be undertaken as part of the PoA Sampling Plan, and in Section B.6.1 describes how the PoA Sampling Plan is to be applied; or b) If CPA-specific sampling is to be undertaken, the CPA Sampling Plan must meet the requirements of AMS II. G v.3 and the Sampling Standard. The CPA-specific sampling approach shall follow the approach outlined in the PoA Sampling Plan except where the methodology AMS II. G and/or the Sampling Standard call for a different approach.	wide sampling plan',which is based on simple random sampling. According to the applied methodology AMS II.G (version 03) /B04/ and as per requirement of the PoA-DD/B03/ , validation team can confirm that that CPAs follows the sampling requirement outlined in Part II of Section B.7.2 of the PoA-DD/B03/. **Conclusion:** Based on the above assessment, validation team concludes that this eligibility criterion of the PoA is complied with the subject CPA.
11	SSC Limit for CPAs	The annual energy savings of each CPA shall not go beyond the limits of 180 GWhth/year over the entire crediting period. In the case of using option 1 to prove additionality under Eligibility Criteria 7, the limit shall be 180 GWh_{th}/year over the entire crediting period.	The maximum number of ICS will be determined in each CPA-DD depending on the technology used (excel sheet will be provided to show calculated energy savings). If a CPA exceeds the applicable limit in any year, the claimable emission reduction shall be capped based on the estimated GHG reductions in the CPA-DD[2].	These CPAs aim to achieve energy savings at a scale of no more than 180 GWh_{th} per year. Based on the energy saving calculations included in the ER calculation sheet /02-b/, energy savings per ICS unit is confirmed as 9.673 MWh_{th}/year. Considering that 18,500 ICS would be operational per year in the small-scale CPAs, this corresponds to 180 GWh_{th}/year of energy savings per CPA, which is the small-scale threshold. **Conclusion:** Based on the above assessment, validation team concludes that this eligibility criterion of the PoA is complied with the subject CPA
12	Exempted from de-bundling	Each ICS reduces energy consumption by less than 1% of the SSC threshold of 180GWh,or 1.8 GWh_{th}/year.	Specific energy savings for the applied ICS estimated using Excel sheet or similar tool.	This CPA is exempted from performing de-bundling check as per "Standard: General Principles for Bundling (Version 04.0)" /B06-3/, i.e. considered as being not a de-bundled component of a large scale activity since according to the energy saving calculations in

[2] As per EB 65, Annex 5, paragraph 83.

				the ER calculation sheet /02-b/, energy saving per ICS is 9.673 MWhth/year, which is 0.0054% of the 1.8 GWhth/year threshold. **Conclusion:** Based on the above assessment, validation team concludes that this eligibility criterion of the PoA is complied with the subject CPA.
13	Contractual agreement	The DO has signed a contractual agreement with the CME to participate in the PoA. This agreement: • defines the ownership of the carbon emission reduction rights • covers the DO's distribution and monitoring related responsibilities • confirms that the ICS to be distributed under the CPA have not and will not be distributed under any other carbon project (CDM project, PoA or voluntary carbon market project) cedes the DO's rights to the carbon credits generated from CPAs under the PoA to the CME	Contractual agreement in place between the DO and the CME including the CDM-specific responsibilities of the DO (e.g. in an Annex to the contract). If the CME is implementing the CPA itself, then this is not necessary.	The CERPD Co., Ltd. is the CPA implementer in these CPAs. A contractual agreement has been signed between CME, Envirofit International Ltd. and CERPD Co., Ltd. /12/ for the CPAs implementation. **Conclusion:** Based on the above assessment, validation team concludes that this eligibility criterion of the PoA is complied with the subject CPA.
14	Local Stakeholder Consultation	A Local Stakeholder Consultation (LSC) must be conducted prior to inclusion of the CPA in the PoA. If an LSC has already been done at the national level for the first CPA in the country, and the LSC covered the issues relevant to this CPA, then the LSC does not need to be done again.	Copy of the report for the LSC that was conducted either for the first CPA in the country or for the particular CPA to be included in the PoA.	A local stakeholder Consultation was done at first CPA level (5342-0006) in Liberia which covers the issues related to this CPAs. Hence, LSC was not required for these CPAs. **Conclusion:** Based on the above assessment, validation team concludes that this eligibility criterion of the PoA is complied with the subject CPA.
15	Environmental Analysis	An Environmental Analysis must be conducted prior to inclusion of the CPA in the PoA. If the Environmental Analysis has already been done at the	If required, a copy of the EIA or exemption that was obtained either for the first CPA in the country or for the particular CPA to be included in the PoA. If neither of these is	The EIA law of Liberia i.e. "An Act Adopting the Environment Protection and Management Law of The Republic of Liberia (Approved on 26/11/2002}"/14/ under Annex I lists the type of projects for which EIA is required. The project activity i.e., distribution of Improved Cook Stoves (ICS) is not mentioned in

		national level for the first CPA in the country, and the analysis covered the issues relevant to this CPA, then the analysis does not need to be done again. Similarly, if an exemption has been obtained from a government agency exempting the CME from having to conduct an Environmental Impacts Assessment for the first CPA, then this shall count for all subsequent CPAs.	required, then CPA-DD should indicate whether there has been any environmental analysis undertaken already for the first CPA. If not, then environmental analysis must be undertaken in the CPA-DD.	Annex I of the document /13/ and hence no EIA is required. The same was confirmed through review of EIA law of Liberia /18/. **Conclusion:** Based on the above assessment, validation team concludes that this eligibility criterion of the PoA is complied with the subject CPA.
16	CPA crediting period does not exceed PoA life	The duration of the crediting period of each CPA to be included in the PoA shall not exceed the end date of the registered PoA.	– CPA-DD shall indicate the duration of the CPA crediting period, either for a single 10-year crediting period or a 7-year renewable crediting period. The final date for which CERs can be credited shall be no later than 28 years after the date of registration of the PoA.	The CPA crediting period has been clearly defined as fixed 10 year crediting period. The start date of crediting period has been stated as 01/04/2019 (or date of inclusion, whichever is later). The information has been indicated correctly in the CPA-DDs/01-b/. Validation team can confirm that end date of the CPA crediting period will not exceed the PoA end date. **Conclusion:** Based on the above assessment, validation team concludes that this eligibility criterion of the PoA is complied with the subject CPA.
	Baseline parameters to be established at CPA level	Each CPA shall demonstrate how the baseline parameters that are to be calculated at the CPA level have been determined, and shall do so applying the following the approaches: a) f_{NRB}: as per the approach outlined in detail in Annex 3 or using default values where available/approved by the host country DNA; b) B_{old}: as per the approach outlined in Section E.6.2, applying Option (a) of paragraph 7 of AMS II.G v.3, using either historical data or a	CPA-DD shall outline the approach and provide supporting documents including copies of any official government reports, statistics or literature sources used for determining parameters. If local surveys or representative sampling are used then copies of questionnaires, sampling design etc.shall be provided.	Assessment on each baseline parameters is provided as below: a) **f_{NRB}:**The value of non-renewable biomass fraction (f_{NRB}) is as per the approved revised PoA DD/B03/. **b) B_{old}:** The quantity of biomass used in the absence of the CPA in tonnes/year B_{old} has been calculated taking into consideration the stove drop-off rate or stove operation fraction, average stove operation year, continuous use of old or 'replaced' stoves and the total number of ICS deployed in the CPA. Validation team can confirm that the calculated values of Bold are conservative, appropriate, and in accordance with the methods stipulated in revised approved PoA-DD /B03/ and the applied methodology /B04/. The formulas are interpreted in the ER

		survey of local usage; c) n_{old}: as per the approach outlined in E.6.2, applying Option 2 of paragraph 6 of AMS II.G v.3, using either national statistics, literature values or through representative sampling.		calculation sheet /02-b/ has been checked and reproduced by validation team. **c) n_{old}:** a default value of 0.1 as stipulated in applied methodology AMS II.G (Version 03) /B04/ has been used and the same is also in accordance with revised approved PoA-DD/B03/. Conclusion: Based on the above assessment, validation team concludes that this eligibility criterion of the PoA is complied with the subject CPA.

Appendix 6. Validation Protocol for proposed CPAs Inclusion into the PoA

Conformity of Component Project Activities

CDM-CPA-DD Requirements Checklist

CPA 00013; CPA 00014; CPA 00015
in Liberia

Table 1: CDM-CPA-DD / CDM-SSC-CPA-DD Requirements Checklist ((based on § 37 of the CDM Modalities and Procedures and on VVS , Project Standard and Standard for demonstration of additionality, development of eligibility criteria and application of multiple methodologies for programme of activities,)				
Checklist	**Comment**	**Ref.**	**Draft Concl.**	**Final Conc.**
Specific requirements of CPA				
SECTION A. General description of CPA				
A.1. Title of the proposed or registered PoA				
A.1.1. Is the reference and title of the PoA to which this CPA is included provided?	Yes, the reference number of the PoA has been provided in this section. ~~CL 01,CL01, CL 03,CL 04 and CAR 02 are raised.~~	/01-a/	~~CL01~~ ~~CL02~~ ~~CL03~~ ~~CL04~~ ~~CAR02~~	OK
A.2. Title of the CPA				
A.2.1. Is the title of the CPA and the unique identification of the CPA Indicated?	Yes, the title of the CPA and the unique identification of the CPA has been appropriately indicated.	/01-a/	OK	OK
A.2.2. Is the current version number of the CPA-DD Indicated?	Yes, the current version number of CPA-DD has been provided in this section.	/01-a/	OK	OK
A.2.3.Is the date the CPA-DD was completed (DD/MM/YYYY) Indicated?	Yes, the date of completion of CPA-DD has been provided in this section.	/01-a/	OK	OK
A.3. Description of the CPA				
A.3.1 Is the description of the technology(ies) and/or measures used by the CPA is in accordance with the proposed or registered PoA, and in accordance with the applicable provisions in the Project standard?	Yes, the description of the technology and/or measure used by the CPA is in accordance with the proposed or registered PoA, and the applicable provisions in the Project standard. ~~CL 04 is raised.~~	/01-a/	~~CL04~~	OK
A.4 Entity/individual responsible for CPA				
A.4.1.1 Is the information on the CPA implementer(s) provided? (CPA implementers can be project participants of the PoA, under which the CPA is submitted, provided)	Yes, appropriate information on the CPA implementer has been provided.	/01-a/	OK	OK

A.4.1.2 Is the name of CPA implementers included in the CPA is consistent with the proposed/ registered PoA?	Yes, the name of CPA implementer included in the CPA is consistent with the registered PoA.	/01-a/	OK	OK
A.5 Technical description of the CPA				
A.5.1. Is the description the technologies and/or measures to be employed and/or implemented by the CPA including a list of the facilities, systems and equipment that will be installed and/or modified by the CPA provided?	Yes, the description of the technologies and/or measures to be employed and/or implemented by the CPA including a list of the facilities, systems and equipment that will be installed and/or modified by the CPA has been appropriately provided. ~~CL 03 is raised~~	/01-a/	~~CL02~~	OK
A.5.2 Does the description includes;				
A.5.2.1 A list and the arrangement of the main manufacturing/production technologies, systems and equipment involved provided?	Not Applicable	/01-a/, /B03/	OK	OK
A.5.2.2 information about the age and average lifetime of the equipment based on manufacturer's specifications and industry standards, and existing and forecast installed capacities, load factors and efficiencies?	Yes, information about the age and average lifetime of the equipment is based on manufacturer's specifications. ~~CL 04 is raised~~	/01-a/	~~CL04~~	OK
A.5.2.3 The monitoring equipment detail and their location in the systems. Does the monitoring detail provided are complete to measure all data and parameters such that Emission reduction can be measured or calculated?	Not Applicable	/01-a/, /B03/	OK	OK
A.5.2.4 Energy and mass flows and balances of the systems and equipment included in the CPA?	Not Applicable	/01-a/, /B03/	OK	OK
A.5.2.5 The types and levels of services (normally in terms of mass or energy flows) provided by the systems and equipment that are being modified and/or installed under the CPA and their relation, if any, to other manufacturing/production equipment and systems outside the project boundary?	Not Applicable	/01-a/, /B03/	OK	OK
A.5.2.6 if the types and levels of services provided by those manufacturing/production systems and equipment outside the project boundary also constitute important parameters of the description. Does the description clearly explain how the same types and levels of services provided by the CPA would have been provided in the baseline scenario?	Not Applicable	/01-a/, /B03/	OK	OK
A.5.3 Does the description contains a list of:-				

A.5.3.1 Facilities, systems and equipment in operation under the existing scenario prior to the implementation of the CPA?	Yes, this section contains description of systems/equipment in operation under the existing scenario prior to the implementation of the CPA.	/01-a/, /B03/	OK	OK
A.5.3.2 Facilities, systems and equipment in the baseline scenario?	Yes, this section contains description of systems/equipment in operation existing in the baseline scenario.	/01-a/, /B03/	OK	OK
A.5.3.3 In case the baseline scenario is a continuation of current practice. Is it stated that both the scenarios are same?	Yes, the baseline scenario is a continuation of current practice.	/01-a/, /B03/	OK	OK
A.5.3.4 Does the information provides the purpose of the CPA and how it reduces GHG emissions?	Yes, information provided describes the purpose of the CPA and how it reduces GHG emissions.	/01-a/, /B03/	OK	OK
A.6. Party(ies)				
A.6.1 Does the Party (ies) and CPA implementer(s) involved in the CPA provided in tabular format and in Appendix 1 Consistent and the contact information complete?	Yes, the Party and CPA implementer involved in the CPA has been provided in tabular format and is further consistent with the information contained in Appendix 1 and is complete. ~~CAR 08 is raised~~	/01-a/	~~CAR 08~~	OK
A.7. Geographic reference or other means of identification				
A.7.1 Is the geographic reference or other means of identification that allows for the unique identification of the CPA provided? (maximum in one page)?	Yes, appropriate geographic reference has been provided which allows for the unique identification of the CPA provided. ~~CAR 02 is raised~~	/01-a/	~~CAR03~~	OK
A.8. Duration of the CPA				
A.8.1 Start date of the CPA				
A.8.1 Is the start date provided in (DD/MM/YYYY) format?	Yes, the start date has been provided in the DD/MM/YYYY format.	/01-a/	OK	OK
A.8.1 Does the description, of how the start date was determined and is in line with the definition of start date in “Glossary of CDM terms” and provided in POA-DD?	Yes, the description of how the start date was determined has been provided and is further in line with the definition of start date in “Glossary of CDM terms”. ~~CL 09 has been raised.~~	/01-a/	~~CL09~~	OK

A.8.2 Expected operational lifetime of the CPA				
A.8.2.1 Is the expected operational lifetime of the CPA stated in years and months?	Yes, the expected operational lifetime of the CPA stated in years.	/01-a/	OK	OK
A.9. Choice of the crediting period and related information				
Does the type of crediting period renewable or Fixed chosen and clearly stated?	The type of crediting period chosen is fixed and is clearly stated.	/01-a/	OK	OK
A.9.1 Choice of the crediting period and related information				
Is the expected start date of the crediting period of the CPA indicated in (DD/MM/YYYY) format, and line with PoA?	Yes, the expected start date of the crediting period of the CPA has been indicated in (DD/MM/YYYY) format and is line with PoA. ~~CL 10 has been raised~~	/01-a/	~~CL10~~	OK
A.9.2 Length of the crediting period				
A.9.2.1 Is the length of the crediting period chosen clearly indicated?	Yes, the length of the crediting period chosen is 10 years (fixed) and has been clearly indicated.	/01-a/	OK	OK
A.9.2.1.1 In case a renewable crediting period is chosen, does the length of the first crediting period and the number of renewal periods provided?	Not Applicable.	/01-a/	OK	OK
A.9.2.1.2 Does the total renewal periods comply and do not exceed the PoA validity period?	Not Applicable .	/01-a/	OK	OK
A.10 Estimated amount of GHG emission reductions				
Does the estimated annual GHG emission reductions for each year of the crediting period and, the annual average and the total GHG emission reductions over the chosen crediting period (or the first crediting period) provided in the table?	Yes, the estimated annual GHG emission reductions for each year of the crediting period and, the annual average and the total GHG emission reductions over the chosen crediting period (or the first crediting period) have been provided in the table. .	/01-a/	OK	OK
A.11. Public funding of the CPA				
A.11.1 Does the PoA receives public funding from Parties included in Annex I?	No, the PoA does not receive public funding from Parties included in Annex I.	/01-a/	OK	OK
A.11.2 if the PoA receives public funding from Parties included in Annex I, is the information on Parties providing public funding Provided in Appendix 2 and the affirmation obtained from such Parties is in accordance with applicable provisions related to official development assistance in the Project standard?	Not Applicable	/01-a/	OK	OK

A.12. Confirmation for CPA				
A.12. Does the description include and confirm that the CPA is neither registered as an individual CDM project activity nor is part of another registered PoA?	Yes, the description includes and further confirms that the CPA is neither registered as an individual CDM project activity nor is part of another registered PoA.	/01-a/	OK	OK
SECTION B. Environmental analysis				
B.1. Analysis of the environmental impacts				
B.1.1 Is the analysis of the environmental impacts required and is undertaken,	No, analysis of the environmental impacts is not mandatory as per host party regulations.	/01-a/	OK	OK
B.1.2 Does the description and the analysis of environmental impacts undertaken is as per the PoA.	Not Applicable	/01-a/	OK	OK
B.2. Environmental impact assessment				
B.2.1. Is an environmental impact assessment required?	No, EIA is not mandatory as per host party regulations.	/01-a/	OK	OK
B.2.1.1 Does the assessment of the requirement of Environmental impact assessment and the conclusion & related references to all documentation provided?	Not Applicable	/01-a/	OK	OK
B.2.2 In case the section B1and B.2 is kept blank. Is it indicated and confirmed that the environmental analysis is provided at the PoA level.	Not Applicable	/01-a/	OK	OK
SECTION C. Local stakeholder comments				
C.1. Solicitation of comments from local stakeholders				
C.1 Is the detail of process by which comments from local stakeholders have been invited for the CPA described?	Local Stakeholder Consultation was conducted at CPA level. Thus, this section is Not Applicable.	/01-a/	OK	
C.2. Summary of comments received				
C.2 Are all stakeholders that have made comments Identified and Is the summary of these comments provided?	Not Applicable	/01-a/	~~OK~~	OK
C.3.1 Does the information provided demonstrate that all comments received have been considered?	Not Applicable	/01-a/	~~OK~~	OK
C.3.2. In case the section C1 and C.2 is kept blank. Is it indicated and confirmed that the stakeholder consultation information is provided at the PoA level?	Not Applicable	/01-a/	~~OK~~	OK
SECTION D. Eligibility of CPA and estimation of emissions reductions				

D.1. Title and reference of the approved baseline and monitoring methodology(ies) selected.				
D.1. Is the exact methodology(ies) Identified and reference & title of the approved methodology provided?	Yes, CME has provided the UNFCCC reference of the applied methodology.	/01-a/	OK	OK
D.2. Application of methodology(ies)				
D.2.1 Is it demonstrated how the applicability conditions of the approved methodology(ies) and the PoA are met?	Yes. The CME has demonstrated the applicability conditions of the methodology in the i submitted CPA-DD. ~~CAR 06 and CAR 07, have been raised .~~	/01-a/	~~CAR 06,~~ ~~CAR07~~	OK
D.2.2 Has the documentation that has been used provided and explained? Is the reference of documentation included in Appendix 3?	~~Subject to closure of CAR 03~~	/01-a/	~~CAR03~~	OK
D.3. Sources and GHGs				
D.3.1 Does all the sources and GHGs included in the CPA boundary Described in accordance with the PoA?	The description of project boundary provided is complete and as per the narrative provided in the applied methodology.	/01-a/	OK.	OK
D.3.2 Does the proof which shows that the CPA is located within the geographical boundary of the proposed or registered PoA Provide?	Yes, the proof which shows that the CPA is located within the geographical boundary of the proposed or registered PoA has been mentioned and provided.	/01-a/	OK	OK
D.3.3. Does all emission sources and GHGs included in the CPA boundary described, explained and justified using the table provided?	Yes, all emission sources and GHGs included in the CPA boundary described are explained and justified using the table provided.	/01-a/	OK	OK
D.3.4 Does the section Include a flow diagram of equipment, energy and mass flows based on the description provided in section A.5. of CPA-DD?	Yes, this section includes a flow diagram of equipment, energy and mass flows based on the description provided in section B.2. of CPA-DD. The section numbering has changed from A.5 to B.2 as the CPA-DD form has been revised.	/01-a/	OK	OK
D.4. Description of the baseline scenario				
D.4 Is the description of the baseline scenario and its identification for the CPA is in accordance with the PoA?	Yes, the description of the baseline scenario and its identification for the CPA is in accordance with the PoA. ~~CL 02 has been raised.~~	/01-a/	~~CL02~~	OK
D.5. Demonstration of eligibility for a CPA				

D.5.1 Does CPA meets each of the eligibility criteria of the PoA including confirmation of additionality of the CPA for its inclusion into the PoA? Please provide assessment for each of the eligibility criteria as per the proposed or registered PoA DD, the eligibility criteria shall cover (unless differently mentioned in the registered PoA DD, if the registered PoA DD provides different set of eligibility criteria, consider those in the below row) a minimum the following :	Yes, the CPA meets each of the eligibility criteria of the PoA including confirmation of additionality of the CPA for its inclusion into the PoA. Refer to the assessment provided in Appendix-7 for further details. ~~Subject to closure of CAR 06 and CAR 07 .~~	/01-a/, /B03/	~~CAR06~~ ~~CAR07~~	OK
(a) The geographical boundary of the CPA including any time-induced boundary # consistent with the geographical boundary set in the PoA # For example, an emission factor for electricity generation is dependent on the boundaries of regional or state or sub-regional grids.	The demonstration of the CPA's compliance with this eligibility criterion was not clearly mentioned in initially submitted CPA-DDs by the CME. ~~Subject to closure of CAR02~~	/01-a/, /B03/	~~CAR02~~	OK
(b) Conditions that avoid double counting of emission reductions like unique identifications of product and end-user locations (e.g. programme logo);	Yes. The demonstration of the CPA's compliance with this eligibility criterion has been successfully made by the CME. .	~~/~~01-a/, /B03/	OK	OK
(c) The specifications of technology/measure # including the level * and type of service, performance specifications including compliance with testing/certifications; # Specifications of the technology/measure shall include the type, capacity and other key features of the design of the systems. For example, indicating the installed capacity (in kW), size or dimensions, fixed/portable operation, and other key design features that makes the project cook stoves efficient, would be appropriate; however, only indicating that all cook stoves will have an efficiency X% would not be sufficient. * The level of service shall be defined in comparison with the baseline system being replaced.	Yes. The demonstration of the CPA's compliance with this eligibility criterion has been successfully made by the CME. ~~CL04 has been raised.~~	/01-a/, /B03/	~~CL04~~	OK

(d) Conditions to check the start date of the CPA through documentary evidence;	The demonstration of the CPA's compliance with this eligibility criterion has been successfully made by the CME. ~~Subject to closure of CL 09~~	/01-a/, /B03/	~~CL09~~	OK
(e) Conditions that ensure compliance with applicability and other requirements of single or multiple methodologies applied by CPAs;	The demonstration of the CPA's compliance with this eligibility criterion has been successfully made by the CME. Refer to the assessment provided in Appendix-7 for further details. ~~Subject to closure of CL 04, CL 05, CAR 06 and CAR 07.~~	/01-a/, /B03/	~~CL04~~ ~~CL05~~ ~~CAR06~~ ~~CAR07~~	OK
(f) The conditions that ensure that the CPA meets the requirements pertaining to the demonstration of additionality as assesed in section B.1 above;	The demonstration of the CPA's compliance with this eligibility criterion has been successfully made by the CME. Refer to the assessment provided in Appendix-7 for further details. ~~Subject to closure of CL 04, CL 05, CAR 06 and CAR 07.~~	/01-a/, /B03/	~~CL04~~ ~~CL05~~ ~~CAR06~~ ~~CAR07~~	OK
(g) The PoA-specific requirements stipulated by the CME including any conditions related to undertaking local stakeholder consultations and environmental impact analysis;# # See also relevant paragraphs of "CDM project cycle procedure".	The demonstration of the CPA's compliance with this eligibility criterion has been successfully made by the CME. Refer to the assessment provided in Appendix-7 for further details. ~~Subject to closure of CL 04, CL 05, CAR 06 and CAR 07.~~	/01-a/, /B03/	~~CL04~~ ~~CL05~~ ~~CAR06~~ ~~CAR07~~	OK

(h) Conditions to provide an affirmation that funding from Annex I Parties, if any, does not result in a diversion of official development assistance;	The demonstration of the CPA's compliance with this eligibility criterion has been successfully made by the CME. Refer to the assessment provided in Appendix-7 for further details. ~~Subject to closure of CL 04, CL 05, CAR 06 and CAR 07~~	/01-a/, /B03/	~~CL04~~ ~~CL05~~ ~~CAR06~~ ~~CAR07~~	OK
(i) Where applicable, target group (e.g. domestic/commercial/industrial, rural/urban, grid-connected/off-grid) and distribution mechanisms (e.g. direct installation) $; $ This is to re-test the validity of assumptions made at the PoA level. For example, in a lighting efficiency application, lighting usage hours of 3.5 hours per day would be valid if the target group is residences/households. Usage hours would be different in commercial applications and vice versa.	The demonstration of the CPA's compliance with this eligibility criterion has been successfully made by the CME. Refer to the assessment provided in Appendix-7 for further details. ~~Subject to closure of CL 04 , CL 05, CAR 06 and CAR 07.~~	/01-a/, /B03/	~~CL04~~ ~~CL05~~ ~~CAR06~~ ~~CAR07~~	OK
(j) Where applicable, the conditions related to sampling requirements for the PoA in accordance with the "Standard for sampling and surveys for CDM project activities and programme of activities";	The demonstration of the CPA's compliance with this eligibility criterion has been successfully made by the CME. Refer to the assessment provided in Appendix-7 for further details.	/01-a/, /B03/	OK	OK
(k) Where applicable, the conditions that ensure that every CPA meets the small- scale or microscale threshold # and remains within those thresholds throughout the crediting period of the CPA. However, for a CPA that consists of only units that qualify as 'microscale CDM units' as defined in the methodological tool "Demonstration of additionality of microscale project activities", this condition is not required; # Please refer to the latest approved version of the methodological tool "Demonstrating additionality of microscale project activities" and the latest approved version of the "General Guidelines to SSC CDM methodologies".	The demonstration of the CPA's compliance with this eligibility criterion has been successfully made by the CME. Refer to the assessment provided in Appendix-7 for further details.	/01-a/, /B03/	~~OK~~	OK
(l) Where applicable, the requirements for the debundling check, in case the CPA belongs to small-scale or microscale project categories #. However, if a CPA solely consists of 'microscale CDM units', the requirement regarding debundling is not applicable. # Please refer to the latest approved version of the methodological tool "Assessment of debundling for small-scale project activities".	The demonstration of the CPA's compliance with this eligibility criterion has been successfully made by the CME. Refer to the assessment provided in Appendix-7 for further details. .	/01-a/, /B03/	~~OK~~	OK

D.6. Estimation of emission reductions				
D.6.1.Explanation of methodological choices				
D.6.1.1 Is Explanation and justification for the methods and/or methodological steps, based on the applied methodology, for calculating baseline emissions applied to the CPA provided?	Yes, explanation and justification for the methods and/or methodological steps for calculating baseline emissions applied to the CPA have been provided in accordance with the applied methodology. ~~CL 07 has been raised.~~	/01-a/, /B03/	~~CL 07~~	OK
D.6.1.2 Is Explanation and justification for the methods and/or methodological steps, based on the applied methodology, for calculating, project emissions, are applied to the CPA provided?	Not Applicable	/01-a/, /B03/	OK	OK
D.6.1.3 Is Explanation and justification for the methods and/or methodological steps, based on the applied methodology, for calculating, leakage emissions and emission reductions applied to the CPA provided?	Not Applicable	/01-a/, /B03/	OK	OK
D.6.1.4 Is Explanation and justification for the methods and/or methodological steps, based on the applied methodology, for calculating, emission reductions applied to the CPA provided?	Yes, explanation and justification for the methods and/or methodological steps, based on the applied methodology, for calculating, emission reductions applied to the CPA have been provided.	/01-a/, /B03/	OK	OK
D.6.1.5 Is the equation for calculating the emission reductions for CPA is in line with the methodology and the PoA?	Yes, the equation for calculating the emission reductions for CPA is in line with the methodology and the PoA.	/01-a/, /B03/	OK	OK
D.6.2. Data and parameters that are to be reported ex-ante				
D.6.2.1 Does the compilation of information on the data and parameters that are not monitored during the crediting period but are determined before the registration and remain fixed throughout the crediting period described and provided?	Yes, the compilation of information on the data and parameters that are not monitored during the crediting period but are determined before the registration and remain fixed throughout the crediting period has been described and provided.	/01-a/, /B03/	OK	OK
D.6.2.2. Is the compilation of information for data that are measured or sampled, and data that are collected from other sources (e.g. official statistics, expert judgment, proprietary data, IPCC, commercial and scientific literature, etc.) are complete and as per the methodology and applicable conditions?	Yes, the compilation of information for data that are measured or sampled, and data that are collected from other sources are complete and as per the methodology and applicable conditions	/01-a/, /B03/	OK	OK

D.6.2.3. Are all data or parameter, complete with respect to the: "Value(s) of data applied, Choice of data, Purpose of data, Measurement methods and procedures to enable Calculation of baseline emissions; Project Emission, Leakage Emission, Emission Reduction? Pleas list all ex-ante parameters (as below) along with their values and provide an assessment on its appropriateness.	Yes, all data or parameters are complete with respect to the: "Value(s) of data applied, Choice of data, Purpose of data, Measurement methods and procedures to enable calculation of baseline emissions; project emissions, and emission reductions.	/01-a/	OK	OK
Parameter: $Q_{biomass}$ Value: 2.46 Tonnes/year for firewood stoves 4.19 Tonnes/year for charcoal stoves Source of value:" The value applied for firewood is estimated based on publically available historical data taken from UN Web site , Liberia Demographic and Health Survey 2013. The value applied for charcoal is an estimation based on publically available historical data taken from UN Website and Liberia Demographic and Health Survey 2013.	The validation team reviewed the reference source and deems the value to be appropriate. Refer to section D.5.2 for detailed assessment. ~~Subject to closure of CAR 03.~~	/01-b/	~~CAR 03~~	OK
Parameter: $f_{NRB, y}$ Value: 0.97 Source of value: Value from CPA 5342-0006 for Liberia	The validation team reviewed the reference source and deems the value to be appropriate.	/01-b/	OK	OK
Parameter: $NCV_{biomass}$ Value: 0.015 TJ/tonne Source of value: default value of applied methodology AMS II.G (Version 03.0)	The validation team reviewed the reference source and deems the value to be appropriate.	/01-b/	OK	OK
Parameter: $EF_{projectedfossilfuel}$ Value: 81.6 tCO_2/TJ Source of value: default value of applied methodology AMS II.G (Version 03.0)	The validation team reviewed the reference source and deems the value to be appropriate.	/01-b/	OK	OK
Parameter: η_{old} Value: 0.10 Source of value: default value of applied methodology AMS II.G (Version 03.0)	The validation team reviewed the reference source and deems the value to be appropriate.	/01-b/	OK	OK

Parameter: LAF Value: 0.95 Source of value: default value of the methodology AMS-II.G(Version 03.0)	The validation team reviewed the reference source and deems the value to be appropriate.	/01-b/	OK	OK
D.6.3. Ex-ante calculation of emission reductions				
D.6.3.1. Is ex ante calculation of project emissions, baseline emissions, Leakage emissions and /or Emission reduction expected during the crediting period, Provided in a transparent manner based on data or parameters (in the table in section D.6.2 above) applying all relevant equations provided in the selected methodology?	Yes, the ex-ante calculation of baseline emissions and Emission reduction expected during the crediting period are provided in a transparent manner based on data or parameters (in the table in section D.6.2 above) applying all relevant equations provided in the selected methodology.	/01-a/	OK	OK
D.6.3.2 If any of these estimates has been determined by a sampling approach, then are the descriptions of the sampling efforts undertaken (in accordance with the "Standard for sampling and surveys for CDM project activities and programme of activities") Provided?	Yes, in cases where estimates have been determined by a sampling approach the descriptions of the sampling efforts undertaken have been provided.	/01-a/	OK	OK
D.6.3.3. Are the documentation of each equation applied, represented in a manner that enables the reader to reproduce the calculation?	Yes, the documentation of each equation applied is represented in a manner that enables the reader to reproduce the calculation.	/01-a/	OK	OK
D.6.3.4. Are the relevant, additional background information and/or data (including relevant electronic) spreadsheet provided in Appendix 4?	Not Applicable	/01-a/	OK	OK
D.6.3.5 Is a sample calculation for each equation used, substituting the values used in the equations Provided?	Yes, a sample calculation for each equation used, substituting the values used in the equations has been provided.	/01-a/	OK	OK
D.6.4. Summary of the ex-ante estimates of emission reductions				
Is the summary of all ex-ante estimation of Baseline Emission, Project Emission, Leakage Emission and Emission Reduction provided in accordance with given table?	Yes, the summary of all ex-ante estimation of Baseline Emission and Emission Reduction is provided in accordance with given table.	/01-a/	OK	OK
D.7. Application of the monitoring methodology and description of the monitoring plan				
D.7.1. Data and parameters to be monitored				

<table>
<tr><td>D.7.1.1. Is the specific information related to procedures for measurement, monitoring, recording, collected, archiving of data and parameters that is required for estimation and calculation of Emission Reduction provided?</td><td>Yes, the specific information related to procedures for measurement, monitoring, recording, collected, archiving of data and parameters that is required for estimation and calculation of Emission Reduction have been provided.

.</td><td>/01-a/</td><td>OK</td><td>OK</td></tr>
<tr><td>D.7.1.2 Are all data or parameter, complete with respect to the: “Value(s) of data applied, Choice of data, Purpose of data, Measurement methods and procedures, QA/QC procedures to enable Calculation of baseline emissions; Project Emission, Leakage Emission, Emission Reduction ?</td><td>Yes, all data or parameter are complete with respect to the: “Value(s) of data applied, Choice of data, Purpose of data, Measurement methods and procedures, QA/QC procedures to enable Calculation of baseline emissions; Project Emission, and Emission Reduction.</td><td>/01-a/</td><td>OK</td><td>OK</td></tr>
<tr><td>D.7.1.3 Are the relevant, additional background information on data and parameters to be monitored is provided in Appendix 5?</td><td>Not Applicable.</td><td>/01-a/</td><td>OK</td><td>OK</td></tr>
<tr><td>D.7.1.4 Is the list of parameters presented in section B.7.1 (Part II of PoA-DD) considered to be complete with regards to the requirements of the applied methodology?</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Parameter: $\eta_{new, y}$</td><td><table><tr><th>Monitoring Checklist</th><th>Yes / No / NA</th></tr><tr><td>Title and description in line with methodology?</td><td>Yes</td></tr><tr><td>Data unit correctly stated?</td><td>Yes</td></tr><tr><td>Source clearly referenced?</td><td>Yes</td></tr><tr><td>Correct value provided for estimation?</td><td>Yes</td></tr><tr><td>Has this value been verified?</td><td>Yes</td></tr><tr><td>Measurement method and procedure correctly described?</td><td>Yes</td></tr><tr><td>Purpose of data correctly described</td><td>Yes</td></tr><tr><td>Additional comments (if any)</td><td>NA</td></tr></table></td><td>/01-a/</td><td>OK</td><td>OK</td></tr>
</table>

Parameter: N_{all}	**Monitoring Checklist** / **Yes / No / NA** Title and description in line with methodology? / Yes Data unit correctly stated? / Yes Source clearly referenced? / Yes Correct value provided for estimation? / Yes Has this value been verified? / Yes Measurement method and procedure correctly described? / Yes Purpose of data correctly described / Yes Additional comments (if any) / NA	/01-a/	OK	OK
Parameter: **SOF**	**Monitoring Checklist** / **Yes / No / NA** Title and description in line with methodology? / Yes Data unit correctly stated? / Yes Source clearly referenced? / Yes Correct value provided for estimation? / Yes Has this value been verified? / Yes Measurement method and procedure correctly described? / Yes Purpose of data correctly described / Yes Additional comments (if any) / NA	/01-a/	OK	OK

Parameter: $\mu_{old\ i}$	**Monitoring Checklist**	**Yes / No / NA**	/01-a/	OK	OK
	Title and description in line with methodology?	Yes			
	Data unit correctly stated?	Yes			
	Source clearly referenced?	Yes			
	Correct value provided for estimation?	Yes			
	Has this value been verified?	Yes			
	Measurement method and procedure correctly described?	Yes			
	Purpose of data correctly described	Yes			
	Additional comments (if any)	NA			
Parameter: f_{old}	**Monitoring Checklist**	**Yes / No / NA**	/01-a/	OK	OK
	Title and description in line with methodology?	Yes			
	Data unit correctly stated?	Yes			
	Source clearly referenced?	Yes			
	Correct value provided for estimation?	Yes			
	Has this value been verified?	Yes			
	Measurement method and procedure correctly described?	Yes			
	Purpose of data correctly described	Yes			
	Additional comments (if any)	NA			

<table>
<tr><td>Parameter:Stove_{year}</td><td><table><tr><th>Monitoring Checklist</th><th>Yes / No / NA</th></tr><tr><td>Title and description in line with methodology?</td><td>Yes</td></tr><tr><td>Data unit correctly stated?</td><td>Yes</td></tr><tr><td>Source clearly referenced?</td><td>Yes</td></tr><tr><td>Correct value provided for estimation?</td><td>Yes. This is a monitoring parameter in line with the PoA-DD/g-CPA-DD.</td></tr><tr><td>Has this value been verified?</td><td>Yes</td></tr><tr><td>Measurement method and procedure correctly described?</td><td>Yes</td></tr><tr><td>Purpose of data correctly described</td><td>Yes</td></tr><tr><td>Additional comments (if any)</td><td>NA</td></tr></table></td><td>/01-a/</td><td>OK</td><td>OK</td></tr>
<tr><td colspan="5">D.7.2. Description of the monitoring plan</td></tr>
<tr><td>D.7.2.1 Is the description of the monitoring plan for the CPA provided in accordance with the approved monitoring methodology (ies) and PoA?</td><td>Yes, the description of the monitoring plan for the CPA is provided in accordance with the approved monitoring methodology and PoA.</td><td>/01-a/, /B03/</td><td>OK</td><td>OK</td></tr>
<tr><td>D.7.2.2 In case the data and parameters to be monitored determined by sampling approach, are the description of sampling plan provided in accordance with the recommended outline for a sampling plan in the “Standard for sampling and surveys for CDM project activities and programme of activities”?</td><td>Yes, for the data and parameters to be monitored determined by sampling approach, the description of sampling plan is provided in accordance with the recommended outline for a sampling plan in the “Standard for sampling and surveys for CDM project activities and programme of activities.</td><td>/01-a/</td><td>OK</td><td>OK</td></tr>
<tr><td>D.7.3 Consistency check and font size</td><td>Yes, all the information is consistent and font size is accurate.</td><td>/01-a/</td><td>OK</td><td>OK</td></tr>
</table>

D.7.3.1 Does the following key terms and there description is consistent within the various section of the PoA-DD? P.S.: Additional rows may be added if required.				
D.7.3.1.1. CME and Participants of PoA	Yes, the description of CME and Participants of PoA is consistent within the various sections of the PoA-DD.	/01-a/	OK	OK
D.7.3.1.2. Description/ Technology or measures to be employed by the CPA	Yes, the description of Technology or measures to be employed by the CPA is consistent within the various sections of the PoA-DD.	/01-a/	OK	OK
D.7.3.1.3. Target group (end users type)	Yes, the Target group (end user type) listed are consistent within the various sections of the PoA-DD.	/01-a/	OK	OK
D.7.3.1.4. Eligibility criteria for inclusion of a CPA	Yes, the Eligibility criteria for inclusion of a CPA is consistent within the various sections of the PoA-DD.	/01-a/	OK	OK
D.7.3.2. Is the font size in all the respective documents is as per the requirements of Instructions for filling out the programme design document form for small-scale/large scale CDM programmes of activities?	Yes, the font size in all the respective documents is as per the requirements of Instructions for filling out the programme design document form for small-scale/large scale CDM programmes of activities	/01-a/	OK	OK

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Document information

Version	*Date*	*Description*
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.

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