

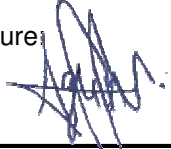


**Verification and certification report form for
CDM programme of activities
(Version 04.0)**

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

BASIC INFORMATION

Title and UNFCCC reference number of the programme of activities (PoA)	KOKO Kenya - Ethanol Cookstoves Program UNFCCC ID: 10476		
Version number(s) of the PoA-DD(s) to which this report applies	07		
Version number of the verification and certification report	06		
Completion date of the verification and certification report	10/11/2021		
Monitoring period number and duration of this monitoring period	02 (second monitoring period) 01/01/2020 to 31/12/2020 (both days included)		
Number and version number of the monitoring report to which this report applies	02 Version 05, dated 21/10/2021		
Coordinating/managing entity (CME)	KOKO Networks Limited		
Host Parties	Host Parties of the PoA	Is this a host Party to a CPA covered in this report? (yes/no)	
	Kenya	Yes	
Applied methodologies and standardized baselines	AMS-I.E. Version 09.0 - "Switch from non-renewable biomass for thermal applications by the user" Standardized baseline: Not applicable		
Mandatory sectoral scopes	01		
Conditional sectoral scopes, if applicable	Not Applicable		
Estimated amount of GHG emission reductions or GHG removals for this monitoring period in the included CPAs covered in this report	52,135 tCO ₂ e		
Certified amount of GHG emission reductions or GHG removals for this monitoring period for the included CPAs covered in this report	Amount before 1 January 2013	Amount from 1 January 2013 until 31 December 2020	Amount from 1 January 2021
	NA	38,179 tCO ₂ e	NA
Name and UNFCCC reference number of the DOE	LGAI Technological Center, S.A. (Applus+ Certification) UNFCCC Ref. No.: E-0032		

Name, position and signature of the approver of the verification and certification report	<p>Mr. Agustín Calle de Miguel</p> <p><i>Applus+ Certification CDM Technical Manager</i></p> <p>Signature: </p>
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SECTION A. Executive summary

>> LGAI Technological Center, S.A. accredited DOE E-0032 (hereinafter referred to as *Applus+ Certification*) has been contracted by PoA CME KOKO Networks Limited to undertake the independent verification of the registered CDM PoA titled “KOKO Kenya - Ethanol Cookstoves Program” (PoA ID: 10476) covering CPA-0002: KOKO Kenya - Ethanol Cookstoves Program Version 4.0 (10476-P1-0002-CP1). The objectives of this verification are to verify and certify emission reductions reported for the specific Component Project Activity (CPA) for the monitoring period from 01/01/2020 to 31/12/2020 (first and last day included); and to verify that the data reported are complete and transparent.

This report summarizes the findings of the verification of the project, performed based on UNFCCC criteria for CDM, as well as criteria given to provide for consistent project operations, monitoring and reporting.

LGA Technological Center, S.A. accredited DOE E-0032 (hereinafter referred to as *Applus+ Certification*) has been contracted by PoA CME KOKO Networks Limited to undertake the independent verification of the registered CDM PoA titled “KOKO Kenya - Ethanol Cookstoves Program” (PoA ID: 10476) covering CPA-0002: KOKO Kenya - Ethanol Cookstoves Program Version 4.0 (10476-P1-0002-CP1). The objectives of this verification are to verify and certify emission reductions reported for the specific Component Project Activity (CPA) for the monitoring period from 01/01/2020 to 31/12/2020 (first and last day included); and to verify that the data reported are complete and transparent.

It is to be noted that the start date of the crediting period for CPA-002 is 28/08/2020 and following the guidelines as provided under paragraph 254(c) of PS PoAs v03.0, the monitoring period is considered from 01/01/2020 to 31/12/2020. The emission reductions for the CPA-002 are calculated considering the monitoring results obtained from the start date of crediting period (28/08/2020).

This report summarizes the findings of the verification of the project, performed based on UNFCCC criteria for CDM, as well as criteria given to provide for consistent project operations, monitoring and reporting.

The scope of the verification process is defined as a third-party independent and objective review and ex-post determination of the monitored reductions in GHG emissions by the Component Project Activity, limited to and against the criteria stated in Article 12 of the Kyoto Protocol, the CDM Modalities and Procedures as agreed in the Marrakech Accords and the relevant decisions by the CDM Executive Board, including the approved baseline and monitoring methodology AMS-I.E. Version 09.0 - “Switch from non-renewable biomass for thermal applications by the user” /5/, the latest version of the CDM Validation and Verification Standard for Programmes of Activities (VVS for PoAs version 03.0)/1/, the latest version of the CDM Project Standard for Programmes of Activities (PS for PoAs version 03.0)/2/ and the latest version of the CDM Project Cycle Procedure for Programmes of Activities (PCP for PoAs version 03.0)/3/, as well as any other related methodological tools, guidelines and other regulatory documents adopted by the CMP or the Board.

The verification process takes as a basis the validated Programme Design Document (PoA-DD), version 07, dated 19/03/2021 and registered Component Project Activity Design Document (CPA-DD), version 4, dated 27/07/2020 (hereinafter referred to as PoA-DD/1/ and CPA-DD/11/, corresponding Validation Report/04/ and CPA Monitoring Report/19/ (hereinafter also referred to as the final MR).

KOKO Networks Limited has implemented the programme of activities which reduces GHG emissions by distributing KOKO Cooker Kit (or Bio ethanol stove) which consists of a two-burner bioethanol stove and a durable ‘smart’ canister equipped with an NFC chip that enables tracking of users (households and SMEs/Kibandas)-level fuel purchases. The dissemination of ethanol cookstove enables affordable and reliable access to bioethanol clean cooking fuel. KOKO Networks Limited launched network of cloud connected “KOKO points” which are fuel ATMs to lower distribution costs. The KOKO points enable customers to use their smart canisters to refill with convenience at local corner shops. Customers can buy their KOKO Cookers by completing one-time registration process and ordering it on the KOKO point tablet screen, via the “myKOKO” mobile app. KOKO’s smart distribution platform allows purchase of bio-ethanol fuel through a digital billing system in bundles to low-income consumers who buy fuel in small units.

Pine Tree Carbon LLC has fully financed the project cost related to subsidy provided to customers for all KOKO Cooker kits distributed to the households. The same was verified based on the ERPA (Emission Reduction Purchase Agreement) between KOKO Networks Limited and Pine Tree Carbon LLC.

Project Location of CPA-0002: KOKO Kenya - Ethanol Cookstoves Program

No.	Project Location
Host Country	Republic of Kenya
Region:	Entire country

Southern-most point of Kenya	4°38'47.4"S 39°12'31.6"E
Western-most point of Kenya	0°06'58.9"N 33°57'35.3"E
Eastern-most point of Kenya	3°55'51.6"N 41°51'59.9"E
Northern-most point of Kenya	4°28'42.5"N 35°52'31.8"E

Basic technical details of the PoA are summarized in table:

Table - A-2: Technical data of the CPA-0002: KOKO Kenya - Ethanol Cookstoves Program

Stove Type	Parameter	Unit	Value
KOKO Cooker (2-burner Bio-ethanol stove)	Overall Efficiency	%	60
	Firepower (max flame setting)	Watts	2100
	Fuel Capacity	Litres	2.4
	Manufacturer	-	KOKO Networks Limited
	Expected Service Life	Years	10 (with routine annual maintenance)

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

- operation of the CPA-0002: KOKO Kenya - Ethanol Cookstoves Program which is claiming CERs is implemented and installed as planned and described in the validated component project activities design document.
- the monitoring plan is in accordance with the applied approved CDM methodology, i.e., AMS-I.E. Version 09.0
- the equipment essential for measuring parameters required for calculating emission reductions are calibrated appropriately.
- the monitoring system is in place and functional. The CPA has generated GHG emission reductions.

As the result of the 2nd periodic verification of PoA: KOKO Kenya - Ethanol Cookstoves Program", the verifier confirms that the GHG emission reductions are calculated without material misstatements in a conservative and appropriate manner. LGAI Technological Center, S.A. herewith confirms that the project has achieved emission reductions in the above-mentioned reporting period as stated on title page.

SECTION B. Verification team, technical reviewer and approver

B.1. Verification team members

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)	Involvement in			
						Desk/document review	On-site inspection	Interview(s)	Verification findings
1.	Lead Auditor / Technical Expert	OR	Soni	Ravi Kant	GCEES	Y	N	Y	Y

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

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)
1.	Technical reviewer and Technical Expert	EI	Cortés Díaz	Miguel A.	Applus+ Certification

2.	Approver	IR	Calle de Miguel	Agustín	Applus+ Certification
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SECTION C. Application of materiality in conducting the verification

C.1. Consideration of materiality in planning the verification

To ensure a complete, transparent, and timely execution of the verification task, the team leader has planned the complete sequence of events necessary to arrive at a substantiated final verification opinion. Various tools have been used to ensure an effective verification planning which are as follows. The verification plan prepared by the team leader complies with paragraphs 306-316 of Validation and Verification Standard for Programme of Activities (VVS for PoA) Version 03.

Materiality Threshold

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

Table C-1: Applied Materiality Threshold

	Threshold	Related to
<input type="checkbox"/>	0.5 %	Emission reductions or removals for registered CDM project activities achieving a total emission reduction or removal equal to or more than 500,000 tonnes of carbon dioxide equivalent per year ³ ;
<input type="checkbox"/>	1 %	Emission reductions or removals for registered CDM project activities achieving a total emission reduction or removal of between 300,000 and 500,000 tonnes of carbon dioxide equivalent per year;
<input type="checkbox"/>	2 %	Emission reductions or removals for registered large-scale CDM project activities achieving a total emission reduction or removal of 300,000 tonnes of carbon dioxide equivalent per year or less;
<input checked="" type="checkbox"/>	5 %	Emission reductions or removals for registered small-scale CDM PoA other than registered CDM PoA covered under next category below;
<input type="checkbox"/>	10 %	Emission reductions or removals for the type of registered small-scale CDM PoA referred to in decision 3/CMP.6, paragraph 38 (referred to as microscale project activities).

Strategic Analysis

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

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

No.	Risk that could lead to material errors, omissions or misstatements	Assessment of the risk		Response to the risk in the verification plan and/or sampling plan
		Risk level	Justification	

1.	Analysis and transfer of data from: • CPA Distribution Record • sales database • household usage Survey and, • reports for parameters under monitoring, MR and excel ER spreadsheet.	Medium	Human error during transfer of data to Sales record, Usage Survey reports sheet for BE, PE and ER calculations	Thorough cross-check and assessment required on the generation and transfer of data to the ER spreadsheet. Assessment of sample CPA Distribution Records/Sales receipts, Usage Survey reports by baseline stoves still in use, no of days stoves under operation, appropriateness of sampling plan etc. Assessment of information flow processes, data reporting, aggregation, management, and QA/QC procedures in place by CME to ensure the database is accurate
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Based on the risk analysis the verification has been planned. A detailed audit / verification plan has been prepared and submitted to the project participant(s) in due time before the remote site visit.

C.2. Consideration of materiality in conducting the verification

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

Parameter	Approach*	Errors Detected	Finding's reference	Corrected	Remaining verification risk
D_i, Date of commissioning of project device i	CDC	Yes		Yes	Not Material
N_{HH}	ASP	-	N/A	-	None
BC_{PJ,PP,y}	ASP	-	N/A	-	None
Q_{HH,Eth}	ASP	-	N/A	-	None
N_{KP,y}	CDC	-	N/A	-	None
NCV_{i,biomass}	CDC	-	N/A	-	None
EC_{PJ,j,y}	CDC	-	N/A	-	None
D_{f,m}	CDC	-	N/A	-	None
FR_{f,m}	CDC	-	N/A	-	None
<i>Aggregate</i>					Materiality threshold not exceeded

*) Verification Approaches:

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

NDC: Non-complete data check – omissions not material

SPL: Sampling approach (all data available)

ASP: Acceptance Sampling

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

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

Analysis and transfer of data from sales records, household usage Survey for parameters under monitoring to MR and excel ER spreadsheet:

Total sales record presented in ER calculation spreadsheet (for CPA-002 claiming ERs under this verification) were assessed and verified at CME office/premise during remote verification audit. CME conducted the monitoring survey to monitor the parameters of interest on sampling basis in accordance with registered monitoring plan. Verification team has assessed the value of different parameters under monitoring (**N_{HH}**, **BC_{PJ,PP,y}**, **Q_{HH,Eth}**) against survey results. The monitoring surveys were conducted in September-October 2020. The Survey was assessed and compared during remote site visit and interview response by the project technologies users, CMEs and survey team on ground during the course of verification. The verification team issued findings (CAR/CLs) which can be referred in table above and

Appendix 4 of this report. The verification team reviewed and compared available data with available records (total sales record, bills of sale, ethanol cookers registration cards, monitoring survey results, etc.) and data presented for total sale for which CERs are claimed under the current monitoring period.

SECTION D. Means of verification

D.1. Desk/document review

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

- the last revision of the PoA-DD including the monitoring plan
- the last revisions of the CPA-DD
- the last revision of the CPA validation report
- the monitoring report, including the claimed emission reductions for the PoA
- Monitoring Survey Report and related work sheets
- the emission reduction calculation spreadsheet
- CPA Distribution Records and customer Sales Receipts
- Sample size calculation spreadsheet for monitoring Survey
- Sales Database

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

D.2. On-site inspection

Due to the current situation with the global COVID-19 pandemic scenario and global travel restrictions, an on-site inspection has not been performed by the assessment team. As per the latest communication received from CDM Executive Board (112th EB meeting) regarding the relaxation for mandatory site visits by DOEs till 30/06/2022, due to COVID-19 pandemic, it is recommended that site visit should be postpone as a result of the COVID-19 pandemic.

On a request by few stakeholders, the Board considered electronically the matter and decided as follows:

-A DOE may postpone site visits for onsite inspections required by the "CDM validation and verification standard for project activities (version 03.0) (VVS-PA)" or "CDM validation and verification standard for programme of activities (version 03.0) (VVS-PoA)", as a result of the COVID-19 pandemic, taking into account the rules of relevant national and local authorities (local to the DOE offices as well as to locality of the site visits), World Health Organization (WHO) recommendations, policies of the DOE (if any) and other relevant travel restrictions and guidance (for example, a requirement to self-isolate upon return from specific countries).,

-If the site visits cannot be postponed, a proper justification should be provided by the DOE why the site visits cannot be postponed, including the demonstration of a significant impact of delaying the site visits on the DOE, or project participants or coordinating/ managing entity (e.g. commitment/ timeline as per the validation or verification contract, CER delivery commitment by project participants) reliance on applicable force majeure provisions in the validation or verification contracts, if needed.

-If the site visit cannot be postponed but are not conducted due to the COVID-19 pandemic, the DOE may use other standard auditing techniques for validation or verification, as referred to in sections 7.1.3 and 9.1.3 of the VVS-PA and sections 7.1.3 and 10.1.3 of the VVS-PoA. In the above regard, the Board agrees to, from 31 December 2021 to 30 June 2022, to deviate from the requirements in paragraphs 30 and 339 of the VVS-PA and paragraphs 179 and 319 of the VVS-PoA. Where the DOE relies on this temporary measure, it shall describe in the validation/ verification report the alternative means used and justify that they are credible and sufficient for the purpose of validation or verification.

In line with paragraph 319 of the VVS for PoAs, version 03, the verification team noted the following for the current monitoring period:

- a) This is the first verification for the DOE with regard to the CPAs being verified during the current monitoring period.
- b) More than three years have not elapsed since the last on-site inspection was conducted for verification for the CPAs; and
- c) Each of the CPAs have achieved less than 300,000 t CO₂ eq of GHG emission reductions since the last verification when an on-site inspection was conducted.

The Project participant has signed the ERPA with the buyer which binds both the parties to transact the

CERs in a time bound manner. As per the contract and the internal communication accessed by the verification team, KOKO networks are required to transfer issued credits by 30th September 2021. Failing to submit the issuance request on time will delay the delivery of CERs to the buyer and will allow the buyer to take remedial measures including termination of the ERPA contract.

Considering the health and safety a top priority and the CER delivery commitment by project participants, it is justified to not conduct the physical site visit for verification audit. Since the site visit cannot be postponed but is not conducted due to the COVID-19 pandemic, hence the DOE has used standard auditing techniques for validation as referred to the paragraphs 179 and 319 of the VVS-PoA version 03.0.

The alternative means used for the purpose of verification are demonstrated as follows:

- The verification team has carried out remote interviews (by telephone / video calls) to assess the information included in the monitoring report and monitoring measurement procedures adopted during the monitoring period on 01/01/2020 to 31/12/2020. During the desk review, the relevant monitoring records were checked. Previous periodic monitoring reports and verification reports, photographs of the KOKO Cooker” stove kit, soft copy of original survey records and sales records were used to cross check consistency of information.
- Through the review of validation reports, previous verification report, comparing the relevant evidence and interview with the CME’s representatives through telephone /video, remote interviews with the households sampled by the DOE from the CME’s samples.

The assessment team has confirmed that the project is implemented in line with the revised and approved PoA-DD/CPA-DDs during the monitoring period. There is no change of the project design, operation, and monitoring plan. In view of the above consideration the assessment team can conclude that the standard auditing techniques used for the project activity are credible and sufficient for the purpose of verification.

Remote interviews were performed by verification team to assess the following:

Remote on-site inspection and interviews: 22/01/2021				
No.	Activity performed on-site	Site location	Date	Team member
1.	An assessment of the implementation and operation of the registered project activity as per the registered PoA-DD, CPA-DDs.	Remote interviews	22/01/2021	Ravi Kant Soni
2.	Assessment of data management system, QA/QC procedures. Comparison of end-user data/Warranty cards information in the database (dates, serial numbers, names, locations etc.) A review of information flows for generating, aggregating and reporting the monitoring parameters	Remote interviews	22/01/2021	Ravi Kant Soni
3.	Interviews with relevant personnel to determine whether the operational and data collection procedures are implemented in accordance with the monitoring plan in the CPA-DD	Remote interviews	22/01/2021	Ravi Kant Soni
4.	A cross check between information provided in the monitoring report and data from other sources such as inventories, purchase records or similar data sources	Remote interviews	22/01/2021	Ravi Kant Soni
5.	A review of calculations and assumptions made in determining the GHG data and emission reductions	Remote interviews	22/01/2021	Ravi Kant Soni
6.	An identification of quality control and quality assurance procedures in place to prevent or identify and correct any errors or omissions in the reported monitoring parameters	Remote interviews	22/01/2021	Ravi Kant Soni

D.3. Interviews

No.	Interviewee	Date	Subject	Team member
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	Last name	First name	Affiliation			
1.	Mahawar	Abhishek	Senior Project Manager, KOKO Networks Limited	22/01/2021	PoA/CPA implementation and its development, monitoring report, ER Calculations, Generation of sales database, Data entry, reporting, QA/QC	Ravi Kant Soni
2	Koigi	Nancy	Head - Market Research, KOKO Networks Limited	22/01/2021	Monitoring, Survey design, QA/QC procedures, analysis of survey results	Ravi Kant Soni
3	Ouma	John	Associate – Market Research, KOKO Networks Limited	22/01/2021	Survey Planning, Survey Implementation	Ravi Kant Soni
4	Mugambi	Fridah	KOKO User (HH, Stove serial number - 200320277)	22/01/2021	DOE Remote survey	Ravi Kant Soni
5	Atieno	Gorety	KOKO User (HH, Stove serial number - 200464677)	22/01/2021	DOE Remote survey	Ravi Kant Soni
6	Njoroge	James	KOKO User (HH, Stove serial number - 200600694)	22/01/2021	DOE Remote survey	Ravi Kant Soni
7	-	Festus	KOKO User (HH, Stove serial number - 200275914)	22/01/2021	DOE Remote survey	Ravi Kant Soni
8	Lilian	Teresa	KOKO User (HH, Stove serial	22/01/2021	DOE Remote survey	Ravi Kant Soni

			number - 200532771)			
9	Khakai	Sarah	KOKO User (HH, Stove serial number - 200174554)	22/01/2021	DOE Remote survey	Ravi Kant Soni
10	Chege	Jane Njoki	KOKO User (HH, Stove serial number - 200264406)	22/01/2021	DOE Remote survey	Ravi Kant Soni
11	Kerubo	Gladys	KOKO User (HH, Stove serial number - 200278144)	22/01/2021	DOE Remote survey	Ravi Kant Soni
12	-	Naomi	KOKO User (HH, Stove serial number - 200212870)	22/01/2021	DOE Remote survey	Ravi Kant Soni
13	Awuor	Eshter	KOKO User (HH, Stove serial number - 200450790)	22/01/2021	DOE Remote survey	Ravi Kant Soni
14	Agweny	Geoffrey	KOKO User (HH, Stove serial number - 200085899)	22/01/2021	DOE Remote survey	Ravi Kant Soni
15	-	Leonora	KOKO User (HH, Stove serial number - 200072554)	22/01/2021	DOE Remote survey	Ravi Kant Soni

D.4. Sampling approach

>> CME's Sampling Approach

The monitoring of the PoA for verification includes parameters which require data related to operations of the cookstoves. Since it is not feasible to monitor all the cookstoves, the sampling-based approach is

adopted by the CME. For the purpose of sampling, CME has followed the CDM guidelines for Sampling and surveys for CDM project activities and programmes of activities version 4.0 which is in line to the revised accepted PoA DD. The confidence precision level applied by CME for the sampling is 95/10, which is appropriate as per the requirement of cross-CPA sampling. The CME applied simple random sampling approach across CPAs for different monitoring parameters. As the population is relatively homogeneous (same stove type, population, and cooking habits) with respect to the object of the sampling effort, simple random sampling method was found appropriate for the survey. The CME demonstrated to the satisfaction of the verification team that the survey conducted was free of any bias, calculation errors or any misinterpretation/misrepresentation of recorded data.

Verification Sampling Approach

In order to meet the requirements of Standard for Sampling and surveys for CDM project activities and programmes of activities version 09.0, the verification team applied acceptance sampling in the verification (in accordance with para 28). The verification team selected random samples of CME's sampled records, checked the acceptability (or otherwise) of the data for each such record with CME's sample records, and then based on the number of records where there is an agreement, determined if the CME's sample records meet the requirements.

The verification team has thus determined the sample size for acceptance sampling by evaluating the following, using guidance in the Standard 'Sampling and surveys for CDM project activities and programme of activities':

- The proportion of discrepancies between the CME's data and verification team's (field or onsite inspection results) data that can be considered acceptable. This is referred to as the AQL (Acceptable Quality Level): 0.5% was considered in this verification.
- The proportion of discrepancies between the CME's data and verification team's (field or onsite inspection results) data that would be considered unacceptable. This is the UQL (Unacceptable Quality Level): 20% was considered in this verification.
- The producer risk: 10% was considered.
- The consumer risk: 10% was considered.

Considering the above input values, a sample size of 11 was required as per Table (Sample size and acceptance number based on AQL, UQL, and producer and consumer risks) in the referred Standard.

Accordingly, the acceptance number (c) thus determined for the sample size is 0.

Table 7: Applied sampling standard

AQL	0.5%
UQL	20%
Producer risk	10%
Consumer risk	10%
Sample size	11
Acceptance Number (c)	0

The DOE has picked 12 samples (against the requirement of minimum 11 samples) from the household user category for verification sampling. The samples to be surveyed by the verification team remotely were randomly selected from the list of monitored samples using the random sample generator on Microsoft excel.

The sampling method used is in line with Standard: Sampling and surveys for CDM project activities and programme of activities, ver. 09.0 and Guideline: Sampling and surveys for CDM project activities and programme of activities, ver. 4.0. The results of the CME sampling and verification sampling are discussed in the section E.3.4.3.

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

Areas of verification findings	No. of CL	No. of CAR	No. of FAR
General			
Compliance of the monitoring report with the monitoring report form	-	-	-
Remaining forward action requests from validation and/or previous verifications	-	-	FAR01
CPAs considered for verification and covered in this report	-	-	-
Programme of activities	-	-	-

Compliance of the programme implementation with the registered PoA-DD	-	-	-
Implementation and operation of the management system	-	-	-
Post-registration changes	-	-	-
• Corrections	-	-	-
• Inclusion of a monitoring plan	-	-	-
• Permanent changes to the registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines, or other methodological regulatory documents ¹	-	-	-
• Changes to the programme design	-	-	-
• Addition of CPA inclusion template	-	-	-
• Change of coordinating/managing entity	-	-	-
• Changes specific to afforestation and reforestation activities	-	-	-
Component project activities	-	-	-
Compliance of the CPA implementation with the included CPA design document	-	-	FAR #2
Post-registration changes	-	-	-
• Temporary deviations from registered monitoring plan, applied methodologies, standardized baselines or other methodological regulatory documents	-	-	-
• Corrections	-	-	-
• Changes to the start date-of the crediting period	-	-	-
• Inclusion of a monitoring plan	-	-	-
• Permanent changes to the registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines, or other methodological regulatory documents	-	-	-
• Changes to the project design	-	-	-
• Changes specific to afforestation and reforestation activities	-	-	-
Compliance of the registered monitoring plan with applied methodologies and standardized baselines	-	-	-
Compliance of monitoring activities with the registered monitoring plan	-	CAR 03	-
• Data and parameters fixed ex ante or at renewal of crediting period	-	CAR #4	-
• Data and parameters monitored	-	CAR02	-
• Implementation of sampling plan	-	-	-
Compliance with the calibration frequency requirements for measuring instruments	-	-	-
Assessment of data and calculation of emission reductions or net removals	CL01	CAR01	-
• Calculation of baseline GHG emissions or baseline net GHG removals by sinks	-	-	-
• Calculation of project GHG emissions or actual net GHG removals by sinks	-	-	-
• Calculation of leakage GHG emissions	-	-	-
• Summary of calculation of GHG emission reductions or net GHG removals by sinks	-	-	-
• Comparison of actual GHG emission reductions or net GHG removals by sinks with estimates in	CL02	-	-

¹ Other standards, methodologies, methodological tools and guidelines (to be) applied in accordance with the applied(selected) methodologies are collectively referred to as the other (applied) methodological regulatory documents).

included CPA			
• Remarks on difference from estimated value in included CPA	-	-	-
Assessment of reported sustainable development co-benefits	-	-	-
Global stakeholder consultation	-	-	-
Others (please specify)	-	-	-
Total	02	04	02

SECTION E. Verification findings

E.1. General

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

Means of verification	The verification team has compared the final monitoring report /19/ with the applicable and latest monitoring report form, i.e. CDM-PoA-MR-FORM /20/.
Findings	No findings.
Conclusion	The final Monitoring Report was prepared using latest correct template i.e., CDM PoA-MR-FORM Version 05.0/20/. The verification team confirms that the monitoring report has been appropriately prepared using the applicable monitoring report form, and that all sections are completed inline to the guidelines.

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

>> There were 2 FAR raised. One FAR was raised during previous verification and other one raised during validation of CPA-002. Both the FARs are addressed during the current verification, please refer FAR #1 and FAR #2 under Appendix-4 for further details.

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

Title and UNFCCC reference number of the CPA included in the PoA as of the end of this monitoring period	Is the CPA considered for this verification? (yes/no)	The date when the CPA was included	Version of the PoA-DD	Confirmation that a request for issuance including the CPA has been published for the previous monitoring period (Y/N)
CPA-0001: KOKO Kenya - Ethanol Cookstoves Program 10476-P1-0001-CP1	No	23/10/2019	07	N
CPA-0002: KOKO Kenya - Ethanol Cookstoves Program 10476-P1-0002-CP1	Yes	28/08/2020	07	Y

E.2. Programme of activities

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

Means of verification	In response to FAR raised in the 1 st issuance cycle/27/, the CME revised the PoA-DD and processed it along with the verification of CPA-0001 as per provisions of Approval of Changes under Issuance Track. The revised PoA-DD/01/ was reviewed to identify the key design features, eligibility requirements and monitoring requirements for the CPA operations. The verification
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	<p>team carried out checks during the remote site visit to assess the compliance of the CPA operations with the PoA design, physical features and monitoring provisions.</p> <p>The following features of the implemented CPA were compared with the latest PoA-DD:</p> <ul style="list-style-type: none">• Implemented technology• CPA eligibility conditions• Emission reduction calculation method• Implemented monitoring plan <p>The implemented CPA, covered under this verification, consisted of KOKO Cookers and KOKOpoints (fuel ATMs) in accordance with the registered PoA-DD. The specification of KOKO cookers and related infrastructure was checked from the specification sheets and the actual units were compared against the same from the user invoices/28/ and company records. There was no departure of the technology observed from the specifications mentioned in the PoA-DD. The CPA implementation complied with all eligibility conditions as provisioned in the PoA-DD. The formulae, fixed parameters and the monitoring parameters and emission reduction calculation methods applied in the monitoring report were found to be complying with the PoA-DD.</p> <p>The PoA involves distribution of modern cookstoves (KOKO cookers) and promote its use for cooking purposes in households in Kenya. The CPA, covered under this verification, was implemented in Nairobi and nearby provinces (Nairobi Network) in Kenya. The summary of total cookstoves distributed under the CPA till the end of monitoring period (31st December 2020) is provided below:</p> <table><tr><th>CPAs</th><th>Technology</th><th>Households</th><th>SMEs (Kibandas)</th></tr><tr><td>CPA-0002</td><td>KOKO Cooker</td><td>27,919</td><td>0</td></tr></table> <p>The CPA operations were found to be consisting of only CDM micro-units and hence exempted from micro/small scale threshold limits /28/. Hence, CPA-0002 is not limited by the threshold's requirements for micro/small scale projects and may continue to include additional units.</p> <p>The total of 596 KOKOpoints were installed and 583 were found operational in the Greater Nairobi region by the end of the monitoring period as checked from the KOKO shop database/15/.</p>	CPAs	Technology	Households	SMEs (Kibandas)	CPA-0002	KOKO Cooker	27,919	0
CPAs	Technology	Households	SMEs (Kibandas)						
CPA-0002	KOKO Cooker	27,919	0						
Findings	FAR#1 (from previous verification) was raised and resolved.								
Conclusion	<p>a) The verification team confirms that the physical features (technology/type) of the implementation were in accordance with the revised accepted PoA-DD.</p> <p>b) The implementation and operation of the registered CDM PoA and the included CPAs have been conducted in accordance with the description contained in the revised accepted PoA-DD</p> <p>c) The operations of the CDM PoA was found to be meeting the CDM requirements with respect to the scale of the PoA.</p> <p>d) No information concerning data and variables was identified that may surpass the estimated quantity of ERs in the CPA DD.</p>								

E.2.2. Implementation and operation of the management system

Means of verification	<p>The verification team carried out remote site visit to check the operations of the CPA covered under this verification and interviewed key personnel of the CME responsible for operation and management of the programme. Interviewees included the CME, KOKO stove distributors, cookstove users, and others. It was established that the programme management system has been implemented and operated as described in the PoA and included CPA.</p> <p>The information about the user, type and installed cooker under each CPA is stored in central ERP database that is maintained by the CME. The central ERP database records the unique identification number, location, installation (fulfilment) date, and usage status of each cooker in CPA, which helps to identify, locate and verify any or all of the units. CME has provided the ERP output file/13/ that is used to ensure that unique identification of CEPs can be tracked. This file has been verified for the</p>
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	number of users. The CME is responsible for QA/QC of the data, analysis and reporting into the monitoring report. For survey data, a monitoring team has been organized by the CME consisting of trained monitoring staff, who conducted the surveys/field tests. The staff was interviewed, and training records/29/ were checked to ensure that they were trained for conducting the surveys/field tests. The Head of marketing research at the CME is responsible for QA/QC of the data, analysis and reporting into the monitoring report.
Findings	No finding was raised.
Conclusion	The verification team assessed the management systems in place to implement the monitoring of the PoA. This included the roles and responsibilities, data collection, transfer and aggregation procedures, data storage and archiving for the monitoring system. The roles and responsibilities, data collection transfer and aggregation procedures, data storage and archiving for the monitoring system have been provided in the MR. The verification team confirms that the monitoring management system of the PoA is in place with the responsibilities properly identified and established.

E.2.3. Post-registration changes

E.2.3.1. Corrections

>> Not Applicable.

E.2.3.2. Inclusion of a monitoring plan

>> Not applicable.

E.2.3.3. Permanent changes to the registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines, or other methodological regulatory documents

>> Not Applicable.

E.2.3.4. Changes to the programme design

>>

Not Applicable

E.2.3.5. Addition of CPA inclusion template

>> Not Applicable

E.2.3.6. Change of coordination/managing entity

>> There is no change in CME, the registered PoA-DD mentions KOKO Networks Limited as the CME.

E.2.3.7. Changes specific to afforestation and reforestation activities

>>

Not applicable

E.3. Component project activities

E.3.1. Compliance of the CPA implementation with the included CPA design document

Means of verification	<p>The verification team carried out checks during the remote site visit to assess the compliance of the CPA operations with the CPA design, physical features and monitoring provisions.</p> <p>The following features of the implemented CPA were compared with the latest CPA-DD:</p> <ul style="list-style-type: none"> • Implemented technology • CPA eligibility conditions • Emission reduction calculation method • Implemented monitoring plan
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	<p>The CME revised the PoA-DD and processed it along with this verification as per provisions of Approval of Changes under Issuance Track of CPA-0001. It was identified that the actual monitoring procedures and operations of the implemented CPA was complying with the revised PoA-DD and the included CPA-DD.</p> <p>The implementation of the CPA is reported in section E.2.1 above. The formulae, fixed parameters and the monitoring parameters and emission reduction calculation methods applied in the monitoring report were found to be complying with the CPA-DD. The CPA implementation and its operation complied with the description of the included CPA-DD.</p>
Findings	FAR #2 (from validation) was raised and resolved.
Conclusion	<p>a) The verification team confirmed through remote audit and review of the supporting documentation that physical features of the CPA have been implemented in accordance with the included CPA-DD.</p> <p>b) No specific monitoring equipment had to be installed according to the monitoring plan.</p> <p>c) The CPA was also found to be completely operational in line with the CPA-DD.</p> <p>d) The information provided in the relevant sections of the monitoring report appropriately described the implementation status of the CPA.</p> <p>e) Assessment team also confirms that monitoring period is within the CPA crediting period</p>

E.3.2. Post-registration changes

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

>> Not Applicable

E.3.2.2. Corrections

>> Not Applicable

E.3.2.3. Changes to the start-date of the crediting period

>> Not Applicable

E.3.2.4. Inclusion of a monitoring plan

>> Not Applicable

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

>> No permanent change to monitoring plan has been submitted to the UNFCCC prior to the current monitoring period.

E.3.2.6. Changes to the project design

>> No change of Project design has been submitted to the UNFCCC prior to the current monitoring period

E.3.2.7. Changes specific to afforestation and reforestation activities

>>

Not applicable

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

Means of verification	<p>The monitoring plan as contained in the CPA-DD was reviewed against the monitoring requirements of the applied methodology AMS-I. E version 09/03/ as well as revised PoA-DD /01/. Based on this review, it was found the monitoring plan contained in the CPA-DD includes all the required parameters to be monitored in the context of the CPA design and description and allows proper determination of emission reductions in accordance with PoA-DD /01/ and the applied methodology.</p>
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Findings	No Findings
Conclusion	The monitoring plan included in CPA-DD is in accordance with the approved methodology, AMS-I.E version 09.

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

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

Means of verification	<p>By means of comparison of the MR and the ER calculation spreadsheet with the PoA-DD/4/ and CPA-DD/11/, the verification team has checked that all parameters fixed ex-ante have been applied correctly.</p> <p>Parameters which are fixed ex-ante are listed as below have been found to be adequately provided in the section E.1 of the MR. Corresponding values in the ER sheet are also verified to be correct and in accordance with the registered monitoring plan of CPA-DD. The list of fixed parameters verified are provided below:</p> <ol style="list-style-type: none"> 1. $f_{NRB,y}$ or f_{NRB} 2. $NCV_{biomass}$ 3. $EF_{projected}$ 4. LAF_y 5. $BC_{BL,PP,Y}$ 6. $N_{P,HH}$ 7. $EF_{bioethanol_production}$ 8. $\dot{\eta}_{Eth}$ 9. $EF_{EF,j,y}$ 10. $TDL_{j,y}$ 11. $\eta_{old,i}$ 12. $EF_{CO2,f}$ 13. CF 14. $D_{Ethanol}$ <p>It is observed that the value of ex-ante parameter $BC_{BL,PP,y}$ (Average annual consumption of woody biomass per person before the start of the project activity) of this CPA 02, it was determined as 1.71 tonnes/person/year, which is higher than the value applied in CPA 01 (i.e. 0.93 tonnes/person/year) from the same host country.</p> <p>DOE assessment on inconsistency in the baseline value of $BC_{BL,PP,y}$ for CPA-0001 & CPA-0002:</p> <p>The value of parameter $BC_{BL,PP,y}$ was calculated as 0.93 tons/person/year, based on the natural resource supplies and the assessment team has confirmed the same through the Economic Survey 2018 /36/ i.e. latest official records available at the time of baseline determination for CPA-0001.</p> <p>However the during the validation of CPA-0002, value of $BC_{BL,PP,y}$ was calculated as 1.71 tons/person/year, using the latest data available in pan-Kenya survey conducted by Ministry of Energy, Kenya and Clean Cooking Association of Kenya, published in August 2019 /35/.</p> <p>Since the baseline for CPA-0001 was already established well before publication of this survey, hence the value of the parameter $BC_{BL,PP,y}$ could not be updated for CPA-0001. The chronology regarding the validation of PoA/CPA as provided under the CME response is correct and appropriate.</p> <p>The assessment team has checked the ER calculation sheet for CPA-0001/34/ and can confirmed that the per capita woody biomass consumption was calculated based on the natural resource supply (Economic Survey 2018), because no authentic/official reliable household survey available during the baseline determination for CPA-0001. The records referred (Economic Survey 2018) cannot be considered as appropriate as reflected a lower woody biomass consumption than the actual and hence cannot be treated as representative of the actual baseline in Kenya. The reasons provided by the CME in this regard are found to be sensible and appropriate.</p> <p>The assessment team is of the opinion that the approach followed for calculation of the parameter $BC_{BL,PP,y}$ (Average annual consumption of woody biomass per person before the start of the project activity), was fairly conservative and accepted</p>
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	<p>during the validation of CPA-0001 due to absence of more accurate and reliable data source. However, the calculation of the woody biomass consumption for CPA-0002 is based on the results obtained from the Pan-Kenya official household survey, that can be considered more robust, reliable and presents more accurate data of household demand.</p> <p>(For further details please refer CAR #4 under Appendix-4 of this report and UN clarification response CPA002 being submitted along with this submission).</p>
Findings	CAR #4 was raised and resolved
Conclusion	<p>The MR and the ER calculation have considered the parameters fixed ex- ante correctly.</p> <p>It is confirmed that fixed ex-ante parameters corresponding with the provisions of CPA-DD/11/ are appropriately applied for the ER calculation.</p>

E.3.4.2. Data and parameters monitored

Means of verification	<p>During the verification, all relevant monitoring parameters (as listed in the generic part of PoA-DD and CPA-DD) have been verified regarding the</p> <ol style="list-style-type: none"> Appropriateness of the applied measurement / determination method, The correctness of the values applied for ER calculation, The accuracy and applied QA/QC measures. <p>The PoA-DD monitoring plan was designed to include both household and SME users. The design of CPA-0002 contains only household users as the target segment. Hence, the monitoring plan of CPA-0002 only contains parameters which are relevant to household user monitoring while excluding those required for SME users. The verification team reviewed the approved CPA-DD for CPA-0002 and confirmed that it contains all parameters required for accurate calculations of emissions reductions for the household user segment. The verification team further confirmed that the reported monitoring parameters and procedures confirm to the approved CPA-DD for CPA-0002.</p> <p>The value of monitoring parameters is derived from periodic monitoring survey conducted by the CME. The results and verification of survey is provided in section 3.4.3 of this report.</p>
Findings	CAR #2 was raised and closed successfully.
Conclusion	All the data and parameters results are now appropriately applied and thus, it can be concluded that the data and parameters monitored are in accordance with applicable provisions under applied methodology, PoA and CPA-DD.

E.3.4.3. Implementation of sampling plan

Means of verification	<p>The verification team checked whether the PP applied a sampling approach to determine the monitored values appropriately in line with POA and CPA-DD.</p> <p>Further it has been checked whether the PP correctly applied the implemented sampling plan including</p> <ol style="list-style-type: none"> Description of the implemented sampling design Collected data Analysis of collected data Demonstration on whether the required confidence/precision has been met.
	<p>Description of CME Monitoring Survey</p> <p>CME has followed the CDM guidelines for Sampling and surveys for CDM project activities and programmes of activities version 4.0/10/ for carrying out the monitoring survey. The confidence precision level applied by CME for the sampling is 95/10, which is appropriate as per the requirement of cross-CPA sampling. The CME applied simple random sampling approach across CPAs for different monitoring parameters. Since the ER calculation methods are different for households and SME users, separate simple random Sampling was applied for each of the category. As the population is relatively homogeneous (same stove type, population, and cooking habits) with respect to the object of the sampling effort, simple random sampling method was found appropriate for the survey.</p> <p>The summary of survey implementation and its verification is provided in the below table.</p>

	Implementation Steps	Description	Means of Verification
	Survey Approval	A proposal to conduct survey as per the CDM requirements and guidelines was submitted to the CME management by the research team (market research department). The proposal included the survey methodology and the questionnaire. Initial approval to undertake the survey was received on date 01/09/2020.	The initial approved proposal/31/ was checked and found satisfactory.
	Sampling Size Calculation	The minimum sample size for proportion and mean parameters was calculated using the simplified equation (1) and equation (4) of the Guideline: Sampling and surveys for CDM project activities and programmes of activities, Version 04.0 respectively. The last survey results were applied as initial guess values for calculating minimum sample size for each survey parameter.	The verification team checked the guess values from the last survey results submitted in the 1 st verification/32/. The sample size calculation /13/ was checked for appropriateness of the formulae and input values. Sample size calculator available on UNFCCC website/33/ was used to cross check the results.
	Random Sampling	The random sampling ID (integers starting from 1) were assigned to each record in the customer database. The sequence of random non-repeating integers, lying between 1 and the random sampling ID of the last record, was generated from the website Random.org (https://www.random.org/integer-sets/). The users from customer database were shortlisted for survey implementation based on the sequence of random numbers generated.	The population size for each category was checked from the customer database/13/. It was verified that the correct random sequence generator was used from the website Random.org. The record of the database/13/ and the screenshot of the random sequence (generated from Random.org)/21/ used for shortlisting the users in each category was checked and found appropriate.
	Field Visits	The field visits were conducted by the trained and experienced staff of market research team of the CME. The team has been regularly carrying out similar surveys and research studies, including the 1 st CDM monitoring survey, at KOKO Networks. All team members attended orientation session before starting the field visits to understand the survey guidelines and the requirements. Field visits were done for all shortlisted users based on their availability. The responses from each user, against the survey questionnaire, were recorded in the google forms via mobile app. The recorded user responses are time stamped and digitally signed by the surveyor.	The training records/29/ and survey records for MP1/32/ were checked for assessing the competence of the survey team. The google form (template)/17/ used for recording user responses was checked for completeness. The survey output sheet/17/, containing all the responses from the users, was also cross-checked for data consistency with the survey results. Government imposed night curfew in Kenya. However, there was no restriction in movement within the city and hence the survey was implemented during the day time before 6 pm. Additionally, KOKO's business activities were allowed as essential services and hence was not impacted

		by any restrictions announced during the period.
Data analysis and Results	Data analysis and result compilation was performed in accordance with the requirements of the monitoring plan and the ER calculations.	Survey results were checked for data compilation, application of formulae and the consistency of the calculations.
Reliability Test	The survey results were checked against the 95/10 reliability level in accordance with the relevant CDM guidelines and standard. Each parameter was found to be meeting the precision limit of 10%.	The formulae applied and the calculation of the reliability test was checked.

Monitoring Survey Results

The results of monitoring survey conducted by the CME are summarized below

Sampling Parameter	Minimum Sample Size	Samples surveyed	Survey Result	Precision
Number of project devices in households of type i and batch j operating during year y, N_{HH}	4	262	100%	0.00%
Average annual consumption of woody biomass per person in the pre-project devices during the project activity, if it is found that pre-project devices were not completely displaced but continue to be used to some extent, $BC_{PJ,PP,Y}$	155	262	0.38	1.85%
Average Daily Consumption of Bioethanol in Households, $Q_{HH,Eth}$	111	262	0.59	2.77%

No CME sampling monitoring records/data results were found discrepant during the DOE verification site-visit. All the 12 samples remotely checked by the verification team were found comparable with CME monitoring records and were also found to be operational during remote audit. Further, the verification team reviewed all the primary monitoring records to assess the consistency of information with ER calculation spreadsheet and found the monitoring data to be correctly transcribed into the ER sheet and MR.

Based on above, verification team concludes that sampling results and values presented by CME in the MR and ER calculation spread sheet with objective evidence as submitted in response to verification issues are consistent with the remote site visit observation and interview with the end users (HHs and SMEs). By means of above assessment, the verification team confirms that:

- the survey was implemented in accordance with the guideline "Sampling and surveys for CDM project activities and programme of activities ", version 04.0 and the "Standard: Sampling and surveys for CDM project activities and programmes of activities", Version 09.0/19/.
- The CME demonstrated to the satisfaction of the verification team that the survey conducted was free of any bias, calculation errors, misinterpretation, or misrepresentation of recorded data.
- The survey results met the required confidence/precision.

Detailed Assessment of Sampling parameters

For detailed assessment of parameter wise sampling, please refer below:

Parameter: N_{HH}

Description	Number of project devices in households of type i and batch j operating during year y
Compliance with Design Documents	The parameter is determined by multiplying the total number of cookers distributed to households with the percentage of cookers found operational during the household monitoring survey.

	<p>The total number of cookers distributed to households is determined from the ERP database/13/.</p> <p>The percentage of cookers operational is determined through a sampling-based monitoring survey of households. During the household monitoring survey, the existence and functionality of the project appliance is confirmed by recording user response to the questionnaire and through a visual inspection of the cooker.</p> <p>The Verification team during remote site visit verified a total of 12 samples from the CME sample list and all were found in operation across all the households. No discrepancies have been observed from the result presented by CME and DOE sampling.</p>	
	Parameter: $BC_{PJ,PP,y}$	
	Description	Average annual consumption of woody biomass in the pre-project devices during the project activity, if it is found that pre-project devices were not completely displaced but continue to be used to some extent in the households
	Compliance with Design Documents	The parameter is determined average consumption of woody biomass over the population by dividing the total annual woody biomass consumption in all households covered in the survey with total number of sample points. To determine this, the survey records the number of daily meals cooked on the pre-project or baseline stove as fraction of total daily meals cooked. The fraction contribution of the pre-project stove in cooking is multiplied by ex-ante fixed parameter "Quantity of woody biomass used in the absence of the project activity". This term is eventually deducted from the baseline emission calculation to discount the fraction of baseline stove usage during the project scenario.
	Parameter: $Q_{HH,Eth}$	
	Description	Average daily consumption of bioethanol in a project cookstove (KOKO cooker) distributed to households
	Verification	<p>The parameter is determined by calculating the Average Bioethanol Consumption by the household customers. The average consumption is calculated by recording the user response for average monthly expense on KOKOfuel and dividing it by the average price of KOKOfuel during the monitoring period.</p> <p>DOE during remote site visit verified 12 samples from the household monitoring survey list applying acceptance sampling. The verification team cross-verified the average monthly consumption of bioethanol together with the biofuel price and availability.</p> <p>The average price of the fuel was also cross-checked from the company records of any changes made to the price of the fuel during the monitoring period.</p>
Findings	CL#1 & CAR#1 were raised and closed successfully.	
Conclusion	<p>Based on the assessment of monitoring survey and sampling records and their analysis sheets for the related parameters, it is concluded that all the parameters have been monitored correctly in accordance with registered monitoring plan and the applied methodology.</p> <p>The verification team can confirm that all sampled parameters have been determined correctly in line with the registered corresponding CPA-DD and the sampling standard. For all the parameters, the achieved relative precision of 10% and 95% confidence level is demonstrated to be met.</p> <p>Based on above along with the remote site visit and interview and sample inspection records of the KOKO cooker installation in Kenya, the verification team concludes the approach and result deemed appropriate and acceptable.</p>	

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

Means of verification	The assessment team has reviewed the CPA DDs and PoA DD, during the verification, to confirm that whether the calibration requirements for monitoring equipment's have been met; especially if the calibration frequency is in line with the requirements of the validated CPA-DD/PoA-DD and/or the applicable calibration standards. The applied methodology and the registered PoA monitoring plan do not make provision for calibration. The Efficiency of bioethanol KOKO Cooker is fixed. Thus, additional verification testing of stove efficiency was not deemed as necessary.
Findings	No Findings
Conclusion	The applied methodology and the registered PoA monitoring plan do not make provision for calibration.

E.3.6. Assessment of data and calculation of emission reductions or net removals**E.3.6.1. Calculation of baseline GHG emissions or baseline net GHG removals by sinks**

Means of verification	<p>The verification team verified that</p> <ol style="list-style-type: none"> A complete set of data for the monitoring period was available for the monitoring period and the verification of each monitoring parameter is elaborated under Section E.3 of this report. The complete monitoring data is also presented in the corresponding ER calculations sheet /17/ of final Monitoring Report /19/. The information provided in the monitoring report was cross checked with other sources, wherever appropriate and available, and such information is also included under Section E.3 of this report. The calculations of baseline emissions as presented in the corresponding ER calculations sheet /17/ of final Monitoring Report were checked and found to be consistent with the formulae and methods described in the registered monitoring plan of each relevant CPA DD, PoA DD and the applied methodology. All assumptions used in the emission reduction calculations were found appropriate and therefore justified Appropriate emission factors, IPCC default factors and other reference values have been correctly applied. This has also been elaborated under Section E.3.4.1 of this report. No standardized baseline was prescribed in the PoA DD and therefore it has not been applied. There is no pro-rate approach was applied in the current monitoring period as entire monitoring period falls into period that is after the end of first commitment period of Kyoto Protocol. <p>The following equations were used to determine the baseline emissions as provided in the monitoring report and applied in the corresponding ER calculations sheets. The expressions used were found consistent with the revised accepted PoA DD, registered CPA DDs and the applied methodology AMS-I.E. Version 09.0: Baseline emission is determined using the following equation in line with applied methodology:</p> $BE_y = B_y \times f_{NRB,y} \times NCV_{biomass} \times EF_{projected} \times Stove_{year} \times LAC$ <p>BE_y = Baseline emissions in the year y (tCO₂e)</p> <p>B_y = Quantity of woody biomass that is substituted or displaced in year y (tonnes)</p> <p>$f_{NRB,y}$ = Fraction of woody biomass used in the absence of the project activity in year y that can be established as non-renewable biomass (fraction or %)</p> <p>$NCV_{biomass}$ = Net calorific value of the non-renewable woody biomass that is substituted (IPCC default for wood fuel, 0.0156 TJ/tonne)</p> <p>$EF_{projected_fossil_fuel}$ = Emission factor for the substitution of non-renewable</p>
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	<p>woody biomass by similar consumers. Use a value of 63.7 tCO₂/TJ₂</p> <p>= number of Year(s) the cookstove i was operational Fraction during the monitoring period</p> <p>LAC = Leakage Adjustment Factor (Default Value - 0.95)</p> <p>For KOKO cookstoves operational in households, Option (b) is applied to calculate parameter By.</p> $B_y = B_{HH,y} = N_{HH} \times N_{p,HH} \times (BC_{BL,PP,y} - BC_{PJ,PP,y})$ <p>Where:</p> <p>$N_{p,HH}$ = Average number of persons served per household, number</p> <p>$BC_{BL,PP,y}$ = Average annual consumption of woody biomass per person before the start of the project activity, tonnes/person/year</p> <p>$BC_{PJ,PP,y}$ = If it is found that pre-project devices were not completely displaced but continue to be used to some extent, average annual consumption of woody biomass per person in the pre-project devices during the project activity, tonnes/person/year</p>
Findings	No Findings
Conclusion	<p>The assessments team confirms that:</p> <ol style="list-style-type: none"> The complete data was available and is duly reported; As indicated above, the description about cross-check of reported data is included under respective parameter (refer Section E.3.4.2 of this report); Appropriate methods and formulae for calculating baseline GHG emissions or baseline net GHG removals were followed; Appropriate emission factors, IPCC default factors and other reference values were correctly applied. <p>There is no pro-rate approach (CDM VVS-PoA Version 03) was applied in the current monitoring period as entire monitoring period falls into period that is after the end of first commitment period of Kyoto Protocol.</p>

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

Means of verification	<p>During the verification process, the assessment team has reviewed the MR, CPA-DD, ER calculation sheet and the approach followed for calculation of project emissions has been checked and confirmed the following:</p> <ul style="list-style-type: none"> The calculation of project emissions is fully traceable and, where used, the excel calculation provides all calculation formulae. All internal and external parameters and data used for the calculation are applied consistently in the monitoring report and the calculation spreadsheet. The applied formulae and methods for calculating project emissions are in accordance with the monitoring plan and the approved methodology. All calculations are complete and without omissions.
Findings	No Findings
Conclusion	<p>The assessment team able to confirm that the calculation of the project emissions has been carried out in accordance with the formulae and methods described in the registered monitoring plan, the applied methodology. Any assumptions used in emission or removal calculations have been justified. Appropriate emission factors, IPCC default values and other reference values have been correctly applied.</p> <p>No errors, miscalculations, omissions, misstatements, or incomplete information have been identified.</p>

E.3.6.3. Calculation of leakage GHG emissions

Means of verification	<p>The leakage due to the use/diversion of non-renewable woody biomass saved under the project activity by non-project households/users that previously used renewable energy sources has been considered in the emission reduction</p>
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	calculation. In accordance with paragraph 24 of the applied methodology, a default net to gross adjustment factor of 0.95 to account for this leakage is applied.
Findings	No finding was raised.
Conclusion	The CME has applied a gross adjustment factor 0.95 as an alternative to leakages stated in para 34(a) and (b) of the applied methodology. The approach was found in line with the applied methodology and therefore, no further leakage emissions required to be accessed. Bio-ethanol stove are newly produced before distribution as confirmed during remote audit/interview with the CME and KOKO stove users.

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

Means of verification	<p>. As discussed in the above sections, the entire emission reductions from the PoA were based on baseline emissions. The calculations presented in this regard in the final monitoring report and corresponding ER calculations sheet were found appropriate and complying with the provisions prescribed in the registered monitoring plan of respective CPA DDs, PoA DD and applied methodology.</p> <p>1. The verification team confirms that an audit trail that contains the evidence and records that validated the stated figures were checked and found acceptable.</p>
Findings	1. No Findings
Conclusion	<p>The verification team confirms that</p> <ol style="list-style-type: none"> The complete data was available and is duly reported; As indicated above, the description about cross-check of reported data is included under respective parameter; Appropriate methods and formulae for calculating baseline GHG emissions or baseline net GHG removals, project emissions and leakage emissions were followed; Appropriate emission factors, IPCC default factors and other reference values were correctly applied. There is no pro-rate approach (CDM VVS-PoA Version 03) was applied in the current monitoring period as entire monitoring period falls into period that is after the end of first commitment period of Kyoto Protocol. The total number of ERs achieved during the current monitoring period is 38,179 tCO_{2e}.

Title and UNFCCC reference number of the CPA	Baseline emissions or baseline net GHG removals by sinks (tCO _{2e})	Project emissions or actual net GHG removals by sinks (tCO _{2e})	Leakage (tCO _{2e})	GHG emission reductions or net GHG removals by sinks (tCO _{2e})		
				Amount achieved before 1 January 2013	Amount achieved from 1 January 2013	Amount achieved in the entire monitoring period
10476-P1-0002-CP1	38,295.07	115.79	0	0	38,179 ²	38,179
Total	38,295.07	115.79	0	0	38,179	38,179

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

Means of verification	As verified and evident from the final Monitoring Report and corresponding ER calculations sheet/23/, the actual emission reductions achieved by the CPA that is included in the current monitoring period were found less than the estimated quantity in the CPA DD for a comparable period. Considering there is no increase in ERs no further verification effort was put in. The quantitative details of actual values of achieved ERs for the CPA and value estimated in the CPA- DD is presented in the next table.
Findings	CL #2 was raised and resolved

² Round down value

Conclusion	The actual emission reductions achieved in the monitoring period are not higher than the estimated quantity of ERs in the registered CPA DD. Therefore, it was accepted by the verification team.
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Title and UNFCCC reference number of the CPA	Actual values achieved by the CPAs during this monitoring period	Value estimated in ex ante calculation in the included CPA-DD(s)
CPA-0002: KOKO Kenya – Ethanol Cookstoves Program 10476-P1-0002-CP1	38,179	52,135
Total	38,179	52,135

E.3.6.6. Remarks on difference from estimated value in included CPA

Means of verification	The achieved emission reduction was compared with the ex-ante estimated number and was found that CPA under this request of issuance have achieved lesser emission reductions than the estimated as per the registered CPA-DD.
Findings	No finding was raised
Conclusion	Since, achieved emission reduction is less than ex-ante estimates no further investigation was done.

E.3.7. Assessment of reported sustainable development co-benefits

Means of verification	The CME has not requested DOE to verify sustainable development co-benefits.
Findings	No finding was raised.
Conclusion	Not applicable

E.3.8. Global stakeholder consultation

Means of verification	Not applicable
Findings	Not applicable
Conclusion	Not applicable

SECTION F. Internal quality control

>> As a final step for Verification, the final documentation, including the verification report, has to undergo an internal quality control by independent and qualified Technical Reviewer(s) to be approved.

Details of the Technical Reviewer(s) are provided within the verification report in Section B.2 and Appendix 2 for further references of knowledge and capability to conduct the quality checking.

After the Technical Review process, and once the Technical Review comments (if any) are incorporated to the Final Verification Report and this is approved by the Technical Review Team, the final documentation may undergo a final quality checking process called Administrative Review, done by the Applus+ Certification's Project Activity Manager and/or Technical Support.

For final approval, the final set of documents are prepared by the DOE's Technical Manager or its deputy and signed by the authorized signatory of the DOE. In case any of the persons performing this final internal quality, control approval process has acted as a part of the Assessment Team or Technical Review team, the approval can only be given by DOE's personnel who have not been part of those teams. If the final set of documents has been satisfactorily approved, the Request for Issuance is submitted to the UNFCCC CDM EB along with the relevant documents

SECTION G. Verification opinion

>>
 LGAI Technological Center, S.A. (Applus+ Certification) has been contracted by PoA's CME KOKO Networks Limited to undertake the independent verification of the registered CDM PoA titled "KOKO Kenya - Ethanol Cookstoves Program" (PoA ID: 10476) covering CPA 002 titled "CPA-0002: KOKO Kenya – Ethanol Cookstoves Program". The objectives of this verification are to verify and certify emission reductions reported for the specific Component Project Activity (CPA) for the monitoring period from 01/01/2020 to 31/12/2020 (first and last day included); and to verify that the data reported are complete and transparent.

The CME is responsible for the collection of data in accordance with the monitoring plan and the reporting of GHG emissions reductions from the project activity.

Applus+ Certification confirms that the monitoring system is in place and the emission reductions are calculated without material misstatements. This verification report has been prepared using the latest available template specified by UNFCCC and complies with the instructions to follow of CDM VVS-PoA Version 03.

The verification activities were conducted in accordance with Applus+ Certification CDM Quality Manual System as per the steps indicated under Section A of this report. The verification process has resulted in conclusion that the included CPA confirm to the revised PoA DD as well as comply with applicable CDM rules and regulations and in accordance with applied monitoring methodology, AMS-I. E version 09.

As a result, it is confirmed that the emission reductions from the CDM PoA 10476 “KOKO Kenya - Ethanol Cookstoves Program” are correctly reported in the Monitoring Report (final) Version 05 dated 21/10/2021 and corresponding ER sheets for the monitoring period 01/01/2020 to 31/12/2020 (including both days) amount as 38,179 tCO₂e. Therefore, this will be submitted as part of request for issuance as per CDM PCP Version 03.

SECTION H. Certification statement

>> LGAI Technological Center, S.A. (Applus+ Certification) DOE E-0032 has carried out the independent verification of the registered CDM PoA “KOKO Kenya – Ethanol Cookstoves Program” (PoA ID: 10476) covering CPA 002 titled “CPA-0002: KOKO Kenya – Ethanol Cookstoves Program” for the monitoring period from 01/01/2020 to 31/12/2020 (first and last day included).

As per the given above DOE's opinion, the Monitoring Report for the CPA meets all relevant UNFCCC requirements for the CDM and all relevant host country criteria, thereof confirms the following:

PoA title:	KOKO Kenya – Ethanol Cookstoves Program
CDM PoA ID:	10476
CPA Title:	CPA-0002: KOKO Kenya – Ethanol Cookstoves Program
Crediting period of the verified CPA:	28/08/2020 to 27/08/2030
Approved PoA-DD:	Version 07 dated 19/03/2021
Final Version of the Monitoring Report:	Version 05, 21/10/2021
Applied Methodology:	AMS-I.E. Version 09.0 - “Switch from non-renewable biomass for thermal applications by the user”
Applicable monitoring period:	01/01/2020 to 31/12/2020 (first and last day included), 2 nd Monitoring Period
Claimed and certified Emission Reductions:	38,179 tCO ₂ e

Appendix 1. Abbreviations

Abbreviations	Full texts
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
CME	Coordinating/Managing Entity
CO ₂	Carbon dioxide
CO ₂ eq	Carbon dioxide equivalent
CL	Clarification Request
DOE	Designated Operational Entity
DVerR	Draft Verification Report
ER	Emission Reduction
FAR	Forward Action Request
GHG	Greenhouse gas(es)
HHs	House Holds
IM	Interview Memo
MP	Monitoring Plan
MR	Monitoring Report
PA	Project Activity
POA-DD	Project of Activities Design Document
CPA-DD	Component Project Activities Design Document
PP	Project Participant
QA/QC	Quality Assurance / Quality Control
RC	Reliability check work sheets for field monitoring test
SD	Standard deviation
UNFCCC	United Nations Framework Convention on Climate Change
VT	Verification Team
VVS	Validation and Verification Standard
XLS	Emission Reduction Calculation Spread Sheet

Appendix 2. Competence of team members and technical reviewers

According to the sectoral scope / technical area and experience in the sectoral or national business environment, Applus+ Certification has composed a project assessment team in accordance with the appointment rules in the internal Quality Management System of Applus+ Certification.

The composition of audit team shall be approved by the Applus+ Certification ensuring that the required skills are covered by the team.

The four qualification levels for team members that are assigned by formal appointment rules are as presented below:

- Lead Auditor (LA).
- Auditor (A) / Auditor in Training (AiT).
- Technical Expert (TE).
- Technical Reviewer (TR).

The sectoral scope / technical area knowledge linked to the applied methodology/ies shall be covered by the assessment team.

Name	Qualification	Coverage of scope	Coverage of technical Area	Financial aspect	Attendance to the On-Site Assessment
Ravi Kant Soni	Lead Auditor (LA) / Technical Expert (TE)	Yes (1)	Yes (1.1)	N/A	NA
Miguel A. Cortés Díaz	Technical Reviewer (TR) / Technical Expert (TE)	Yes (1)	Yes (1.1)	N/A	NA

The curricula vitae of the DOE's team members are provided below:

Name	SHORT CV. BACKGROUND INFORMATION
Ravi Kant Soni	He is a certified lead auditor for Lead Auditor ISO 14001:2004&Lead Auditor ISO 14064:2006 GHG Inventory and verification. He has more than 10 years of work experience across Climate Change, Environmental Management & Monitoring, Health & Safety Management, and Statutory Compliance. He was involved in more than 100 CDM validation and verifications activities and Gold Standard, VER projects as a team leader/technical reviewer / validator / verifier covering the sectoral scope 1 technical area 1.2. He has done Master in Technology (Energy Management) from a premier institute, School of Energy & Environmental Studies, DAVV, Indore (M.P.), India and Bachelor of Engineering (Mechanical Engineering) from M.I.T.S Gwalior Jiwaji University Gwalior, India
Miguel A. Cortés Díaz	Mr. Miguel Cortés holds a Bachelor's Science Degree on Civil and Environmental Engineering, being specialized on Hydric Resources. He has worked as CDM/VCS/GS and environmental consultant for different industries of multidisciplinary sectors world widely. Mr. Miguel Cortés counts with several years of GHG assessment experience, working and being qualified as Lead Auditor and Technical Reviewer for different DOEs world widely, as well as has been part of Gold Standard expert's committees. Furthermore, he has performed his professional GHG assessment portfolio career worldwide and focusing in Latin America, developing assessments for projects in Argentina, Mexico, Panama, Colombia and Chile, among others.

Appendix 3. Documents reviewed or referenced

No.	Author	Title	References to the document	Provider
1	CME	Registered PoA-DD Revised PoA DD	Version 05 dated 11/07/2019 Version 07, 19/03/2021	Others
2	ESPL	Validation Report for Registered PoA-DD	Version 04, dated 12/07/2019	Others
3	UNFCCC	AMS-I.E- "Switch from non-renewable biomass for thermal applications by the user"	Version 09	Others
4	ESPL	Validation Report for CPA-DD titled " CPA-0002: KOKO Kenya – Ethanol Cookstoves Program "	Version 03, dated 05/08/2020	Others
5	UNFCCC	CDM VVS for PoA	Version 03	Others
6	UNFCCC	CDM PS for PoA	Version 03	Others
7	UNFCCC	CDM PCP for PoA	Version 03	Others
8	UNFCCC	Glossary of CDM terms	Version 10.0	Others
9	UNFCCC	Standard: Sampling and surveys for CDM project activities and programme of activities	Version 09.0	Others
10	UNFCCC	Guideline: Sampling and surveys for CDM project activities and programme of activities	Version 4.0	Others
11	CME	CPA-DD titled "CPA-0002: KOKO Kenya - Ethanol Cookstoves Program"	Version 4.0, dated 27/07/2020	Others
12	CME	Evidence for price of bioethanol (KES 70.00). KOKO fuel price Index	Dated Mar 2021	CME
		Fuel transportation logbook	28/08/2020 to 31/12/2020	
		Undertaking by the CME regarding the procurement of bioethanol from the VIVO Energy Kenya	dated 08/05/2020	
13	CME	Customer Sales Database sheet covering the applied Monitoring Period CDM Monitoring Survey Results Worksheet and Sample Size Calculation (CDM Survey Result_CONFIDENTIAL(User Personal Details).xls)	-	CME
		Declaration Statement by CPA implementer that the CPA is not part of any other project activity	Dated 15/04/2019	

		Proof of Carbon Credits waiver - End user Agreement (Samples)	-	
14	CME	Sample Purchase orders (Samples) for import of cookstoves from India issued by KOKO Networks Ltd PO01616 to PO1700	28/08/2020 to 31/12/2020	CME
		Digital Database of (KOKO stove sold) and sample digital application form	-	
		Registration of household in app-based software: screenshot of smart phone application (sample copy) from the KOKO Mobile App – Customer Journey	-	
15	CME	Evidence of installed KOKO Points – KOKOshop Database	As on 31/12/2020	CME
		Chemical & Industrial Consultancy Unit, Department of Chemistry, University of Nairobi for determination of the NCV of the biomass (bioethanol)	Dated 11/02/2021	
16	IPCC	1996 IPCC Guidelines for National Greenhouse Gas Inventories: work book	https://www.ipcc-nggip.iges.or.jp/	Others
		2006 IPCC Guidelines for National Greenhouse Gas Inventories: work book		
17	CME	<ul style="list-style-type: none"> Sample Usage Survey Forms- Google Form Usage survey analysis report integrated as part of the ER worksheet 	-	CME
18	CME	Monitoring Report (publication)	Version 01, 16/11/2020	CME
19	CME	Monitoring Report (final)	Version 05, 21/10/2021	CME
20	UNFCCC	Monitoring Report Form (CDM-PoA- MR-FORM)	Version 05.0	Others
21	CME	Evidence for random number generator for sampling of households	-	CME
22	CME	Stove specifications for models disseminated monitoring period in line with the Inclusion Criteria 4- Technical Specification of bioethanol stove	-	CME
23	CME	Initial ER calculation sheet	Version 01	CME
		Final version of ER calculation sheet	Version 06	
24	CME	fNRB backup worksheet using Tool 30 for fNRB calculation	-	CME
25		Filled sample questioners utilized for the Usage Report- Google Form based database	-	
26	PP	Emission Reduction Purchase Development Agreement between KOKO Networks Limited and Pine Tree Carbon LLC	-	CME
27	TUV-Nord	MP1 Verification Report	26/06/2020	Others
28		Methodological Tool: Demonstration of additionality of	Version 8, 22/09/2017	Others

		microscale project activity		
29	CME	Training Records for field survey team	-	CME
30	LGA	Validation Report for PRC in PoA-DD	27/03/2021	Others
31	CME	Proposal for field surveys for 2 nd periodic monitoring	01/09/2020	CME
32	CME	Survey Records for 1 st periodic CDM monitoring	-	CME
33	UNFCCC	Sample Size Calculator Tool – Excel Sheet https://cdm.unfccc.int/sunsetcms/storage/contents/stored-file-20150813144045237/Meth_guid48_Calculator.xlsx	-	Others
34	CME	ER calculation sheet CPA-001(validation) available at CPA view page	-	Others
35	Ministry of Energy Republic of Kenya	MoE survey report Kenya Household Cooking Sector Study	August 2019	Others
36	Kenya National Bureau of Statistics	Economic Survey 2018	-	Others
37	Stockholm Environment Institute	Charcoal Sector Study Kenya published	January 2016	Others
38	CME	Mail communication by CME to DoE (ESPL) regarding submission of CPA-DD	Dated 02/07/2020	CME
39	IPCC	IPCC GHG Inventory Report 2019	-	Others
40	Yale School of Forestry and Environmental Studies	Report for baseline fuel consumption in Kenya	Published in 2015 (https://cleancooking.org/wp-content/uploads/2021/07/426-1.pdf)	Others
41	United Nations	Report “United Nations: Energy for a sustainable Future”.	April 2010	Others
42	CME	CONTROLLED COOKING TEST Report (Nairobi)	December 2020	CME
		Water Boiling Test (WBT)	Sept 2016	
43	CME	Mass balance sheet	-	CME
44	CME	Monitoring survey Report (For MP01)	Jan 2020	CME
45	CME	Monitoring survey Report (For MP02)	Sept 2020	CME

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

Table 1. Remaining FARs from validation and/or previous verification

FAR ID	01	Section no.	E.2	Date:	25/01/2021
Description of FAR					
FAR raised during previous verification: A consolidated FAR is issued during the first verification and shall be checked during MP-2 Verification by the Verifying DOE: Consistency in the reporting of the parameter descriptions throughout the PoA-DD.					
Project participant response					Date: 04/03/2021
The revised design documents have been submitted for Post Registration Changes to the MP2 verification DoE for processing under Issuance-Track. All identified typographical errors have been corrected in the revised design documents.					
Documentation provided by project participant					
Revised PoA-DD					
DOE assessment					Date: 18/03/2021
The PP has submitted the revised PoA for post-registration changes along with CPA-0001 request for issuance. The revised PoA-DD was found to be satisfactory. FAR #1 is closed.					

FAR ID	02	Section no.	E.3.1	Date:	25/10/2021
Description of FAR					
FAR raised during CPA-002 validation: The project has not been implemented yet. The DOE involved in the first verification of this CPA shall confirm that implementation has been done in line with the PoA DD and generic CPA DD'.					
Project participant response					Date:
NA					
Documentation provided by project participant					
NA					
DOE assessment					Date: 10/11/2021
The DOE has used standard auditing techniques for validation as referred to the paragraphs 179 and 319 of the VVS-PoA version 03.0. The assessment team has confirmed that the project is implemented in line with the revised and approved PoA-DD/CPA-DDs during the monitoring period. There is no change of the project design, operation, and monitoring plan. In view of the above consideration the assessment team can conclude that the standard auditing techniques used for the project activity are credible and sufficient for the purpose of verification. FAR #2 is closed.					

Table 2. CLs from this verification

CL ID	01	Section no.	D.4	Date:	25/01/2021
Description of CL					
There was slight deviation observed in the data received from some of the respondents during the verification survey as compared to the data reported in the monitoring survey. CME is requested to clarify the reason for such deviation. Number of KOKO points reported in the MR are reduced as compared to the previous monitoring period, kindly clarify the reason. Kindly provide the list of KOKO points operational during the current monitoring period and the basis for selection of KOKO points.					
Project participant response					Date: 15/03/2021

It shall be noted that the monitoring survey was conducted in the month of September and October 2020 (which falls within the monitoring period) while the verification survey by the DoE was conducted in January 2021. It is highly unlikely that the users will be able to recall the exact responses provided during the monitoring survey at the time of verification survey. Hence, the user responses during verification survey were mostly representative of their current experience at the time of verification. It shall also be noted that the project is in implementation stage and most of the respondents in the monitoring survey are adapting to the modern cooking practices with the average age of cookers is less than a year. It is reasonable to expect slight variations in the consumption behaviour of the users over a 4-month interval (gap between monitoring survey and the verification survey).

CME would like to submit that most of the users have provided consistent responses during the verification survey except few where slight deviation is observed. However, the deviation is reflective of the natural variation of consumption behaviour over the period instead of any erroneous recording of data. Besides, based on qualitative information gathered from the users and the KOKO agents, CME has observed a trend that the users reduce the usage of baseline appliance with time as they become more comfortable with the KOKO technology. Some of the users who were partially using the baseline appliance during the monitoring survey (Sep-2020), responded to acceptance sampling (Jan-2021) that they have stopped using baseline appliance.

Originally, 700 KOKOpoints were planned for operations in Nairobi network at the time of project conceptualization as reported in the registered PoA-DD. However, the actual installation of KOKOpoints is dependent on the fuel demand generated across the network. More KOKOpoints were installed during 1st monitoring period, expecting high demand for fuel. However, it was later realized that some of the clusters were not generating fuel demand as expected earlier. Hence, they were decommissioned. Besides, some of the KOKOpoints which are not decommissioned but are not in operation due to technical problems also lead to reduced number of KOKOpoints available during the 2nd monitoring period. The record of operational KOKOpoints is provided to the DoE.

The basis for site selection for installing KOKOpoints is a combination of multiple factors like expected fuel demand, market visibility, proximity to the users, financial health and infrastructure of the prospective KOKO agent, etc.

Documentation provided by project participant

List of KOKOpoints

DOE assessment

Date: 18/03/2021

The clarification provided by the CME regarding the slight deviation observed in the data received from some of the respondents during the verification survey as compared to the data reported in the monitoring survey is appropriate and acceptable, considering the time gap between monitoring and verification survey.

The CME has submitted the list of KOKOpoints installed during the current monitoring period. Number of KOKOpoints are reduced as compared to previous monitoring period due to low demand for fuel, resulting the decommissioning of the existing one.

The KOKOpoints are selected on the basis of fuel demand and the other factors as indicated by the CME, found to be satisfactory, hence accepted.

It is not clear whether the project emissions are calculated based on installed or operational KOKOpoints, CME is requested to clarify the same.

CL #1 is open

Project participant response

Date: 19/03/2021

The emission reduction was originally calculated based on the number of operational KOKOpoints. However, the CME accepts that some of the decommissioned KOKOpoints have been partially operated before decommissioning during the monitoring period. In response to the DOE's concern related to conservativeness of the project emissions, CME has revised the number of KOKOpoints based on the number of installations, instead of operational units, in the ER calculation sheet. Hence, the project emissions are now accounting for all KOKOpoints installed (including both operational and non-operational).

Documentation provided by project participant

Revised MR

DOE assessment

Date: 24/03/2021

The project emissions are calculated based on the installed KOKOpoints (instead of operational), this approach is found to be conservative, hence accepted.

CL #1 is closed.

CL ID	02	Section no.	E.3.6	Date: 19/03/2021
Description of CL				

The emission reductions reported in the MR for the monitoring period (28/08/2020 – 30/09/2020) was found to be more than the estimated emission reductions for the monitoring period when calculated from the annual estimated emission reductions presented in the CPA-DD. Please justify the reason for the increase in the emission reduction than the estimated value.	
Project participant response	Date: 24/03/2021
<p>The achieved emission reductions during the monitoring period (28/08/2020 – 30/09/2020) are 5% higher than the ex-ante estimation of the ERs based on CPA-DD. It shall be noted that the CPA-DD assumed 9.3% deduction of baseline emissions due to continuation of baseline appliance while the monitoring survey conducted during the monitoring period observed this value to be only 6.4%. Hence, the lower deductions from the baseline emissions due to continuation of baseline appliance resulted in higher emission reductions than estimated.</p> <p>At the time of 1st CPA inclusion, the initial estimated deductions due to continuation of baseline appliances was 2%. However, during the 1st monitoring survey, the value was observed to be 8.7%. Hence, in CPA-2 inclusion, the value was conservatively taken to be 9.3%.</p> <p>Based on qualitative information gathered from the users and the KOKOagents, CME has observed a trend that the users reduce the usage of baseline appliance with time as they become more comfortable with the KOKO technology. This was also observed during the acceptance sampling survey conducted by the verification team. Some of the users who were partially using the baseline appliance during the monitoring survey (Sep-2020), responded to acceptance sampling (Jan-2021) that they have stopped using baseline appliance.</p>	
Documentation provided by project participant	
None	
DOE assessment	Date: 27/03/2021
<p>Based on the survey results and telephonic interview of the users during the sampling survey, it was verified that the rise in emission reduction than the estimate value is due to lower usage of baseline appliance than the estimate value. The verification team did not find any other variation in the operation parameters, calculation parameters or calculation method which may result in higher emission reduction, hence eliminating any risk of design change going unnoticed. Hence, the verification team accepts the higher emission reductions than estimated as reasonable and beyond the control of the CME.</p> <p>CL#02 is closed.</p>	
DoE closure remark, dated 20/04/2021:	
As discussed under CAR #3, the monitoring period was extended from 28/08/2020- 30/09/2020 to 28/08/2020 - 31/12/2020 and the corresponding ER calculation sheet is updated including the data for the revised monitoring period (28/08/2020 to 31/12/2020). The actual ERs achieved during the current monitoring period were found within the estimated ERs in the CPA-DD for comparable period.	
DoE closure remark, dated 02/09/2021:	
In response to the comments raised during the completeness check. The monitoring period dates are updated as 01/01/2020 to 31/12/2020, in line with the requirements as outlined under paragraph 255 (b) of PS PoAs version 02.0.	

Table 3. CARs from this verification

CAR ID	01	Section no.	E.3.6	Date: 25/01/2021
Description of CAR				
<p>The values related to sampling parameters and the ER calculation reported in MR are not consistent with the Survey Analysis and ER Calculation spreadsheets submitted to the DoE.</p> <p>There are duplicate phone numbers identified in the customer database, kindly clarify the reason.</p>				
Project participant response				Date: 04/03/2021

The values and description provided in the revised MR are now consistent with the ER calculation sheet and the survey analysis sheet.

CME is well aware about the users who have purchased multiple cookers. There are 700 such users (1.7% of the total unique users) who have purchased multiple cookers, totalling to 1471 cookers. Some of the above users (having multiple cookers) were included in the sampling and interviewed during the two periodic surveys conducted by the CME. It was revealed during the interviews that there are following reasons for purchase of multiple cookers by these users:

- Majority of these users also run small food outlets (kibandas) and they purchased 2 KOKO cookers - one for personal household needs while the other for using in the kibanda.
- Some users who had bigger food outlets serving to large number of customers replaced multiple cookers in his/her kibanda with multiple koko cookers
- Some users, fully satisfied with the 1st cooker, purchased an additional cooker for gifting it to their relatives/friends.
- Few users manage 2 households (having 2 wives - polygamy is legal in kenya) and purchased a cooker for each of the two households.

In all the above 4 cases, the sold cookers, albeit to a single user, are being used regularly for cooking purposes. Hence, the sale of multiple cookers does not lead to any doubt counting or over estimation of ERs.

Documentation provided by project participant

MR v 02, dated 04/03/2021

DOE assessment

Date: 18/03/2021

The CME has updated the values and description of parameters in the revised MR and now found consistent with the ER calculation sheet and the survey analysis sheet, hence accepted.

Based on the discussion with the end-users & information's verified during the remote verification survey, the assessment team is able to confirm that the clarification provided by the CME regarding the identical phone numbers in the database is appropriate and hence accepted.

CAR #1 is closed.

CAR ID	02	Section no.	E.3.4	Date: 25/01/2021
Description of CAR				
Kindly provide the evidences for the following:				
i. Rated power of KOKO Points				
ii. Lab test reports for NCV of biomass				
Project participant response				Date: 15/03/2021
The relevant documents are submitted to the DoE.				
Documentation provided by project participant				
1. KOKOpoint specification sheet				
2. Lab Test Report for NCV				
DOE assessment				Date: 18/03/2021
The CME has submitted the evidences for technical specifications of KOKOpoints and lab test reports for NCV of biomass, found to be satisfactory, hence accepted.				
CAR #2 is closed.				

CAR ID	03	Section no.	E.3.4.3	Date: 14/04/2021
Description of CAR				
It is noted that the revised MR covers a different monitoring period (28/08/2020 to 31/12/2020) from the period covered (28/08/2020 to 30/09/2020) by the original monitoring report published on the UNFCCC CDM website. Kindly clarify how the guidelines provided under paragraph 224 of CDM PCP for PoA V02.0 are followed.				
CME is requested to submit the revised ER calculation sheets including the data in line with the updated monitoring period.				
The monitoring survey was conducted by the CME during September 2020, however the current monitoring ends on 31/12/2020. In view of this information kindly justify the validity of monitoring survey in accordance with the section 4.8 of "General guidelines for SSC CDM methodologies" v 23.1.				
Project participant response				Date: 19/04/2021

<p>The change in monitoring period meets all the requirements of paragraph 224 of CDM PCP for PoA V2.0.</p> <ul style="list-style-type: none"> a) The end date of all CPAs is aligned with the revised end-date of the monitoring period. b) The request for issuance is submitted with the 1st batch of CPA c) The change in monitoring period will be indicated in the Issuance Request Form d) The on-site inspection was conducted in Jan 2021 which is after the revised end date of the monitoring period. <p>The revised ER calculation and MR has been submitted in line with the updated monitoring period.</p> <p>As per paragraph 4.8.2 of the "General guidelines for SSC CDM methodologies" v 23.1, the survey results are applicable for 24 months prior and 12 months later from the survey date. The survey date for this survey is 16th September 2020. Hence, it is applicable for the complete monitoring period (28/08/2020 – 31/12/2020). The CME do not envisage any circumstance which may question the validity of the survey for the given monitoring period.</p>	
Documentation provided by project participant	
MR version 02 ER calculation sheet v02	
DOE assessment	Date: 20/04/2021
<p>The CME is submitted revised MR and ER sheet including the data for the updated monitoring period found to be appropriate. The extension in the monitoring period is in accordance with the guidelines as outlined under paragraph 224 of CDM PCP for PoA V2.0, hence accepted.</p> <p>Monitoring survey conducted for the original monitoring period (28/08/2020 to 30/09/2020) on 16/09/2020 and in line with the paragraph 4.8.2 of the "General guidelines for SSC CDM methodologies" v 23.1, the survey results are valid for the extended monitoring period, hence accepted.</p> <p>CAR #3 is closed.</p>	

CAR ID	04	Section no.	E.3.6	Date: 19/10/2021
Description of CAR				
<p>There are some parameters in the table "Fixed Monitoring Parameters" of the ER sheet are referring to CPA-0001 whereas this request for issuance is exclusively for CPA-0002. Please clarify the inconsistency observed.</p> <p>It is noted that the ex-ante parameter $BC_{BL,PP,y}$ (Average annual consumption of woody biomass per person before the start of the project activity) of this CPA 02, it was determined as 1.71 tonnes/person/year, which is higher than the value applied in CPA 01 (i.e. 0.93 tonnes/person/year) from the same host country. Kindly clarify the appropriateness of this value, in accordance with paragraph 358(d) of VVS for PoA version 3.</p>				
Project participant response				Date: 26/10/2021

1. The references to CPA-0001 in ER calculation sheet have been corrected now.
2. The reason for difference in the value of the baseline parameter $BC_{BL,PP,Y}$ in CPA-0001 and CPA-0002 design documents and the appropriateness of the value in CPA-0002 are discussed below (The detailed response is provided in the document “**UN Clarification Responses CPA02_PoA 10476.doc**” which is submitted along with the findings).

Reason for difference in CPA-0001 and CPA-0002 values

The recent CPA-0002 derives its baseline value from the latest (2019-published) pan-Kenya survey conducted by Ministry of Energy, Kenya and Clean Cooking Association of Kenya which was available at the time of CPA-0002 validation. The baseline values for CPA-0001 were already established, accepted and submitted for registration of PoA by the validation agency (Jan-April 2019) before this survey report was published in Aug 2019. Hence, the survey results could not be used in the CPA-0001.

Instead, CPA-0001 relied on a less robust method of estimating consumption from published data of supply of physical resources (Economic Survey of Kenya 2018). This method determined much lower value than the actual one due to:

- a) Error in the final step of per capita baseline fuel consumption where the population percentage of woody biomass users (69.9%) was missed in the denominator, resulting in a lower per capita value.
- b) The official supply records of physical resources in Kenya did not account for the illegal sourcing and supply of woody biomass (especially charcoal) in Kenya.

Appropriateness of the value applied in CPA-0002

The CPA-0002 reports the value of $BC_{BL,PP,Y}$ as 1.71 tons/person/year or 6.82 tons wood eq./HH/year including both wood stoves and charcoal stoves. The calculation of the value is based on the latest published survey report which has presented results of pan-Kenya household survey covering 3512 user samples across 47 counties in Kenya. This is a globally funded survey study endorsed by the Ministry of Energy, Republic of Kenya following all best practices for sampling & surveys recommended by World Bank. There is none other similar user-based survey study conducted in Kenya in recent years. All the formulae, references and the values applied in the calculations are standard/default assumptions or taken from reliable sources. Hence, the appropriateness of the value validated in CPA-0002 is well justified.

Further, the appropriateness of the above figures can be cross checked by estimating the annual per capita consumption of energy based on different methods – (a) Average operational hours of household cooking and (b) standard per meal energy consumption published in publicly available resources.

The above 2 alternative methods also arrived at a comparable value of baseline fuel energy consumption.

	Project Value (Household Survey)	Operational Hours Approach	Standard Energy Requirement Approach
Energy Content of HH fuel consumption (TJ/HH/Year)	0.0570	0.0788	0.0628
Percentage Variation	100%	138%	110%

(Please refer BC_BL_Y_Energy Balance.xls for details)

The above analysis reflects similar value of energy from all 3 methods and confirms the appropriateness of the baseline fuel consumption of wood and charcoal in households.

Documentation provided by project participant

Revised ER Sheet - MP2_ER Calculation Sheet_CPA2_V-5.0.xls

Revised MR

BC BL Y Energy Balance.xls and related evidences

DOE assessment

Date: 31/10/2021

1. The revised ER sheet is reviewed and found corrected for the typographical errors related to references of CPA-0001 instead of CPA-0002. **Closed**
2. The assessment of the CME response is as below:
 - a. The CME has adequately explained the reason for lower value of $BC_{BL,PP,Y}$ in CPA-0001. The validation team checked the ex-ante calculations conducted for CPA-0001 and confirm the validity of the justification. The validation team also checked the baseline calculations for CPA-0001 to confirm that the total woody biomass consumption was incorrectly divided by the total population of Kenya, instead of incorporating the population factor of users consuming woody biomass (69.9%). **Closed**
 - b. The verification team checked the energy balance analysis conducted by CME. It is not clear why both wood and charcoal are reported fuel consumption for users in the baseline calculations based on survey report. **Open**
 - c. The average daily time required for cooking under “Daily Operational Hours” approach is sourced from controlled cooking test conducted by CME. As checked from the submitted controlled cooking test report, the test was conducted for charcoal stoves, however the same value is assumed for the wood stoves as well. Please justify the reasoning behind it. **Open**
 - d. The CME has not provided any comparison of the baseline value with respect to other CDM registered projects/PoAs. **Open**

Project participant response	Date : 09/11/2021
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1. Closed

2. Please find the CME response below:

a. Closed.

- a. The woody biomass is consumed by households in both forms - "wood" and "charcoal". Some households keep wood as the primary fuel for cooking and use charcoal in relatively smaller quantity (secondary fuel) while other households keep charcoal as primary fuel and use wood in relatively smaller quantity. The same is transparently reported as primary and secondary fuel usage in different households in the published survey report. It is clearly described in the report that households in Kenya depend on both types of fuel for cooking requirements. The trend of dual fuel consumption in Kenya is also reported in another report conducted in 2015 - WISDOM Kenya-Analysis of wood fuel supply, demand and sustainability in Kenya.
- b. The controlled cooking test (CCT) is designed to assess the performance of the improved/modern stove relative to the baseline common or traditional stoves. Stoves are compared as they perform a standard cooking task that is closer to the actual cooking that local people do every day. However, the tests are designed in a way that minimizes the influence of other factors and allows for the test conditions to be reproduced. It was difficult to simulate conditions for fuelwood 3-stone stoves and hence the CCT could not be performed for wood stoves. In fact, the charcoal stove used in CCT is also the improved cookstove. Hence, the duration of cooking reported in the CCT is on conservative side. The actual baseline cookstove will result in higher cooking periods. The 3-stone cookstoves result in much higher cooking period ranging between 3-4 hours (pg 6, "[Sharing the burden: Shifts in family time use, agency and gender dynamics after introduction of new cookstoves in rural Kenya](#)"). Hence, it is reasonable and conservative to assume that the same value can be applied for wood stoves.
- c. Comparison with other CDM projects may not be meaningful as they represent different baseline assumptions (number of members per household, charcoal-wood mix), geographical areas (counties) and target households (rural, urban). However, to have a sense of range presented in other CDM projects, we are providing below the energy content of the baseline fuel consumption for the CDM projects registered in Kenya.

Project Title	PoA No.	Wood Qty (t/HH/yr)	Charcoal Qty (t/HH/year)	Avg Energy Content (TJ/person /yr)
MicroEnergy Credits – Microfinance for Clean Energy Product Lines-Africa (CPA-0002-03)	10341	2.000	N/A	0.031
SimGas Biogas Programme of Activities	7734	7.420	4.720	0.127
Improved Cooking Stoves Programme of Activities in Africa (CPA-0008-0010)	5341	2.010	5.700	0.100
Improved Cooking Stoves Programme of Activities in Africa (CPA-0001-0007)	5341	4.180	3.560	0.085
Improved Cook Stoves for East Africa (CPA 1)	7014	3.650	NA	0.057
Efficient Cook Stove Programme: Kenya (CPA 2)	5336	5.140	N/A	0.080
Efficient Cook Stove Programme: Kenya (CPA 1)	5336	3.980	N/A	0.062
Average		4.397	4.660	0.0775

The quantity of energy content of the fuel consumption per HH for this project (0.0570 TJ/HH/yr) is lower than the average value derived below for all CDM projects (0.0775 TJ/HH/yr).

Documentation provided by project participant	
Response to UN Comments document BC_BL_Y_Mass Balance.xls WISDOM Kenya Analysis Report (https://cleancooking.org/wp-content/uploads/2021/07/426-1.pdf)	
DOE assessment	Date: 10/11/2021
<p>1. Closed.</p> <p>2. The assessment of the CME response is as below:</p> <ul style="list-style-type: none"> a. The baseline calculations for CPA-0001 were based on the supply side data and conservative assumptions which explains the lower value of the baseline. It was also checked by analysing the chronology of the project cycle, that the survey report was not available at the time of CPA-0001 baseline establishment. Hence the assessment team concluded that the CME had to determine baseline value in CPA-0001 based on the conservative estimates of fuel supply, instead of consumption statistics. This reasonably justifies the difference in the baseline values reported in the 2 CPAs. Closed b. The survey report was reviewed by the assessment team to confirm that the households are consuming both wood and charcoal and the reporting of fuel consumption was found consistent with the survey report. The other referred report Wisdom Kenya Analysis was also reviewed by the assessment team and confirmed that use of both forms of woody biomass is common in Kenya and such surveys report consumption of both fuels by the households. Closed c. The daily cooking duration for wood stoves was checked from the published paper and found to be in the range of 3-6 hours. Based on the sectoral expertise of the assessment team, it is reasonable to assume average cooking hours between 2-3 hours per day for low-income households using woody biomass. Hence, the assumption was found ok. Closed d. The CME performed comparison with other CDM projects based on thermal energy content of the fuel due to variation of other assumptions. The assessment team found this approach acceptable as the energy content of fuel is relatable to the fuel consumption. The analysis provides a wide range of energy content 0.031-0.127 TJ/HH/year with an average value of 0.0775 TJ/HH/year. The wide range is understandable as each project represents variety of different baseline scenarios affected by project area, lifestyle, and target users. The baseline value applied for this project represents an energy content of 0.0570 TJ/HH/year which is 36% lower than the average value arrived from other CDM registered projects and within the range of the values reported by other CDM projects. Closed <p>The assessment team is of the opinion that the approach followed for calculation of the parameter $BC_{BL,PP,y}$ (Average annual consumption of woody biomass per HH before the start of the project activity), was generously conservative and accepted during the validation of CPA-0001 due to absence of more accurate and reliable data source. However, the calculation of the woody biomass consumption for CPA-0002 is based on the results obtained from the Pan-Kenya official household survey, that can be considered more robust, reliable and presents more accurate data of household demand.</p> <p>CAR #4 is closed.</p>	

Table 4. FARs from this verification

FAR ID	XX	Section No.	XX	Date :
Description of FAR				
NA				
Project participant response				Date : DD/MM/YYYY
NA				
Documentation provided by project participant				
NA				

DOE assessment	Date: DD/MM/YYYY
NA	

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Document information

<i>Version</i>	<i>Date</i>	<i>Description</i>
04.0	6 April 2021	Revision to: <ul style="list-style-type: none"> Reflect the “Clarification: Regulatory requirements under temporary measures for post-2020 cases” (CDM-EB109-A01-CLAR).
03.0	31 May 2019	Revision to: <ul style="list-style-type: none"> Ensure consistency with version 02.0 of the “CDM validation and verification standard for programmes of activities” (CDM-EB93-A08-STAN); Make structural and editorial improvements.
02.0	29 December 2017	Revision to align with the requirements of the “CDM validation and verification standard for programme of activities” (version 01.0).
01.0	5 June 2015	Initial publication.
Decision Class: Regulatory Document Type: Form Business Function: Issuance Keywords: programme of activities, verifying and certifying		