Verification and certification report form for CDM programme of activities

(Version 03.0)

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

BASIC INFORMATION		
Title and UNFCCC reference number of the programme of activities (PoA)	8142: MicroEnergy Credits - Microfinance for Clean Energy Product Lines – Mongolia	
Version number(s) of the PoA-DD(s) to which this report applies	2.2	
Version number of the verification and certification report	3.0	
Completion date of the verification and certification report	20/12/2019	
Monitoring period number and duration of this morning period	Monitoring period number: 5th Duration: 01/05/2018 - 30/04/2019 (Both Days Included)	
Number and version number of the monitoring report to which this report applies	Monitoring report number: 2nd Monitoring report version: 2.1	
Coordinating/managing entity (CME)	MicroEnergy Credits	
Host Parties	Host Parties of the PoA	Is this a host Party to a CPA covered in this report? (yes/no)
	Mongolia	Yes
Applied methodologies and standardized baselines	Applied Methodology: AMS-II.E. - Energy efficiency and fuel switching measures for buildings, version 10 Applied Standardized baselines: N/A	
Mandatory sectoral scopes	3: Energy demand	
Conditional sectoral scopes, if applicable	NA	
Estimated amount of GHG emission reductions or GHG removals for this monitoring period in the included CPAs covered in this report	100,266 tCO2e	
Certified amount of GHG emission reductions or GHG removals for this monitoring period for the included CPAs covered in this report	43,227 tCO2e	
Name and UNFCCC reference number of the DOE	Earthood Services Private Limited E-0066	
Name, position and signature of the approver of the verification and certification report		

	Ashok Kumar Gautam Director

SECTION A. Executive summary

The PoA under verification involves the disbursement of Clean Energy Products (CEPs). Micro Energy Credits Corporation Private Limited (MEC) is the CME for the PoA. The CEP distributed are the efficient cooking and heating stoves and home insulation products. The PoA participates in the installation and maintenance of the CEP.

This distribution takes place with the help of Partner Organisations (PO) and the project participant – XacBank LLC Mongolia. The CEP's distribution results in reduction of GHG emission that would have been generated in the absence of implementation of this PoA.

The PoA implementation has taken place in those areas where people use the inefficient stoves for cooking and heating and inefficient home insulation. It has been replaced with the CEPs which reduce the consumption of fossil fuel resulting in generation of much lesser GHG and particulate matter.

For CPA being verified under this batch issuance, MicroEnergy Credits works with the POs listed below-

S.no	CPA Ref No.	Partner Organizations/CPA Implementer
1.	8142-P1-0002-CP1	XacBank LLC Mongolia
2.	8142-P1-0003-CP1	XacBank LLC Mongolia

XacBank LLC has signed the standard contractual agreement with the CME (MEC) to participate in the PoA, which cedes the sole rights of the emission reduction generated through PoA to the CME (MEC).

Scope of verification:

The verification is an independent and objective review and ex-post determination of the monitored reductions in GHG emissions by the DOE. The verification includes the implementation and operation of the PoA as set out in the PoA-DD/1/ & CPA DDs/6,7/ in the monitoring period for the CPA included in this batch issuance i.e.,8142-P1-0002-CP1 and 8142-P1-0003-CP1. The verification tests the data and assertions set out in the monitoring report based on the following:

The verification tests the data and assertions set out in the monitoring report prepared for this monitoring period by the CMEs and is based on the following:

1. The approved methodology AMS-II.E. – "Energy efficiency and fuel switching measures for buildings", (version 10)/3/, applied in the POA-DD/1/ & CPA-DDs/6,7/
2. The registered PoA DD & CPA-DDs and monitoring plan
3. UNFCCC criteria referred to in the Kyoto Protocol criteria and the CDM modalities and procedures as agreed in the Bonn Agreement and the Marrakech Accords
4. The CDM Validation and Verification Standard for PoA Version 02/16/
5. The CDM Project Standard for PoA Version 02/17/ and Project Cycle Procedure for PoA Version 02/18/
6. Relevant decisions, guidance and clarifications of the CMP and CDM Executive Board and any other information and references relevant to the project activity's reported emission reductions

The verification has considered both quantitative and qualitative aspects on stated/reported emission reductions. The monitoring report (all versions) and corresponding supporting documentation was assessed in accordance with the rules defined by UNFCCC, as appropriate to the PoA. The verification is not meant to provide any consulting or recommendations to the CME/others. However, stated requests for clarifications and/or corrective actions may provide input for improvement of the monitoring activities.

Verification Process:

The verification process is conducted as per internal CDM Quality Manual, which includes the following steps;

1. Contract with MicroEnergy Credits Corporation Private Limited and appointment of verification team and technical review team (refer Section B.1 and B.2 of this report)
2. Completeness check of Monitoring Report
3. Publication of Monitoring Report at UNFCCC website
4. Desk review (refer Section D.1 of this report) of Monitoring Report and corresponding ER sheet by verification team and planning of onsite audit (including sampling approach (refer Section D.4 of this report) to be applied)
5. On site audit (refer Section D.2 of this report) (physical implementation and interview with relevant stakeholders) by verification team consistent of Team Leader and all Technical Experts, as a minimum
6. Follow up activities e.g., interviews (refer Section D.3 of this report)

7. Reporting and closure of findings (CARs/CLs/FARs) and preparation of draft verification report (refer Section D.5 of this report)
8. Independent technical review (refer Section F of this report) of the draft verification report and final/revised documentation (e.g., Monitoring Report, corresponding ER sheet and evidences)
9. Reporting and closure of TR comments/findings (refer Section D.5 of this report) (CARs/CLs/FARs) and final approval for the decision made (refer Section G and H of this report).
10. Issuance of final verification report to contracted CME (or authorized representatives) and submission of request for issuance, as appropriate.

Verification Conclusion:
Based on the outcome of the verification process of the registered PoA "MicroEnergy Credits – Microfinance for Clean Energy Product Lines – Mongolia" and its CPAs (8142-P1-0002-CP1 and 8142-P1-003-CP1) for the monitoring period **01/05/2018 to 30/04/2019** (including both dates) we confirm that the implementation of referenced registered PoA/1/ and CPAs/6,7/ is complying with applicable CDM rules and regulations. The GHG emission reductions were calculated correctly based on the applied methodologies and the monitoring plan contained in the PoA-DD.
Earthood Services Private Limited was able to certify that the emission reductions from the registered CDM PoA UN#8142 "MicroEnergy Credits – Microfinance for Clean Energy Product Lines – Mongolia"(MP5B2) during the period **01/05/2018 to 30/04/2019** (including both days) amount to **43,227 tCO_2e**. Therefore, this is being submitted for request for issuance, as per UNFCCC procedures.

SECTION B. Verification team, technical reviewer and approver

B.1. Verification team members

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)	Involvement in			
						Desk/document review	On-site inspection	Interview(s)	Verification findings
1.	Team Leader	IR	Singh	Kaviraj	Central office	Y	Y	Y	Y
2.	Verifier	IR	Mahala	Deepika	Central office	Y	N	N	Y
3.	TA expert (TA 3.1)	IR	Singh	Kaviraj	Central office	Y	Y	Y	Y
4.	Meth expert	IR	Kumar	Sanjeev	Central office	Y	N	N	Y
5.	Local expert	IR	Tserevsuren	Chinbat	Central office	Y	Y	Y	Y
6.	Trainee (Verifier)	IR	Shresth	Gaurav	Central office	Y	N	N	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	IR	Gautam	Ashok	Central office
2.	TA Expert to TR	IR	Gautam	Ashok	Central office
3.	Approver	IR	Gautam	Ashok	Central office

SECTION C. Application of materiality in conducting the verification

C.1. Consideration of materiality in planning the verification

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.	Erroneous transfer of information from documented records to credit tracker platform	Low	POs contracted by CME enters the details in credit tracker platform at the time of installation. POs also conduct an internal check to verify the accuracy of data entry.	On a sampling basis, the records are checked with the information from credit tracker platform and substantiated by onsite observations. The familiarity of PO representatives with the tracker platform is also checked.
2.	Erroneous consideration of technical specifications of CEPs	Low	The technical specifications are provided by manufacturer	Technical specifications of each CEP model are checked against the document issued by manufacturer.
3.	Inconsistency between CME's result and DOE's observation during inspection.	Low	Considering DOE's observation are cross-check of CME's result, which were actually monitored by CME, there are usually less chances of error. However, if there are discrepancies, they are to be dealt as per acceptance sampling approach.	If the aggregated materiality threshold stays within the prescribed materiality threshold, no additional effort is required. However, if aggregated materiality threshold is above the prescribed threshold, additional samples are to be inspected. If additional sampling is not able to reduce the materiality threshold to reasonable level of assurance, the monitoring result by the CME for that parameter are to be discarded.

C.2. Consideration of materiality in conducting the verification

In accordance with CDM VVS for PoAs, Version 02.0 the prescribed thresholds for materiality for CDM PoAs are as under;

Type of PoA	PoAs comprising large-scale CPAs			PoAs comprising only small-scale CPAs	PoAs comprising only micro-scale CPAs
Emission Reductions (tCO2e)/year	500,000 or more	300,001 to 499,999	300,000 or less		
Materiality Threshold	0.5%	1.0%	2.0%	5.0%	10.0%

The applicable materiality threshold is 5% as PoA comprises only small-scale CPAs.

Particulars / Monitoring Report	MR Version (Public)	MR Version (Revised/Final)
Emission Reductions Achieved (tCO2e) in this monitoring period	45,751 tCO2e	43,227 tCO2e
Applicable Threshold (%) as per CDM VVS for PoAs Version 02.0	5.0%	5.0%

Monitored Parameter (Symbol / Description)	Reporting Frequency	Number of Discrete Data* (Total) Total (100%)	Sample selected for verification Sample (100%)	Type of error identified	Impact on ERs	
					ERs impacted (Sample)	ERs impacted (Population based on extrapolation)

CPA 8142-P1-0002-CP1 & CPA 8142-P1-0003-CP1						
$N_{all,}$ Total number of CEPs disseminated.	Annual	17,364	17,364 The number of installations was cross-checked from output file of credit tracker platform 36 samples(18 for each CPA) were checked by the TL.	None	NA	NA
POF, Product Operation Fraction	Annual	CPA#02- 287 CPA#03- 223	36 samples(18 for each CPA) were checked by the TL	None	NA	NA
$C_{y,new,CEP-I,}$ Quantity of coal used in the heating season in the project scenario for CEP-i installation	Annual	CPA#02- 287 CPA#03- 223	36 samples(18 for each CPA) were checked by the TL	None	NA	NA
$C_{y_old,CEPi,}$ Quantity of coal used in the baseline cluster	Annual	CPA#02- 287 CPA#03- 223	36 samples(18 for each CPA) were checked by the TL	None	NA	NA
$T_{y,s}$ household stoves and/or insulation, Mean temperature in Celsius for year y and season s (Autumn, Winter, Spring) for target groups in Ger Area homes	Annual	3	3	None	NA	NA
$WS_{y,s}$ household stoves and/or insulation, Mean wind speed in knots for year y and	Annual	3	3	None	NA	NA

season s (Autumn, Winter, Spring) for target groups in Ulaanbaatar						
$DW_{y,type,}$ household stoves and/or insulation, Number of dwellings that are houses for target groups in Ger Area homes	Annual	CPA#02- 287 CPA#03- 223	36 samples (18 for each CPA) were checked by the TL	None	NA	NA
Nnew %thermal efficiency	done in case new stoves are added	NA	NA	None	N/A	N/A

*It is a calculated parameter. Calculation formula applied and the average values of Ty,s and WSy,s has been checked in the ER sheet/12,13/.

The ERs under this monitoring report have declined as compared to the published MR. This was because of erroneous reporting of emission reductions from ER calculation sheet in monitoring report and some calculation errors. These issues were identified by the team and the CME and resolved. No discrepancy was found in the sampled visit. Thus, no materiality issues were identified.

SECTION D. Means of verification

D.1. Desk/document review

The desk review involves:

- A review of the data and information presented to verify their completeness;
- A review of the monitoring plan, the monitoring methodology including applicable tool(s) and, where applicable, the applied standardized baseline, paying particular attention to the frequency of measurements, the quality of metering equipment including calibration requirements, and the quality assurance and quality control procedures;
- A review of calculations and assumptions made in determining the GHG data and emission reductions;
- An evaluation of data management and the quality assurance and quality control system in the context of their influence on the generation and reporting of emission reductions;

The list of documents reviewed during the verification is provided under appendix 3 of this report.

D.2. On-site inspection

Duration of on-site inspection: 29/09/2019 to 01/10/2019				
No.	**Activity performed on-site**	**Site location**	**Date**	**Team member**
1.	Physical site visit: Households visited (implementation of PoA)	Mongolia	29/09/2019 to 01/10/2019	Kaviraj Singh, Chinbat Tserevsuren
2.	Review of information flows for generating, aggregating and reporting the monitoring parameters	Mongolia	29/09/2019 to 01/10/2019	Kaviraj Singh, Chinbat Tserevsuren
3.	Cross check between information provided in the monitoring report and data from other sources such as plant logbooks, inventories, purchase records or similar data sources;	Mongolia	29/09/2019 to 01/10/2019	Kaviraj Singh, Chinbat Tserevsuren
4.	A check of the monitoring equipment including calibration performance and observations of monitoring practices against the applicable requirements	Mongolia	29/09/2019 to 01/10/2019	Kaviraj Singh, Chinbat Tserevsuren
5.	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	Mongolia	29/09/2019 to 01/10/2019	Kaviraj Singh, Chinbat Tserevsuren

D.3. Interviews

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Nugent	Nick	MEC	29/09/2019	Program overview and Organisational structure, implementation status, Sales and credit tracker database management	Kaviraj Singh
2.	Bansal	Abhishek	MEC	29/09/2019	Emission reduction calculation and data collection for MR and related documentation for CPA01 verification	Kaviraj Singh
3.	Nevalsky	Eric	Xac Bank	29/09/2019	System and procedure followed while conducting usage survey	Kaviraj Singh
4.	Zegas	Greg	Xac Bank	29/09/2019	Data recording & archiving	Kaviraj Singh
5.	Crpmurgar	M.	Xac Bank	29/09/2019	Data recording & archiving	Kaviraj Singh
6.	Enkhchhlaan	B.	Xac Bank	29/09/2019	Data recording & archiving	Kaviraj Singh
7.	Oyunbaatar	Mergentuya	End user	30/09/2019	CEP unique identification and use	Kaviraj Singh, Chinbat Tserevsuren
8.	Baatar	Ankhtuya	End user	30/09/2019	CEP unique	Kaviraj Singh,

					identification and use	Chinbat Tserevsuren
9.	Chodorsuren	Chuluunbaatar	End user	30/09/2019	CEP unique identification and use	Kaviraj Singh, Chinbat Tserevsuren
10.	Terbish	Byambasuren	End user	30/09/2019	CEP unique identification and use	Kaviraj Singh, Chinbat Tserevsuren
11.	Purevdorj	Byambajav	End user	30/09/2019	CEP unique identification and use	Kaviraj Singh, Chinbat Tserevsuren
12.	Samdan	Baasantseren	End user	30/09/2019	CEP unique identification and use	Kaviraj Singh, Chinbat Tserevsuren
13.	Dorjsuren	Ganbold	End user	30/09/2019	CEP unique identification and use	Kaviraj Singh, Chinbat Tserevsuren
14.	Tuvdennyam	Yadamsuren	End user	30/09/2019	CEP unique identification and use	Kaviraj Singh, Chinbat Tserevsuren

15.	Suren	Tumurbaatar	End user	30/09/2019	CEP unique identification and use	Kaviraj Singh, Chinbat Tserevsuren
16.	Khambaa	Purevdorj	End user	30/09/2019	CEP unique identification and use	Kaviraj Singh, Chinbat Tserevsuren
17.	Dashtseren	Tuya	End user	30/09/2019	CEP unique identification and use	Kaviraj Singh, Chinbat Tserevsuren
18.	Tsegmed	Batgerel	End user	30/09/2019	CEP unique identification and use	Kaviraj Singh, Chinbat Tserevsuren
19.	Gankhuleg	Dashjamts	End user	30/09/2019	CEP unique identification and use	Kaviraj Singh, Chinbat Tserevsuren
20.	Tsagaan	Batmunkh	End user	30/09/2019	CEP unique identification and use	Kaviraj Singh, Chinbat Tserevsuren
21.	Budjav	Erdenetsetseg	End user	30/09/2019	CEP unique identification and use	Kaviraj Singh, Chinbat Tserevsuren
22.	Yondon	Batzaya	End user	30/09/2019	CEP unique identification and use	Kaviraj Singh, Chinbat Tserevsuren
23.	Jambaldorj	Oyunkhuu	End user	30/09/2019	CEP unique identification and use	Kaviraj Singh, Chinbat Tserevsuren
24.	Bidrush	Surjavkhlan	End user	30/09/2019	CEP unique identification and use	Kaviraj Singh, Chinbat Tserevsuren
25.	Shirnen	Terbish	End user	01/10/2019	CEP unique identification and use	Kaviraj Singh, Chinbat Tserevsuren
26.	Tsend-Ayush	Khashkhuu	End user	01/10/2019	CEP unique identification and use	Kaviraj Singh, Chinbat Tserevsuren
27.	Tsendmaa	Lkhamsuren	End user	01/10/2019	CEP unique identification and use	Kaviraj Singh, Chinbat Tserevsuren
28.	Baasan	Bayarsaikhan	End user	01/10/2019	CEP unique identification and use	Kaviraj Singh, Chinbat Tserevsuren
29.	Juuyar	Choijuu	End user	01/10/2019	CEP unique identification and use	Kaviraj Singh, Chinbat Tserevsuren
30.	Batmunkh	Tserendolgor	End user	01/10/2019	CEP unique identification and use	Kaviraj Singh, Chinbat Tserevsuren
31.	Purevsuren	Baigalmaa	End user	01/10/2019	CEP unique identification and use	Kaviraj Singh, Chinbat Tserevsuren
32.	Bayarsaikhan	Baasantseren	End user	01/10/2019	CEP unique identification and use	Kaviraj Singh, Chinbat Tserevsuren
33.	Belgee	Narangarav	End user	01/10/2019	CEP unique identification and use	Kaviraj Singh, Chinbat Tserevsuren
34.	Ayush	Yanjmaa	End user	01/10/2019	CEP unique identification and use	Kaviraj Singh, Chinbat Tserevsuren
35.	Galsanpuntsag	Otgontsetseg	End user	01/10/2019	CEP unique identification	Kaviraj Singh, Chinbat

					and use	Tserevsuren
36.	Baysgalan	Batjargal	End user	01/10/2019	CEP unique identification and use	Kaviraj Singh, Chinbat Tserevsuren
37.	Otgon	Battumur	End user	01/10/2019	CEP unique identification and use	Kaviraj Singh, Chinbat Tserevsuren
38.	Gombo	Batgerel	End user	01/10/2019	CEP unique identification and use	Kaviraj Singh, Chinbat Tserevsuren
39.	Davaajav	Uranchimeg	End user	01/10/2019	CEP unique identification and use	Kaviraj Singh, Chinbat Tserevsuren
40	Lkhagva	Nyamjav	End user	01/10/2019	CEP unique identification and use	Kaviraj Singh, Chinbat Tserevsuren
41.	Sukhbaatar	Oyunchimeg	End user	01/10/2019	CEP unique identification and use	Kaviraj Singh, Chinbat Tserevsuren
42.	Regzedmaa	Natsag-yum	End user	01/10/2019	CEP unique identification and use	Kaviraj Singh, Chinbat Tserevsuren

D.4. Sampling approach

CME's sampling approach:

For the purpose of sampling CME has followed the CDM guidelines for Sampling and surveys for CDM project activities and programmes of activities version 4.0/21/ which is inline to the PoA DD/1/.

The following parameters have been determined by survey using the sampling approach:

- POF – fraction of CEPs that were in use during monitoring period
- $C_{y,new\ CEPi}$ – project coal consumption
- $C_{y,old\ CEPi}$ – baseline coal consumption

The CME has applied simple random sampling approach at CPA level for different monitoring parameters as per validated PoA DD/1/ and CPA DDs/6,7/. 90/10 confidence precision was mainly applied by CME in the sampling, which is appropriate since they are doing an annual survey. According to the applied methodology (AMS.II.E. version 10)/3/, registered PoA-DD/1/ and CPA-DDs/6,7/, the parameters POF, $C_{y,new,CEP-I}$ and $C_{y_old,CEPi}$ have to be monitored at least every 2 years(biennial), however CME has decided to conduct monitoring surveys and monitor these parameters on an annual basis and accordingly sample size has been determined by satisfying a 90/10 precision (90% confidence interval and 10% margin of error). This was accepted by assessment team since this does not lead to overestimation of CERs. The sampling approach undertaken by CME is duly explained under Section E.3 of monitoring report.

DOE's sampling approach:

In order to meet the requirements of Standard for Sampling and surveys for CDM project activities and programmes of activities, Version 7/20/, the verification team applied acceptance sampling in the verification (in accordance with para 28). The verification team selected random sample 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 agreement, determined if the CME's sample records meet the requirements.

The verification team determined the sample size for acceptance sampling by evaluating the following, using its own professional judgment and guidance in the Standard 'Sampling and surveys for CDM project activities and programme of activities' version 7.0/20/:

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): 1.0% 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 18 was required as per Table (Sample size and acceptance number based on AQL, UQL, and producer and consumer risks) in the referred Standard. Since there are two CPAs, the Team leader has visited 36(18*2) samples Accordingly, acceptance number (c) thus determined for the sample size is 1. A sample size of 36 meets the criteria.

Accordingly, the verification team together has verified 36 samples during site visit and observed no discrepancy between the reported result by CME and sample conducted by the DOE. Therefore, it is concluded that the sampling survey results of the CME were consistent with DOE's field survey results.

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	-	-	-
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	-	-	-
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	-	-	-

[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).

• 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	-	-	-
• Data and parameters fixed ex ante or at renewal of crediting period	-	-	-
• Data and parameters monitored	-	CAR#02	-
• Implementation of sampling plan	-	-	-
Compliance with the calibration frequency requirements for measuring instruments	-	-	-
Assessment of data and calculation of emission reductions or net removals	-	CAR#03	-
• 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	-	CAR#01	-
• Comparison of actual GHG emission reductions or net GHG removals by sinks with estimates in 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	0	3	0

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 /5/ with the applicable and latest monitoring report form, i.e. CDM-PoA-MR-FORM /11/ and found that the CME has used correct version of form and the final MR has been prepared following all the guidelines of the template.
Findings	No findings
Conclusion	The final Monitoring Report was prepared using the correct template i.e. CDM-PoA-MR-FORM Version 03.0/11/. 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

This is the fifth verification (MP5 Batch 2) of PoA. There is no FAR from previous verification /22/ or validation/inclusion /2, 33,34/ that needs to be closed during this verification.

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)
8142-P1-0001-CP1 MicroEnergy Credits – Microfinance for Clean Energy Product Lines - Mongolia –CPA No.001:XacBank LLC	No	12/11/2012	Version Number: 2.2, dated 10/10/2012	NA
8142-P1-0002-CP1 MicroEnergy Credits – Microfinance for Clean Energy Product Lines - Mongolia – CPA No.002: XacBank LLC	Yes	08/03/2016	Version Number: 2.2, dated 10/10/2012	Y
8142-P1-0003-CP1 MicroEnergy Credits – Microfinance for Clean Energy Product Lines - Mongolia –CPA No.003: XacBank LLC	Yes	08/03/2016	Version Number: 2.2, dated 10/10/2012	Y

E.2. Programme of activities

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

Means of verification	The PoA involves the marketing, distribution and financing of improved cooking and heating stoves and insulation products for low income households in Mongolia. CME has implemented the CPAs through coordination with the partner organizations (POs) . The overall responsibility of implementation and operation is with CME (MEC), which was also evident during the site visit. This is consistent with PoA DD /1/. This monitoring period for batch 2 includes the implementation and monitoring of CPA#02 and CPA#03 as part of PoA. There were total 03 included CPAs (8142-P1-0001-CP1 to 8142-P1-0003-CP1) implemented at the end date of current monitoring period. However, the current verification considers only two CPAs (8142-P1-0002-CP1 and 8142-P1-003-CP1) that was put by CME as part of fifth Monitoring Period and second Monitoring Report Number. The implementation of CPAs (included in this request), as referenced above, are within the geographical boundary of the PoA DD/1/, which constitutes the physical boundary as well. The type of CEP (Clean Energy Product) models deployed under these CPAs is verified by the following:

CPA 002 (8142-P1-0002-CP1):

CEP Deployed	CEP model	PO/Implementer /PP
Efficient cooking and heating stoves (Stove)	• Silver Stove Mini (model 131) • Royal Stove/Dul model • Royal Golomt Stove • Ikh Tengeriin Khuhch LLC Bekas Stove (model 107) • Chin-1 Stove	XacBank LLC
Insulation products: Ger blankets*	• 4-walled model • 5-walled model	XacBank LLC

*No Ger blanket has been distributed the CPA yet.

CPA 003 (8142-P1-0003-CP1):

CEP Deployed	CEP model	PO/Implementer
Efficient cooking and heating stoves (Stove)	• Silver Stove Mini (model 131) • Royal Stove/Dul model • Royal Golomt Stove • Ikh Tengeriin Khuhch LLC Bekas Stove (model 107) • Chin-1 Stove	XacBank LLC
Insulation products: Ger blankets	• 4-walled model • 5-walled model	XacBank LLC

*No Ger blanket has been distributed the CPA yet.

The efficient stove is designed to use less amount of fuel as well as it provides required amount of energy for cooking and heating during cold weather. Stoves are credited according to the dwelling type in which they are located, either a house or a ger.

A ger insulation blanket has a double layer of insulation inside and a waterproof layer outside which comes in six sections as stated in the CPA DDs/6,7/. The six sections of ger helps to keep wind, water and dirt away and mainly insulating the inside area. The ger blankets are not distributed under CPA 0002 and CPA 0003 during this monitoring period.

Technical specification of each type of CEP models are verified with the details provided by respective CEP suppliers /24/ and found to be consistent with the monitoring report.

The verification team was able to confirm that the quantity, specification and target group of the CEPs is consistent with the PoA DD /1/ and CPA DDs/6,7/. Further, based on the review of Credit Tracker Platform /14/, physical observations and interview conducted during the site visit, the verification team found that:

- The CPAs are implemented within the boundary of the PoA as described in the PoA-DD/1/.
- The CME is same as that mentioned in the PoA-DD/1/.
- The implementation and operation of the project activity has been conducted in accordance with the description contained in the PoA-DD/1/ and included CPA DDs/6,7/.
- All physical features of the CPAs proposed in the included CPA-DDs is in place.

- The CPA implementer has operated the CPAs as per the included CPA DDs/6,7/.

The change in ERs between webhosted Monitoring Report/4/ and final version of Monitoring Report/5/ for submission are as follows:

CPA Ref No.	Monitoring Report (public)	Monitoring Report (final)
8142-P1-0002-CP1	43,158 tCO2e	41,103 tCO2e
8142-P1-0003-CP1	2,593 tCO2e	2,124 tCO2e
Total	45,751 tCO2e	43,227 tCO2

The verification team has visited the 36 households during site visit. It was observed that each CEP was assigned a unique household identification number. The unique identification number on each CEP, personal information of CEP owners and commissioning date of CEP was cross checked with the MIS system of POs and further checked with Credit Tracker Platform available with the CME. The operation of the CEPs was confirmed through interviews of owners/representatives (of CEPs) during the site visit.

The emission reductions being claimed during this monitoring period are lesser than the estimated emission reductions in the CPA DDs/6,7/, as given in the table below for comparable estimated CERs in the CPA DD for the corresponding period:

CPA Ref. No.	Estimated ERs (tCO_2) as per CPA DDs
8142-P1-0002-CP1	50,133 tCO2e
8142-P1-0003-CP1	50,133 tCO2e
Total	100,266 tCO2e

The information (including data and variables) provided in the MR/5/ is found to be in line with the description provided in the PoA-DD/1/.

The verification team considers the programme description as contained in the PoA-DD/1/ is complete and accurate. The PoA-DD/1/ complies with the applied methodologies, tools, and forms. The monitoring report was compared and verified against the description provided in the PoA-DD/1/ and found to be correct.

Findings	No findings
Conclusion	a) The verification team confirms that the physical features (technology/type of CEP) of the implementation were in accordance with the PoA DD/1/. b) The actual operation is in line to CPA DDs/6,7/. c) SSC threshold limit has not been breached by the CPA. d) There is no information with regard to data and variables was identified that may surpass the estimated quantity of ERs in the CPA DDs/6,7/.

E.2.2. Implementation and operation of the management system

Means of verification	Based on the interview of MEC representatives, representatives of Xacbank LLC (CPA implementers) and monitoring team during the site visit, it is confirmed that the CME has organized an appropriate management and operational system for monitoring and reporting. The CME co-ordinate with the PO to establish a marketing and lending program for CEPs. PO's staff, local distributors, technicians and other service providers involves in marketing of CEPs to concern households. The monitoring plan and procedures to identify each CEP sold has been followed by the PO. MEC (MicroEnergy Credits Corporation Private Limited) who is CME for the PoA and responsible for inclusion of CPAs in the PoA. The Carbon Operation Manager of MEC is responsible to complete inclusion process. The CME maintains the user manual that specifies the process of inclusion of CPA, referred to provide the training for individuals.

	In order to improve the quality of management, annual internal audits were also conducted which was confirmed by interviewing the CME and PO staff during the on-site visit. The Carbon Operation Manager, CME and PO involve in the CPA address the non-conformities identified during the audit. The information about the type of CEP installed under each CPA is stored in Credit Tracker Platform that is maintained by MEC (CME). The Credit Tracker Platform records the unique identification number (sysnum), HH name, passport no. of purchaser, mobile no., location, product type, product model, installation date, date of sale, dwelling type, district name, CPA assignment of each clean energy product (CEP) in the CPA, helps to identify, locate and verify any or all of the CEP installations in particular CPA. CME has provided the tracker output file/14/ that is used to ensure that unique identification of CEPs can be tracked. This file has been verified to also ensure that no household receives more than one CEP. The Carbon Operation Manager at 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. The staff was interviewed during the on-site visit and training records/32/ were checked to ensure that they were trained for conducting the surveys. The monitoring manager at the CME is responsible for QA/QC of the data, analysis and reporting into the monitoring report. Inline to the registered monitoring plan, CME conducts an annual survey to ascertain the status of equipment. This process is to initiate a repair/post sales service. All the products which were found to be damaged or inactive has been discounted from emission reduction calculation as verified from emission reduction spreadsheet. CPA Implementer/PO field staff continually randomly select households included in the database and visit them to cross-check the information on the database with the factual evidence in the field, referred as spot check. Any inconsistencies found (e.g., change in the address of a user) are updated on the database. Original copies of sales receipts/15/ and completed survey forms are retained by the PO/CPA implementer. The organizational structure and roles and responsibilities for monitoring are in line with the situation on the ground as observed during the site visit, and the structure is considered appropriate.
Findings	None
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 /5/. 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

NA

E.2.3.2. Inclusion of a monitoring plan

NA

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

NA

E.2.3.4. Changes to the programme design

NA

E.2.3.5. Addition of CPA inclusion template

NA

E.2.3.6. Change of coordination/managing entity

NA

E.2.3.7. Changes specific to afforestation and reforestation activities

NA

E.3. Component project activities

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

Means of verification

Section E.3 shall be dealing with distribution of CEP and its compliance with registered PoA-DD/1/ and applicable standard.

CPAs (8142-P1-0002-CP1 and 8142-P1-0003-CP1) described in this section targets the promotion, distribution and sale of efficient cooking and heating stoves and home insulation products for low income households in Mongolia.

MicroEnergy Credits Corporation Private Limited is the Coordinating and Managing Entity (CME) for the implementation of CPA. The CME coordinates and manages the Partner Organization (PO)/CPA Implementer and assists them in implementing each element of the monitoring plan, which was confirmed to be the case by interviewing the CME and PO staff during on-site visit.

The project activity makes available two types of CEPs to low-income populations in Mongolia:

1. Energy efficiency: Efficient cooking and heating technologies
2. Insulation products: Ger blankets

Stoves are installed in one of two dwelling types: a house or a Ger. A ger (i.e. a yurt) is a portable felt-covered dwelling structure that is the traditional housing type and is a low-cost alternative to a more permanent housing structure.

CPA (8142-P1-0002-CP1 and 8142-P1-0003-CP1):

CEP Deployed	CEP model	PO/Implementer
Efficient cooking and heating stoves (Stove)	• Silver Stove Mini (model 131) • Royal Stove/Dul model • Royal Golomt Stove • Ikh Tengeriin Khuhch LLC Bekas Stove (model 107) • Chin-1 Stove	XacBank LLC
Insulation products: Ger blankets	• 4-walled model • 5-walled model	XacBank LLC

The efficient stove is designed to use less amount of fuel as well as provides

required amount of energy for cooking and heating during cold weather. Stoves are credited according to the dwelling type in which they are located, either a house or a ger.

A ger insulation blanket has a double layer of insulation inside and a waterproof layer outside which comes in six sections as stated in the CPA DD/6/. The six sections of ger helps to keep wind, water and dirt away and mainly insulating the inside area.

Technical specification of each type of CEP models are verified with the details provided by respective CEP suppliers /24/ and found to be consistent with the monitoring report.

The summary of the total installation as confirmed form the MEC's Tracker Platform/14/ is as follows-

Summary of installations for CPA-002 (8142-P1-0002-CP1):

Dwelling type and Districts	**Number of cookstoves**
GER Bayangol	766
GER Songinokhairkhan	4,179
House Bayangol	248
House Songinokhairkhan	1,245
GER Other	7,375
House Other	2,725
Total	**16,538**

Summary of installations for CPA-003 (8142-P1-0003-CP1):

Dwelling type and Districts	**Number of cookstoves**
GER Bayangol	37
GER Songinokhairkhan	202
House Bayangol	9
House Songinokhairkhan	79
GER Other	394
House Other	105
Total	**826**

No Ger blanket has been distributed yet under these two CPAs.

CPA 002 (8142-P1-0002-CP1**):**
CEPs were distributed in Mongolia, which is consistent with the description given in the included CPA DD/6/. The verification team reviewed the ER sheet/12/ which clearly depicts the calculation of energy savings. In the ER sheet/12/, the energy savings of the CPA is approximately 118 GWhth, which is way below the threshold of 180 GWhth. The CEPs are sold to end users and the sales data is collected by means of sales receipts/15/ at the time of sale to the end user.

CPA 003 (8142-P1-0003-CP1**):**
CEPs were distributed in Mongolia, which is consistent with the description given in the included CPA DD/7/. The verification team reviewed the ER sheet/13/ which clearly depicts the calculation of energy savings. In the ER sheet/13/, the energy savings of the CPA is approximately 6 GWhth, which is way below the threshold of 180 GWhth. The CEPs are sold to end users and the sales data is collected by means of sales receipts/15/ at the time of sale to the end user.

Findings	None
Conclusion	a) The verification team is of the opinion that physical features of the CPAs have been implemented in accordance with the CPA DDs/6,7/. b) No specific monitoring equipment had to be installed according to the monitoring plan. c) It is also confirmed, through the physical site visit and review of the supporting documentation that physical features of the component of CPAs have been implemented in accordance with the CPA DDs/6,7/. d) The CPAs were also found to be completely operational in line with the CPA DDs/6,7/. e) The information provided in the relevant sections of the monitoring report are appropriately describe the implementation and operational status of the PoA. f) CME has chosen to distribute the CPAs in many batches for the purpose of verification. DOE can confirm that all the monitoring reports contain mutually exclusive batches of CPA and have the same monitoring period that can encompass all monitoring results obtained during the period. g) The assessment team also confirms that monitoring periods are consecutive.

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

NA.

E.3.2.2. Corrections

NA

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

NA

E.3.2.4. Inclusion of a monitoring plan

NA

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

NA

E.3.2.6. Changes to the project design

NA

E.3.2.7. Changes specific to afforestation and reforestation activities

NA

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

Means of verification	The monitoring plan as contained in CPA DDs/6,7/ was reviewed against the monitoring requirements of the applied methodology AMS-II.E version 10 /3/ as well as PoA DD/1/ with reference to the technology involved. Based on this review it was found the monitoring plan contained in the CPA DDs/6,7/ 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/1/ and applied methodology AMS-II.E version 10 /3/.
Findings	None
Conclusion	The monitoring plan is in accordance with the approved methodology, AMS-II.E version 10 /3/, that is included in CPA DDs/6,7/.

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

Net calorific value of biomass (NCV_{coal}), TJ/tonne

Means of verification	The value of the parameter was checked with the PoA-DD/1/ and included CPA DD/6,7/ and found to be correct. The value of this parameter mentioned below: CPA Ref. No. | Value Applied | Consistency Checked with 8142-P1-0002-CP1 | 0.0189 | CPA DD /6/ 8142-P1-0003-CP1 | 0.0189 | CPA DD /7/
Findings	No findings.
Conclusion	The values in the Monitoring Report /5/ and corresponding Emission Reduction Spreadsheets /12,13/ are consistent with the PoA-DD/1/ and CPA DDs/6,7/. The values were checked with source-IPCC 2006 /29/ also and found to be correct. The applied values are correct and justified.

Emission factor: subbituminous coal (EF_{coal}), tCO2/TJ

Means of verification	The value of the parameter was checked with the PoA-DD/1/ and included CPA DD/6,7/ and found to be correct. The value of this parameter mentioned below: CPA Ref. No. | Value Applied | Consistency Checked with 8142-P1-0002-CP1 | 96.1 | CPA DD /6/ 8142-P1-0003-CP1 | 96.1 | CPA DD /7/
Findings	No findings.
Conclusion	The values in the Monitoring Report /5/ and corresponding Emission Reduction Spreadsheets /12,13/ are consistent with the PoA-DD/1/ and CPA DDs/6,7/. The values were checked with source-IPCC 2006 /29/ also and found to be correct. The applied values are correct and justified.

Regression coefficients for the determination of baseline coal consumption, Variable

Means of verification	The value of this parameter is calculated through following formula: C y_old,CEPi = 4.57681 − (0.67248∑WSy,s) − (0.01124∑Ty,s) + 0.14638 DWy,house + 0.11988 $D_{y,Songinokhairkhan}$ − 0.36234Dy,Bayangol Where: C y_old,CEPi = Mean coal consumption during the heating season (Fall, Winter, Spring) Ty,s = Mean temperature in Celsius for year y and season s (Fall, Winter, Spring, Summer) WSy,s = Mean wind speed in Knots for year y and season s (Fall, Winter, Spring, Summer) Dy,Songinokhairkhan = District location is Songinokhairkhan district (dummy variable 1=yes, 0=no) Dy,Bayangol = District location is Bayangol district (dummy variable 1=yes, 0=no) DWy,house = Dwelling is a house (dummy variable 1=house, 0=ger) The regression model equation and its regression coefficients were found to be consistent with the CPA DD/6,7/.
Findings	No findings.
Conclusion	The values of regression coefficients in the Monitoring Report /5/ and corresponding Emission Reduction Spreadsheets /12,13/ are consistent with the PoA-DD/1/ and CPA DDs/6,7/. The applied values are correct and justified.

Regression coefficients for the determination of baseline biomass consumption, Variable

Means of verification	The value of this parameter is calculated through following formula: By_old,CEPi = 3.42434 − (0.46183∑WSy,s) − (0.00748∑Ty,s) + 0.57023Dy,Songinokhairkhan − 0.36234Dy,Bayangol − 0.14078Dy,Chingeltei Where:

	B y_old,CEPi = Mean biomass consumption during the heating season (Fall, Winter, Spring) Ty,s = Mean temperature in Celsius for year y and season s (Fall, Winter, Spring, Summer) WSy,s = Mean wind speed in Knots for year y and season s (Fall, Winter, Spring, Summer) Dy,Songinokhairkhan = District location is Songinokhairkhan district (dummy variable 1=yes, 0=no) Dy,Bayangol = District location is Bayangol district (dummy variable 1=yes, 0=no) Dy,Chingeltei = District location is Chingeltei district (dummy variable 1=yes, 0=no) The regression model equation and its regression coefficients were found to be consistent with the CPA DD/6,7/.
Findings	No findings.
Conclusion	The values of regression coefficients in the Monitoring Report /5/ and corresponding Emission Reduction Spreadsheets /12,13/ are consistent with the PoA-DD/1/ and CPA DDs/6,7/. The applied values are correct and justified.

E.3.4.2. Data and parameters monitored

Total number of CEPs disseminated (N_{all}), number

Means of verification	**Criteria/Requirements**	**Assessment/Observation**
	Measuring /Reading /Recording frequency	Measured Continuously/Recording
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
	Monitoring equipment	Not applicable
	Calibration frequency /interval:	Not applicable
	How were the values in the monitoring report verified?	The values reported in the final MR /5/ (and corresponding ER sheets /12,13/) were verified through the MEC Tracker database Platform /14/ that records appliance type, dwelling type, sysnum number, date of installation, and geographical location. All CEP sold till the end of the current monitoring period are included in the ER sheets/12,13/ of the CPAs (SSC threshold limit has also been ensured and demonstrated in the ER sheet). The verified value for stoves sold/distributed under each CPA at the end of the current monitoring period is presented below; For Heating Season 2018-2019 For CPA-002 (8142-P1-0002-CP1)

Crediting Category (by CEP):	**N_{all}**	**Total CEP-Heating Seasons**
1. House-Song.	1,245	1,240
2. House-Bayan.	248	247
3. House-Other	2,725	2,713
4. Ger-Song.	4,179	4,104
5. Ger-Bayan.	766	763
6. Ger-Other	7,375	7,344
Total	16,538	

For CPA-003 (8142-P1-0003-CP1)

Crediting Category (by CEP):	Nall	Total CEP-Heating

sampling frame.

The calculation for determining the sample size were checked by the verification team and found to be appropriate and consistent with equation in PoA DD/1/.

The verified values are included in the final Monitoring Report /5/.

The verified results were as under:

For 2018-19 heating season
For CPA-002 (8142-P1-0002-CP1)

1. House-Song.	88.00%
2. House-Bayan.	88.64%
3. House-Other	88.89%
4. Ger-Song.	90.38%
5. Ger-Bayan.	90.38%
6. Ger-Other	90.91%

For CPA-003 (8142-P1-0003-CP1)

1. House-Song.	92.86%
2. House-Bayan.	100.00%
3. House-Other	90.48%
4. Ger-Song.	91.30%
5. Ger-Bayan.	94.74%
6. Ger-Other	91.38%

If applicable, has the reported data been cross-checked with other available data?	The survey results/10/, assumptions and sales records/30/ were checked by the verification team and were found acceptable. The results are reproducible in the corresponding ER sheet/12,13/ of final Monitoring Report/5/. The verification team randomly selected 18 samples from each CPA (thus, 18*2=36) under this batch issuance for DOE's field survey and found that all the CEPs were operational, which was consistent with the CME's sample survey result.
Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes. The QA/QC procedure are in place, internal checks have been done by the CPA implementer and established during the onsite assessment

Findings	No findings
Conclusion	The parameter has been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan.

Quantity of coal used in the heating season in the project scenario for CEP-I installation ($C_{y,new,CEP-i}$), Tonnes/year

Means of verification	**Criteria/Requirements**	**Assessment/Observation**
	Measuring /Reading /Recording frequency	Annually

Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	The frequency is at least once in two years (Biennial) in the PoA DD and CPA DD. However, CME has done it annually, more frequent and complying with the requirement. Thus, it was accepted by the verification team.
Monitoring equipment	Not applicable
Calibration frequency /interval:	Not applicable
How were the values in the monitoring report verified?	The parameter is the quantity of coal used in the heating season in the project scenario. The CME has determined the value of the parameter through sampling surveys. The surveys have been conducted by PO with the assistance of 3rd party consultant. The formula in line with the CPA DDs/6,7/ is as follows: **Household Coal consumption per season (ton)** = # Zil-130 used *(5 ton/Zil) + # of porters used *(1.72 ton/porter) + # of Government Baganuur bags used (.04 ton/bag) + # Other bags used *(0.0221 ton/bag) The end user respond by telling the type and quantity (how many – say:half/full/ two)have they consumed in each season. This helps to determine the project coal consumption value for each season. $C_{y,new,CEP-i}$ is calculated by taking the mean value of coal consumption for the heating season for each sampling frame, where the value of coal consumption is sum of coal consumption in Autumn, Winter, and Spring. The calculation for determining the sample size were checked by the verification team and found to be appropriate and consistent with equation in PoA DD/1/. The verified values are included in the final Monitoring Report /5/. The survey results/10/ are reproducible in the ER sheet/11/ of final Monitoring Report/5/. These survey results were cross checked by the verification team during onsite visit. The verification team randomly selected 18 samples from the CPA (thus, 18*2=36) under this batch issuance (CME's samples) for DOE's field survey. Each household visited, by the team, was asked the question about the total number and type of coal bags they have consumed for the heating during the season. These numbers and type as responded by end users was then cross checked with the number of bags mentioned in the ER sheet/12,13/ for the corresponding users and found consistent. Thus, the verification team confirms that quantity of coal as reported and used in the ER sheet/12,13/ is correct. The verified results were as under: For 2018-19 heating season For CPA-002 (8142-P1-0002-CP1) 1. House-Song. 3.13 2. House-Bayan. 3.35 3. House-Other 3.31

		4. Ger-Song. 3.20 5. Ger-Bayan. 2.91 6. Ger-Other 2.70 For CPA-003 (8142-P1-0003-CP1) 1. House-Song. 3.33 2. House-Bayan. 3.25 3. House-Other 2.84 4. Ger-Song. 3.29 5. Ger-Bayan. 2.77 6. Ger-Other 2.76
	If applicable, has the reported data been cross-checked with other available data?	The type and quantity of coal consumed by the end users, during the season, as reported by CME and also verified by assessment team during the on-site survey (by asking questions about coal consumed), have also been randomly verified from the coal purchase receipts/36/ available with the household's owners.
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes. The QA/QC procedure are in place, internal checks have been done by the CPA implementer and established during the onsite assessment
Findings	CAR#02 has been raised and closed.	
Conclusion	The parameter has been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan.	

Quantity of coal used in the baseline cluster ($C_{y,old,CEP-i}$), Tonnes/year

Means of verification	**Criteria/Requirements**	**Assessment/Observation**
	Measuring /Reading /Recording frequency	Annually
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	The frequency is at least once in two years (Biennial) in the PoA DD and CPA DD. However, CME has done it annually, more frequent and complying with the requirement. Thus, it was accepted by the verification team.
	Monitoring equipment	Not applicable
	Calibration frequency /interval:	Not applicable
	How were the values in the monitoring report verified?	The parameter is the quantity of coal used in the baseline cluster. The CME has determined the value of the parameter through sampling surveys. The surveys have been conducted by PO with the assistance of 3rd party consultant. The coal consumption has been calculated through the Regression model for parameter 'Baseline Coal Consumption Regression Model'. The values applied in the calculation have been verified through the MEC Tracker, local wind speed and temperature data from NOAA climate data base; district baseline regression model.

		The value of the variables in this equation are actually monitored parameters ($T_{y,s}$, $WS_{y,s}$, $DW_{y,house}$, $Dy_{,songinokhairkhan}$, $D_{y,bayangol}$) which are assessed in detail separately in this section. The ER sheet/12,13/ was also checked thoroughly to confirm the correct value applied for each sample. The verified average value of the parameter for each sampling frame are stated below: For 2018-19 heating season For CPA-002 (8142-P1-0002-CP1) 1. House-Song. 5.15 2. House-Bayan. 3.70 3. House-Other 4.77 4. Ger-Song. 4.71 5. Ger-Bayan. 3.26 6. Ger-Other 4.35 For CPA-003 (8142-P1-0003-CP1) 1. House-Song. 5.15 2. House-Bayan. 3.70 3. House-Other 4.79 4. Ger-Song. 4.71 5. Ger-Bayan. 3.26 6. Ger-Other 4.35
	If applicable, has the reported data been cross-checked with other available data?	This parameter is calculated based on monitoring value and also default values. The default values (eg. temperature data) were cross checked with the data and information publicly available at various sources on internet and found acceptable. The cross checks for the monitored value (coal consumption) is reported in the respective section of that parameter in this monitoring report.
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes. The QA/QC procedure are in place, internal checks have been done by the CPA implementer and established during the onsite assessment
Findings	CAR#02 has been raised and closed.	
Conclusion	The parameter has been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan.	

Mean temperature in Celsius for year y and season s (Autumn, Winter, Spring) for target groups in Ger Area homes ($T_{y,s\ household\ stoves\ and/or\ insulation}$), °Celsius

Means of verification	**Criteria/Requirements**	**Assessment/Observation**
	Measuring /Reading /Recording frequency	Annually for representative sample of appliances installed. For Heating Season 2018-1 data was extracted in May 2019
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes

	Monitoring equipment	Not applicable
	Calibration frequency /interval:	Not applicable
	How were the values in the monitoring report verified?	The value of parameter is calculated based on the data of National Climatic Data Center Climatic Service Branch of the National Oceanic and Atmospheric Administration (NOAA). The value has been verified through from NOAA weather data base/35/. NOAA calculates the value for each season by taking an average of daily temperature recorded. The data was extracted and recorded annually for each season from source stated above. The applied data has been extracted in May 2019 for 2018-2019 heating season. The verified results (valid for both CPAs i.e., 8142-P1-0002-CP1 and 8142-P1-0003-CP1) were as under: For Heating Season 2018-19 $T_{1,Autumn}$ 8.2 $T_{1,Winter}$ -19.3 $T_{1,Spring}$ -10.2 The verified values are included in the final Monitoring Report /5/.
	If applicable, has the reported data been cross-checked with other available data?	N/A
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes. The QA/QC procedure are in place, internal checks have been done by the CPA implementer and established during the onsite assessment
Findings	No findings	
Conclusion	The parameter has been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology/3/. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan.	

Mean wind speed in knots for year y and season s (Autumn, Winter, Spring) for target groups in Ulaanbaatar ($WS_{y,s\ household\ stoves\ and/or\ insulation}$), Knots

Means of verification	**Criteria/Requirements**	**Assessment/Observation**
	Measuring /Reading /Recording frequency	Annually
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
	Monitoring equipment	Not applicable
	Calibration frequency /interval:	Not applicable

	How were the values in the monitoring report verified?	The value of parameter is calculated based on the data of National Climatic Data Center Climatic Service Branch of the National Oceanic and Atmospheric Administration (NOAA). The value has been verified through from NOAA weather data base/35/. NOAA calculates the value for each season by taking an average of daily temperature recorded. The data was extracted and recorded annually for each season from source stated above. The applied data has been extracted in May 2019 for 2018-2019 heating season. The verified results (valid for both CPAs i.e., 8142-P1-0002-CP1 and 8142-P1-0003-CP1) were as under: For Heating Season 2018-19 $WS_{1,Autumn}$ 5.6 knots $WS_{1,Winter}$ 3.3 knots $WS_{1,Spring}$ 5.4 knots The verified values are included in the final Monitoring Report /5/.
	If applicable, has the reported data been cross-checked with other available data?	NA
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes. The QA/QC procedure are in place, internal checks have been done by the CPA implementer and established during the onsite assessment
Findings	No findings	
Conclusion	The parameter has been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology/3/. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan.	

Number of dwellings that are houses for target groups in Ger Area homes ($DW_{y,type,\ household\ stoves\ and/or\ insulation}$),

Means of verification	**Criteria/Requirements**	**Assessment/Observation**
	Measuring /Reading /Recording frequency	Monitored continuously. Applied annually .
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
	Monitoring equipment	Not applicable
	Calibration frequency /interval:	Not applicable
	How were the values in the monitoring report verified?	The parameter is monitored to know the dwelling type. It tells Number of dwellings that are houses for target groups in Ger Area homes. The value of parameter is determined through MEC

		Tracker Platform/14/ and Household Energy Survey (HES)/27/. In the ER sheet/12,13/, the CME reports 1 if it's house and 0 if it's Ger. The team leader visited 18 samples for each CPA (36 in total) and found that dwellings have correctly been listed as house in the ER sheet/12,13/. The calculation for determining the monitoring parameter were checked by the verification team and found to be appropriate and consistent with approach stated in PoA DD/1/.
	If applicable, has the reported data been cross-checked with other available data?	The monitoring parameter was checked by the verification team and were found acceptable as per the HES data. The results are reproducible in the corresponding ER sheets/12,13/ of final Monitoring Report/5/.
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes. The QA/QC procedure are in place, internal checks have been done by the CPA implementer and established during the onsite assessment
Findings	None	
Conclusion	The parameter has been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology/3/. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan.	

Thermal Efficiency ($\eta_{new,\,i}$), fraction

Means of verification	**Criteria/Requirements**	**Assessment/Observation**
	Measuring /Reading /Recording frequency	According to registered PoA-DD/1/ and CPA-DDs/6,7/ it has to be calculated in case new stoves are added.
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
	Monitoring equipment	NA
	Calibration frequency /interval:	NA
	How were the values in the monitoring report verified?	Since, no new stove has been added during the current monitoring period, no fresh test has been conducted. The results of the stoves already included are presented below:

Stove Type	Thermal Efficiency	Tester, Year
Silver Stove Mini (model 131)	76.2%	SEET, 2014

Royal Single/Dul Stove	74.3%	SEET, 2014
Royal Golomt Stove	75.8%	SEET, 2014
Ikh Tengeriin Khuhch LLC Bekas Stove (model 107)	70%	SEET, 2014
Chin-1 Stove	72.7%	SEET, 2014

The tests were conducted following protocol: "UJ SeTAR Centre Standard Operating Procedure: The Heterogeneous Testing Procedure for Thermal Performance and Trace Gas Emissions.". The results were checked and found to be consistent with the test reports/26/.

The results were valid and for both CPAs i.e., 8142-P1-0002-CP1 and 8142-P1-0003-CP1.

If applicable, has the reported data been cross-checked with other available data?	NA
Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	NA

Findings	None
Conclusion	The parameter has been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. As per registered POA-DD/1/ and CPA-DDs/6,7/; the efficiency is to be determined only once when a new CEP is introduced post inclusion. The efficiency test is to be done now only when new model of the CEP is to be added. As there is no CEP added during this monitoring period, hence no new efficiency tests have been conducted. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan.

E.3.4.3. Implementation of sampling plan

Means of verification	The monitoring has been carried out in accordance with the monitoring plan contained in the PoA DD/1/ and CPA DDs/6,7/. **Sampling Design/Target Population/Sampling Frame/Reliability**: In this sampling design, CPAs that are covered under the current monitoring period were subject. The sampling frame considered confidence level and precision as 90/10 considering the requirement of Standard for sampling and surveys for CDM PAs and PoAs. Sampling plan is implemented separately for each specific-case CPA. There is no single-sampling applied to all of the specific-case CPAs under this PoA for this monitoring period. The following parameters have been determined by survey using the sampling approach: • POF – fraction of CEPs that were in use during monitoring period

	• $C_{y,new\ CEPi}$ – project coal consumption • $C_{y,old\ CEPi}$ – baseline coal consumption **Sampling Method:** Simple random sampling method has been applied to determine the samples for the monitored parameters (POF, $C_{y,new,CEP-i}$,) randomly from the total population. **Sample Size (Required and Actual) for Parameter of Interest:** The sample size for the monitored parameters, POF, $C_{y,new,CEP-I\ and}$ $C_{y_old,CEPi}$ has been determined by following the requirements for sampling laid down in "Guidelines for sampling and survey for CDM project activities"version 4.0/21/. The CME has formed six sampling frames for monitoring applying combinations of technology/dwelling type and district, which are listed below: 1. Stove in house dwelling type, located in Songinokhairkhan district 2. Stove in house dwelling type, located in Bayangol district 3. Stove in house dwelling type, located in other district 4. Stove in ger dwelling type, located in Songinokhairkhan district 5. Stove in ger dwelling type, located in Bayangol district 6. Stove in ger dwelling type, located in other district **Sample selection:** The samples were randomly selected from the complete sales databases/30/ (irrespective of their usage status determined during usage survey as a part of QA/QC inline to registered PoA-DD/1/) for each CPA. The sample can be confirmed to be representative of the total population. Sampling period: May-June 2019 **Reliability and precision calculation:** The verification team has verified the ER calculation spreadsheets/12,13/ with the monitored data, where the actual achieved precision is calculated against the Guidelines outlined under "Standard for sampling and surveys for CDM project activities and programme of activities"/20/ and can confirm that the calculation of achieved reliability was done correctly. Reliability and precision check are carried out for each CEP installed under each CPA. In the same manner, the parameter of interest is included in the ER spreadsheets/12,13/ for the relevant CPA. These were checked for the input values as well as formula applied and were found consistent. The reliability (demonstration of precision achieved after the survey results) is depicted in the ER calculation sheets /12,13/ corresponding to final Monitoring Report /5/, which were also found correct. Based on the verified results the verification team found that the required precision is met in all the cases and therefore the survey results /10/ were directly used in the calculation of ERs.
Findings	None
Conclusion	The verification team confirmed that the sampling plan and the parameter values are in accordance with the monitoring plan provided in PoA DD/1/.

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

Means of verification	No monitoring equipment required to monitor the parameters, as verified through the registered monitoring plan as outline in the CPA-DDs/6,7/ and PoA-DD/1/.
Findings	None
Conclusion	The verification team has determined that no monitoring equipment has been used by the PP. Therefore, there was no requirement of calibration. This was in accordance with the monitoring plan/1,6,7/ and the applied monitoring methodology/3/.

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

Emissions reductions are calculated using the following equations:

$$ERy = \sum_{o}^{i} BEy, CEPi - PEy, CEPi$$

ER_y	Emission reductions during the year y in tCO_2e
$BE_{y, CEPi}$	Baseline emissions for CEP-i during the year y in tCO_2e.
$PE_{y ,CEPi}$	Project activity emissions for CEP-i during the year y for technology i in tCO_2e.

Where,
The formula for calculating the baseline emission is as follows-

$BE_{y.CEP-i} = C_{y,old,CEP-i} * NCV_{coal} * EF_{coal}$

Where:

$C_{y,old,CEP-i}$	Quantity of coal used in the heating season in the absence of the project activity in tons of coal per household per heating season, calculated through baseline regression model
NCV_{coal}	Net calorific value of coal.
EF_{coal}	Emission factor for the amount of CO_2e resulting from the combustion of coal

The equations were used to determine the baseline emissions as provided in the monitoring report /5/ and applied in the corresponding ER calculations sheets /12,13/. The expressions used were found consistent with the PoA DD/1/, CPA DDs/6,7/ and the applied methodology AMS-II.E., version 10/3/.
Each parameter used in the equation is assessed in detail in the section E.3.4.2. of this report.

The CME has also calculated emission reduction from wood consumption in the ER sheet/12,13/ but has not claimed it conservatively under the PoA.

Findings

CAR#03 was raised and resolved.

Conclusion

The verification team confirms that

a) The complete data was available and is duly reported;
b) As indicated above, the description regarding cross-check of reported data is included under respective parameter.
c) Appropriate methods and formulae for calculating baseline GHG emissions or baseline net GHG removals were followed;
d) Appropriate emission factors, IPCC default factors and other reference values were correctly applied.
e) There is no pro-rata 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.

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

Means of verification	The formula for calculating the baseline emission is as follows- $PE_{y.CEP-i} = C_{y,new,CEP-i} * NCV_{coal} * EF_{coal}$ Where: $C_{y,new,CEP-i}$ – Quantity of coal used in the heating season used during the project activity in tons of coal per household per heating season, measured through surveys. NCV_{coal} – Net calorific value of coal. EF_{coal} – Emission factor for the amount of CO_2e resulting from the combustion of coal The equations were used to determine the baseline emissions as provided in the monitoring report /5/ and applied in the corresponding ER calculations sheets/12,13/. The expressions used were found consistent with the PoA DD/1/, CPA DDs/6,7/ and the applied methodology AMS-II.E., version 10/3/. Each parameter used in the equation is assessed in detail in the section E.3.4.2. of this report.
Findings	None
Conclusion	The verification team confirms that a) The complete data was available and is duly reported; b) As indicated above, the description regarding cross-check of reported data is included under respective parameter. c) Appropriate methods and formulae for calculating baseline GHG emissions or baseline net GHG removals were followed; d) Appropriate emission factors, IPCC default factors and other reference values were correctly applied. e) There is no pro-rata 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.

E.3.6.3. Calculation of leakage GHG emissions

Means of verification	As per the registered PoA DD/1/, the leakage shall be considered for the two reasons which are: 1- Displaced stoves: The CME has provided the stove dismantling procedure document /31/ followed for each HH/Ger receiving the project stove. Additionally, CME has added a question which is asked at the time of survey to confirm the fate of old stove. At the time of verification, the samples visited by team leader were also checked for the same. All these activities corroborate that old stove is no longer exists in any of houses receiving the project stove. This is fifth verification and there has been no new installation done under these CPAs since 2014/2015. The check for the consistency between number of project activity equipment distributed by the project and the number of scrapped equipment correspond with each other for already disseminated systems was already done in the previous verification as confirmed from the verification report of previous MP/22/. No fresh dismantling documents have been prepared by the CME as there is no new sale done. Thus, it can be confirmed that for all systems disseminated till now, CME has documented and independently verified the information of the replaced systems. Thus, no leakage is considered due to the displaced stoves for this verification. 2- NRB Consumption: CME has demonstrated in the ER sheets/12,13/ through monitored value of biomass consumption in project and baseline scenario, that the biomass consumption has reduced since the use of the project stove which has conservatively not claimed. Thus, no leakage is considered due to wood consumption.
Findings	None

Conclusion	CME has not considered leakages due to the reasons stated above. The type of leakages checked for applicability were found to be in line with the PoA DD/1/ and CPA DDs/6,7/

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

Means of verification	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/12,13/ were found appropriate and complying with the provisions prescribed in the registered monitoring plan of CPA DDs/6,7/, PoA DD/1/ and applied methodology/3/. The verification team confirms that an audit trail that contains the evidence and records that validated the stated figures were checked and found acceptable.
Findings	CAR#01 has been raised and resolved.
Conclusion	The verification team confirms that a) The complete data was available and is duly reported; b) As indicated above, the description about cross-check of reported data is included under respective parameter; c) Appropriate methods and formulae for calculating baseline GHG emissions or baseline net GHG removals, project emissions and leakage emissions were followed; d) Appropriate emission factors, IPCC default factors and other reference values were correctly applied. e) There is no pro-rate approach (CDM VVS-PoA Version 02) 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. f) The total number of ERs achieved during the current monitoring period is 43,227 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
8142-P1-0002-CP1	1,21,076	79,973	0	0	41,103	41,103
8142-P1-0003-CP1	6,181	4,056	0	0	2,124	2,124
Total	127,257	84,029	0	0	43,227	43,227

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

Means of verification	The achieved emission reduction was compared with the ex-ante estimated number and was found that CPAs under this request of issuance has achieved less than the estimates.

	Achieved ERs	Estimated ERs
8142-P1-0002-CP1(ICS)	41,103	42,011
8142-P1-0003-CP1(ICS)	2,124	42,011
8142-P1-0002-CP1(Ger blanket)	0	8,122
8142-P1-0003-CP1(Ger blanket)	0	8,122
Total	43,227	100,266*

*The estimated ERs considered both ICS and Ger Blankets.

The achieved ERs from Ger blanket is 0 under current monitoring period as no Ger blankets have been distributed yet under these two CPAs.
Since the achieved ERs are less than estimated ERs, no further justification was sought.

Findings	None
Conclusion	The actual emission reductions achieved in the specific CPA DD as stated in the MR/5/ is not higher than the estimated quantity of ERs in the CPA DDs/6,7/. Therefore, it was accepted by the verification team.

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)
8142-P1-0002-CP1	41,103	50,133
8142-P1-0003-CP1	2,124	50,133
Total	43,227	100,266[2]

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 CPAs under this request of issuance has achieved less than the estimates. **Achieved ERs** / **Estimated ERs** 8142-P1-0002-CP1(ICS): 41,103 / 42,011 8142-P1-0003-CP1(ICS): 2,124 / 42,011 8142-P1-0002-CP1(Ger blanket): 0 / 8,122 8142-P1-0003-CP1(Ger blanket): 0 / 8,122 **Total**: 43,227 / 100,266* *The estimated ERs considered both ICS and Ger Blankets. The achieved ERs from Ger blanket is 0 under current monitoring period as no Ger blankets have been distributed yet under these two CPAs. Since the achieved ERs are less than estimated ERs, no further justification was sought.
Findings	None
Conclusion	Considering the actual/achieved emission reductions in the current monitoring period are less than ex-ante estimates for comparable period, 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	None
Conclusion	Not applicable

E.3.8. Global stakeholder consultation

Means of verification	There were no public comments received during the period of publication of monitoring report.
Findings	None
Conclusion	Not applicable

SECTION F. Internal quality control

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

During the technical review process, additional findings may be identified, or the closed findings may be opened, which needs to be satisfactorily resolved before the request for issuance is submitted to UNFCCC. The independent technical reviewer may either approve the report as such or reject/return the same in such

[2] This total estimated ERs estimated as per the CPA DDs. The estimated ERs considered both ICS and Ger Blankets. The achieved ERs from Ger blanket is 0 under current monitoring period as no Ger blankets have been distributed yet under these two CPAs.

case providing the comments/findings/issues that needs to be resolved by the verification team. The decision taken by the Technical Reviewer is final and is authorized by the Managing Director on behalf of Earthood Services Private Limited.

SECTION G. Verification opinion

Earthood Services Private Limited (ESPL), contracted by MicroEnergy Credits Corporation Private Limited (the CME for the PoA), has performed the fifth independent verification of the emission reductions for the registered CDM PoA 8142 "MicroEnergy Credits – Microfinance for Clean Energy Product Lines – Mongolia" in Mongolia for the fifth monitoring period **01/05/2018 to 30/04/2019** (both days included) as reported in the Monitoring Report (public) Version 01 dated 02/09/2019. The present verification is 2nd Batch of the 5th monitoring period. 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.
This verification report is for the CPAs 8142-P1-0002-CP1 and 8142-P1-0003-CP1 which were included at the UNFCCC webpage at the end of the current monitoring period.

ESPL 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 02/16/.

The verification activities were conducted in accordance with ESPL's 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 PoA DD/1/ as well as comply with applicable CDM rules and regulations and in accordance with applied monitoring methodologies, AMS II.E (Version 10)/3/.

As a result, it is confirmed that the emission reductions from the CDM PoA 8142 "MicroEnergy Credits – Microfinance for Clean Energy Product Lines – Mongolia" are correctly reported in the Monitoring Report (final) and corresponding ER sheets for the monitoring period **01/05/2018 to 30/04/2019** (including both days) amount as **43,227 tCO_2e**. Therefore, this is being submitted as part of request for issuance as per CDM PCP Version 02/18/.

SECTION H. Certification statement

The verification approach is based on the understanding of the risks associated with reporting of GHG emission data and the controls in place to mitigate these. ESPL planned and performed the verification by obtaining evidence and other information and explanations that ESPL considered necessary to give reasonable assurance that reported GHG emission reductions are fairly stated.

In our opinion the GHG emissions reductions reported for the PoA for the monitoring period **01/05/2018 to 30/04/2019** are fairly stated in the Monitoring Report (final) **Version 2.1 dated 02/11/2019/5/**.

ESPL, based on outcome of verification activities, certify in writing that, during the monitoring period **01/05/2018 to 30/04/2019** (including both days), the registered CDM PoA "MicroEnergy Credits – Microfinance for Clean Energy Product Lines – Mongolia" and the included CDM CPAs (8142-P1-0002-CP1 and 8142-P1-0003-CP1) in the registered CDM PoA achieved the verified amount of **43,227 tCO_2e** reductions in anthropogenic emissions by sources of greenhouse gases that would not have occurred in the absence of the CPAs.

The verified amount of emission reductions is stated below as per each CPA and as per commitment period;

	Emission Reductions (Amount) in this monitoring period (in tCO_2e)	
CPAs (included in this request)	**Up to 31/12/2012 (1st commitment period)**	**01/01/2013 onwards**
8142-P1-0002-CP1	-	41,103
8142-P1-0003-CP1	-	2,124
Total	-	43,227

Appendix 1. Abbreviations

Abbreviations	Full texts
AQL	Acceptable Quality Level
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CDM PCP	Clean Development Mechanism Project Cycle Procedure
CDM PS	Clean Development Mechanism Project Standard
CDM VVS	Clean Development Mechanism Validation and Verification Standard
CER	Certified Emission Reduction
CEP	Clean Energy Product
CL	Clarification Request
CME	Coordinating or Managing Entity
CPA	Component Project Activity
CP	Crediting period
DOE	Designated Operational Entity
DNA	Designated National Authority
EB	Executive Board
ESPL	Earthood Services Private Limited
FAR	Forward Action Request
GHG	Greenhouse Gas(es)
ICS	Improved Cook Stove
IPCC	Intergovernmental Panel on Climate Change
MEC	MicroEnergy Credits Corporation Private Limited
MIS	Management Information System
PDD	Project Design Document
PO	Partner Organization
RMP	Registered monitoring plan
TA	Technical Area (with in Sectoral Scope)
TR	Technical Reviewer
VVS	Validation and Verification Standard
UNFCCC	United Nations Framework Convention on Climate Change
UQL	Unacceptable Quality Level

Appendix 2. Competence of team members and technical reviewers

Competence Statement	
Name	Kaviraj Singh
Country	India
Education	Ph.D. (Environmental Engineering), IIT Delhi Masters (Energy & Environmental), DAVV Indore
Experience	15 Years +
Field	Climate Change & Environment
Approved Roles	
Team Leader	YES
Validator	YES
Verifier	YES
Methodology Expert	AMS-I.D., AMS-II.D., ACM0006, AMS-I.A., AMS-I.C., AMS-II.B., AMS-III.H,

	ACM0002, ACM0001, AM0080		
Local expert	YES (India)		
Financial Expert	YES		
Technical Reviewer	YES		
TA Expert	YES (TA 1.1, TA 1.2, TA 3.1, TA 13.1, TA 13.2)		
Reviewed by	Abhishek Mahawar	**Date**	26/09/2019
Approved by	Ashok Gautam	**Date**	26/09/2019

Competence Statement			
Name	Deepika Mahala		
Country	India		
Education	M. Sc. (Environmental Management), GGSIP University B.Sc. Hons. (Chemistry), Sri Venkateshwar College, DU		
Experience	3 Years +		
Field	Climate Change		
Approved Roles			
Team Leader	YES		
Validator	YES		
Verifier	YES		
Methodology Expert	ACM0002, AMS.I.D., AMS.I.A, AMS.III.AV, AMS.II.G		
Local expert	YES (India)		
Financial Expert	NO		
Technical Reviewer	YES		
TA Expert	YES (TA 1.2 & TA 3.1)		
Reviewed by	Shreya Garg	**Date**	14/09/2018
Approved by	Anshika Gupta	**Date**	14/09/2018

Competence Statement	
Name	Sanjeev Kumar
Country	India
Education	B. Tech. (Chemical Engineering) M.Tech. (Energy Management)
Experience	13.5 years +
Field	Climate Change, Environment, Energy
Approved Roles	
Team Leader	YES
Validator	YES
Verifier	YES
Methodology Expert	YES (ACM0002, ACM0006, ACM0004, ACM0009, ACM0012, ACM0001, AMS I.D, AMS I.F, AMS I.C, AMS I.A, AMS II.D, AMS II.E, AMS III.H, AM0009, AM0013, AM0025, AM0056, AM0028, AM0029, AM0008)
Local expert	YES (India)
Financial Expert	NO
Technical Reviewer	YES
TA Expert	YES (TA 1.1, TA 1.2, 4.1, 13.1)

Reviewed by	Shreya Garg	**Date**	13/12/2018
Approved by	Anshika Gupta	**Date**	13/12/2018

Competence Statement			
Name	Gaurav Shresth		
Education	B.Tech (Mechanical Engineering) M.E. (Thermal Engineering)		
Experience	4+ years		
Field	Mechanical and thermal engineering		
Approved Roles			
Team Leader	NO		
Validator	Yes (Trainee)		
Verifier	Yes (Trainee)		
Methodology Expert	NO		
Local expert	NO		
Financial Expert	NO		
Technical Reviewer	NO		
TA Expert	YES (1.2, 3.1)		
Reviewed by	Shreya Garg	**Date**	01/05/2019
Approved by	Anshika Gupta	**Date**	02/05/2019

Competence Statement			
Name	Chinbat Tserevsuren		
Education	Bachelor's in business administration		
Experience	5+ years		
Field	Economics, Marketing		
Approved Roles			
Team Leader	No		
Validator	No		
Verifier	No		
Methodology Expert	No		
Local expert	Yes (Mongolia)		
Financial Expert	No		
Technical Reviewer	No		
TA Expert	No		
Reviewed by	Shreya Garg	**Date**	09/08/2019
Approved by	Anshika Gupta	**Date**	09/08/2019

Competence Statement	
Name	Ashok Gautam
Country	India
Education	M. Sc. (Environmental Sciences) M. Tech. (Energy & Environmental Management)
Experience	16 Years +
Field	Energy, Climate Change & Environment

Approved Roles			
Team Leader	YES		
Validator	YES		
Verifier	YES		
Methodology Expert	AMS-I.D., AMS-I.A., AMS-I.C., AMS-I.E, AMS-II.D., AMS-II.G., AMS-III.E., AMS-III.H., AMS-III.Q, AMS-III.Z., AMS-III.AV., AM0029, AM0025, AM0056, ACM0001, ACM0002, ACM0004, ACM0012, ACM0006, AM0018, ACM0009, AM0034, AMS.I.B		
Local expert	YES (India)		
Financial Expert	YES		
Technical Reviewer	YES		
TA Expert	YES (TA 1.1, TA 1.2, TA 3.1, TA 13.1)		
Reviewed by	Shreya Garg	**Date**	25/01/2019
Approved by	Anshika Gupta	**Date**	25/01/2019

Appendix 3. Documents reviewed or referenced

No.	Author	Title	References to the document	Provider
1.	CME	PoA DD	Version 2.2, Dated 10/10/2012	Others
2.	DNV	Validation Report for Registered PoA-DD	Report No.- 2012-9611, Dated 23/03/2012	Others
3.	UNFCCC	AMS-II.E “Energy efficiency and fuel switching measures for buildings”	Version 10	Others
4.	MEC	Monitoring Report (publication)	Version 1, Dated 02/09/2019	CME
5.	MEC	Monitoring Report (final)	Version 2.1, Dated 02/11/2019	CME
6.	MEC	CPA DD (8142-P1-0002-CP1)	Version 2, Dated 08/03/2016	CME
7.	MEC	CPA DD (8142-P1-0003-CP1)	Version 2, Dated 08/03/2016	CME
8.	MEC	Spot Check user records and the pictures of the stoves	-	CME
9.	MEC	Baseline Fuel Consumption Analysis	-	
10.	MEC	Sampling survey reports for parameters monitored for CEP	-	CME
11.	UNFCCC	CDM-PoA-MR-FORM	Version 03	Others
12.	MEC	ER spreadsheet (final) – CPA 2 verified	Pertaining to latest MR	CME
13.	MEC	ER spreadsheet (final) – CPA 3 verified	Pertaining to latest MR	CME
14.	MEC	Credit Tracker Platform / Online – Output File	-	CME
15.	MEC	Original copies of sales receipts	-	CME
16.	UNFCCC	CDM VVS for PoA	Version 2	Others
17.	UNFCCC	CDM PS for PoA	Version 2	Others
18.	UNFCCC	CDM PCP for PoA	Version 2	Others
19.	UNFCCC	Glossary of CDM terms	Version 10	Others
20.	UNFCCC	Standard: Sampling and surveys for CDM project activities and programme of activities	Version 7	Others
21.	UNFCCC	Guideline: Sampling and surveys for CDM project activities and programme of activities	Version 4.0	Others

22.	TUV NORD	Previous Verification Report	Version 1, Dated 18/05/2018	Others
23.	MEC	Random sample generator spreadsheet	-	CME
24.	Various	Technical Specifications of cookstoves and Ger blankets	Various	CME
25.	ESPL	DoE Sample survey for each type of CEP	-	
26.	MEC	Stove test reports	-	CME
27.	MCA	Mongolia Household Survey Report	-	
28.	UNFCCC	UNFCCC webpage of PoA 8142	last accessed on 01/07/2019	Others
29.	IPCC	IPCC Defaults	2006	Others
30.	MEC	Sales database for the CPA covered in the current monitoring period	-	CME
31.	MEC	Stove dismantling procedure document	-	CME
32.	MEC	Training records	-	CME
33.	TUV SUD	CPA 2 Inclusion report	Version 2, Dated 08/03/2016	CME
34.	TUV SUD	CPA 3 Inclusion report	Version 1, Dated 26/02/2016	CME
35.	National Climatic Data Center	National Oceanic and Atmospheric Administration (NOAA) weather database	-	Others
36.	Other	Purchase receipts (bills) of coal bought by end users	Various dates	Others

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

Project Title: MicroEnergy Credits - Microfinance for Clean Energy Product Lines – Mongolia

CAR: Corrective Action Request
CL: Clarification Request
FAR: Forward Action Request

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

FAR ID	01	**Section no.**		**Date :** DD/MM/YYYY
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				

There was no FAR from the validation/ previous verification.

Table 2. CL from this verification

CL ID	-	**Section no.**	-	**Date :** -
Description of CL				
-				
Project participant response				**Date :** DD/MM/YYYY
-				
Documentation provided by project participant				
-				

DOE assessment	Date: DD/MM/YYYY
-	

There was no CL raised in the verification.

Table 3. CAR from this verification

CAR ID	01	Section no.	E.3.6.4	Date : 25/10/2019
Description of CAR				
1- The amount of estimated ER in the page 1 of the MR is inconsistent from the value in MR page 31 and CPA-DD page 22. 2- In the table of section A1.2 .of the MR in page 2, the details are not inline to the title of the heading. 3- In the table of section F.5.of the MR in page 31, the details are not inline to the title of the heading.				
Project participant response				**Date :** 26/10/2019
1 – Values have been corrected in the revised MR enclosed herewith. 2 – The headers have been changed to reflect the content of the columns in the table in section A 1.2 3 – The headers have been changed to reflect the content of the columns in the table in section F.5				
Documentation provided by project participant				
Revised Monitoring Report				
DOE assessment				**Date:** 26/10/2019
1- The amount of estimated ER in the page 1 of the MR has been updated and found consistent from the value in MR page 31 and CPA-DD page 22. Open 2- In the table of section A1.2 .of the MR in page 2 has been corrected and the details are found inline to the title of the heading. 3- In the table of section F.5.of the MR page 31 has been corrected and the details are found inline to the title of the heading. Thus, the CAR stands closed.				

CAR ID	02	Section no.	E.3.4.2	Date : 25/10/2019
Description of CAR				
Following are the inconsistencies observed in the submitted MR version 01; 1- The unit of the monitoring parameter ‘Cy,new,CEP-I’ in page 19 of the MR is inconsistent from the CPA-DD page 25. 2- The unit of the monitoring parameter ‘Cy,old,CEP-I’ in the page 21 of the MR is inconsistent from the CPA-DD page 26.				
Project participant response				**Date :** 26/10/2019
1 – Unit of the parameters ‘Cy,new,CEP-I’ have been changed and made consistent with CPA-DD 2 – Unit of the parameters ‘Cy,old,CEP-I’ have been changed and made consistent with CPA-DD				
Documentation provided by project participant				
Revised Monitoring Report				
DOE assessment				**Date:** 26/10/2019
1- The unit of the monitoring parameter ‘Cy,new,CEP-I’ in page 19 of the MR has been corrected and found consistent from the CPA-DD page 25. 2- The unit of the monitoring parameter ‘Cy,old,CEP-I’ in the page 21 of the MR has been corrected and found consistent from the CPA-DD page 26. Thus, the CAR stands closed.				

CAR ID	03	Section no.	E.3.6	Date :01/11/2019
Description of CAR				

1. It has been observed in the document “Annex - 2 - ER Calculations & HES-2018-19_CPA3” sheet “7f. Sample_GER_Other”, cell BS43, the stove has been marked as operational, however, the project coal consumption and baseline coal consumption is not calculated in the respective columns for this entry. There are many examples are like this and noted down in the both ER sheets.
2. There are some entries in worksheet ‘CPA No. 002’, ER sheet CPA#02 and worksheet ‘CPA No. 003’, ER sheet-CPA#03 for which the phone number is same. PP shall clarify if the same household has received multiple systems or not.
3. There are some entries with same name in worksheet ‘CPA No. 002’, ER sheet CPA#02 and worksheet ‘CPA No. 003’, ER sheet-CPA#03.
   PP shall clarify how it has discounted the cases where one house has received multiple units.
4. The stove dissemination started in 2012. The current monitoring period is 01/05/2018 - 30/04/2019. PP shall clarify what is the lifespan of the products disseminated and how do they treat the cases where the lifetime of the stove has expired.

Project participant response	Date : 02/11/2019

1. There was an error in pasting the formula. The error has been rectified in the reviser ER sheet.
2. There are multiple unique identifications that have been deployed for each CEP. These are Unique Sysnum, Passport/National id number, Location co-ordinates etc. The Sysnum and passport numbers are the real unique numbers, which would not match with other clients. This ensures that same household does not receive multiple CEP. In the year 2012-13, the mobile phones was not very common, and hence many clients would use mobile numbers of their friends/relatives. Also, at times, sales agent would have to enter their mobile numbers, which resulted in common phone numbers.
3. As mentioned above, the same household receiving multiple devices has been ruled out due to usage of unique identification numbers, sysnum and passport numbers. There are probabilities of same names specially conserving large population of more than 16,000 households.
4. The stoves under consideration are not cook-stoves. These are specially designed heating stoves which are expensive (250-300 USD) and are sturdy and very well build. As observed by DOE team during site visit, these stoves are installed as fixed and permanent installations in the households, and show very less sign of wear and tear. Even the product serial numbers and other details were still visible on the stoves. Hence, there is no question of life time expiry of the products.

Documentation provided by project participant

DOE assessment	Date: 02/11/2019

1- The ER sheet has been updated and all the details were found correct.
2- The dissemination started in 2012-2013, when not everybody owned mobile phone in the target area. At the time of installation, some of end users filled their neighbors phone number to provide contact detail so that the company can contact them for installation/repairement issues. Therefore, it would not be correct to establish the uniqueness of each user in the basis of their mobile number would not be unique to each user. The Unique Sysnum and the passport are the unique number ensures that the no same household received more than one CEP. The team has checked the passport number and sysnum numbers (along with their name and address) of the customer has been checked in the worksheet “CPA No. 001” and found that there is no repetition
3- The Unique Sysnum and the passport are the unique number ensures that the no same household received more than one CEP. The team has checked the passport number and sysnum numbers (along with their name and address) of the customer has been checked in the worksheet “CPA No. 001” and found that there is no repetition
4- The team leader confirmed through site visit that the stoves are durable and sturdy. Also, the operational rate determined through survey will ensure that the inactive stoves are discounted aptly.

Thus, The CAR stands closed.

Table 4. FAR from this verification

FAR ID		**Section No.**		**Date :** DD/MM/YYYY
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	

There is no FAR from this verification.

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Document information

Version	Date	Description
03.0	31 May 2019	Revision to: • Ensure consistency with version 02.0 of the “CDM validation and verification standard for programmes of activities” (CDM-EB93-A08-STAN); • Make 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