



**Monitoring report form for CDM programme of activities
(Version 04.0)**

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

MONITORING REPORT

Title of the PoA	The Project of CCC program of Activities (PoA) for Distribution of Improved Cookstoves (ICS) in Developing South and Southeast Asia Countries (Myanmar)		
UNFCCC reference number of the PoA	10471		
Version numbers of the PoA-DD applicable to this monitoring report	06.13		
Version number of this monitoring report	1.3		
Completion date of this monitoring report	27/07/2021		
Monitoring period number	1		
Duration of this monitoring period	31/08/2019 – 31/12/2020(inclusive of start & end date)		
Monitoring report number for this monitoring period	1		
Coordinating/managing entity	Climate Change Center		
Host Parties	Host Party of the PoA	Is this the host Party of a CPA covered in this monitoring report? (yes/no)	
	The Republic of the Union of Myanmar	Yes	
Applied methodologies and standardized baselines	AMS-II.G Energy efficiency measures in thermal applications of non-renewable biomass, version 09		
Sectoral scopes	Sectoral Scope: 03		
Amount of GHG emission reductions or net anthropogenic GHG removals achieved by all CPAs covered in this monitoring report in this monitoring period	Amount achieved before 1 January 2013	Amount achieved from 1 January 2013 until 31 December 2020	Amount achieved from 1 January 2021
	0	385,267 tCO ₂ e	0
Amount of GHG emission reductions or net anthropogenic GHG removals estimated ex ante for this monitoring period in the CPA-DDs for the CPAs covered in this monitoring report	370,813 tCO ₂ e		

PART I Monitoring of programme of activities (PoA)

SECTION A. Description of PoA

A.1. General description of PoA

>> The purpose of the proposed Small Scale Program of Activity (SSC-PoA or PoA) is to distribute and install energy-efficient Improved Cooking Stoves (ICSs) for households in the Republic of the Union of Myanmar (Myanmar). Implementation of the proposed activity will reduce consumption of non-renewable biomass (i.e. fuel wood) during cooking and heating water via enhancement of heat transfer, and deliver other environmental and social benefits.

The total population in Myanmar is 51,486,253, with approximately 70% of the population residing in rural areas who are heavily dependent on nearby forests for their basic needs¹. Fuel wood is used as the main source of cooking fuel for approximately 59% of the households in Myanmar (18% of urban households and 82% of rural households)².

The households located in the rural areas of Myanmar are the main target of this PoA. The majority of the targeted households have used the traditional stoves called “three-stone” cookstoves for cooking. The traditional stoves are open fire with three (3) stones or bricks placed at similar heights. For three-stone fire stoves, thermal efficiency is estimated to be as low as 10%³. It is understood that the majority of the energy generated during the combustion of the fuel wood is being lost, resulting in the waste of natural resources. In addition, indoor use of traditional stoves is known to have a negative health impact on users, resulting in chronic lung diseases, acute respiratory infections, cataracts, blindness, and adverse effects on pregnancy. In addition, fuel wood collection and cooking are mainly carried out by females who spend a considerable amount of time performing these duties. The environmental degradation caused by biomass stoves is equally problematic. When wood is used as a primary fuel, inefficient cooking methods lead to large-scale deforestation, soil erosion, desertification, greenhouse gas (GHG) emission, and indoor air pollution.

The distributed ICSs are expected to help achieve Myanmar’s sustainable development goals, as the PoA will contribute to reducing deforestation and forest degradation, and bringing improvements to indoor air quality, gender equality, income generation, and job opportunities for the rural communities. In addition, the PoA will contribute to a reduction of GHG emissions on a global scale.

Climate Change Center (CCC) is the coordinating/managing entity for this CDM project. CCC as the CME was responsible for contracting with CPA implementer and assessing the competence of potential CPA implementers to ensure that they fulfil technical and eligibility requirements of PoA/CPA. The CPAs under this monitoring report has been operated with the local partner Dry Zone Greening Department (DZGD) as CPA implementer, who is responsible for implementing the CPAs in accordance with agreement with CCC. More detailed roles of CME and CI are described under B.2 Section.

¹ http://themimu.info/sites/themimu.info/files/documents/Census_Atlas_Myanmar_the_2014_Myanmar_Population_and_Housing_Census.pdf

² http://themimu.info/sites/themimu.info/files/documents/Report_Myanmar_Cookstove_Market_Assessment_GERES_Jun_2015.pdf

³ <https://www.vqronline.org/articles/three-stone-fire>

A.1.1. Corresponding generic component project activities (CPAs)

Title and reference number of the corresponding generic CPA	Version of the PoA-DD	Sectoral scopes	Applied methodologies and standardized baselines
CCC PoA for distribution of ICS in developing countries (Myanmar): CPA # Ref. Generic CPA 001	06.13	03	Applied methodology: AMS-II.G, "Small-scale methodology: Energy efficiency measures in thermal applications of non-renewable biomass", Version 09.0 Methodological Tools: Tool 30: "Calculation of fraction of non-renewable biomass", Version 01.0

A.1.2. CPAs included in the PoA

Title and UNFCCC reference number of the CPA	Version of the PoA-DD	Title and reference number of the corresponding generic CPA	Crediting period type and duration	Covered in this monitoring report? (yes/no)
CCC PoA for distribution of ICS in developing countries (Myanmar): CPA 001 10471-P1-0001-CP1	06.13	CCC PoA for distribution of ICS in developing countries (Myanmar): CPA # Ref. Generic CPA 001	Type: Renewable Duration: 7 years 31/08/2019-30/08/2026	Yes
CCC PoA for distribution of ICS in developing countries (Myanmar): CPA 002 10471-P1-0002-CP1	06.13	CCC PoA for distribution of ICS in developing countries (Myanmar): CPA # Ref. Generic CPA 001	Type: Renewable Duration: 7 years 31/08/2019-30/08/2026	Yes
CCC PoA for distribution of ICS in developing countries (Myanmar): CPA 003 10471-P1-0003-CP1	06.13	CCC PoA for distribution of ICS in developing countries (Myanmar): CPA # Ref. Generic CPA 001	Type: Renewable Duration: 7 years 31/08/2019-30/08/2026	Yes
CCC PoA for distribution of ICS in developing countries (Myanmar): CPA 004 10471-P1-0004-CP1	06.13	CCC PoA for distribution of ICS in developing countries (Myanmar): CPA # Ref. Generic CPA 001	Type: Renewable Duration: 7 years 31/08/2019-30/08/2026	Yes
CCC PoA for distribution of ICS in developing countries (Myanmar): CPA 005 10471-P1-0005-CP1	06.13	CCC PoA for distribution of ICS in developing countries (Myanmar): CPA # Ref. Generic CPA 001	Type: Renewable Duration: 7 years 31/08/2019-30/08/2026	Yes
CCC PoA for distribution	06.13	CCC PoA for distribution of ICS	Type:	Yes

of ICS in developing countries (Myanmar): CPA 006 10471-P1-0006-CP1		in developing countries (Myanmar): CPA # Ref. Generic CPA 001	Renewable Duration: 7 years 31/08/2019-30/08/2026	
CCC PoA for distribution of ICS in developing countries (Myanmar): CPA 011 10471-P1-0007-CP1	06.13	CCC PoA for distribution of ICS in developing countries (Myanmar): CPA # Ref. Generic CPA 001	Type: Renewable Duration: 7 years 14/04/2020-13/04/2027	No
CCC PoA for distribution of ICS in developing countries (Myanmar): CPA 012 10471-P1-0008-CP1	06.13	CCC PoA for distribution of ICS in developing countries (Myanmar): CPA # Ref. Generic CPA 001	Type: Renewable Duration: 7 years 14/04/2020-13/04/2027	No
CCC PoA for distribution of ICS in developing countries (Myanmar): CPA 013 10471-P1-0009-CP1	06.13	CCC PoA for distribution of ICS in developing countries (Myanmar): CPA # Ref. Generic CPA 001	Type: Renewable Duration: 7 years 14/04/2020-13/04/2027	No
CCC PoA for distribution of ICS in developing countries (Myanmar): CPA 014 10471-P1-0010-CP1	06.13	CCC PoA for distribution of ICS in developing countries (Myanmar): CPA # Ref. Generic CPA 001	Type: Renewable Duration: 7 years 14/04/2020-13/04/2027	No
CCC PoA for distribution of ICS in developing countries (Myanmar): CPA 015 10471-P1-0011-CP1	06.13	CCC PoA for distribution of ICS in developing countries (Myanmar): CPA # Ref. Generic CPA 001	Type: Renewable Duration: 7 years 14/04/2020-13/04/2027	No
CCC PoA for distribution of ICS in developing countries (Myanmar): CPA 016 10471-P1-0012-CP1	06.13	CCC PoA for distribution of ICS in developing countries (Myanmar): CPA # Ref. Generic CPA 001	Type: Renewable Duration: 7 years 14/04/2020-13/04/2027	No
CCC PoA for distribution of ICS in developing countries (Myanmar): CPA 017 10471-P1-0013-CP1	06.13	CCC PoA for distribution of ICS in developing countries (Myanmar): CPA # Ref. Generic CPA 001	Type: Renewable Duration: 7 years 14/04/2020-13/04/2027	No
CCC PoA for distribution of ICS in developing countries (Myanmar): CPA 018	06.13	CCC PoA for distribution of ICS in developing countries (Myanmar): CPA #	Type: Renewable Duration: 7 years	No

10471-P1-0014-CP1		Ref. Generic CPA 001	14/04/2020-13/04/2027	
CCC PoA for distribution of ICS in developing countries (Myanmar): CPA 019	06.13	CCC PoA for distribution of ICS in developing countries (Myanmar): CPA #	Type: Renewable Duration: 7 years	No
10471-P1-0015-CP1		Ref. Generic CPA 001	14/04/2020-13/04/2027	
CCC PoA for distribution of ICS in developing countries (Myanmar): CPA 020	06.13	CCC PoA for distribution of ICS in developing countries (Myanmar): CPA #	Type: Renewable Duration: 7 years	No
10471-P1-0016-CP1		Ref. Generic CPA 001	14/04/2020-13/04/2027	
CCC PoA for distribution of ICS in developing countries (Myanmar): CPA 021	06.13	CCC PoA for distribution of ICS in developing countries (Myanmar): CPA #	Type: Renewable Duration: 7 years	No
10471-P1-0017-CP1		Ref. Generic CPA 001	14/04/2020-13/04/2027	
CCC PoA for distribution of ICS in developing countries (Myanmar): CPA 022	06.13	CCC PoA for distribution of ICS in developing countries (Myanmar): CPA #	Type: Renewable Duration: 7 years	No
10471-P1-0018-CP1		Ref. Generic CPA 001	14/04/2020-13/04/2027	
CCC PoA for distribution of ICS in developing countries (Myanmar): CPA 023	06.13	CCC PoA for distribution of ICS in developing countries (Myanmar): CPA #	Type: Renewable Duration: 7 years	No
10471-P1-0019-CP1		Ref. Generic CPA 001	14/04/2020-13/04/2027	
CCC PoA for distribution of ICS in developing countries (Myanmar): CPA 024	06.13	CCC PoA for distribution of ICS in developing countries (Myanmar): CPA #	Type: Renewable Duration: 7 years	No
10471-P1-0020-CP1		Ref. Generic CPA 001	14/04/2020-13/04/2027	
CCC PoA for distribution of ICS in developing countries (Myanmar): CPA 025	06.13	CCC PoA for distribution of ICS in developing countries (Myanmar): CPA #	Type: Renewable Duration: 7 years	No
10471-P1-0021-CP1		Ref. Generic CPA 001	14/04/2020-13/04/2027	
CCC PoA for distribution of ICS in developing countries (Myanmar): CPA 026	06.13	CCC PoA for distribution of ICS in developing countries (Myanmar): CPA #	Type: Renewable Duration: 7 years	No
10471-P1-0022-CP1		Ref. Generic CPA 001	14/04/2020-13/04/2027	
CCC PoA for distribution	06.13	CCC PoA for distribution of ICS	Type:	No

of ICS in developing countries (Myanmar): CPA 027 10471-P1-0023-CP1		in developing countries (Myanmar): CPA # Ref. Generic CPA 001	Renewable Duration: 7 years 14/04/2020-13/04/2027	
CCC PoA for distribution of ICS in developing countries (Myanmar): CPA 028 10471-P1-0024-CP1	06.13	CCC PoA for distribution of ICS in developing countries (Myanmar): CPA # Ref. Generic CPA 001	Type: Renewable Duration: 7 years 14/04/2020-13/04/2027	No
CCC PoA for distribution of ICS in developing countries (Myanmar): CPA 029 10471-P1-0025-CP1	06.13	CCC PoA for distribution of ICS in developing countries (Myanmar): CPA # Ref. Generic CPA 001	Type: Renewable Duration: 7 years 14/04/2020-13/04/2027	No
CCC PoA for distribution of ICS in developing countries (Myanmar): CPA 030 10471-P1-0026-CP1	06.13	CCC PoA for distribution of ICS in developing countries (Myanmar): CPA # Ref. Generic CPA 001	Type: Renewable Duration: 7 years 14/04/2020-13/04/2027	No
CCC PoA for distribution of ICS in developing countries (Myanmar): CPA 031 10471-P1-0027-CP1	06.13	CCC PoA for distribution of ICS in developing countries (Myanmar): CPA # Ref. Generic CPA 001	Type: Renewable Duration: 7 years 14/04/2020-13/04/2027	No
CCC PoA for distribution of ICS in developing countries (Myanmar): CPA 032 10471-P1-0028-CP1	06.13	CCC PoA for distribution of ICS in developing countries (Myanmar): CPA # Ref. Generic CPA 001	Type: Renewable Duration: 7 years 14/04/2020-13/04/2027	No
CCC PoA for distribution of ICS in developing countries (Myanmar): CPA 033 10471-P1-0029-CP1	06.13	CCC PoA for distribution of ICS in developing countries (Myanmar): CPA # Ref. Generic CPA 001	Type: Renewable Duration: 7 years 14/04/2020-13/04/2027	No
CCC PoA for distribution of ICS in developing countries (Myanmar): CPA 034 10471-P1-0030-CP1	06.13	CCC PoA for distribution of ICS in developing countries (Myanmar): CPA # Ref. Generic CPA 001	Type: Renewable Duration: 7 years 14/04/2020-13/04/2027	No
CCC PoA for distribution of ICS in developing countries (Myanmar): CPA 035	06.13	CCC PoA for distribution of ICS in developing countries (Myanmar): CPA # Ref. Generic CPA 001	Type: Renewable Duration: 7 years	No

10471-P1-0031-CP1			14/04/2020-13/04/2027	
CCC PoA for distribution of ICS in developing countries (Myanmar): CPA 036 10471-P1-0032-CP1	06.13	CCC PoA for distribution of ICS in developing countries (Myanmar): CPA # Ref. Generic CPA 001	Type: Renewable Duration: 7 years 14/04/2020-13/04/2027	No
CCC PoA for distribution of ICS in developing countries (Myanmar): CPA 037 10471-P1-0033-CP1	06.13	CCC PoA for distribution of ICS in developing countries (Myanmar): CPA # Ref. Generic CPA 001	Type: Renewable Duration: 7 years 14/04/2020-13/04/2027	No
CCC PoA for distribution of ICS in developing countries (Myanmar): CPA 038 10471-P1-0034-CP1	06.13	CCC PoA for distribution of ICS in developing countries (Myanmar): CPA # Ref. Generic CPA 001	Type: Renewable Duration: 7 years 14/04/2020-13/04/2027	No
CCC PoA for distribution of ICS in developing countries (Myanmar): CPA 039 10471-P1-0035-CP1	06.13	CCC PoA for distribution of ICS in developing countries (Myanmar): CPA # Ref. Generic CPA 001	Type: Renewable Duration: 7 years 14/04/2020-13/04/2027	No
CCC PoA for distribution of ICS in developing countries (Myanmar): CPA 040 10471-P1-0036-CP1	06.13	CCC PoA for distribution of ICS in developing countries (Myanmar): CPA # Ref. Generic CPA 001	Type: Renewable Duration: 7 years 14/04/2020-13/04/2027	No
CCC PoA for distribution of ICS in developing countries (Myanmar): CPA 041 10471-P1-0037-CP1	06.13	CCC PoA for distribution of ICS in developing countries (Myanmar): CPA # Ref. Generic CPA 001	Type: Renewable Duration: 7 years 14/04/2020-13/04/2027	No
CCC PoA for distribution of ICS in developing countries (Myanmar): CPA 042 10471-P1-0038-CP1	06.13	CCC PoA for distribution of ICS in developing countries (Myanmar): CPA # Ref. Generic CPA 001	Type: Renewable Duration: 7 years 14/04/2020-13/04/2027	No
CCC PoA for distribution of ICS in developing countries (Myanmar): CPA 043 10471-P1-0039-CP1	06.13	CCC PoA for distribution of ICS in developing countries (Myanmar): CPA # Ref. Generic CPA 001	Type: Renewable Duration: 7 years 14/04/2020-13/04/2027	No
CCC PoA for distribution of ICS in developing	06.13	CCC PoA for distribution of ICS in developing countries	Type: Renewable	No

countries (Myanmar): CPA 044 10471-P1-0040-CP1		(Myanmar): CPA # Ref. Generic CPA 001	Duration: 7 years 14/04/2020- 13/04/2027	
CCC PoA for distribution of ICS in developing countries (Myanmar): CPA 045 10471-P1-0041-CP1	06.13	CCC PoA for distribution of ICS in developing countries (Myanmar): CPA # Ref. Generic CPA 001	Type: Renewable Duration: 7 years 14/04/2020- 13/04/2027	No
CCC PoA for distribution of ICS in developing countries (Myanmar): CPA 046 10471-P1-0042-CP1	06.13	CCC PoA for distribution of ICS in developing countries (Myanmar): CPA # Ref. Generic CPA 001	Type: Renewable Duration: 7 years 14/04/2020- 13/04/2027	No
CCC PoA for distribution of ICS in developing countries (Myanmar): CPA 047 10471-P1-0043-CP1	06.13	CCC PoA for distribution of ICS in developing countries (Myanmar): CPA # Ref. Generic CPA 001	Type: Renewable Duration: 7 years 14/04/2020- 13/04/2027	No
CCC PoA for distribution of ICS in developing countries (Myanmar): CPA 048 10471-P1-0044-CP1	06.13	CCC PoA for distribution of ICS in developing countries (Myanmar): CPA # Ref. Generic CPA 001	Type: Renewable Duration: 7 years 14/04/2020- 13/04/2027	No
CCC PoA for distribution of ICS in developing countries (Myanmar): CPA 049 10471-P1-0045-CP1	06.13	CCC PoA for distribution of ICS in developing countries (Myanmar): CPA # Ref. Generic CPA 001	Type: Renewable Duration: 7 years 14/04/2020- 13/04/2027	No
CCC PoA for distribution of ICS in developing countries (Myanmar): CPA 050 10471-P1-0046-CP1	06.13	CCC PoA for distribution of ICS in developing countries (Myanmar): CPA # Ref. Generic CPA 001	Type: Renewable Duration: 7 years 14/04/2020- 13/04/2027	No
CCC PoA for distribution of ICS in developing countries (Myanmar): CPA 051 10471-P1-0047-CP1	06.13	CCC PoA for distribution of ICS in developing countries (Myanmar): CPA # Ref. Generic CPA 001	Type: Renewable Duration: 7 years 14/04/2020- 13/04/2027	No
CCC PoA for distribution of ICS in developing countries (Myanmar): CPA 052 10471-P1-0048-CP1	06.13	CCC PoA for distribution of ICS in developing countries (Myanmar): CPA # Ref. Generic CPA 001	Type: Renewable Duration: 7 years 14/04/2020-	No

			13/04/2027	
CCC PoA for distribution of ICS in developing countries (Myanmar): CPA 053 10471-P1-0049-CP1	06.13	CCC PoA for distribution of ICS in developing countries (Myanmar): CPA # Ref. Generic CPA 001	Type: Renewable Duration: 7 years 14/04/2020-13/04/2027	No
CCC PoA for distribution of ICS in developing countries (Myanmar): CPA 054 10471-P1-0050-CP1	06.13	CCC PoA for distribution of ICS in developing countries (Myanmar): CPA # Ref. Generic CPA 001	Type: Renewable Duration: 7 years 14/04/2020-13/04/2027	No
CCC PoA for distribution of ICS in developing countries (Myanmar): CPA 055 10471-P1-0051-CP1	06.13	CCC PoA for distribution of ICS in developing countries (Myanmar): CPA # Ref. Generic CPA 001	Type: Renewable Duration: 7 years 14/04/2020-13/04/2027	No
CCC PoA for distribution of ICS in developing countries (Myanmar): CPA 056 10471-P1-0052-CP1	06.13	CCC PoA for distribution of ICS in developing countries (Myanmar): CPA # Ref. Generic CPA 001	Type: Renewable Duration: 7 years 14/04/2020-13/04/2027	No
CCC PoA for distribution of ICS in developing countries (Myanmar): CPA 057 10471-P1-0053-CP1	06.13	CCC PoA for distribution of ICS in developing countries (Myanmar): CPA # Ref. Generic CPA 001	Type: Renewable Duration: 7 years 14/04/2020-13/04/2027	No
CCC PoA for distribution of ICS in developing countries (Myanmar): CPA 058 10471-P1-0054-CP1	06.13	CCC PoA for distribution of ICS in developing countries (Myanmar): CPA # Ref. Generic CPA 001	Type: Renewable Duration: 7 years 14/04/2020-13/04/2027	No

A.2. Coordinating/managing entity

>> Climate Change Center (CCC)

The person responsible for this form is as follows:

Name: Kwon Taeyoung

Position: Team Manager

Email: ktu@climatechangecenter.kr**SECTION B. Implementation of PoA****B.1. Description of implemented PoA**

>> The management system is designed with reference to the CDM Project Standard for Programmes of Activities (Version 02.0), Section 7.3, and to ensure actual, assessable, and long-term GHG emission reduction for the project activity are monitored and reported. As described in

the registered PoA-DD, CME has operational and management responsibility for the implementation, monitoring of the PoA and assesses the performance of all CPAs/CPA implementers to ensure that they fulfil technical and eligibility requirements and application of the same sampling approach for monitoring of the group of CPAs covered in this monitoring report. Moreover, CME plans the technical and administrative processes to meet PoA requirements.

The operational and management arrangement is as follows:

1) A clear definition of roles and responsibilities of personnel involved in the process of Inclusion of CPAs, including a review of their competencies;

The six CPAs (from 10471-P1-0001-CP1 to 10471-P1-0006-CP1) are implemented by Climate Change Center in line with the validated management system. The role and responsibilities for the PoA are as follows:

Personnel	Responsibility	Competencies
CME	<ul style="list-style-type: none"> •To sign agreements with CI; •To sign agreements with DOE for inclusion and verification services; •To communicate with the CDM EB, including on matters related to the distribution of CERs; •To review and assist in the selection and preparation of CPAs, ensuring that all CPAs fulfil eligibility criteria and are neither registered as an individual CDM project activity nor included in another registered PoA; •To ensure that ICS under the PoA meets minimum thermal efficiency requirement of 20%; •To ensure that the same approved baseline and monitoring methodology is applied to all the CPAs; •To establish CER ownership agreements with the CI and the Investors for CPAs; •To train and supervise CI in data collection and archiving; •To ensure that the CI maintain and provide monitoring data for calculating CERs; •To plan and manage validation and verification process; and •To establish and manage the database for calculating CERs based on data received from the CPA implementers. 	<ul style="list-style-type: none"> •Knowledge of specific technical and methodological CDM aspects including but not limited to utilizing appropriate principles, procedures, techniques, and other features throughout the process of registering and including PoA and CPAs •Ability to organize and manage emission reduction projects in general and to communicate and maintain networks with relevant communities and experts including the CPA implementers
CPA Implementers	<ul style="list-style-type: none"> •To disseminate ICS; •To institute adequate data collection and archiving systems; •To establish quality control procedures for all monitoring parameters; and •To conduct sampling survey, monitor and record data. 	<ul style="list-style-type: none"> •Knowledge of technical and methodological CDM aspects as well as the circumstance of regions described in the project boundary •Competencies in monitoring equipment, data collection, recording, and reporting

2) A record-keeping system for each CPA under the PoA;

The CME has trained CPA implementer personnel in PoA implementation, particularly in data collection and archiving.

The ICS has been distributed by the CI. Users and their details have been recorded on a village basis using the user list, Conformity Letter, and self-assessment form during ICS distribution.

The main information we collected from the user is below:

- Name of the user;
- Address and contact number;
- Serial number of the E-FREE cookstoves;
- Age and gender;
- Installation date; and
- Number of people in the household

However, there was a large number of cook stoves distributed, and it was difficult to manage the project when managing the monitoring documents including the above-mentioned information for each stove. Therefore, to increase the project operation efficiency, only key information that can identify users, such as name of the user, address and contract number, stove serial number, and installation date has been included in the database.

This record has been collected by the CI, either electronically or in hard copy at the field, which has been continually stored in CME's electronic database. The CI ensures the production of electronic copies of any records collected in hard copy at the field to provide data to the CME electronically. This information – i.e., name, personal information such as age and gender, and the contact information – allows the CME/CI to track a particular ICS and/or user by visiting particular end-users to check device performance and/or to monitor the operation status. In addition, the ongoing monitoring of the performance of the ICSs in each CPA has been collected by the CI that has been serving as the basis for the calculation of CERs.

3) Procedures for technical review of inclusion of CPAs under the PoA;

The CME has ensured before the inclusion of the CPAs that they met all eligibility requirements for the inclusion under the registered PoA-DD. The documents related to the CPAs are kept, organized, and referred to in a systematic manner. All monitoring documents including hard copies of the original monitoring documents were collected and transferred to an electronic database.

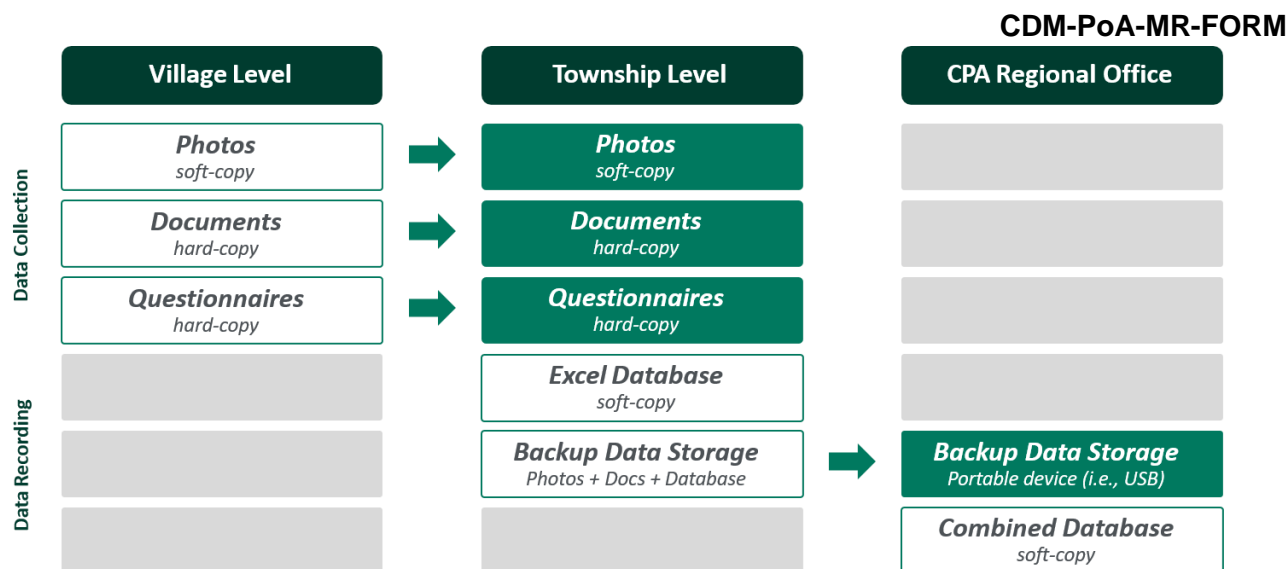
4) Procedure to avoid double counting of ICS/CPA under the PoA;

The following procedures have been undertaken to avoid double counting:

- Every new CPA has been reviewed against the already existing database and the list of similar project activities that are under validation or registered at the United Nations Framework Convention to Climate Change (UNFCCC) or any other mechanism to avail climate change mitigation benefits. This prevents double counting of CPAs.
- CI has been made aware of the double counting principle (i.e. CPA should neither be a CDM project nor a part of any other CDM PoA nor any other mechanism to avail climate change mitigation benefits) via training;
- The user list contains information such as name, contact number, address, and age, and has been stored in the database. Therefore, double counting would not be possible.

5) Records and documentation control process for each CPA under the PoA;

The CI has collected/achieved all data/records and transfer the data/records to the CME's electronic database. Please refer to Section B (i) of the PoA DD for details on the procedure.



6) The SSC-CPA included in the PoA is not a de-bundled component of another CDM programme activity (CPA) or CDM project activity;

Each CPA included in the PoA is not a de-bundled component of another CDM programme activity (CPA) or CDM project activity. Also, as per guidelines, “If each of the independent subsystem/measure (i.e. each ICS) included in the CPA of a PoA is no larger than 1% of the small-scale thresholds defined by the methodology applied, then that CPA of PoA is exempted from performing de-bundling check i.e., considering as not being a de-bundled component of a large scale activity.” The AMS-II.G threshold for maximum energy saving is 180 GWh_{th}/year for SSC projects. The de-bundling rule does not apply to this PoA as the ICS installed/distributed under the six CPAs would not exceed 1% of the 180 GWh_{th}/year thresholds.

7) The provisions to ensure that those operating the CPA are aware of and have agreed that their activity is being subscribed to the PoA;

Climate Change Center (CCC) of Korea acts as the Coordinating/Managing Entity (CME) of the PoA collaborating with the government institutions who distribute ICSs and monitor the use of the ICSs as a CPA Implementer (CI). Myanmar Ceramic Society (MCS), a local stove manufacturer, is responsible for the production and quality control of the ICSs. Multiple private entities/firms of the Republic of Korea participate in the PoA as investors.

8) Measures for continuous improvements of the PoA management system;

CME is responsible for the coordination of the monitoring activities of each CPA, and to ensure the monitoring procedure is applied to all CPAs and is regularly communicating with the field management team with regards to stove manufacturing, distribution, as well as issues raised during the monitoring process to ensure that the monitoring procedure, including sampling, is being followed by the validated CPA-DDs. For continuous improvement of the system, CME is supervising the PoA management system on a regular basis to ensure that:

- 1) There is sufficient documentation of the management systems for ICS distribution and monitoring;
- 2) The system has focused on providing quality training, assessment, and support to the project-related activities;
- 3) CME has regularly arranged meetings with CI and the field team to seek feedback and make changes in response;
- 4) Staff and the team know and meet their responsibilities for applying the system;
- 5) Key policies and procedures are being implemented appropriately with internal assessment; and
- 6) All monitoring data is recorded and stored.

CME has also monitored their improvements to determine their effectiveness and make further changes if needed.

B.2. Post-registration changes to PoA

B.2.1. Corrections

>> The fNRB value, which is the fraction of woody biomass that can be established as non-renewable biomass, has been changed from 0.3 to 0.615 as the Myanmar national default value was newly approved by the board on 23 December 2020⁴ (ASB0049-2020). The PRC according to the update was finally approved on 29 March 2021 and the official reference number is PRC-10471-001. The correction is reflected in PoA-DD version 06.13.

B.2.2. Inclusion of monitoring plan

>> na

B.2.3. Permanent changes to the registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines, or other methodological regulatory documents

>> na

B.2.4. Changes to programme design

>> na

B.2.5. Changes specific to afforestation or reforestation activities

>> na

PART II Monitoring of CPAs

>> Following description is applicable to all six CPAs (from CPA-001 to CPA-006). All CPAs included in this monitoring report follows the generic CPA as identified in section A.1.2.

SECTION C. Implementation of CPAs

C.1. Description of implemented CPAs

>>

(a) Purpose of the CPAs and the measures taken for GHG emission reductions or net anthropogenic GHG removals

The main objective of the CPA is the dissemination of the efficient improved cooking stove located within the Republic of the Union of Myanmar, which functionally contributes in reduced firewood consumption leading to climate change mitigation in a sustainable manner.

⁴ https://cdm.unfccc.int/methodologies/standard_base/2015/sb160.html

Three-stone cookstove is the common stove used in the region, which is composed of stones or bricks of the same height and mud on which a cooking pot can be balanced over a fire. However, these open fires allow heat to escape to the open air, significantly reducing the thermal efficiency. It also emits a considerable amount of smoke associated with a number of diseases. The most serious health issue is chronic and acute respiratory illnesses, such as bronchitis and pneumonia.

Implementation of the project activity replaces the traditional three-stone cookstoves with the ICSs. The ICS is designed to provide an enclosure for the fire to reduce loss of radiant heat, protecting it against wind and increase heat transfer, ultimately reducing the use of non-renewable biomass (i.e. fuel wood). Improvement in efficiency is achieved by adjusting the dimensions of the combustion chamber and ensuring effective airflow.

The adoption of fuel-efficient stoves also reduces deforestation and degradation of forests in Myanmar. This also reduces time and money spent for the collection and use of fuel wood, and improvements to air quality, thus, contributing to the improvement of people's quality of life in Myanmar.

This is a microscale Type II project activity as it is an energy efficiency improvement project that includes solely units that qualify as "microscale CDM units" as defined in the "Methodological tool 19: Demonstration of additionality of microscale project activities". It indicates "energy efficiency project activities that aim to achieve energy savings at a scale of no more than 20 GWh per year and for other project activities that aim to achieve GHG emission reductions at a scale of no more than 20 ktCO₂e per year" and "the geographic location of the project activity is in one of the least developed countries or the small island developing States (LDCs/SIDS) or in a SUZ of the host country" are considered additional.

(b) Description of the installed technologies, technical processes, and equipment for the CPAs

An improved cookstove (ICS) called E-FREE Cook Stoves is distributed to the local households to replace traditional firewood stoves. The introduced ICS model reduces fuel use and emissions by improving heat transfer and combustion efficiency compared to the pre-project device. It utilizes the ancient ash glaze (celadon) technology of Myanmar. Since this ancient celadon technology requires a high temperature (say 1250 - 1300 °C), the ICS manufacturer modified the ancient celadon technology to render appropriate low temperature (about 700 - 800 °C) ash glaze (celadon) technology incorporating borax to suit low-temperature conditions. This celadon flux is to be used as post-stressed glass-string networking flux (GNF) to check heat shock and cracking of the stove body without pre-baking, as used in the ICS production method. The traditional ash glaze consists of three (3) basic properties, which include: alkaline group (modifier flux), stabilizer group, and an acid group (glass former). Borax possesses additional properties that prevent cracking. Premier quality cement and borax has been employed as an agent to form quick setting clay (QSC).

Myanmar Ceramic Society (MCS) is the manufacturer of the E-FREE Cook Stoves and has manufacturing facilities located in each project region. In order to distinguish, track and monitor ICSs in the CPA, all ICSs are given a unique serial number. At the time of distribution, every end-user is required to fill out and sign a form, the conformity letter, to ensure the end-users participation in and tracking by the project.

Technical manufacturer specification of E-FREE Cook Stove:

- Dimension Height 10"x Diameters 11"& 8"
- Material Clay and metal
- Fuel type Firewood
- Efficiency 28%



A WBT for the ICS has been conducted by the laboratory at the Department of Industrial Chemistry, University of Yangon, the national university of Myanmar, and was certified to have a thermal efficiency of 28%. Against the baseline scenario, the households use three-stone fires for cooking, which consume more fuel wood and have a thermal efficiency of lower than 10%. The test was conducted based on the Standard set by the Clean Cooking Alliance with Partnership for Clean Indoor Air (PCIA), as suggested by the applied methodology. The actual efficiency of the ICSs has been measured during the CPA Monitoring Stage, using one of the methods as listed in Section E.2. Note that only one type of model, the E-FREE, has been implemented, and only one stove per household at a time has been distributed throughout the CPA. The lifespan of the ICS is estimated to be two (2) years according to the ICS manufacturer, however, in order to maintain high performance and efficiency of project devices, the ICSs will be replaced every two (2) years throughout the crediting period of the CPA, regardless of the devices' operation condition.

(c) Information on the implementation and actual operation of the CPAs

The following table details the implementation and actual operation status for the CPA:

CPA	Steps	Timeline
10471-P1-0001-CP1	Inclusion under the PoA	27/08/2019
	Crediting period start date	31/08/2019
	Date of the first stove installed under the CPA	19/12/2018
10471-P1-0002-CP1	Inclusion under the PoA	27/08/2019
	Crediting period start date	31/08/2019
	Date of the first stove installed under the CPA	19/12/2018
10471-P1-0003-CP1	Inclusion under the PoA	27/08/2019
	Crediting period start date	31/08/2019
	Date of the first stove installed under the CPA	19/12/2018
10471-P1-0004-CP1	Inclusion under the PoA	27/08/2019
	Crediting period start date	31/08/2019
	Date of the first stove installed under the CPA	19/12/2018
10471-P1-0005-CP1	Inclusion under the PoA	27/08/2019
	Crediting period start date	31/08/2019
	Date of the first stove installed under the CPA	19/12/2018
10471-P1-0006-CP1	Inclusion under the PoA	27/08/2019
	Crediting period start date	31/08/2019

	Date of the first stove installed under the CPA	19/12/2018
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C.2. Location of CPAs

>> The geographical scope of the CPAs is within the national boundary of the Republic of the Union of Myanmar.

CPA	GPS coordination	Region	Township
CPA 001	24.428381, 95.393955	Sagaing	Monywa, Chaungoo, Budalin, Ayadaw, Salingyi, Yinmarbin, and Pale
CPA 002	21.915970, 95.962110	Sagaing	Sagaing, Myinmu and Myaung
CPA 003	21.339416, 95.070279	Magway	Pakokku, Yesagyo, Myaing, Pauk and Seikphyu
CPA 004	20.900635, 94.826142	Magway	Chauk, Yenangyaung, Natmauk, Myothit, Taungdwingyi and Magway
CPA 005	21.466222, 95.388720	Mandalay	Myingyan, Nahtogyi, Taungtha, and Ngazun
CPA 006	20.508045, 96.152698	Mandalay	Yamethin and Pyawbwe

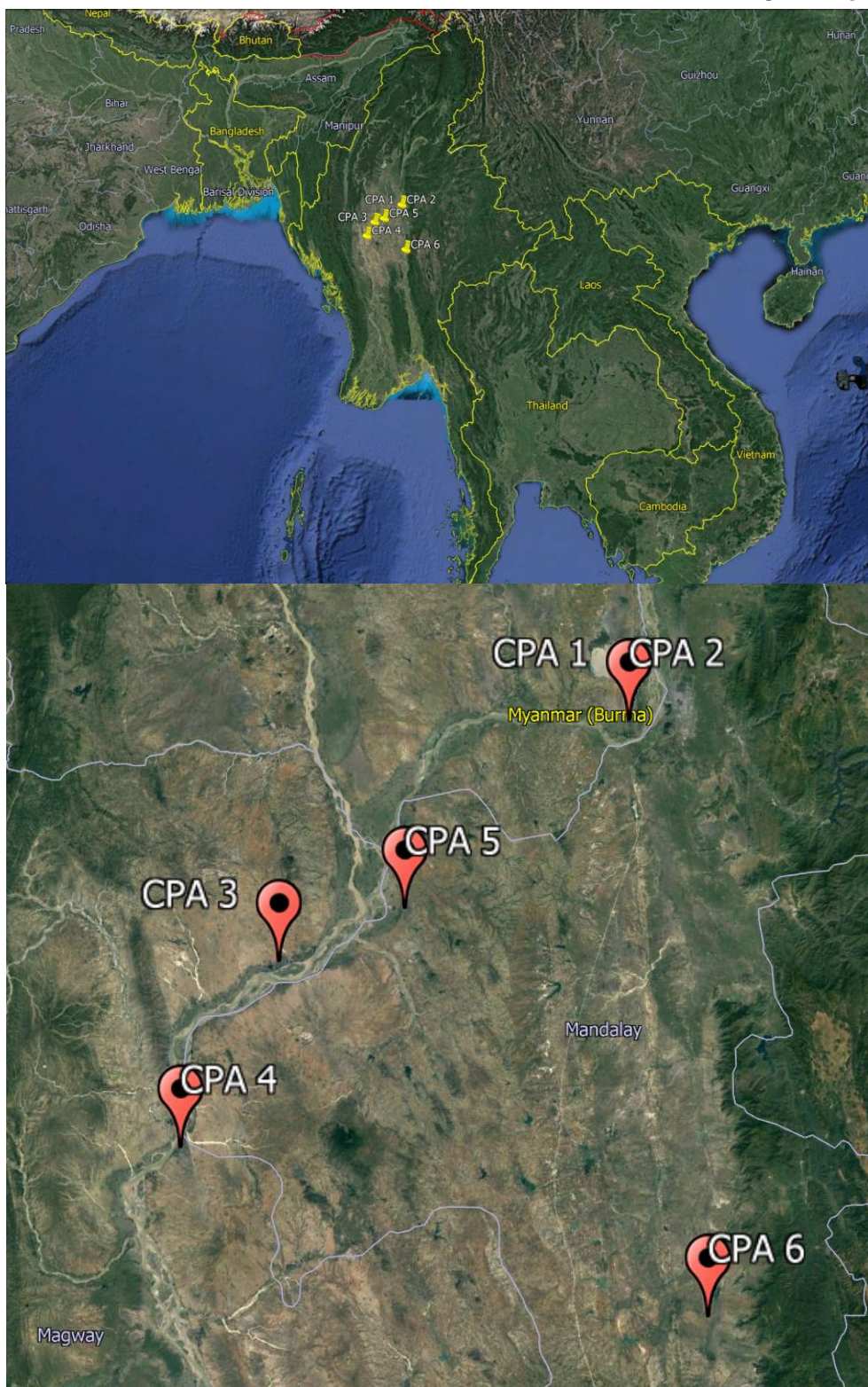


Figure 1. The geographical boundary of SSC-PoA, which is the Republic of the Union of Myanmar, is marked with the pin

CCC PoA for distribution of ICS in developing countries (Myanmar): CPA 001:
(10471-P1-0001-CP1)

All ICSs included in CPA 001 have been disseminated to households located within Sagaing Region of Myanmar – the townships included are Monywa, Chaungoo, Budalin, Ayadaw, Salingyi, Yinmarbin, and Pale Townships.

CCC PoA for distribution of ICS in developing countries (Myanmar): CPA 002:
(10471-P1-0002-CP1)

All ICSs included in CPA 002 have been disseminated to households located within Sagaing Region of Myanmar – the townships included are Sagaing, Myinmu, and Myaung Townships.

CCC PoA for distribution of ICS in developing countries (Myanmar): CPA 003:
(10471-P1-0003-CP1)

All ICSs included in CPA 003 have been disseminated to households located within Magway Region of Myanmar – the townships included are Pakokku, Yesagyo, Myaing, Pauk, and Seikphyu Townships.

CCC PoA for distribution of ICS in developing countries (Myanmar): CPA 004:
(10471-P1-0004-CP1)

All ICSs included in CPA 004 have been disseminated to households located within Magway Region of Myanmar – the townships included are Chauk, Yenangyaung, Natmauk, Myothit, Taungdwingyi, and Magway.

CCC PoA for distribution of ICS in developing countries (Myanmar): CPA 005:
(10471-P1-0005-CP1)

All ICSs included in CPA 005 have been disseminated to households located within Mandalay Region of Myanmar – the townships included are Myingyan, Nahtogyi, Taungtha, and Ngazun.

CCC PoA for distribution of ICS in developing countries (Myanmar): CPA 006:
(10471-P1-0006-CP1)

All ICSs included in CPA 006 have been disseminated to households located within Mandalay Region of Myanmar – the townships included are Yamethin and Pyawbwe.

C.3. Post-registration changes to CPAs

C.3.1. Temporary deviations from the monitoring plans in the included CPA-DDs, applied methodologies, standardized baselines or other methodological regulatory documents

>> na

C.3.2. Corrections

>> The fNRB value, which is the fraction of woody biomass that can be established as non-renewable biomass, has been changed from 0.3 to 0.615 as the Myanmar national default value was newly approved by the board on 23/12/2020⁵ (ASB0049-2020). PRC for 10471-P1-0001-CP1 and 10471-P1-0004-CP1 was completed on 12/04/2021 and PRC for 10471-P1-0002-CP1, 10471-P1-0003-CP1, 10471-P1-0005-CP1 and 10471-P1-0006-CP1 was completed on 18/04/2021. The official reference number of PRC is PRC-10471-002~007. The correction was reflected on the CPA-DD version 8.2 for 10471-P1-0001-CP1, CPA-DD version 01.10 for 10471-P1-0002-CP1 to 10471-P1-0006-CP1.

C.3.3. Changes to the start date of the crediting period

>> na

C.3.4. Inclusion of monitoring plan

>> na

⁵ https://cdm.unfccc.int/methodologies/standard_base/2015/sb160.html

C.3.5. Permanent changes to the included monitoring plans, or permanent deviation of monitoring from the applied methodologies, standardized baselines, or other methodological regulatory documents

>> na

C.3.6. Changes to project design

>> na

C.3.7. Changes specific to afforestation or reforestation CPA

>> na

SECTION D. Description of monitoring system of CPAs

>> The CME is responsible for organizing and supervising the overall operation of the monitoring system of CPAs including sampling plan, data collection, and verification, and results analysis in accordance with the requirements from the CDM EB to ensure GHG emission reductions are accurately monitored, recorded, and reported.

After conducting the field survey, the collected survey results were stored in the electronic database, which contains the following selected information:

- Serial number of E-FREE cook stove
- Name of household representative
- Number of people in a household
- Type of stoves other than E-FREE
- Number of meals per day
- Weight of total wood fuel consumption and on E-FREE

The monitoring plan is designed to monitor the parameters listed in Section E of the respective CPA-DD, which are required for the calculation of GHG emission reduction achieved by the CPAs. The share of operating stoves and the continued use of pre-project devices has been determined based on sampling procedures. The CME is responsible for conducting the sampling surveys and maintaining a database with all operating stoves.

SECTION E. Data and parameters

E.1. Data and parameters fixed ex ante

Data/Parameter	$\eta_{old,i,j}$
Unit	Fraction
Description	Efficiency of pre-project device, which is a three-stone fire using firewood (not charcoal), or a conventional device with no improved combustion air supply or flue gas ventilation, that is without a grate or a chimney
Source of data	Sample survey of end user, AMS-II.G., ver09.0
Value(s) applied	0.1
Choice of data or measurement methods and procedures	Determine the type of pre-project devices being used in the representative households by conducting sample survey; apply the relevant default value suggested in the methodology AMS-II.G., ver 09.0, according to the result of the sample survey.
Purpose of data/parameter	Calculation of baseline emissions

Additional comments	Value established prior to start of implementation based on survey; since the representative households from sample survey were solely using three-stone fires as pre-project device, the default value of 0.1 provided by AMS-II.G., ver09.0 is applied.
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Data/Parameter	μ_y
Unit	Fraction
Description	Adjustment to account for any continued use of pre-project devices during the year y.
Source of data	Data/Parameter table 9 of AMS-II.G. Version 09.0
Value(s) applied	1.0
Choice of data or measurement methods and procedures	As per the methodology, 1.0 is applied when equation 3,5 and 7 is used to estimate $B_{y,savings,i,j}$. Since PoA-DD is applying equation 7, the value of 1.0 has been used in accordance with the methodology.
Purpose of data/parameter	Calculation of baseline emissions
Additional comments	

Data/Parameter	$f_{NRB,y}$
Unit	Fraction
Description	Fraction of woody biomass saved by the project activity in year y that can be established as non-renewable biomass
Source of data	Default value endorsed by designated national authorities and approved by the Board. < https://cdm.unfccc.int/methodologies/standard_base/2015/sb160.html >
Value(s) applied	0.615
Choice of data or measurement methods and procedures	Default national value (0.615) of Myanmar approved by the Board is applied instead of the default value(0.3) as per the methodological tool 30.
Purpose of data/parameter	Calculation of baseline emission
Additional comments	This parameter shall remain fixed for the monitoring periods.

Data/Parameter	$NCV_{biomass}$
Unit	TJ/tonne
Description	Net calorific value of the non-renewable woody biomass that is substituted (IPCC default for wood fuel, 0.0156 TJ/tonnes, based on the gross weight of the wood that is 'air-dried')
Source of data	Paragraph 17 of AMS II.G, Version 09
Value(s) applied	0.0156
Choice of data or measurement methods and procedures	As per the methodology AMS II.G, Version 09 Default value
Purpose of data/parameter	Calculation of baseline emission
Additional comments	This parameter shall remain fixed for the monitoring periods

Data/Parameter	$EF_{projected\ fossil\ fuel}$
Unit	tCO ₂ /TJ
Description	Emission factor for the fossil fuels projected to be used for substitution of non-renewable woody biomass by similar consumer. Use a value of 63.7 tCO ₂ /TJ
Source of data	AMS II.G, Version 09
Value(s) applied	63.7
Choice of data or measurement methods and procedures	Default value as per methodology has been applied.
Purpose of data/parameter	Calculation of baseline emissions
Additional comments	This parameter shall remain fixed for the monitoring periods.

Data/Parameter	Leakage
Unit	Fraction
Description	Use of non-renewable woody biomass saved under the project activity to justify the baseline of other CDM project activities can also be a potential source of leakage. Increase in the use of non-renewable woody biomass outside the project boundary to create non-renewable woody biomass baselines can also be potential source of leakage. As an alternative to previous mentioned $B_{y,savings,i,j}$ can be multiplied by a net to gross adjustment factor of 0.95 to account for both leakage.
Source of data	Paragraph 38 of AMS II.G, Version 09
Value(s) applied	0.95
Choice of data or measurement methods and procedures	Default value applied as per the methodology
Purpose of data/parameter	Calculation of baseline emission
Additional comments	This parameter shall remain fixed for the monitoring periods

E.2. Data and parameters monitored

Data/Parameter	N _{y,i,j}				
Unit	Number of units				
Description	Number of project devices of type i and batch j operating during year y.				
Measured/calculated/ Default	Measured. The number of project device, the ICS, by type i and batch j during period y is recorded and stored in the Project Database of specific-CPAs, also including the information on the device installation date and the address of the end-users. The number of stoves still operating has been determined based on sampling survey.				
Source of data	Project database and household survey				
Value(s) of monitored parameter	CPA	N _y	Distribution (Dec 2018)	Replacement (2019)	Expiration (Dec 2020)
	CPA 1	36,514	4,841	3,499	1,342
	CPA 2	36,067	9,067	1,070	7,997
	CPA 3	36,132	6,068	675	5,393
	CPA 4	36,808	8,615	457	8,158
	CPA 5	36,816	2,424	368	2,056

	CPA 6	36,618	4,679	756	3,923
	Total	218,955	35,694	6,825	28,869
	<p>The lifespan of the cook stove used in this project is 2 years. Stoves that were distributed in December 2018 and continued to be used until December 2020 without replacement in 2019 should be excluded from the reduction calculation as their lifespan has expired. Therefore, after determining the number of stoves that were not replaced, the corresponding amount of emissions was excluded from the ER calculation.</p> <p>Further details on the number of cook stoves are contained in the ER Sheet.</p>				
Monitoring equipment	Not applicable. This number of units is monitored via CPA distribution record and the operational rate is monitored with sampling survey.				
Measuring/reading/recording frequency	The number of stoves still operating has been monitored based on the sampling survey conducted at least once every two years.				
Calculation method (if applicable)	This is a measured parameter, thus calculation method is not applicable.				
QA/QC procedures	<p>For each CPA, the CI shall conduct sampling survey and collect/record data. The CME supervises the CI in data collection/archiving and provides training, guidelines to manage quality and reliable data. In cases where survey results indicate that 95/10 precision are not achieved, the lower bound of the 95 per cent confidence interval of the parameter value may be used as an alternative to repeating the survey on the basis of AMSII.G ver 09, paragraph 36.</p> <p>An electronic copy of all data sources has been archived for two years after the end of the final crediting period or the last issuance of CERs, whichever occurs later.</p>				
Purpose of data/parameter	Calculation of baseline emissions				
Additional comments	-				

Data/Parameter	$\eta_{new,i,j}$				
Unit	Fraction				
Description	Efficiency of the device of each type i and batch j implemented as part of the project activity				
Measured/calculated/default	Measured				
Source of data	Water Boiling Test (WBT) results on sampling method				
Value(s) of monitored parameter	26.5%				
	Three WBT tests were conducted for each of 15 samples, and the average value was designated as the stove's efficiency value. 26.5% is the average value of 15 stoves.				
	Stove 1	Stove 2	Stove 3	Stove 4	Stove 5
	26.3%	26.3%	27.4%	26.6%	26.7%
	Stove 6	Stove 7	Stove 8	Stove 9	Stove 10
	26.5%	25.9%	26.6%	26.6%	25.9%
	Stove 11	Stove 12	Stove 13	Stove 14	Stove 15
26.9%	26.3%	26.9%	26.4%	26.5%	

Monitoring equipment	The monitoring equipment details are as follows:	
	Type	Thermometer
	Model Name	Center 375/376
	Accuracy	at (23±5°C) ±(0.05% reading + 0.1°C)
	Serial Number	210607821, 210204626, 210607791, 210204625, 190313802, 190313804, 190313826, 190313795
	Calibration Frequency	Annual
	Last Calibration	August 27, 2020
	Validity	August 26, 2021
	Type	Probe(thermocouple)
	Model Name	TP-R04(with Center 375/376)
	Accuracy	IEC751, class A ±0.15°C±0.002t (t: measurement temperature)
	Serial Number	210607880, 210204629, 210607879, 210204628, 191313905, 190313892, 190313930, 190313878
	Calibration Frequency	Annual
	Last Calibration	August 27, 2020
	Validity	August 26, 2021
	Type	Scale
	Model Name	Ohaus V500P6KR
	Accuracy	d=1g, e=1g
	Serial Number	8120420010
Calibration Frequency	Annual	
Last Calibration	August 27, 2020	
Validity	August 26, 2021	
Type	Moisture meter for wood	
Model Name	Testo 606-1	
Accuracy	(nominal temperature 25°C, ±1 Digit) Conductivity measurement ±1%	
Serial Number	59008018	
Calibration Frequency	Annual	
Last Calibration	August 27, 2020	
Validity	August 26, 2021	
Equipment Calibration: All equipment listed above were used during the WBT test in February 2021. Prior to undertaking the efficiency tests for the monitoring session, the equipment used were calibrated as under proper calibration by OTS, a calibration laboratory in Myanmar, which has certified under the ISO/IEC 17025:2017. Therefore, it can be stated that these were in worthy state of use at the time of WBT.		
Measuring/reading/recording frequency	Annually from a representative sample. Adjusted for the loss of efficiency as per the paragraph 27(d) of methodology AMS-II.G, Version 09.0	
Calculation method (if applicable)	This is a measured parameter, thus calculation method is not applicable.	
QA/QC procedures	WBTs were carried out for a sample of installed ICSs in operation in line with the PoA sampling. The test protocol used by the third party testing agency is traceable at: http://cleancookstoves.org/binary-data/DOCUMENT/file/000/000/399-1.pdf	
Purpose of data/parameter	Calculation of baseline emissions	

Additional comments	<p>WBTs were carried out by a third party, Mandalay University, following the WBT protocol version 4.2.3 set by the Clean Cooking Alliance with Partnership for Clean Indoor Air (PCIA).</p> <p>WBT on randomly selected households from the database, selected as per sampling size calculation.</p>
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Data/Parameter	B _{y=1,new,i,j,survey}																							
Unit	Tonnes																							
Description	Quantity of woody biomass used by project devices in tonnes per device of type i.																							
Measured/calculated/default	Measured																							
Source of data	Monitoring survey records																							
Value(s) of monitored parameter	The average value of samples is as follows: <table><tr><td>B_{y=1,new,i,j,survey}</td><td>kg/day</td><td>3.815</td></tr><tr><td>B_{y=1,new,i,j,survey}</td><td>ton/year</td><td>1.392</td></tr></table>			B _{y=1,new,i,j,survey}	kg/day	3.815	B _{y=1,new,i,j,survey}	ton/year	1.392															
B _{y=1,new,i,j,survey}	kg/day	3.815																						
B _{y=1,new,i,j,survey}	ton/year	1.392																						
Monitoring equipment	Equipment used is an electronic weighing scale <table><tr><td>Type</td><td colspan="2">Scale</td></tr><tr><td>Model Name</td><td colspan="2">DRETEC KS-514</td></tr><tr><td>Accuracy</td><td colspan="2">d=1g, e=1g</td></tr><tr><td>Serial Number</td><td colspan="2">19E21825</td></tr><tr><td>Calibration Frequency</td><td colspan="2">Annual</td></tr><tr><td>Last Calibration</td><td colspan="2">August 27, 2020</td></tr><tr><td>Validity</td><td colspan="2">August 26, 2021</td></tr></table>			Type	Scale		Model Name	DRETEC KS-514		Accuracy	d=1g, e=1g		Serial Number	19E21825		Calibration Frequency	Annual		Last Calibration	August 27, 2020		Validity	August 26, 2021	
Type	Scale																							
Model Name	DRETEC KS-514																							
Accuracy	d=1g, e=1g																							
Serial Number	19E21825																							
Calibration Frequency	Annual																							
Last Calibration	August 27, 2020																							
Validity	August 26, 2021																							
Measuring/reading/recording frequency	A sample survey conducted during the first year from the time the stove distribution is completed (i.e., physical on-site visit for face to face interview during the first year of the crediting period, y=1) using a survey																							
Calculation method (if applicable)	This is a measured parameter, thus calculation method is not applicable.																							
QA/QC procedures	If pre-project device is still in use or the project device is found to be missing or broken, the value for the household will be zero. The CI shall conduct sampling survey and collect/record data. The CME supervises the CI in data collection/archiving and provides training, guidelines to manage quality and reliable data. In cases where survey results indicate that 95/10 precision are not achieved, the lower bound of the 95 per cent confidence interval of the parameter value may be used as an alternative to repeating the survey on the basis of AMSII.G ver 09, paragraph 36.																							
Purpose of data/parameter	Calculation of baseline emissions																							
Additional comments	-																							

Data/Parameter	Life Span
Unit	Number of years
Description	The operating lifetime of the project device. The life span should be reported in cases where the PPs are opting to account for the efficiency loss as per paragraph 27 of the applied methodology
Measured/calculated/default	Measured
Source of data	Manufacturer specification
Value(s) of monitored parameter	2
Monitoring equipment	Not applicable. The life span of the project device is monitored via a CPA distribution record.

Measuring/reading/recording frequency	Not applicable
Calculation method (if applicable)	This is a measured parameter, thus calculation method is not applicable
QA/QC procedures	-
Purpose of data/parameter	Calculation of baseline emissions
Additional comments	<p>The life span of the project device stove is estimated to be 2 years according to the device manufacturer and in order to maintain high performance and efficiency of the devices, they will be replaced every two years through the crediting period of the CPA regardless of the devices' operation condition.</p> <p>The life span of the project device was determined based on the date of the conformity letter in each CPA. The ICS users signed the letter at the time of the ICS handover. For measuring the life span of the stoves included in this report, we recognized all stoves as a single batch. As a batch, the date of the last cook stove delivered was the start date for forming a vintage of stoves.</p>

Data/Parameter	Date of commissioning of project device i														
Unit	Date														
Description	The actual date of commissioning of the project device														
Measured/calculated/default	Measured														
Source of data	Project database and household survey														
Value(s) of monitored parameter	<table border="1"> <thead> <tr> <th>CPA</th><th>Date</th></tr> </thead> <tbody> <tr> <td>CPA 1</td><td>19/12/2018</td></tr> <tr> <td>CPA 2</td><td>19/12/2018</td></tr> <tr> <td>CPA 3</td><td>19/12/2018</td></tr> <tr> <td>CPA 4</td><td>19/12/2018</td></tr> <tr> <td>CPA 5</td><td>19/12/2018</td></tr> <tr> <td>CPA 6</td><td>19/12/2018</td></tr> </tbody> </table> <p>The date for each CPA was determined based on the first stove distribution date, which is stated in the Conformity letter signed by the ICS user. More details are to be referred from the ER calculation sheet.</p>	CPA	Date	CPA 1	19/12/2018	CPA 2	19/12/2018	CPA 3	19/12/2018	CPA 4	19/12/2018	CPA 5	19/12/2018	CPA 6	19/12/2018
CPA	Date														
CPA 1	19/12/2018														
CPA 2	19/12/2018														
CPA 3	19/12/2018														
CPA 4	19/12/2018														
CPA 5	19/12/2018														
CPA 6	19/12/2018														
Monitoring equipment	Not applicable.														
Measuring/reading/recording frequency	Fixed and recorded at the time of commissioning/distribution														
Calculation method (if applicable)	This is a measured parameter, thus calculation method is not applicable														
QA/QC procedures	Conformity letters and the database of the stove distribution record have been cross-checked.														
Purpose of data/parameter	Calculation of baseline emissions														
Additional comments	-														

Data/Parameter	Date of commissioning of batch j
Unit	Date
Description	To establish the date of commissioning, the CPA Implementers may opt to group the devices in "batches" and the latest date of commissioning of a device within the batch used as the date of commissioning for the entire batch.
Measured/calculated/default	Measured
Source of data	Stove distribution database

Value(s) of monitored parameter	Date of commissioning of batch
	30/09/2019
	In this monitoring report, the total number of stoves included are the stoves distributed until 30/09/2019. As per the description from the methodology, the date of commissioning of the batch has been determined based on the last date of commissioning of the device within the batch, which is 30/09/2019 is the commissioning of a batch. More details are to be referred from the ER calculation sheet.
Monitoring equipment	NA
Measuring/reading/recording frequency	Fixed and recorded at the time of commissioning/distribution
Calculation method (if applicable)	This is a measured parameter, thus calculation method is not applicable
QA/QC procedures	Conformity letters and the database of the stove distribution record have been cross-checked.
Purpose of data/parameter	Calculation of baseline emissions
Additional comments	-

E.3. Implementation of sampling plan

>> As of the current monitoring period, a total of 54 CPAs are included under the PoA and only six CPAs are included under the current monitoring period. The total ICS distributed across the six CPAs is 218,955; the number of ICS distributed under each CPA is as follows:

	Total number of stoves distributed
CPA 1	36,514
CPA 2	36,067
CPA 3	36,132
CPA 4	36,808
CPA 5	36,816
CPA 6	36,618
Total	218,955

The current monitoring period considered is from 31 August 2019 to 31 December 2020, with both dates included. Representative sampling has been undertaken that is designed in line with the requirements of the AMS-ILG methodology applied and the "Sampling and surveys for CDM project activities and programme of activities".

Sampling design

Objectives and reliability requirements - The sampling objective is to provide unbiased and reliable estimates of each parameter throughout the crediting period. As per the applied methodology, "[a] statistically valid sample of the locations where the devices are deployed, with consideration, in the sampling design, of occupancy and demographic differences can be used to determine parameter values used to calculate emission reductions. In accordance with the standard "Sampling and surveys for CDM project activities and programs of activities", 95/10 confidence/precision will be applied in all cases, since the project is solely composed of "microscale CDM units" as defined in the methodological tool "Demonstration of additionality of microscale project activities."

Target population - The target population is the number of project devices distributed within the selected monitoring period; applicable to all monitoring parameters.

Sampling method – Stratified random sampling has been applied as the project has multiple batches. Detailed calculations are provided within the monitoring plan as per CDM guidelines "Sampling and surveys for CDM project activities and programmes of activities".

Monitoring parameters are $N_{y,i,j}$, $n_{new,i,j}$ and $B_{y=1,new,i,j,survey}$.

$N_{y,i,j}$	= Visual inspection to see if ICS is operational and in use; interview with end-user if required to verify that ICS is still in use (Yes/No)
$n_{new,i,j}$	= Efficiency determined by the WBT during the monitoring period
$B_{y=1,new,i,j,survey}$	= Quantity of woody biomass used by project devices in tonnes per device of type i

Sampling frame – Sampling frame is the database recorded at the ICSs distribution. All cook stoves included in this monitoring report are defined as one batch and have the same vintage, thus, sampling was performed only once. The date when the cook stove was distributed and started to use was determined based on the date written on the conformity letter signed by users.

Sample size – The sample size is calculated in order to meet the requirements. The minimum sample size has been calculated based on 95/10 confidence/precision. Samples were selected through random number generation using appropriate software – i.e., MS Excel random selection function. The total number of selected samples is made larger than the minimum requirement in order to ensure that the precision of the Sampling Frame is established for all CPA within the PoA to estimate emissions reductions. The same sampling approach has been applied to all CPAs in this monitoring report.

There are two parameters for the survey that are estimated through sampling: i) the number of the project devices still in operation during the current monitoring period ($N_{y,i,j}$); ii) Quantity of woody biomass used by project devices ($B_{y=1,new,i,j,survey}$). In accordance with AMS-II.G version 09.0, both parameters can be sampled in a single survey with a random sample of households using the above-described confidence/precision levels depending on annual or biennial monitoring frequency.

Estimation of the sample size for $N_{y,i,j}$:

To estimate the sample size for parameter $N_{y,i,j}$ the following equation is used

$$n \geq \frac{1.96^2 NV}{(N-1) \times 0.1^2 + 1.96^2 V} \quad , \quad V = \left(\frac{SD}{mean} \right)^2$$

Where :

n	= Sample size
N	= Number of ICSs installed in year y
1.96	= Represents the 95 % confidence required
0.1	= Represents the 10 % relative precision
SD	= Overall standard deviation
mean	= Overall mean

Based on the above equation, the resulting sampling size for 95/10 confidence/precision is calculated for the total population size, which comes out to be $n \geq 96$. Therefore, at least 96 samples were supposed to be monitored. However, considering an oversampling of 15% on the calculated sample size, and in consideration of accuracy, the sample size of 110 was determined.

Estimation of the sample size for $B_{y=1,new,i,j,survey}$:

To estimate the sample size for parameter $B_{y=1,new,i,j,survey}$ the following equation is used

$$n \geq \frac{1.96^2 NV}{(N-1) \times 0.1^2 + 1.96^2 V} \quad , \quad V = \frac{SD^2}{\bar{p}^2} = \frac{\text{overall variance}}{\bar{p}^2}$$

Where :

n	= Sample size
N	= Number of ICSs installed in year y

p	=	Expected proportion
1.96	=	95 % confidence
0.1	=	10 % relative precision
\bar{p}	=	Overall proportion

Based on the above equation, the resulting sampling size for 95/10 confidence/precision is calculated for the total population size, which comes out to be $n \geq 137$. Therefore, at least 137 samples were supposed to be monitored. However, considering an oversampling of 15% on the calculated sample size, and in consideration of accuracy, sample size of 160 was determined.

Estimation of the sample size for $n_{\text{new},i,j}$:

To estimate the sample size for $n_{\text{new},i,j}$ the following equation is used

$$n \geq \frac{1.96^2 NV}{(N-1) \times 0.1^2 + 1.96^2 V}, \quad V = \left(\frac{SD}{\text{mean}} \right)^2$$

Where :

N	=	Sample size
N	=	Number of ICSs installed in year y
1.96	=	Represents the 95 % confidence required
0.1	=	Represents the 10 % relative precision
SD	=	Overall standard deviation
Mean	=	Overall mean

Based on the above equation, the resulting sampling size for 95/10 confidence/precision is calculated for the total population size, which comes out to be $n \geq 3$. Therefore, at least 3 samples were supposed to be monitored. However, the sample size returned a value less than 30, based on the instruction, we concluded our minimum boundary of 5 samples. Considering an oversampling on the calculated sample size and precision, and in consideration of accuracy, the sample size was determined to be 15, which was three times more than the number of calculated sample size.

Parameter	Calculated sample size	Decided sample size
$N_{y,i,j}$	96	110
$B_{y=1,\text{new},i,j,\text{survey}}$	137	160
$n_{\text{new},i,j}$	3	15

Sampling was conducted from September 1, 2020, to September 15, 2020.

SECTION F. Calculation of emission reductions or net anthropogenic removals

F.1. Calculation of baseline emissions or baseline net removals

>> According to paragraph 17 of methodology AMS-II.G version 09, emission reductions shall be calculated as:

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

Where,

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

$ER_{y,i,j}$	=	Emission reductions by project device of type i and batch j during year y in t CO ₂ e
LE_y	=	Leakage emissions in the year y

So, now

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

Where,

$B_{y,savings}$	=	Quantity of woody biomass that is saved in tonnes per cookstove device of type i and batch j during year y
$N_{y,i,j}$	=	Number of project devices of type i and batch j operating during year y
μ_y	=	Adjustment to account for any continued use of pre-project devices during the year y
$f_{NRB,y}$	=	Fraction of woody biomass that can be established as non-renewable biomass
$NCV_{biomass}$	=	The net calorific value of the non-renewable woody biomass, briquettes, or charcoal used in project devices
$EF_{projected\ fossil\ fuel}$	=	Emission factor for the fossil fuels projected to be used for substitution of non-renewable woody biomass by similar consumers
LAF	=	Leakage adjustment factor

In line with the applied methodology AMS-II.G version 09.0, Water Boiling Test (WBT) has been chosen to determine $B_{y,savings,i,j}$ with the equations given below,

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

Where,

$B_{y=1,new,i,j,survey}$	=	Quantity of woody biomass used by project devices in tonnes per device of type i
$\eta_{new,i,j}$	=	The efficiency of the device of each type i and batch j implemented as part of the project activity
$\eta_{old,i,j}$	=	The efficiency of the pre-project device, which is a three-stone fire using firewood

The estimated CERs as per registered CPA 1 has been calculated as follows with actual monitoring values :

$$B_{y,savings,i,j} = B_{y=1,new,i,j,survey} \times (\eta_{new,i,j} / \eta_{old,i,j} - 1)$$

$$= 1.392 \times (0.265 / 0.10 - 1)$$

$$= 2.2968 \text{ tCO}_2\text{e/yr}$$

In order to calculate the actual reduction, we divide it into cases arriving before and after the monitoring start date for calculating the year fraction.

Year fraction = (Monitoring Period end date - Monitoring Period start date+1)/365

For instance, two types of year fractions were applied for CPA 1. The ER calculation formula applied up to the year fraction is as follows :

1) When the project device that arrived before the monitoring period start date

$$B_{y,savings} \times N_{y,l} \times \mu_y \times f_{NRB} \times NCV_{biomass} \times EF_{projected\ fossil\ fuel} \times Leakage \times Year\ fraction$$

$$= 2.2968 \times 36,141 \times 1.0 \times 0.615 \times 0.0156 \times 63.7 \times 0.95 \times 1.340$$

$$= 64,566 \text{ tCO}_2\text{e}$$

2) When the project device that arrived after the monitoring period

$$B_{y,savings} \times N_{y,l} \times \mu_y \times f_{NRB} \times NCV_{biomass} \times EF_{projected\ fossil\ fuel} \times Leakage \times Year\ fraction$$

$$= 2.2968 \times 373 \times 1.0 \times 0.615 \times 0.0156 \times 63.7 \times 0.95 \times 1.337$$

$$= 665 \text{ tCO}_2\text{e}$$

When calculating the ER, it was assumed that the stove was used from the next day, not the day of the stove distributed. Therefore, the monitoring start date for calculation of year fraction that we applied started on August 31 if the stove supply was completed until August 30, 2019, and if the distribution was completed after August 30, 2019, the monitoring started from the day after the distribution to the period ends on December 31, 2020, the last day of the monitoring period.

However, some stoves, they began to be used in December 2018 and were used even after the lifespan of the stoves specified in the PoA-DD in December 2020. Since the amounts of GHG emission reduction due to the use of expired cookstoves are not recognized according to the methodology, so we determine the number of the stoves that are used without being replaced even after the end of their lifespan, and excluded the ER amounts occurred from the time when the life of the stove passed two years until December 31 2020, the last date of the monitoring period of this report from using of the corresponding stoves.

Similarly, when calculating the year fraction, it was calculated from the next day of the stove distribution date, so only stoves supplied until December 30, 2018, were excluded from the calculation. This is because the start date of use of the cookstove distributed on December 31, 2018, was January 1, 2019, so the period of end-of-life will be ended on January 1, 2021, which is, exceeded the period of the monitoring period under this report.

As a result,

Total ERy for CPA 001

$$= 64,566 + 665 - 30$$

$$= 65,201 \text{ tCO}_2\text{e}$$

We rounded down the result, thus final value was 65,200 tCO₂e

The remaining CPAs were calculated in the same way as above. The detailed ER calculation is submitted in the ER sheet.

F.2. Calculation of project emissions or actual net removals

>> As per the equations in the methodology, there is no project emission taken separately. Section F.1 shall be referred to for this section.

F.3. Calculation of leakage emissions

>> As per AMS II.G, a leakage factor of 0.95 has already been taken in the calculation of baseline emissions and therefore the B_{old} has been multiplied by a net to gross adjustment factor to account for leakages.

F.4. Calculation of emission reductions or net anthropogenic removals

CPA UNFCCC reference number	Baseline GHG emissions or baseline net GHG removals (t CO ₂ e)	Project GHG emissions or actual net GHG removals (t CO ₂ e)	Leakage GHG emissions (t CO ₂ e)	GHG emission reductions or net anthropogenic GHG removals (t CO ₂ e)			
				Before 01/01/2013	From 01/01/2013 until 31/12/2020	From 01/01/2021	Total amount
10471-P1-0001-CP1	65,200	0	0	0	65,200	0	65,200
10471-P1-0002-CP1	63,603	0	0	0	63,603	0	63,603
10471-P1-0003-CP1	63,434	0	0	0	63,434	0	63,434
10471-P1-0004-CP1	64,320	0	0	0	64,320	0	64,320
10471-P1-0005-CP1	64,673	0	0	0	64,673	0	64,673
10471-P1-0006-CP1	64,037	0	0	0	64,037	0	64,037
Total	385,267	0	0	0	385,267	0	385,267

F.5. Comparison of emission reductions or net anthropogenic removals achieved with estimates in the included CPA-DDs

CPA UNFCCC reference number	Amount achieved during this monitoring period (t CO ₂ e)	Amount estimated ex ante for this monitoring period in the CPA-DD (t CO ₂ e)
10471-P1-0001-CP1	65,200	60,120
10471-P1-0002-CP1	63,603	64,774
10471-P1-0003-CP1	63,434	64,221
10471-P1-0004-CP1	64,320	60,799
10471-P1-0005-CP1	64,673	60,572
10471-P1-0006-CP1	64,037	60,327
Total	385,267	370,813

F.5.1. Explanation of calculation of “amount estimated ex ante for this monitoring period in the CPA-DD”

>> The fNRB value has been changed from 0.3 to 0.615 as the Myanmar national default value was newly approved by the board on 23 December 2020⁶. The correction was reflected in PoA-DD version 06.13, which is in PRC (PRC-10471-001). The revised PoA DD was submitted to the UNFCCC on 4 February 2021. As of 10 June 2021, the PRC for the PoA DD has been completed.

⁶ https://cdm.unfccc.int/methodologies/standard_base/2015/sb160.html

The number of days for the monitoring period is 489 days (31/08/2019 – 31/12/2020). The amount estimated ex-ante for this monitoring period is provided in the respective CPA-DD. In order to calculate emission reduction value proportional to the monitoring period, a total of 489 days from 31/08/2019 – 31/12/2020 were considered in the calculation. Since the same formula was applied to all 6 CPAs included in this monitoring report, detailed information can be found in the ER Sheet. In this part, we used CPA 1 as an example to explain the method.

For 10471-P1-0001-CP1: CPA 001,

The *ex-ante* estimated for the monitoring period has been calculated as follows:

$$= B_{y,savings} \times N_{y,l} \times \mu_y \times f_{NRB} \times NCV_{biomass} \times EF_{projected\ fossil\ fuel} \times Leakage$$

$$= 2.124 \times 36,390 \times 1.0 \times 0.615 \times 0.0156 \times 63.7 \times 0.95$$

$$= 44,875 \text{ tCO}_2\text{e/yr}$$

$$= (\text{Estimated CERs as per registered CPA} / 365) \times 489 \text{ (days)}$$

$$= 44,875 / 365 \times 489$$

$$= 60,120 \text{ tCO}_2\text{e}$$

F.6. Remarks on increase in achieved emission reductions

>> The ex-ante estimated emission during the monitoring period in the CPA-DD was calculated based on the ex-ante values provided in the respective CPA-DD. Based on the methodology that we applied, $B_{y=1,new,i,j,survey}$ values were determined after the monitoring. As the ex-ante reduction amount was determined before the monitoring, we applied the estimated default value, which is 1.18 to $B_{y=1,new,i,j,survey}$. The estimated value was calculated using the average wood fuel consumption of households in the Asia region suggested in the CDM-SSC WG Thirty-third meeting Report Annex 8. After monitoring, the value was determined to be 1.392, thus, 1.392 instead of the default value, was applied to this monitoring report. Since the 1.392 value, not the 1.18 value, was applied, there is an increase from the ex-ante value we submitted.

F.7. Remarks on scale of small-scale CPAs

>> NA.

Document information

<i>Version</i>	<i>Date</i>	<i>Description</i>
04.0	6 April 2021	Revision to: <ul style="list-style-type: none"> • Reflect the “Clarification: Regulatory requirements under temporary measures for post-2020 cases” (CDM-EB109-A01-CLAR).
03.0	31 May 2019	Revision to: <ul style="list-style-type: none"> • Ensure consistency with version 02.0 of the “CDM project standard for programmes of activities” (CDM-EB93-A07-STAN); • Add a section on remarks on the observance of the scale limit of small-scale CPAs during the crediting periods; • Add "changes specific to afforestation or reforestation activities/CPA" as a possible post-registration changes; • Clarify the reporting of net anthropogenic GHG removals for A/R PoAs between two commitment periods; • Make structural and editorial improvements.
02.0	7 June 2017	Revision to: <ul style="list-style-type: none"> • Ensure consistency with version 01.0 of the “CDM project standard for programmes of activities (CDM-EB93-A07-STAN); • Make editorial improvements.
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