



**Monitoring report form for CDM programme of activities  
(Version 05.0)**

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

**MONITORING REPORT**

<b>Title of the PoA</b>	The Project of CCC program of Activities (PoA) for Distribution of Improved Cookstoves (ICS) in Developing South and Southeast Asia Countries (Myanmar)		
<b>UNFCCC reference number of the PoA</b>	10471		
<b>Version number of the PoA-DD applicable to this monitoring report</b>	06.13		
<b>Version number of this monitoring report</b>	2.0		
<b>Completion date of this monitoring report</b>	24/11/2025		
<b>Monitoring period number</b>	2		
<b>Duration of this monitoring period</b>	01/01/2021 – 31/05/2022 (inclusive of start & end date)		
<b>Monitoring report number for this monitoring period</b>	2		
<b>Coordinating/managing entity</b>	Climate Change Center		
<b>Host Parties</b>	<b>Host Party of the PoA</b>	<b>Is this the host Party of a CPA covered in this monitoring report? (yes/no)</b>	
	The Republic of the Union of Myanmar	Yes	
<b>Applied methodologies and standardized baselines</b>	AMS-II.G Energy efficiency measures in thermal applications of non-renewable biomass, version 09		
<b>Sectoral scopes</b>	Sectoral Scope: 03		
<b>Amount of GHG emission reductions or net anthropogenic GHG removals achieved by all CPAs covered in this monitoring report in this monitoring period</b>	<b>Amount achieved before 1 January 2013</b>	<b>Amount achieved from 1 January 2013 until 31 December 2020</b>	<b>Amount achieved from 1 January 2021</b>
	0	0	590,355 tCO <sub>2</sub> e
<b>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</b>	3,012,480 tCO <sub>2</sub> 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 area who are heavily dependent on nearby forests for their basic needs<sup>1</sup>. 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)<sup>2</sup>.

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%<sup>3</sup>. 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.

#### 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

<sup>1</sup> [http://themimu.info/sites/themimu.info/files/documents/Census\\_Atlas\\_Myanmar\\_the\\_2014\\_Myanmar\\_Population\\_and\\_Housing\\_Census.pdf](http://themimu.info/sites/themimu.info/files/documents/Census_Atlas_Myanmar_the_2014_Myanmar_Population_and_Housing_Census.pdf)

<sup>2</sup> [http://themimu.info/sites/themimu.info/files/documents/Report\\_Myanmar\\_Cookstove\\_Market\\_Assessment\\_GERES\\_Jun\\_2015.pdf](http://themimu.info/sites/themimu.info/files/documents/Report_Myanmar_Cookstove_Market_Assessment_GERES_Jun_2015.pdf)

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

## 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	No
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	No
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	No
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	No
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	No
CCC PoA for distribution of ICS in developing countries (Myanmar): CPA 006 10471-P1-0006-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	No
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	Yes
CCC PoA for distribution of ICS in developing countries (Myanmar): CPA 012	06.13	CCC PoA for distribution of ICS in developing countries (Myanmar): CPA # Ref. Generic CPA 001	Type: Renewable Duration: 7 years	Yes

10471-P1-0008-CP1			14/04/2020-13/04/2027	
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	Yes
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	Yes
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	Yes
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	Yes
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	Yes
CCC PoA for distribution of ICS in developing countries (Myanmar): CPA 018 10471-P1-0014-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	Yes
CCC PoA for distribution of ICS in developing countries (Myanmar): CPA 019 10471-P1-0015-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	Yes
CCC PoA for distribution of ICS in developing countries (Myanmar): CPA 020 10471-P1-0016-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	Yes

CCC PoA for distribution of ICS in developing countries (Myanmar): CPA 021 10471-P1-0017-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	Yes
CCC PoA for distribution of ICS in developing countries (Myanmar): CPA 022 10471-P1-0018-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	Yes
CCC PoA for distribution of ICS in developing countries (Myanmar): CPA 023 10471-P1-0019-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	Yes
CCC PoA for distribution of ICS in developing countries (Myanmar): CPA 024 10471-P1-0020-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	Yes
CCC PoA for distribution of ICS in developing countries (Myanmar): CPA 025 10471-P1-0021-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	Yes
CCC PoA for distribution of ICS in developing countries (Myanmar): CPA 026 10471-P1-0022-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	Yes
CCC PoA for distribution of ICS in developing countries (Myanmar): CPA 027 10471-P1-0023-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	Yes
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	Yes
CCC PoA for distribution of ICS in developing countries (Myanmar): CPA 029	06.13	CCC PoA for distribution of ICS in developing countries (Myanmar): CPA #	Type: Renewable Duration: 7 years	Yes

10471-P1-0025-CP1		Ref. Generic CPA 001	14/04/2020-13/04/2027	
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	Yes
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	Yes
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	Yes
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	Yes
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	Yes
CCC PoA for distribution of ICS in developing countries (Myanmar): CPA 035 10471-P1-0031-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	Yes
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	Yes
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	Yes

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	Yes
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	Yes
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	Yes
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	Yes
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	Yes
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	Yes
CCC PoA for distribution of ICS in developing countries (Myanmar): CPA 044 10471-P1-0040-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	Yes
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	Yes
CCC PoA for distribution of ICS in developing countries (Myanmar): CPA 046	06.13	CCC PoA for distribution of ICS in developing countries (Myanmar): CPA #	Type: Renewable Duration: 7 years	Yes

10471-P1-0042-CP1		Ref. Generic CPA 001	14/04/2020-13/04/2027	
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	Yes
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	Yes
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	Yes
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	Yes
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	Yes
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 14/04/2020-13/04/2027	Yes
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	Yes
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	Yes

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	Yes
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	Yes
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	Yes
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	Yes

## A.2. Coordinating/managing entity

>> Climate Change Center (CCC)

The person responsible for this form is as follows:

Name: Heo, Seo Joon

Position: Team Manager

Email: [Seojoon.heo@climatechangecenter.kr](mailto:Seojoon.heo@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 03.0), 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 fulfill technical and eligibility requirements and the same sampling approach was applied 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 48 CPAs (from 10471-P1-0007-CP1 to 10471-P1-0054-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"> <li>• To sign agreements with CI;</li> <li>• To sign agreements with DOE for inclusion and verification services;</li> <li>• To communicate with the CDM EB, including on matters related to the distribution of CERs;</li> <li>• To review and assist in the selection and preparation of CPAs, ensuring that all CPAs fulfill eligibility criteria and are neither registered as an individual CDM project activity nor included in another registered PoA;</li> <li>• To ensure that ICS under the PoA meets minimum thermal efficiency requirement of 20%;</li> <li>• To ensure that the same approved baseline and monitoring methodology is applied to all the CPAs;</li> <li>• To establish CER ownership agreements with the CI and the Investors for CPAs;</li> <li>• To train and supervise CI in data collection and archiving;</li> <li>• To ensure that the CI maintain and provide monitoring data for calculating CERs;</li> <li>• To plan and manage validation and verification process; and</li> <li>• To establish and manage the database for calculating CERs based on data received from the CPA implementers.</li> </ul>	<ul style="list-style-type: none"> <li>• 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</li> <li>• 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</li> </ul>
CPA Implementers	<ul style="list-style-type: none"> <li>• To disseminate ICS;</li> <li>• To institute adequate data collection and archiving systems;</li> <li>• To establish quality control procedures for all monitoring parameters; and</li> <li>• To conduct sampling survey, monitor and record data.</li> </ul>	<ul style="list-style-type: none"> <li>• Knowledge of technical and methodological CDM aspects as well as the circumstance of regions described in the project boundary</li> <li>• Competencies in monitoring equipment, data collection, recording, and reporting</li> </ul>

**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. The Users and their details have been recorded on a village basis using the user list, Conformity Letter, and self-assessment form during the ICS distribution. When managing data for monitoring, the following key information that can identify users and cookstoves was extracted in order to increase the efficiency of data management. The main information is below:

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

This record has been collected by the CI either electronically or in hard copy at the field, which has been subsequently stored in CME's electronic database. The CI ensures to produce 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 address and contact information – allows the CME/CI to track particular ICS and/or user by visiting particular end-users as necessary 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 served 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.

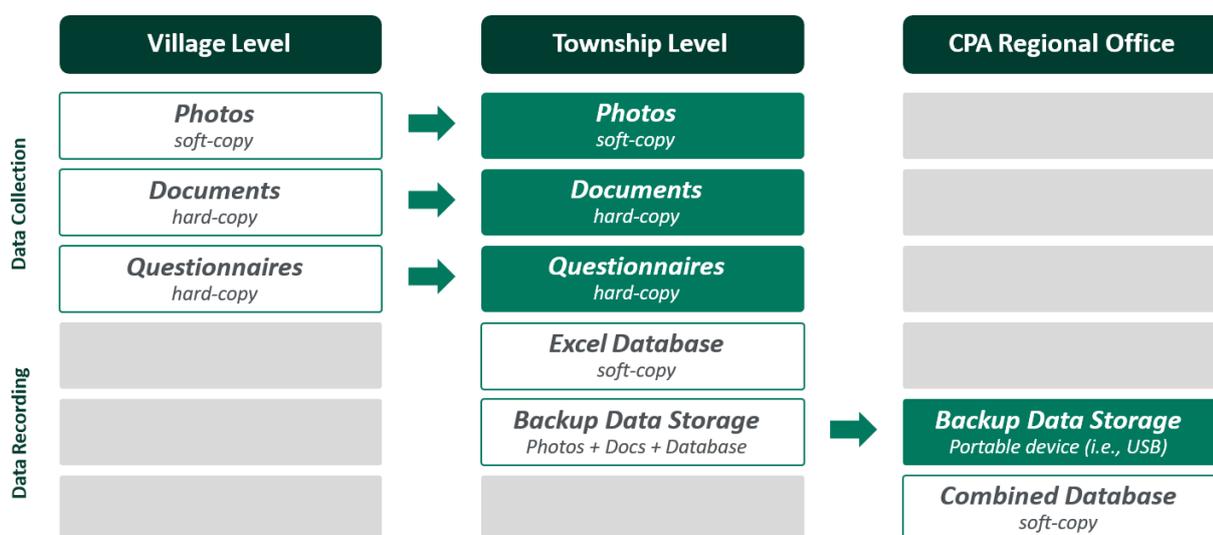
**4) Procedure to avoid double counting of ICS/CPA under the PoA;**

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 is not 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 GWhth/year for SSC projects. The de-bundling rule does not apply to this PoA as the ICS installed/distributed under the 48 CPAs would not exceed 1% of the 180 GWhth/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 have distributed ICSs and monitor the use of the ICSs as a CPA Implementer (CI). Local stove manufacturer, Myanmar Ceramic Society (MCS), is responsible for the production and quality control of the ICSs. Multiple private entities/firms of the Republic of Korea have participated 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 is regularly communicating with the field management team in regard to the stove manufacturing, distribution, as well as issues raised during the monitoring process to ensure that the monitoring procedure including sampling is following validated CPA-DDs. For continuous improvement of the system, CME is supervising the PoA management system on regular basis to ensure that;

- 1) There are sufficient documentation of the management systems for ICS distribution and monitoring;
- 2) The system has focused on providing quality training, assessment, and support 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 2020 (ASB0049-2020)<sup>4</sup>. 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**

>> N/A

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<sup>4</sup> [https://cdm.unfccc.int/methodologies/standard\\_base/2015/sb160.html](https://cdm.unfccc.int/methodologies/standard_base/2015/sb160.html)

**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**

>> N/A

**B.2.4. Changes to programme design**

>> N/A

**B.2.5. Changes specific to afforestation or reforestation activities**

>> N/A

## **PART II Monitoring of CPAs**

>> The following description is applicable to all 48 CPAs (from 10471-P1-0007-CP1 to 10471-P1-0054-CP1). 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 will result in reduced firewood consumption leading to climate change mitigation in a sustainable manner.

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 ktCO<sub>2</sub>e 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 oC), the ICS manufacturer modified the ancient celadon technology to render appropriate low temperature (about 700 - 800 oC) 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 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 CPAs:

<b>CPA</b>	<b>Steps</b>	<b>Timeline</b>
10471-P1-0007-CP1	Inclusion under the PoA	14/04/2020
	Crediting period start date	14/04/2020
	Date of the first stove installed under the CPA	17/02/2020
10471-P1-0008-CP1	Inclusion under the PoA	14/04/2020
	Crediting period start date	14/04/2020
	Date of the first stove installed under the CPA	11/02/2020
10471-P1-0009-CP1	Inclusion under the PoA	14/04/2020
	Crediting period start date	14/04/2020
	Date of the first stove installed under the CPA	10/02/2020
10471-P1-0010-CP1	Inclusion under the PoA	14/04/2020
	Crediting period start date	14/04/2020
	Date of the first stove installed under the CPA	02/02/2020
10471-P1-0011-CP1	Inclusion under the PoA	14/04/2020
	Crediting period start date	14/04/2020
	Date of the first stove installed under the CPA	02/02/2020
10471-P1-0012-CP1	Inclusion under the PoA	14/04/2020
	Crediting period start date	14/04/2020
	Date of the first stove installed under the CPA	01/02/2020
10471-P1-0013-CP1	Inclusion under the PoA	14/04/2020
	Crediting period start date	14/04/2020
	Date of the first stove installed under the CPA	01/02/2020
10471-P1-0014-CP1	Inclusion under the PoA	14/04/2020
	Crediting period start date	14/04/2020
	Date of the first stove installed under the CPA	01/02/2020
10471-P1-0015-CP1	Inclusion under the PoA	14/04/2020
	Crediting period start date	14/04/2020
	Date of the first stove installed under the CPA	04/02/2020
10471-P1-0016-CP1	Inclusion under the PoA	14/04/2020
	Crediting period start date	14/04/2020
	Date of the first stove installed under the CPA	02/02/2020
10471-P1-0017-CP1	Inclusion under the PoA	14/04/2020
	Crediting period start date	14/04/2020
	Date of the first stove installed under the CPA	01/02/2020
10471-P1-0018-CP1	Inclusion under the PoA	14/04/2020
	Crediting period start date	14/04/2020
	Date of the first stove installed under the CPA	02/02/2020
10471-P1-0019-CP1	Inclusion under the PoA	14/04/2020
	Crediting period start date	14/04/2020

CPA	Steps	Timeline
	Date of the first stove installed under the CPA	01/02/2020
10471-P1-0020-CP1	Inclusion under the PoA	14/04/2020
	Crediting period start date	14/04/2020
	Date of the first stove installed under the CPA	01/02/2020
10471-P1-0021-CP1	Inclusion under the PoA	14/04/2020
	Crediting period start date	14/04/2020
	Date of the first stove installed under the CPA	01/02/2020
10471-P1-0022-CP1	Inclusion under the PoA	14/04/2020
	Crediting period start date	14/04/2020
	Date of the first stove installed under the CPA	01/02/2020
10471-P1-0023-CP1	Inclusion under the PoA	14/04/2020
	Crediting period start date	14/04/2020
	Date of the first stove installed under the CPA	03/02/2020
10471-P1-0024-CP1	Inclusion under the PoA	14/04/2020
	Crediting period start date	14/04/2020
	Date of the first stove installed under the CPA	02/02/2020
10471-P1-0025-CP1	Inclusion under the PoA	14/04/2020
	Crediting period start date	14/04/2020
	Date of the first stove installed under the CPA	01/02/2020
10471-P1-0026-CP1	Inclusion under the PoA	14/04/2020
	Crediting period start date	14/04/2020
	Date of the first stove installed under the CPA	01/02/2020
10471-P1-0027-CP1	Inclusion under the PoA	14/04/2020
	Crediting period start date	14/04/2020
	Date of the first stove installed under the CPA	01/02/2020
10471-P1-0028-CP1	Inclusion under the PoA	14/04/2020
	Crediting period start date	14/04/2020
	Date of the first stove installed under the CPA	01/02/2020
10471-P1-0029-CP1	Inclusion under the PoA	14/04/2020
	Crediting period start date	14/04/2020
	Date of the first stove installed under the CPA	05/02/2020
10471-P1-0030-CP1	Inclusion under the PoA	14/04/2020
	Crediting period start date	14/04/2020
	Date of the first stove installed under the CPA	01/02/2020
10471-P1-0031-CP1	Inclusion under the PoA	14/04/2020
	Crediting period start date	14/04/2020
	Date of the first stove installed under the CPA	08/02/2020
10471-P1-0032-CP1	Inclusion under the PoA	14/04/2020
	Crediting period start date	14/04/2020

CPA	Steps	Timeline
	Date of the first stove installed under the CPA	01/02/2020
10471-P1-0033-CP1	Inclusion under the PoA	14/04/2020
	Crediting period start date	14/04/2020
	Date of the first stove installed under the CPA	29/01/2020
10471-P1-0034-CP1	Inclusion under the PoA	14/04/2020
	Crediting period start date	14/04/2020
	Date of the first stove installed under the CPA	01/02/2020
10471-P1-0035-CP1	Inclusion under the PoA	14/04/2020
	Crediting period start date	14/04/2020
	Date of the first stove installed under the CPA	01/02/2020
10471-P1-0036-CP1	Inclusion under the PoA	14/04/2020
	Crediting period start date	14/04/2020
	Date of the first stove installed under the CPA	13/02/2020
10471-P1-0037-CP1	Inclusion under the PoA	14/04/2020
	Crediting period start date	14/04/2020
	Date of the first stove installed under the CPA	01/02/2020
10471-P1-0038-CP1	Inclusion under the PoA	14/04/2020
	Crediting period start date	14/04/2020
	Date of the first stove installed under the CPA	05/02/2020
10471-P1-0039-CP1	Inclusion under the PoA	14/04/2020
	Crediting period start date	14/04/2020
	Date of the first stove installed under the CPA	08/02/2020
10471-P1-0040-CP1	Inclusion under the PoA	14/04/2020
	Crediting period start date	14/04/2020
	Date of the first stove installed under the CPA	02/02/2020
10471-P1-0041-CP1	Inclusion under the PoA	14/04/2020
	Crediting period start date	14/04/2020
	Date of the first stove installed under the CPA	01/02/2020
10471-P1-0042-CP1	Inclusion under the PoA	14/04/2020
	Crediting period start date	14/04/2020
	Date of the first stove installed under the CPA	15/02/2020
10471-P1-0043-CP1	Inclusion under the PoA	14/04/2020
	Crediting period start date	14/04/2020
	Date of the first stove installed under the CPA	07/02/2020
10471-P1-0044-CP1	Inclusion under the PoA	14/04/2020
	Crediting period start date	14/04/2020
	Date of the first stove installed under the CPA	01/02/2020
10471-P1-0045-CP1	Inclusion under the PoA	14/04/2020
	Crediting period start date	14/04/2020

CPA	Steps	Timeline
	Date of the first stove installed under the CPA	14/02/2020
10471-P1-0046-CP1	Inclusion under the PoA	14/04/2020
	Crediting period start date	14/04/2020
	Date of the first stove installed under the CPA	12/02/2020
10471-P1-0047-CP1	Inclusion under the PoA	14/04/2020
	Crediting period start date	14/04/2020
	Date of the first stove installed under the CPA	01/02/2020
10471-P1-0048-CP1	Inclusion under the PoA	14/04/2020
	Crediting period start date	14/04/2020
	Date of the first stove installed under the CPA	01/02/2020
10471-P1-0049-CP1	Inclusion under the PoA	14/04/2020
	Crediting period start date	14/04/2020
	Date of the first stove installed under the CPA	01/02/2020
10471-P1-0050-CP1	Inclusion under the PoA	14/04/2020
	Crediting period start date	14/04/2020
	Date of the first stove installed under the CPA	02/02/2020
10471-P1-0051-CP1	Inclusion under the PoA	14/04/2020
	Crediting period start date	14/04/2020
	Date of the first stove installed under the CPA	04/02/2020
10471-P1-0052-CP1	Inclusion under the PoA	14/04/2020
	Crediting period start date	14/04/2020
	Date of the first stove installed under the CPA	01/02/2020
10471-P1-0053-CP1	Inclusion under the PoA	14/04/2020
	Crediting period start date	14/04/2020
	Date of the first stove installed under the CPA	18/02/2020
10471-P1-0054-CP1	Inclusion under the PoA	14/04/2020
	Crediting period start date	14/04/2020
	Date of the first stove installed under the CPA	01/02/2020

## C.2. Location of CPAs

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

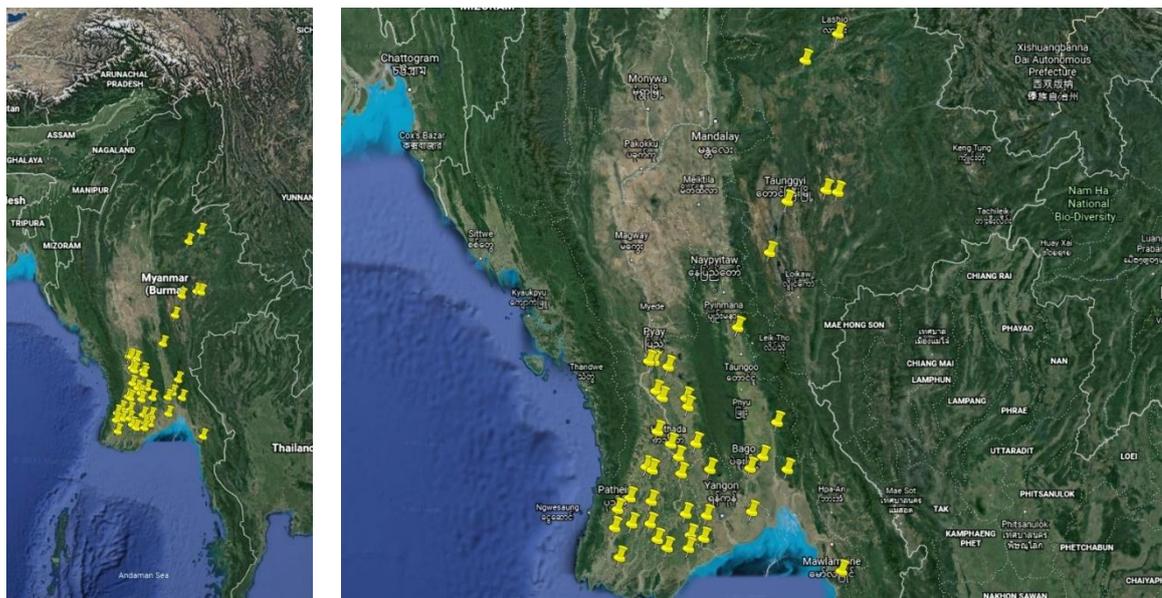


Figure 1. The geographical boundary of SSC-PoA, which is the Republic of the Union of Myanmar, and the CPA region

CPA	GPS Coordinates	Region	Township
10471-P1-0007-CP1	16°47'04.2"N 94°43'55.0"E	Ayeyarwaddy	Pathein and Thabaung
10471-P1-0008-CP1	17°18'14.7"N 95°11'43.1"E	Ayeyarwaddy	Kyonpyaw
10471-P1-0009-CP1	17°20'41.4"N 95°06'56.2"E	Ayeyarwaddy	Yaekyi and Kyaunggon
10471-P1-0010-CP1	16°32'28.9"N 94°41'31.6"E	Ayeyarwaddy	Nga Pu Taw
10471-P1-0011-CP1	16°32'28.9"N 94°41'31.6"E	Ayeyarwaddy	Nga Pu Taw and Kanyidaunt
10471-P1-0012-CP1	16°56'07.8"N 94°53'50.0"E	Ayeyarwaddy	Kanyidaunt and Pantanaw
10471-P1-0013-CP1	16°43'52.1"N 95°38'53.8"E	Ayeyarwaddy	Maubin
10471-P1-0014-CP1	16°43'52.1"N 95°38'53.8"E	Ayeyarwaddy	Maupin and Nyaungdon
10471-P1-0015-CP1	17°15'36.5"N 95°35'10.5"E	Ayeyarwaddy	Nyaungdon, Danubyu and Zalun
10471-P1-0016-CP1	17°28'40.5"N 95°33'03.0"E	Ayeyarwaddy	Zalun and Lemyethna
10471-P1-0017-CP1	17°48'27.1"N 95°16'06.8"E	Ayeyarwaddy	Ingapu
10471-P1-0018-CP1	18°14'56.5"N 95°19'50.0"E	Ayeyarwaddy	Ingapu, Myanaung and Kyangin

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CPA	GPS Coordinates	Region	Township
10471-P1-0019-CP1	18°19'57.4"N 95°14'54.6"E	Ayeyarwaddy	Kyangin and Hinthada
10471-P1-0020-CP1	17°38'38.1"N 95°26'47.9"E and 16°45'44.9"N 96°31'53.6"E	Ayeyarwaddy, Yangon	Hinthada, Thonekwa, Khayan, Thanlyin, Kyauktan, Tadar, Hlegu and Taikgyi
10471-P1-0021-CP1	16°42'37.4"N 95°55'36.0"E	Yangon	Twantay, Kawhmu and Kungyangon
10471-P1-0022-CP1	17°18'59.3"N 95°58'20.5"E and 17°19'51.2"N 96°30'46.2"E	Yangon, Bago	Taik kyi, Htantapin and Bago
10471-P1-0023-CP1	17°19'51.2"N 96°30'46.2"E	Bago	Bago, Thatnatpin and Kawa
10471-P1-0024-CP1	17°05'20.2"N 96°27'14.5"E	Bago	Kawa and Waw
10471-P1-0025-CP1	17°29'00.6"N 96°40'59.9"E	Bago	Waw, Dike-U, Nyaunglaypin and Shwekyin
10471-P1-0026-CP1	17°55'41.0"N 96°52'37.9"E	Bago	Shwegyin, kyauktaga and Taungoo
10471-P1-0027-CP1	19°09'24.5"N 96°20'59.2"E	Bago	Taungoo, Htantapin and Yedashe
10471-P1-0028-CP1	19°09'24.5"N 96°20'59.2"E	Bago	Yedashe, Oktwin, Phyu and Kyaukkyi
10471-P1-0029-CP1	18°49'01.7"N 95°14'42.9"E	Bago	Kyaukkyi, Pyay and Shwedaung
10471-P1-0030-CP1	18°42'57.9"N 95°13'08.6"E and 17°18'47.7"N 97°00'42.6"E	Bago, Mon	Shwedaung, Paungde, Padung, Kyaikhto, Thaton, Belin and Thanbyuzayat
10471-P1-0031-CP1	15°58'02.2"N 97°43'57.0"E	Mon	Thanbyuzayat, Kyaikmaraw and Ye
10471-P1-0032-CP1	15°15'13.6"N 97°51'09.9"E and 20°07'55.9"N 96°12'25.2"E	Mon, Nay Pyi Taw	Ye, Tatkon and Lewe
10471-P1-0033-CP1	20°47'00.2"N 97°01'52.0"E	Shan	Taunggyi, Nyaungshwe, Pindaya, Kalaw, Ywangan and Lawksawk
10471-P1-0034-CP1	20°07'23.0"N 96°47'00.9"E	Shan	Lawksawk, Pinlaung, Pekon and Hsihseng
10471-P1-0035-CP1	20°55'36.2"N 97°33'46.1"E	Shan	Hsihseng, Hopong, Loilem and Namsang
10471-P1-0036-CP1	16°35'37.1"N 94°55'11.6"E	Ayeyarwaddy	Myaungmya
10471-P1-0037-CP1	16°53'44.3"N 95°11'01.3"E	Ayeyarwaddy	Myaungmya, Einme and Wakema

CPA	GPS Coordinates	Region	Township
10471-P1-0038-CP1	16°36'03.6"N 95°10'14.3"E	Ayeyarwaddy	Wakema
10471-P1-0039-CP1	16°09'06.6"N 94°45'20.8"E	Ayeyarwaddy	Labutta
10471-P1-0040-CP1	16°23'22.9"N 95°15'27.9"E	Ayeyarwaddy	Labutta and Mawlamyainggyun
10471-P1-0041-CP1	16°23'41.2"N 95°15'55.1"E	Ayeyarwaddy	Mawlamyinegyun
10471-P1-0042-CP1	16°16'45.6"N 95°41'00.3"E	Ayeyarwaddy	Pyapon
10471-P1-0043-CP1	16°24'41.4"N 95°53'10.4"E	Ayeyarwaddy	Pyapon and Dedaye
10471-P1-0044-CP1	16°27'12.4"N 95°42'37.8"E	Ayeyarwaddy	Kyaiklat
10471-P1-0045-CP1	16°17'00.5"N 95°23'45.7"E	Ayeyarwaddy	Bogale
10471-P1-0046-CP1	16°16'45.6"N 95°41'00.3"E and 18°43'04.4"N 95°09'01.5"E	Ayeyarwaddy, Bago	Pyapon, Bogale and Padaung
10471-P1-0047-CP1	18°43'04.4"N 95°09'01.5"E	Bago	Padaung and Paukhaung
10471-P1-0048-CP1	18°38'57.0"N 95°24'41.2"E	Bago	Paukhaung, Thegon and Nattalin
10471-P1-0049-CP1	18°14'26.2"N 95°39'08.0"E	Bago	Nattalin, Zigon, Gyobingauk and Okpho
10471-P1-0050-CP1	18°07'50.7"N 95°40'33.7"E	Bago	Okpho and Monyo
10471-P1-0051-CP1	17°39'15.3"N 95°47'05.5"E	Bago	Monyo, Minhla, Letpadan and Thayarwaddy
10471-P1-0052-CP1	20°53'53.5"N 97°43'28.8"E	Shan	Namsang, Pinlon, Tangyan, Mongyai and Lashio
10471-P1-0053-CP1	22°58'04.1"N 97°45'25.9"E	Shan	Lashio and Hsipaw
10471-P1-0054-CP1	22°37'24.7"N 97°17'52.8"E	Shan	Hsipaw, Kyaukme and Nawngkhio

### 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**

&gt;&gt;

Correction in the 'fNRB' value considered for ex-ante ER calculation.

- Notification date: 03/02/2021
- Reference number of post-registration change: PRC-10471-008
- Approval date: 12/04/2021
  
- Notification date: 03/02/2021
- Reference number of post-registration change: PRC-10471-009
- Approval date: 12/04/2021
  
- Notification date: 03/02/2021
- Reference number of post-registration change: PRC-10471-010
- Approval date: 12/04/2021
  
- Notification date: 03/02/2021
- Reference number of post-registration change: PRC-10471-011
- Approval date: 12/04/2021
  
- Notification date: 03/02/2021
- Reference number of post-registration change: PRC-10471-012
- Approval date: 12/04/2021
  
- Notification date: 03/02/2021
- Reference number of post-registration change: PRC-10471-013
- Approval date: 12/04/2021
  
- Notification date: 03/02/2021
- Reference number of post-registration change: PRC-10471-014
- Approval date: 12/04/2021
  
- Notification date: 03/02/2021
- Reference number of post-registration change: PRC-10471-015
- Approval date: 12/04/2021
  
- Notification date: 03/02/2021
- Reference number of post-registration change: PRC-10471-016
- Approval date: 12/04/2021
  
- Notification date: 03/02/2021
- Reference number of post-registration change: PRC-10471-017
- Approval date: 12/04/2021
  
- Notification date: 03/02/2021
- Reference number of post-registration change: PRC-10471-018
- Approval date: 12/04/2021
  
- Notification date: 03/02/2021
- Reference number of post-registration change: PRC-10471-019
- Approval date: 12/04/2021
  
- Notification date: 03/02/2021
- Reference number of post-registration change: PRC-10471-020
- Approval date: 20/04/2021

- Notification date: 03/02/2021
- Reference number of post-registration change: PRC-10471-021
- Approval date: 12/04/2021
  
- Notification date: 03/02/2021
- Reference number of post-registration change: PRC-10471-022
- Approval date: 12/04/2021
  
- Notification date: 03/02/2021
- Reference number of post-registration change: PRC-10471-023
- Approval date: 12/04/2021
  
- Notification date: 03/02/2021
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- Reference number of post-registration change: PRC-10471-025
- Approval date: 12/04/2021
  
- Notification date: 03/02/2021
- Reference number of post-registration change: PRC-10471-026
- Approval date: 12/04/2021
  
- Notification date: 03/02/2021
- Reference number of post-registration change: PRC-10471-027
- Approval date: 12/04/2021
  
- Notification date: 03/02/2021
- Reference number of post-registration change: PRC-10471-028
- Approval date: 12/04/2021
  
- Notification date: 03/02/2021
- Reference number of post-registration change: PRC-10471-029
- Approval date: 12/04/2021
  
- Notification date: 03/02/2021
- Reference number of post-registration change: PRC-10471-030
- Approval date: 12/04/2021
  
- Notification date: 03/02/2021
- Reference number of post-registration change: PRC-10471-031
- Approval date: 12/04/2021
  
- Notification date: 03/02/2021
- Reference number of post-registration change: PRC-10471-032
- Approval date: 12/04/2021
  
- Notification date: 03/02/2021
- Reference number of post-registration change: PRC-10471-033
- Approval date: 12/04/2021
  
- Notification date: 03/02/2021
- Reference number of post-registration change: PRC-10471-034
- Approval date: 12/04/2021

- Notification date: 03/02/2021
- Reference number of post-registration change: PRC-10471-035
- Approval date: 12/04/2021
  
- Notification date: 03/02/2021
- Reference number of post-registration change: PRC-10471-036
- Approval date: 12/04/2021
  
- Notification date: 03/02/2021
- Reference number of post-registration change: PRC-10471-037
- Approval date: 12/04/2021
  
- Notification date: 03/02/2021
- Reference number of post-registration change: PRC-10471-038
- Approval date: 12/04/2021
  
- Notification date: 03/02/2021
- Reference number of post-registration change: PRC-10471-039
- Approval date: 12/04/2021
  
- Notification date: 03/02/2021
- Reference number of post-registration change: PRC-10471-040
- Approval date: 12/04/2021
  
- Notification date: 03/02/2021
- Reference number of post-registration change: PRC-10471-041
- Approval date: 12/04/2021
  
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- Reference number of post-registration change: PRC-10471-042
- Approval date: 12/04/2021
  
- Notification date: 03/02/2021
- Reference number of post-registration change: PRC-10471-043
- Approval date: 12/04/2021
  
- Notification date: 03/02/2021
- Reference number of post-registration change: PRC-10471-044
- Approval date: 12/04/2021
  
- Notification date: 03/02/2021
- Reference number of post-registration change: PRC-10471-045
- Approval date: 12/04/2021
  
- Notification date: 03/02/2021
- Reference number of post-registration change: PRC-10471-046
- Approval date: 12/04/2021
  
- Notification date: 03/02/2021
- Reference number of post-registration change: PRC-10471-047
- Approval date: 12/04/2021
  
- Notification date: 03/02/2021
- Reference number of post-registration change: PRC-10471-048
- Approval date: 12/04/2021
  
- Notification date: 03/02/2021

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- Approval date: 12/04/2021
  
- Notification date: 03/02/2021
- Reference number of post-registration change: PRC-10471-050
- Approval date: 12/04/2021
  
- Notification date: 03/02/2021
- Reference number of post-registration change: PRC-10471-051
- Approval date: 12/04/2021
  
- Notification date: 03/02/2021
- Reference number of post-registration change: PRC-10471-052
- Approval date: 12/04/2021
  
- Notification date: 03/02/2021
- Reference number of post-registration change: PRC-10471-053
- Approval date: 12/04/2021
  
- Notification date: 03/02/2021
- Reference number of post-registration change: PRC-10471-054
- Approval date: 12/04/2021
  
- Notification date: 03/02/2021
- Reference number of post-registration change: PRC-10471-055
- Approval date: 12/04/2021

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

>> N/A

**C.3.4. Inclusion of monitoring plan**

>> N/A

**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**

>> N/A

**C.3.6. Changes to project design**

>> N/A

**C.3.7. Changes specific to afforestation or reforestation CPA**

>> N/A

**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 from analysis in accordance with the requirements from the CDM EB to ensure GHG emission reductions are accurately monitored, record and report.

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 the 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 have 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

<b>Data/Parameter</b>	$\eta_{old,i,j}$
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., ver 09.0 is applied.

<b>Data/Parameter</b>	$\mu_y$
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 will be used in accordance with the methodology.
Purpose of data/parameter	Calculation of baseline emissions
Additional comments	-

<b>Data/Parameter</b>	$f_{NRB,y}$
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	Tool 33 ver 3.0
Value(s) applied	0.36
Choice of data or measurement methods and procedures	Tool 33 ver 3.0, para 18 cites the default national fNRB value for Myanmar as 0.36
Purpose of data/parameter	Calculation of baseline emission
Additional comments	In line with paragraphs 42(b) and 37 of the <i>Standard: Transition of CDM Activities to the Article 6.4 Mechanism</i> (version 5.0), CME has revised the fNRB value from 0.615 to 0.36, applying the default national fNRB value for Myanmar provided in Tool 33 (version 3.0).

<b>Data/Parameter</b>	$NCV_{biomass}$
Unit	TJ/tonne
Description	The 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

<b>Data/Parameter</b>	$EF_{projected\ fossil\ fuel}$
Unit	tCO <sub>2</sub> /TJ
Description	Emission factor for the fossil fuels projected to be used for substitution of non-renewable woody biomass by a similar consumer. Use a value of 63.7 tCO <sub>2</sub> /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

<b>Data/Parameter</b>	Leakage
<b>Unit</b>	Fraction
<b>Description</b>	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
<b>Source of data</b>	Paragraph 38 of AMS II.G, Version 09
<b>Value(s) applied</b>	0.95
<b>Choice of data or measurement methods and procedures</b>	Default value applied as per the methodology
<b>Purpose of data/parameter</b>	Calculation of baseline emission
<b>Additional comments</b>	This parameter shall remain fixed for the monitoring periods

## E.2. Data and parameters monitored

<b>Data/Parameter</b>	$N_{y,i,j}$
<b>Unit</b>	Number of units
<b>Description</b>	Number of project devices of type i and batch j operating during year y
<b>Measured/calculated/default</b>	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.
<b>Source of data</b>	Project database and household survey
<b>Value(s) of monitored parameter</b>	794,880 18,000 ICSs were distributed for each CPA. Therefore, the total number of initially distributed ICSs of the 48 CPAs included in this monitoring is 864,000 units. Sample monitoring revealed that 92% of the cookstoves were still in operation. Therefore, the total number of cook stoves during this monitoring period is 794,880 units.
<b>Monitoring equipment</b>	Not applicable. The number of units is monitored via CPA distribution record and the operational rate is monitored with a sampling survey
<b>Measuring/reading/recording frequency</b>	The number of stoves still operating has been monitored based on the sampling survey conducted at least once every two years.
<b>Calculation method (if applicable)</b>	This is a measured parameter, thus calculation method is not applicable.
<b>QA/QC procedures</b>	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.  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.
<b>Purpose of data/parameter</b>	Calculation of baseline emission

Additional comments	-
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<b>Data/Parameter</b>	$\eta_{new,i,j}$																																
Unit	Fraction																																
Description	The 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 the sampling method																																
Value(s) of monitored parameter	24.3%																																
	Three WBT tests were conducted for each of 15 samples, and the average value was designated as the stove's efficiency value. 24.3% is the average value of 15 stoves.																																
	<table border="1"> <thead> <tr> <th>Stove 1</th> <th>Stove 2</th> <th>Stove 3</th> <th>Stove 4</th> </tr> </thead> <tbody> <tr> <td>24.8%</td> <td>25.0%</td> <td>23.6%</td> <td>24.9%</td> </tr> <tr> <th>Stove 5</th> <th>Stove 6</th> <th>Stove 7</th> <th>Stove 8</th> </tr> <tr> <td>24.5%</td> <td>24.5%</td> <td>24.0%</td> <td>23.7%</td> </tr> <tr> <th>Stove 9</th> <th>Stove 10</th> <th>Stove 11</th> <th>Stove 12</th> </tr> <tr> <td>23.4%</td> <td>24.2%</td> <td>24.7%</td> <td>24.4%</td> </tr> <tr> <th>Stove 13</th> <th>Stove 14</th> <th>Stove 15</th> <td></td> </tr> <tr> <td>24.6%</td> <td>23.7%</td> <td>24.3%</td> <td></td> </tr> </tbody> </table>	Stove 1	Stove 2	Stove 3	Stove 4	24.8%	25.0%	23.6%	24.9%	Stove 5	Stove 6	Stove 7	Stove 8	24.5%	24.5%	24.0%	23.7%	Stove 9	Stove 10	Stove 11	Stove 12	23.4%	24.2%	24.7%	24.4%	Stove 13	Stove 14	Stove 15		24.6%	23.7%	24.3%	
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Monitoring equipment	The monitoring equipment details are as follows:																																
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Last Calibration	August 25, 2021																																

	Validity	August 24, 2022
	Type	Moisture meter for wood
	Model Name	Testo 606-1
	Accuracy	(nominal temperature 25°C, ±1 Digit) Conductivity measurement ±1%
	Serial Number	59008018/0521
	Calibration Frequency	Annual
	Last Calibration	August 25, 2021
	Validity	August 24, 2022
	Type	Scale
	Model Name	Ohaus V500P6KR
	Accuracy	d=1g, e=1g
	Serial Number	8120420010
	Calibration Frequency	Annual
	Last Calibration	August 25, 2021
	Validity	August 24, 2022
Equipment Calibration: All equipment listed above were used during the WBT test from 3, January 2022 to 5, January 2022. 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 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: <a href="http://cleancookstoves.org/binary-data/DOCUMENT/file/000/000/399-1.pdf">http://cleancookstoves.org/binary-data/DOCUMENT/file/000/000/399-1.pdf</a>	
Purpose of data/parameter	Calculation of baseline emissions	
Additional comments	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).  WBT on randomly selected households from the database, selected as per sampling size calculation.	

<b>Data/Parameter</b>	$B_{y=1,new,i,j,survey}$		
Unit	Tonnes		
Description	Quantity of woody biomass used by project devices in tonnes per the device of type i		
Measured/calculated/default	Sample survey of end user		
Source of data	Monitoring survey records		
Value(s) of monitored parameter	The average value of samples is as follows:		
	$B_{y=1,new,i,j,survey}$	kg/day	3.705
	$B_{y=1,new,i,j,survey}$	ton/year	<b>1.352</b>
Monitoring equipment	First year of installation		
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	-

<b>Data/Parameter</b>	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>

<b>Data/Parameter</b>	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	Date of commissioning of project device has been determined on the date of the Conformity Letter had provided and signed by the ICS users. More details are to be referred from the ER calculation sheet.
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	-

<b>Data/Parameter</b>	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 shall be 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 A	Date of commissioning of batch B
	01/03/2020	11/02/2022
	This monitoring report has two batches, Batch A and Batch B. As explained in the methodology, the batch commissioning date was determined based on the last commissioning date of the devices in the batch, and the commissioning date for batch A determined during the primary monitoring period was March 1, 2020. The commissioning date for Batch B, determined during the second monitoring period, is February 11, 2022.  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, total 48 CPAs are included under the PoA, of which 48 CPAs are included in the current monitoring period. For each CPA, 18,000 ICS were distributed, so the total ICS distributed across the 48 CPAs is 864,000.

The current monitoring period is considered from 1 Jan 2021 to 31 May 2022, with both dates included. Representative sampling has been undertaken that is designed in line with the requirements of the AMS-II.G 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 programmes of activities”, 95/10 confidence/precision has

been 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 technique 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 an 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 cookstoves included in this monitoring report are defined as one batch as commissioned during the calendar year 2020 (per definitions under AMS.II.G Para 14.a) and have the same vintage, thus, sampling was performed only once. The date when the cookstove 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 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., 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 CPAs within the PoA to estimate emissions reductions. The sampling approach has been applied to all CPAs in this monitoring report.

There are two parameters for a 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

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

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  $n \geq 43$ . Therefore, at least 43 samples was supposed to be monitored. However, in order to consider the monitoring accuracy, the sample size was determined for 100 samples, which is 233% of the calculated sample size.

**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

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

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  $n \geq 140$ . Therefore, at least 140 samples were supposed to be monitored. However, in order to consider the monitoring accuracy, the sample size was determined for 160 samples, which is 114% of the calculated sample size.

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

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

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

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
$N_{y,i,j}$	43	100
$B_{y=1,new,i,j,survey}$	140	160
$n_{new,i,j}$	3	15

Sampling was conducted from December 13, 2021 ~ February 18, 2022

**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 <sub>2</sub> 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 $y$
$\mu_y$	=	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
$NCV_{biomass}$	=	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 $i$
$\eta_{new,i,j}$	=	Efficiency of the device of each type $i$ and batch $j$ implemented as part of the project activity
$\eta_{old,i,j}$	=	Efficiency of pre-project device, which is a three-stone fire using firewood

The CERs as per registered CPA 11 has been calculated as follows with actual monitoring values:

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

$$= 1.352 \times (0.243 / 0.10 - 1)$$

$$= 1.931 \text{ tCO}_2\text{e/yr}$$

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 = Remaining lifespan from the monitoring start date / monitoring period (516 days)

The emission reduction in CPA 11 for 18,000 cook stoves is as follows:

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

$$= 1.931 \times 18,000(\text{Excluding stoves that have exceeded their lifespan}) \times 0.92 \times 1 \times 0.36 \times 0.0156 \times 63.7 \times 0.95 \times 1.155(\text{Actual calculations were considered for each cookstove. Please refer to the ER sheet})$$

$$= 12,552 \text{ tCO}_2\text{e/yr}$$

When calculating the ER, it was assumed that the stove was used from the next day, not the day of the stove distributed.

In order to take the lifespan into account in calculating the emission reduction, the year fraction factor has been introduced. The year fraction is the remaining lifespan of the cook stove compared to the total monitoring period. For example, if the lifespan exceeds the total monitoring period, the year fraction is 1. As another example, if a cookstove has 172 days of lifespan remaining, it can be operated for 30% of the total monitoring period of 516 days, so the year fraction in this case is 0.3. As a result, the amount of greenhouse gas reduction of CPA 1 excluding cook stoves that have exceeded their service life is 12,552 tons.

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 to be accounted. The emission reduction calculation approach as described under Section F.1, above 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 <sub>2</sub> e)	Project GHG emissions or actual net GHG removals (t CO <sub>2</sub> e)	Leakage GHG emissions (t CO <sub>2</sub> e)	GHG emission reductions or net anthropogenic GHG removals (t CO <sub>2</sub> e)			
				Before 01/01/2013	From 01/01/2013 until 31/12/2020	From 01/01/2021	Total amount
10471-P1-0007-CP1	12,552	0	0	0	0	12,552	12,552
10471-P1-0008-CP1	12,534	0	0	0	0	12,534	12,534
10471-P1-0009-CP1	12,412	0	0	0	0	12,412	12,412
10471-P1-0010-CP1	12,444	0	0	0	0	12,444	12,444
10471-P1-0011-CP1	12,496	0	0	0	0	12,496	12,496
10471-P1-0012-CP1	12,265	0	0	0	0	12,265	12,265
10471-P1-0013-CP1	12,489	0	0	0	0	12,489	12,489
10471-P1-0014-CP1	12,266	0	0	0	0	12,266	12,266
10471-P1-0015-CP1	12,260	0	0	0	0	12,260	12,260
10471-P1-0016-CP1	12,376	0	0	0	0	12,376	12,376
10471-P1-0017-CP1	12,311	0	0	0	0	12,311	12,311
10471-P1-0018-CP1	12,144	0	0	0	0	12,144	12,144
10471-P1-0019-CP1	12,298	0	0	0	0	12,298	12,298
10471-P1-0020-CP1	12,101	0	0	0	0	12,101	12,101
10471-P1-0021-CP1	12,026	0	0	0	0	12,026	12,026
10471-P1-0022-CP1	12,179	0	0	0	0	12,179	12,179
10471-P1-0023-CP1	12,164	0	0	0	0	12,164	12,164
10471-P1-0024-CP1	12,137	0	0	0	0	12,137	12,137
10471-P1-0025-CP1	12,126	0	0	0	0	12,126	12,126
10471-P1-0026-CP1	12,301	0	0	0	0	12,301	12,301
10471-P1-0027-CP1	12,231	0	0	0	0	12,231	12,231
10471-P1-0028-CP1	12,101	0	0	0	0	12,101	12,101

10471-P1-0029-CP1	12,268	0	0	0	0	12,268	12,268
10471-P1-0030-CP1	12,294	0	0	0	0	12,294	12,294
10471-P1-0031-CP1	12,467	0	0	0	0	12,467	12,467
10471-P1-0032-CP1	12,159	0	0	0	0	12,159	12,159
10471-P1-0033-CP1	12,412	0	0	0	0	12,412	12,412
10471-P1-0034-CP1	12,413	0	0	0	0	12,413	12,413
10471-P1-0035-CP1	12,137	0	0	0	0	12,137	12,137
10471-P1-0036-CP1	12,433	0	0	0	0	12,433	12,433
10471-P1-0037-CP1	12,335	0	0	0	0	12,335	12,335
10471-P1-0038-CP1	12,185	0	0	0	0	12,185	12,185
10471-P1-0039-CP1	12,227	0	0	0	0	12,227	12,227
10471-P1-0040-CP1	12,320	0	0	0	0	12,320	12,320
10471-P1-0041-CP1	12,126	0	0	0	0	12,126	12,126
10471-P1-0042-CP1	12,395	0	0	0	0	12,395	12,395
10471-P1-0043-CP1	12,374	0	0	0	0	12,374	12,374
10471-P1-0044-CP1	12,170	0	0	0	0	12,170	12,170
10471-P1-0045-CP1	12,388	0	0	0	0	12,388	12,388
10471-P1-0046-CP1	12,431	0	0	0	0	12,431	12,431
10471-P1-0047-CP1	12,378	0	0	0	0	12,378	12,378
10471-P1-0048-CP1	12,356	0	0	0	0	12,356	12,356
10471-P1-0049-CP1	12,335	0	0	0	0	12,335	12,335
10471-P1-0050-CP1	12,227	0	0	0	0	12,227	12,227
10471-P1-0051-CP1	12,436	0	0	0	0	12,436	12,436
10471-P1-0052-CP1	12,172	0	0	0	0	12,172	12,172
10471-P1-0053-CP1	12,460	0	0	0	0	12,460	12,460

<b>10471-P1-0054-CP1</b>	12,244	0	0	0	0	12,244	12,244
<b>Total</b>	590,355	0	0	0	0	590,355	590,355

**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 <sub>2</sub> e)	Amount estimated ex ante for this monitoring period in the CPA-DD (t CO <sub>2</sub> e)
10471-P1-0007-CP1	12,552	62,760
10471-P1-0008-CP1	12,534	62,760
10471-P1-0009-CP1	12,412	62,760
10471-P1-0010-CP1	12,444	62,760
10471-P1-0011-CP1	12,496	62,760
10471-P1-0012-CP1	12,265	62,760
10471-P1-0013-CP1	12,489	62,760
10471-P1-0014-CP1	12,266	62,760
10471-P1-0015-CP1	12,260	62,760
10471-P1-0016-CP1	12,376	62,760
10471-P1-0017-CP1	12,311	62,760
10471-P1-0018-CP1	12,144	62,760
10471-P1-0019-CP1	12,298	62,760
10471-P1-0020-CP1	12,101	62,760
10471-P1-0021-CP1	12,026	62,760
10471-P1-0022-CP1	12,179	62,760
10471-P1-0023-CP1	12,164	62,760
10471-P1-0024-CP1	12,137	62,760
10471-P1-0025-CP1	12,126	62,760
10471-P1-0026-CP1	12,301	62,760
10471-P1-0027-CP1	12,231	62,760
10471-P1-0028-CP1	12,101	62,760
10471-P1-0029-CP1	12,268	62,760
10471-P1-0030-CP1	12,294	62,760
10471-P1-0031-CP1	12,467	62,760
10471-P1-0032-CP1	12,159	62,760
10471-P1-0033-CP1	12,412	62,760
10471-P1-0034-CP1	12,413	62,760
10471-P1-0035-CP1	12,137	62,760
10471-P1-0036-CP1	12,433	62,760
10471-P1-0037-CP1	12,335	62,760
10471-P1-0038-CP1	12,185	62,760
10471-P1-0039-CP1	12,227	62,760
10471-P1-0040-CP1	12,320	62,760
10471-P1-0041-CP1	12,126	62,760
10471-P1-0042-CP1	12,395	62,760
10471-P1-0043-CP1	12,374	62,760
10471-P1-0044-CP1	12,170	62,760
10471-P1-0045-CP1	12,388	62,760
10471-P1-0046-CP1	12,431	62,760
10471-P1-0047-CP1	12,378	62,760
10471-P1-0048-CP1	12,356	62,760
10471-P1-0049-CP1	12,335	62,760

10471-P1-0050-CP1	12,227	62,760
10471-P1-0051-CP1	12,436	62,760
10471-P1-0052-CP1	12,172	62,760
10471-P1-0053-CP1	12,460	62,760
10471-P1-0054-CP1	12,244	62,760
<b>Total</b>	<b>590,355</b>	<b>3,012,480</b>

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

>> The number of days for the monitoring period is 516 days (01/01/2021 – 31/05/2022). 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 516 days out of 365 days were considered in the calculation.

Since the same formula was applied to all 48 CPAs included in this monitoring report, detailed information can be found in the ER Sheet.

The amount has been calculated on pro-rata basis:

Amount estimated ex ante for this monitoring period in the CPA-DD × [number of monitoring days / 365 Days] = Amount achieved during this monitoring period tCO<sub>2</sub>.

The Ex-ante of CPA 011 estimated for the monitoring period has been calculated as follows:

$$= 44,394 \text{ tCO}_2\text{e} \times [516 \text{ days} / 365 \text{ days}]$$

$$= 62,760 \text{ tCO}_2\text{e}$$

The same formula was applied to all CPAs included in this monitoring.

#### F.6. Remarks on increase in achieved emission reductions

>> Amount of GHG emission reduction achieved during this monitoring period is less than the amount estimated ex ante for this monitoring period in the CPA-DD.

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

>> N/A.

## Document information

<i>Version</i>	<i>Date</i>	<i>Description</i>
05.0	8 October 2021	Revision to: <ul style="list-style-type: none"> <li>• Ensure consistency with version 03.0 of the “CDM project standard for programmes of activities” (CDM-EB93-A07-STAN).</li> </ul>
04.0	6 April 2021	Revision to: <ul style="list-style-type: none"> <li>• Reflect the “Clarification: Regulatory requirements under temporary measures for post-2020 cases” (CDM-EB109-A01-CLAR).</li> </ul>
03.0	31 May 2019	Revision to: <ul style="list-style-type: none"> <li>• Ensure consistency with version 02.0 of the “CDM project standard for programmes of activities” (CDM-EB93-A07-STAN);</li> <li>• Add a section on remarks on the observance of the scale limit of small-scale CPAs during the crediting periods;</li> <li>• Add "changes specific to afforestation or reforestation activities/CPA" as a possible post-registration changes;</li> <li>• Clarify the reporting of net anthropogenic GHG removals for A/R PoAs between two commitment periods;</li> <li>• Make structural and editorial improvements.</li> </ul>
02.0	7 June 2017	Revision to: <ul style="list-style-type: none"> <li>• Ensure consistency with version 01.0 of the “CDM project standard for programmes of activities (CDM-EB93-A07-STAN);</li> <li>• Make editorial improvements.</li> </ul>
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