MONITORING REPORT

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Key Project Information

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KEY PROJECT INFORMATION

Programme of Activity Information – (delete below table if N/A)

GS ID of Programme	GS 2434
Title of Programme	MicroEnergy Credits – Mongolia -Microfinance for Clean Energy Product Lines VER Project
Version of POA-DD applicable to this monitoring report	3.0
Name and GS ID of fully Validated CPA/VPAs (i.e. non compliance check)	N/A

Key Project Information

GS ID (s) of Project (s)	GS 2684, GS 2685, GS 2686, GS 2687
Title of the project (s) covered by monitoring report	GS2434 MicroEnergy Credits – Mongolia - Microfinance for Clean Energy Product Lines VER Project – VPA No.002: XacBank LLC- VPA 2

GS2434 MicroEnergy Credits – Mongolia - Microfinance for Clean Energy Product Lines VER Project – VPA No.003: XacBank LLC- VPA 3

GS2434 MicroEnergy Credits – Mongolia - Microfinance for Clean Energy Product Lines VER Project – VPA No.004: XacBank LLC- VPA 4

GS2434 MicroEnergy Credits – Mongolia - Microfinance for Clean Energy Product Lines VER Project – VPA No.005: XacBank LLC- VPA 5 |
| **Version number of the PDD/VPA-DD (s) applicable to this monitoring report** | VPA 2- 2.2
VPA 3- 2.2
VPA 4- 2.1
VPA 5- 2.3 |

Version number of the monitoring report	2.1
Completion date of the monitoring report	25/04/2023
Date of project design certification	02/09/2014
Date of Last Annual Report	NA
Monitoring period number	1
Duration of this monitoring period	06/04/2020 to 05/04/2022 (both dates inclusive)
Project Representative	MicroEnergy Credits LLC
Host Country	Mongolia
Activity Requirements applied	☒ Community Services Activities ☐ Renewable Energy Activities ☐ Land Use and Forestry Activities/Risks & Capacities ☐ N/A
Methodology (ies) applied and version number	Reduced Emissions from Cooking and Heating: Technologies and Practices to Displace Decentralized Thermal Energy Consumption (TPDDTEC) version 4.0
Product Requirements applied	☒ GHG Emissions Reduction & Sequestration ☐ Renewable Energy Label ☐ N/A

Table 1 - Sustainable Development Contributions Achieved

Sustainable Development Goals Targeted	SDG Impact	Amount Achieved	Units/ Products
13 Climate Action (mandatory)	GHG emission reductions	**VPA 2:** 1,31,313 **VPA 3:** 1,12,226 **VPA 4:** 1,16,960 **VPA 5:** 1,27,725	$tCO2_e$/Year
7 Affordable & Clean Energy	The number of active CEPs disseminated by the project, during year y	**VPA 2** Year 1:13,278 Year 2: 12,960 **VPA 3:**	Number

		Year 1: 12,249 Year 2:11,841 **VPA 4** Year 1: 12,670 Year 2: 12,328 **VPA 5** Year 1: 12,933 Year 2: 12,628	
8 Decent Work & Economic Growth	Number of jobs created by the project activity	**VPA 2:** 4 **VPA 3:** 4 **VPA 4:** 4 **VPA 5:** 4	No. of jobs

Table 2 – Product Vintages

Start Dates	End Dates	Amount Achieved
		VERs
06/04/2020	31/12/2020	48,568**(VPA 2)** 42,198**(VPA 3)** 43,879**(VPA 4)** 47,763 **(VPA 5)**
01/01/2021	31/12/2021	65,657 **(VPA 2)** 55,666 **(VPA 3)** 58,078 **(VPA 4)** 63,524 **(VPA 5)**
01/01/2022	05/04/2022	17,089 **(VPA 2)** 14,362 **(VPA 3)** 15,003 **(VPA 4)** 16,438 **(VPA 5)**
Total		1,31,313 **(VPA 2)** 1,12,226 **(VPA 3)** 1,16,960 **(VPA 4)**

Gold Standard®   *Climate Security and Sustainable Development*

	1,27,725 (**VPA 5**)

SECTION A. DESCRIPTION OF PROJECT

A.1. General description of project

>> The purpose of this Programme of Activities (PoA) is the dissemination of efficient stoves and heating technologies in Mongolia. These VPAs involve the installation and maintenance of efficient stoves/heating technologies by Partner Organization (PO) in Mongolia.

The current practice in Mongolia is to use inefficient stoves at the household level, resulting in necessary combustion of large amounts of refined coal briquettes. As per the latest UNICEF survey for Mongolia, 56% of the households report using the traditional stoves for space heating[1]. The use of this fuel generates a variety of gases including Carbon dioxide (CO_2). The replacement of these traditional products with efficient stoves reduces the amount of fuel required for heating, thereby reducing the amount of greenhouse gases (GHG) emitted into the atmosphere.

MicroEnergy Credits (MEC) is the Coordinating Managing Entity (CME) for the PoA. MEC is a social enterprise that helps micro-entrepreneurs and low-income households in developing countries to invest in efficient stoves through their local microfinance institution. Under the PoA, MEC developed programs with microfinance institutions[2], such as VPA implementer XacBank LLC, and product suppliers to market, distribute, and finance efficient stoves to these micro-entrepreneurs and low-income households.

The VPAs have been developed and implemented by the PO which has signed the standard contractual agreement with the CME (MEC) to participate in the PoA, and this agreement guides the transfer of the emission reduction rights to the CME (MEC).

The VPAs are neither registered as an individual GS or CDM project activity nor as part of another registered PoA. MEC's Credit Tracker Platform is used to record detailed information on each efficient heating technology installation. Using this data, MEC is able to ensure that all installations in the proposed VPAs are uniquely defined and

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[1] UNICEF MICS. 2018; Table TC 4.1 (pg 171) & Table TC 4.4 (pg 174)
[2] For the purposes of this document, a "microfinance institution" is defined as a local institution that provides financial services to low income households.

included in the VPAs only, thereby avoiding double counting of emission reductions generated by the VPAs.

Policy/measure or stated goal of the PoA: The goal of the PoA is to use microfinance to expand access to clean energy to millions of microentrepreneurs and low-income households, enabling:

• Households to achieve critical development improvements (health, education, economic status)
• Households to benefit from savings on energy expenditures
• Expansion of the clean energy product supply chain to serve low-income populations
• Reduced environmental impacts from carbon emissions

The CME had requested a deviation from Gold Standard (dated 01/06/2022) which allowed the PoA (and its registered VPAs) to undergo design certification renewal, with the crediting period starting immediately after the end date of the previous crediting period. Further, GS VERs for VPA 2(GS 2684), VPA 3 (GS 2685), VPA 4 (GS 2686) and VPA 5 (GS 2687) can be claimed from 06/04/2020 (6th April 2020) or three years (retroactive) from the date of remote/physical site visit by a VVB, whichever occurs later. Thus, the duration of the monitoring period is from 06/04/2020 to 05/04/2022 (both dates included). The deviation approval form will be shared with the verifying VVB for review.

A.2. Location of project

>> The boundaries of the proposed VPAs has been determined by the location of the households where the CEPs are installed but is limited to the area of Mongolia. The identification of each CEP installed and in use is possible through the information compiled in the Credit Tracker Platform. This information is constantly validated by the CME through spot-checks and will be available at VVB verification.

Figure A.2.1: National Map of Mongolia (Source: Asian Development Bank)

GPS coordinates for Ulaanbaatar (focal point of VPA): 47.9200° N, 106.9200° E

The location of each clean energy installation will be recorded in MicroEnergy Credit's Credit Tracker Platform, which has been designed specifically for accelerating microfinance access to clean and efficient energy. These locations will define the more precise boundary of the project activities.

The Credit Tracker Platform is used to collect and store the information related to the unique identification number, location, installation date, and usage status of each clean energy product, making it easy to identify, locate and verify the installations that pertain to the VPA. The MEC Credit Tracker Platform is a hosted internet service, limiting the risk of loss of data.

A.3. Reference of applied methodology

>> The VPAs have been implemented using the following approved methodology, Reduced Emissions from Cooking and Heating (RECH)-

Technologies and Practices to Displace Decentralized Thermal Energy Consumption (TPDDTEC) version 4.0.

Requirements and Guidelines: Usage Rate Monitoring, version 2.0

A.4. Crediting period of project

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The crediting period for VPA 2(GS 2684), VPA 3 (GS 2685), VPA 4 (GS 2686) and VPA 5 (GS 2687) is from 02/09/2019 to 01/09/2026, the crediting period for these projects is 7 years. The crediting period may be renewed twice in line with the Community Services Activity Requirements.

SECTION B. IMPLEMENTATION OF PROJECT

B.1. Description of implemented project

>> Xac Bank, which is the leading microfinance institution in Mongolia, has developed a lending program for efficient stoves, in partnership with MicroEnergy Credits. The program and the VPAs seek to address barriers faced by low-income households in adopting clean energy products, which include education, pricing, financing, supply and aftersales services. The role of MicroEnergy credits pertains to training the Xac Bank staff implement the lending program, as well as developing and maintain a robust & transparent carbon credit monitoring and tracking system. This would ensure that carbon emission reductions are quantified and recorded in transparent manner.

The scope of the VPA involves marketing, distributing, and financing improved heating stoves for low-income households in Mongolia. These products provide efficient energy for heating by reducing the fuel to keep the house at a habitable temperature during cold weather and meet the heating temperature needs of low-income households without compromising on quality, and heat.

The stoves use an insulated combustion chamber and are designed to retain heat for longer and at a higher temperature than the traditional versions, allowing users to keep their homes warmer while using less fuel. All stoves employed in the VPAs utilize the most common and locally accessible fuel sources—primarily refined coal briquettes along with a minority use of wood (primarily non-renewable biomass) as a starter fuel—while significantly enhancing the combustion process. The PoA includes emissions reductions from decreased use of coal only; to be conservative it does not include emissions reductions from decreased consumption of non-renewable biomass used as starter fuel.

The efficient cooking and heating technology models that will be disseminated under this VPAs are listed in table below. Stoves distributed to end-users have been assigned

a unique ID at the time of sale. Corresponding to the unique ID, model details, date of installation, end-user contact details have also been collected and maintained by the CME in a database. In compliance with eligibility criteria 18 of the PoA, per manufacturer specifications each of the stoves (a) is designated for household level heating, (b) is a coal burning appliance, and (c) has a thermal efficiency value per manufacturer specifications of at least 70%, as demonstrated in table below[3]:

Stove Type	Thermal Efficiency
Silver Stove Mini (model 131)	71%
Silver Stove Turbo (model 26)	74%
Silver Twin (model 181)	70%
Royal Stove Dul (Royal Single)	70%
Royal Stove Golomt (Royal Double)	75.8%

The stoves have a life expectancy of 15 years. The beneficiaries are informed about proper waste handling and disposal of scrap material due to end of life or non-operational product. Each user receives contact information of the VPA implementer at the time of sale

The project has been implemented as described in the VPA-DDs. The year-wise distribution of stoves under these VPAs has been tabulated below:

VPA-2

Year	No. of Stoves distributed in houses	Total
2011	14127	
2012	2725	16,914
2013	62	

VPA 3

Year	No. of Stoves distributed in houses	Total
2011	0	
2012	15115	15,601

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[3] Manufacturer specifications for all products provided to VVB.

2013	486	

VPA 4

Year	No. of Stoves distributed in houses	Total
2011	0	
2012	14949	**16,235**
2013	1286	

VPA 5

Year	No. of Stoves distributed in houses	Total
2011	0	
2012	11754	**16,772**
2013	5018	

However, no new stoves were distributed in the current monitoring period under these VPAs.

B.1.1 Forward Action Requests

>> No forward action requests

B.2. Post-Design Certification changes

>> Post-design certification changes to the PoA/VPA have been discussed below. The CME submitted a design change memo to GS which has been shared with the VVB along with other supporting evidence for review.

B.2.1. Temporary deviations from the approved Monitoring & Reporting Plan, methodology or standardized baseline

>> N/A

B.2.2. Corrections

>> No correction in the VPA-DD is applied

B.2.3. Changes to start date of crediting period

>> No change in start date of crediting period is applied.

B.2.4. Permanent changes from the Design Certified monitoring plan, applied methodology or applied standardized baseline

>> The PoA, and VPAs therein, are voluntarily changing the applied methodology of the design certified PoA (including existing and future VPAs) from *AMS-II.E. Energy Efficiency and Fuel Switching Measures for Buildings (version 10)* to *Reduced Emissions from Cooking and Heating: Technologies and Practices to Displace Decentralized Thermal Energy Consumption (TPDDTEC) (version 4.0)* – in line with the provisions of paragraph 3.1.6(i) of GS4GG Design Change Requirements.

B.2.5. Changes to project design of approved project

>> The CME is implementing the following changes to the design of the PoA and its VPAs:

a. **Technology/measure removal** – Removing the technology/measure of *Home Insulation technologies (ger blankets)* from the ambit of the design certified PoA (including existing and future VPAs) and continuing with implementation of *efficient stoves and heating technologies (space heating stoves)* only, for all future VER issuances – in line with the provisions of paragraph 3.1.6(f) of GS4GG Design Change Requirements, and

b. **Project fuel shift** – Shifting the fuel used by project technologies in the design certified PoA (including existing and future VPAs) from pit coal to refined coal briquettes - in line with the provisions of paragraph 3.1.6 (e) and (f) of GS4GG Design Change Requirements.

SECTION C. DESCRIPTION OF MONITORING SYSTEM APPLIED BY THE PROJECT

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Stoves were distributed to end-users by Partner Organization (PO) – XacBank LLC. Distributors were trained on the stove distribution and data collection procedures. The CME operates and manages an electronic data management system that stores information on and track all efficient technologies under the VPA. As a minimum the following information is recorded through MEC Credit Tracker system in the database:

- Unique serial number (USN) of the CEP
- Date of installation
- Name of distributor/retailer
- Quantity of CEPs distributed
- Geographic area (district) of distribution
- Model type
- Type of dwelling

Besides, the distribution database will contain end-user contact details (name, state, mobile number, or national ID number). The monitoring activity provides a framework for project preparation and monitoring processes that are undertaken at the VPA level. All required monitoring and documentation are implemented, reported, consolidated and managed by the CME or a qualified expert partner to meet verification requirements. Monitored data is stored in a suite of monitoring databases. These are updated for each monitoring period:

1. **Total Distribution Record:** The MEC Credit Tracker Platform is used to keep detailed records of all installations under each VPA. The Project monitors a representative sample of households that have received the stove technology. All monitoring records are maintained in the Credit Tracker Platform.

    a) The PO maintains in the Credit Tracker Platform a record of all clean energy products that are installed

    b) The PO identifies the exact location of the CEP using GPS location and/or address of the household or organization.

    c) The emissions parameters required for ex-post management are also maintained in the Credit Tracker Platform. These include the number of clean energy products still in operation, and then their performance. These parameters are determined through a sampling study as described above.

    d) The CME uses the Credit Tracker Platform to cross-check the new records with the existing Platform in order to confirm that the installation record is authentic and that no double-counting occurs.

    e) The electronic files holding installation records are backed up on the Internet, reducing risk of any loss of data.

    f) All monitored data required for verification and issuance will be kept for two years after the end of the crediting period or the last issuance of CERs/VERs for the PoA, whichever occurs later. The unique system ID number which is linked

to a GPS location and/or verified address eliminates any risk of double-counting between VPAs.

Frequency: Ongoing

2. **Project Database:** Each VPA has a specific Project Database that records each device crediting in that VPA. Every device listed in the Total Distribution Record was transferred into the Project Database of each VPA as needed to expand the number of devices deployed, until the maximum threshold for the VPA is reached.

3. Information provided in the Total Distribution Record, the VPA-specific Project Database recorded user details (enough for end-user identification and follow-up) for all, or a subset of all, appliances deployed. These end-user details recorded are:
   a) Name
   b) Telephone, or address (as available)
   c) Type of stove (stove model) and fuel the device is replacing:

Frequency: Ongoing

4. **KPTs, Usage Survey use of other stoves:** Usage surveys conducted on households (House/GER) using the project stoves collected data on the presence and usage practices of traditional and other non-project technology by project technology end users and prepared descriptive statistics of these practices. The same method of in person interviews and expert observation within the kitchen in question was suitable to collect these data. Although all the baseline stoves were collected and discarded by the distribution agency during the distribution of project cookstoves, however, if a traditional stove is still found to be in use, even in a secondary role, the HH shall not claim emission reductions.

The actual field measurements conducted during monitoring (e.g. project KPT) has been performed by enumerators trained by CME and PO field staff. Sampled households were visited for 4 days to collect the data on the fuel consumption for heating. Coal briquettes were not supplied separately but a small bag from household stock was separated and provided to households to be used for the KPT. Each day enumerator or field staff would visit the household between 6-7 a.m. All enumerators would carry weighing scale and moisture meter to take the measurements. The data would be collected directly in the Microsoft excel. CME has

defined the project technology "use" versus "non-use" to determine who should be considered eligible for crediting. The criteria for defining the same has been listed below:

1. User is defined as someone who uses the stove daily. The same shall be captured in the survey questionnaire.

2. To define the use and non-use of project technology, CME has included questions in the survey questionnaire such as when was the stove last used, frequency of use.

3. Physical verification of the stove is conducted to check if the combustion chamber is intact and grate is available or not. Surveyor shall also observe physically that the stove feels warm and presence of ash in the stove.

4. Users will be asked questions on use of the baseline stove, seasonal variation presence or absence of the baseline stove.

5. CME shall refer to usage and project survey and Kitchen Performance Tests (KPTs) to determine if the stove was in use or not.

During sampling there may be non-response from the target population. Over-sampling by 20% have been used to avoid non-response, however, sampling may be cease once required confidence/precision is met.

Implementation - The survey for collecting the details of monitoring parameters was conducted annually at the end of the monitoring. The overall monitoring and the implementation of the sampling has been coordinated by the VPA Implementer in coordination with CME staff. CME has ensured successful monitoring of the emission reductions of the proposed project during its crediting period. Furthermore, the survey of the representative sample for the parameters has been carried out by the distributor together with the CME. The survey method used by CME include: (a) Online questionnaire (b) Face to face interview (c) Telephone Interview (cross check). Primary data was stored by the implementing entities/operators. All efforts of sampling will be conducted by qualified personnel who have undergone training as part of the programme.

5. Organizational structure of monitoring and inclusions:
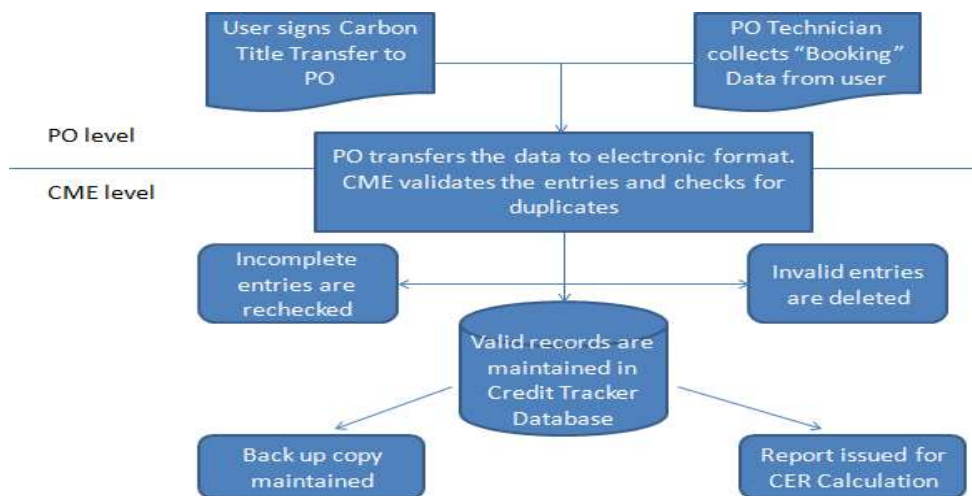
6. Quality Assurance/Quality control

As the PoA is intended to include multiple regions within Mongolia with distribution in six different districts, there is no "one size fits all" approach for dealing with these issues. However, in order to avoid many of these problems the CME undertook following strategies, tailoring the specific approach to the local circumstances:

a) Ensuring end user awareness. At the time of sale, the CEP customer was made aware that they were required to participate in monitoring activities. This was done via training. Sales personnel to explain the importance of monitoring to each customer, and during regularly scheduled microfinance group meetings for end-users.

b) Questionnaire design. The design of the questionnaire ensured that the questions were non-intrusive and easy to understand for both the interviewee and interviewer.

c) Drawing on local knowledge. The local contractors to be hired by the CME in each region played an important role in tailoring the approach to suit local circumstances. For example, in some instances, it was essential for a local person to conduct the interview in order to obtain accurate results.

d) Quality of contractors. Any third parties hired by the CME to carry out sampling was required to demonstrate a high level of cultural awareness, local language skills and appropriate experience with data entry and data management. The CME ensured that contractors are adequately trained for the tasks they are contracted for.

e) Training was provided on how to deal with non-responses, refusals and other problems should these occur.

Technical Failure and Maintenance Protocol

PO has a robust aftersales mechanism in place which ensures that the customer complaints are registered and resolved in a timely manner. The mechanism involves various steps:

Step 1: Complaint Registration

Step 2: Lodging complaint

Step 3: Collection of products for repair

Step 4: Resolution of the complaint

Step 5: Feedback (optional)

Customers can get their complaints registered through either of the following modes:

1) Field staff of the PO who visit the customers on a monthly basis or

2) Call on the customer support number provided to them at the time of sale of the product.

The logbook maintained in branch offices of different districts of Mongolia has records of the complaints registered by the end users during the monitoring period. The logbook records the complainant contact details, date, sysnum of the CEP, complaint and remarks on whether appropriate action was taken by the supplier/manufacturer local service team.

In case of minor issues, repair of the device happens on the site itself however if the issue is major then the device is collected and taken to the nearest workshop for repair. Service team of the supplier/manufacturer is expected to resolve the issue within 30 days of receiving the complaint. Once the product is repaired, it is returned to the customer.

SECTION D. DATA AND PARAMETERS

D.1. Data and parameters fixed ex ante or at renewal of crediting period
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SDG13

Data/parameter	Project technology description
Unit	NA
Description	The detailed description of the project technology shall include as a minimum: - Manufacturer name, - product name (if applicable), - technology type, - capacity characteristics, - rated thermal efficiency,
Source of data	Manufacturer specifications
Value(s) applied	
Choice of data or Measurement methods and procedures	Manufacturer specifications
Purpose of data	Calculation of project scenario
Additional comment	NA

Stove Type (Improved cookstove and heating device)	Manufacturer	Thermal Efficiency	Stove capacity (KW)
Silver Stove Mini (model 131)	Selenge Construction	71%	4.7
Silver Stove Turbo (model 26)	Selenge Construction	74%	2.9
Royal Single/Dul Stove	Royal Ocean	70%	3.5
Royal Golomt Stove	Royal Ocean	75.8%	6.6
Silver Twin	Selenge Construction	70%	2.9

Data/parameter	Expected technical life of project technology
Unit	Time period

Description	The expected technical life of an individual project technology shall be defined in the PDD.
Source of data	Manufacturer specification
Value(s) applied	

Stove Type	Lifetime (years)
Silver Stove Mini (model 131)	15
Silver Stove Turbo (model 26)	15
Royal Stove Dul (Royal Single)	15
Royal Golomt Stove (Royal Double)	15
Silver Twin	15

Choice of data or Measurement methods and procedures	Manufacturer specifications
Purpose of data	Calculation of project scenario
Additional comment	The beneficiaries are informed about proper waste handling and disposal of scrap material due to end of life or non-operational product

Data/parameter	Avoidance of double counting or double claiming among project participants
Unit	NA
Description	Evidence of avoidance of double counting or double claiming with other parties directly involved with the project or programme
Source of data	Carbon Title Transfer Form between end user and PO and Agreement between PO and CME Unique identification (sysnum) in tracker database -
Value(s) applied	NA

Choice of data or Measurement methods and procedures	Title Transfer Form Upon purchase of a CEP, the user must sign the Carbon rights waiver (i.e., Title Transfer Form) which includes the provision that emission reductions generated by the CEP are transferred from the end-user to the PO and ultimately owned by the CME. Further to avoid double counting among different VPAs a unique ID i.e sysnum is provided to each device and is recorded in the tracker database.
Purpose of data	Calculation of project scenario
Additional comment	To ensure avoidance of double counting among project participants

Data/parameter	Avoidance of double counting or double claiming with other mitigation actions
Unit	NA
Description	Review and analysis of mitigation actions in other voluntary market or UNFCCC/compliance mechanisms
Source of data	Using publicly available information from Gold Standard and other voluntary standards, at a minimum Verra and any recognized national or regional standards in the project location, and UNFCCC CDM project & PoA database. -
Value(s) applied	There are no space heating stove registered projects in Mongolia in any of the Standards (GS, VERRA, GCC, CDM etc.).
Choice of data or Measurement methods and procedures	The VPA will not be part of another single CDM project activity or VPA under another PoA. Further, MEC's Credit Tracker Platform is used to record detailed information on each CEP, which is used to ensure that all installations in VPA are uniquely defined and included in one VPA only. In addition, declaration from VPA operators as part of their contract with the CME, stating that their activities are not registered as part of another single CDM/GS project activity or VPA with a different CME. Documentation provided to VVB:

	1. VPA-DD 2. Contract with CME and VPA Implementer
Purpose of data	Calculation of project scenario
Additional comment	Undertake at the time of project design review and VPA inclusion review.

Data/parameter	Regulatory framework for provision of thermal energy Services
Unit	NA
Description	Evidence that the project does not undermine or conflict with any national, sub-national or local regulations or guidance for thermal energy supply/devices or fuel supply or use
Source of data	http://en.energy.gov.mn/ According to The Law of Mongolia on Energy the project does not conflict with any regulation on thermal energy supply in Mongolian households
Value(s) applied	NA
Choice of data or Measurement methods and procedures	In response to growing public concern over air pollution, on May 15, 2019, the Government of Mongolia (GoM) implemented a raw coal ban, a law to completely ban individual and business use of raw coal in six central districts of Ulaanbaatar (Songinokharikhan, Bayanzurkh, Chingeltei, Khan-uul, Sukhbaatar, Bayangol), excluding power plants with special licenses. Instead, GoM provided an alternative product on the market called "refined coal briquettes" at a subsidized price close to the price of raw coal. One of the proposed design changes to the PoA is aligned with Mongolia's recent regulations (mentioned above) as it involves shift from pit coal to refined coal briquettes (coking coal). Further the project doesn't conflict with host country law. As per Climate & Clean Air Coalition report (SNAP Initiative), an assessment was undertaken to identify the air pollution benefits that could be achieved as Mongolia revised its climate change commitment in its Nationally

Determined Contribution (NDC) to reducing greenhouse gas emissions by 22.7% in 2030. As per CCAC report, major sources of air pollution are greenhouse gases and air pollutants. This includes agriculture, transport, and coal consumption for household heating and cooking (responsible for over 50% of black carbon emissions in Mongolia), and for electricity and heat generation. It is also the major cause of respiratory issues in Mongolia. In order to ensure clean air in the country, initiatives like the one described in the VPA will lead to a greater level of improvements in the sector and have achieve reduction in air pollution due to use of inefficient cooking and heating devices.

Purpose of data	Demonstration of project eligibility
Additional comment	Undertake at the start of each crediting period.

Data/parameter	$EF_{b,f,CO2}$
Unit	tCO_2/TJ
Description	CO_2 emission factor arising from use of fuels in baseline scenario
Source of data	IPCC default for coking coal
Value(s) applied	94.60
Choice of data or Measurement methods and procedures	Parameter will be determined based on IPCC default values for coking coal briquettes
Purpose of data	Calculation of baseline scenario
Additional comment	If EF is in units of tCO2/t_fuel, remove NCV term from emission calculations. Term can include a combination of emission factors from fuel production, transport, and use

Data/parameter	$EF_{p,f,CO2}$
Unit	tCO_2/TJ

Description	CO_2 emission factor arising from use of fuels in project scenario
Source of data	IPCC defaults for coking coal
Value(s) applied	94.60
Choice of data or Measurement methods and procedures	As per parameter $EF_{b,f,CO2}$ above
Purpose of data	Calculation of project scenario
Additional comment	If EF is in units of tCO2/t_fuel, remove NCV term from emission calculations. Term can include a combination of emission factors from fuel production, transport, and use.

Data/parameter	$NCV_{b,fuel}$
Unit	TJ/ton
Description	Net calorific value of the fuels used in the baseline
Source of data	IPCC defaults for coking coal
Value(s) applied	0.0282
Choice of data or Measurement methods and procedures	2006 IPCC Guidelines for National Greenhouse Gas Inventories
Purpose of data	Calculation of baseline scenario
Additional comment	NA

Data/parameter	$NCV_{p,fuel}$
Unit	TJ/ton
Description	Net calorific value of the fuels used in the project
Source of data	IPCC defaults for coking coal
Value(s) applied	0.0282

Choice of data or Measurement methods and procedures	2006 IPCC Guidelines for National Greenhouse Gas Inventories
Purpose of data	Calculation of project scenario
Additional comment	NA

Data / Parameter	$P_{b,y}$
Unit	tonnes/household-day
Description	Quantity of fuel that is consumed in baseline scenario b during year y
Source of data	Baseline performance field tests
Value(s) applied	VPA 2

Household-district	Value (t/HH-day)
Ger_Bayan	0.012776
Ger_Song	0.013974
Ger_Others	0.013104
House_Bayan	0.013955
House_Song	0.014238
House_Others	0.014074

VPA 3

Household-district	Value (t/HH-day)
Ger_Bayan	0.012310
Ger_Song	0.013531
Ger_Others	0.012837
House_Bayan	0.012027
House_Song	0.012781
House_Others	0.012377

VPA 4

Household-district	Value (t/HH-day)
Ger_Bayan	0.013749
Ger_Song	0.013967
Ger_Others	0.012708
House_Bayan	0.013509
House_Song	0.013931
House_Others	0.013949

VPA 5

Household-district	Value (t/HH-day)
Ger_Bayan	0.015191
Ger_Song	0.013527
Ger_Others	0.012668
House_Bayan	0.013059
House_Song	0.01375
House_Others	0.013597

Choice of data or Measurement methods and procedures	Baseline KPT

The calibration details for weighing scale and moisture meter are as follows: |
| Purpose of data | Calculation of baseline scenario |
| Additional comment | Done once at the time of renewal of crediting period |

D.2. Data and parameters to be monitored

>>

SDG 13

Data / Parameter	Avoidance of double counting or double claiming among project technology end users
Unit	NA
Description	Evidence of avoidance of double counting or double claiming with project technology end users

Source of data	Evidence of informing / notification of end users by signing carbon title waiver forms signed by end users
Value(s) applied	N/A
Measurement methods and procedures	The end user sign carbon title transfer agreement with the PO surrendering the user's rights to any carbon offsets associated with the CEP.
Monitoring frequency	Monitored whenever project technology is sold or otherwise disseminated
QA/QC procedures	Cross check using general internet search and search of public records of Gold Standard and other voluntary market and UNFCCC mechanisms
Purpose of data	Calculation of project scenario
Additional comment	NA

Data / Parameter	Presence of stove stacking
Unit	N/A
Description	Descriptive statistics of the presence and usage practices of baseline- and other non-project-technology by project technology end users
Source of data	Project Survey- use of other stoves, to capture heating pattern and stove usage of households in the region, including quantification of use of baseline devices, by formulating questions and/or collecting evidences to determine the frequency of usage of both the project devices and baseline devices, monitoring surveys to capture the other type of fuels or technology used for heating. The surveys may be integrated with the usage survey.
Value(s) applied	No household reported stove stacking during Usage surveys
Measurement methods and procedures	-
Monitoring frequency	Annual
QA/QC procedures	The calculation of $SFS_{p,b,y}$ shall be cross-checked with the observed presence of stove stacking. Ensure any stove stacking is considered so that emission reductions are calculated only from real reduction of, or replacement of, baseline fuel use.
Purpose of data	Calculation of project scenario

Additional comment	The project shall account for in the emission reductions when a baseline technology is used in parallel with the project stove.

Data / Parameter	$P_{p,y}$
Unit	tonnes/household-day
Description	Quantity of fuel that is consumed in project scenario b during year y
Source of data	Survey or field study
Value(s) applied	VPA 2

VPA 2

Household-district	Value (tonnes/HH*day)
Ger_Bayan	0.00528
Ger_Song	0.00572
Ger_Others	0.00597
House_Bayan	0.00577
House_Song	0.00559
House_Others	0.00591

VPA 3

Household-district	Value (tonnes/HH/day)
Ger_Bayan	0.00543
Ger_Song	0.00547
Ger_Others	0.00567
House_Bayan	0.00491
House_Song	0.00584
House_Others	0.00565

VPA 4

Household-district	Value (tonnes/HH*day)
Ger_Bayan	0.00566
Ger_Song	0.00700
Ger_Others	0.00591
House_Bayan	0.00612
House_Song	0.00623
House_Others	0.00551

VPA 5

Household-district	Value (tonnes/HH*day)
Ger_Bayan	0.00536
Ger_Song	0.00585
Ger_Others	0.00559
House_Bayan	0.00566
House_Song	0.00575
House_Others	0.00541

Measurement methods and procedures	Project KPTs complying with sampling requirements and guidelines under Annex 2 of Kitchen performance test.

The calibration details for monitoring equipment (weighing scale and moisture meter) are as follows:

A) Weighing Scale calibration details:

Code Number	Calibration date	Calibration due date
WB -18 WB-19 WB-20 WB-21 WB-22 WB-23 WB-24 WB-25 WB-26 WB-27 WB-28 WB-29 WB-30 WB-31 WB-32 WB-33 WB-34 WB-35 WB-36	2/12/2020 And 1/12/2021	13/12/2021 And 12/12/2022

WB-37 WB-38 WB-39 WB-40 WB-41 WB-42 WB-43		

B) Moisture meter calibration details:

1) 1st calibration details

Serial Number	Calibration date	Calibration due date
T45D989 T91D556 T58D332 T42D581 T73D941 T71D457 T27D835 T58D343	16/12/2020	December 2021
T21D835 T78D327 T30D448 T99D457 T13D396 T89D376	17/12/2020	December 2021
T51D664 T62D231 T18D375 T56D581	18/12/2020	December 2022

Serial Number	Calibration date	Calibration due date
T69D529 T55D236 T66D774 T52D612 T41D789 T62D454 T49D593	15/12/2020	December 2021

2) <u>2nd Calibration details</u>

Serial Number	Calibration date	Calibration due date
T58D332 T30D448 T99D457 T52D612 T18D375	21/12/2021	December 2022
T21D835 T73D941 T66D774 T51D664 T13D396 T27D835 T56D581	22/12/2021	December 2022
T45D989 T69D529 T55D236 T41D789 T58D343 T62D231 T62D454	23/12/2021	December 2022
T91D556 T78D327 T42D581 T71D457 T49D593 T89D376	24/12/2021	December 2022

Monitoring frequency	Updated every two years

QA/QC procedures	The equipment used for testing i.e. weighing scales and moisture meters are externally calibrated and newly purchased at the time of use, respectively. So, measurements are done with the necessary guarantees.
Purpose of data	Calculation of project scenario
Additional comment	A single project fuel consumption parameter is weighted to be representative of baseline technologies being compared for project crediting. KPT protocol shall be used for PFT (for e.g.: PCIA KPT protocol may be used)

Data / Parameter	$SFS_{b,p,y}$
Unit	tonnes/stove-day
Description	Specific fuel savings for an individual project technology of baseline b/project p pair in year y
Source of data	Calculated from $P_{b,y}$, $P_{p,y}$ and other information to obtain the savings in the required units
Value(s) applied	VPA 2

Household-district	Value (tonnes/stove*day)
Ger_Bayan	0.0075
Ger_Song	0.0083
Ger_Others	0.0071
House_Bayan	0.0082
House_Song	0.0086
House_Others	0.0082

VPA 3

Household-district	Value (tonnes/stove*day)
Ger_Bayan	0.0069
Ger_Song	0.0081
Ger_Others	0.0072
House_Bayan	0.0071
House_Song	0.0069
House_Others	0.0067

VPA 4

VPA 5

Household-district	Value (tonnes/stove*day)
Ger_Bayan	0.0098
Ger_Song	0.0077
Ger_Others	0.0071
House_Bayan	0.0074
House_Song	0.0080
House_Others	0.0082

Household-district	Value (tonnes/stove*day)
Ger_Bayan	0.0081
Ger_Song	0.0070
Ger_Others	0.0068
House_Bayan	0.0074
House_Song	0.0077
House_Others	0.0084

Measurement methods and procedures	$SFS_{b,p,y} = P_{b,y} - P_{p,y}$
Monitoring frequency	Updated every two years, or more frequently
QA/QC procedures	NA
Purpose of data	Calculation of project scenario
Additional comment	The baseline and project field test data must be analysed in combination to estimate the average fuel savings per technology unit.

Data / Parameter	$U_{p,y}$
Unit	Percentage
Description	Weighted average usage rate in project scenario p during year y
Source of data	Usage survey and supporting documents as per usage rate guidelines
Value(s) applied	Usage rates for following household-district combinations were weighted against, to arrive at the average usage rate in project scenario. These combinations are: VPA 2

VPA 2

Household-district	Usage rate in % (Year 1)	Usage rate in % (Year 2)
Ger_Bayan	69	69
Ger_Song	78	75
Ger_Others	78	76
House_Bayan	50	50
House_Song	80	79
House_Others	79	78

VPA 3

Household-district	Usage rate in % (Year 1)	Usage rate in % (Year 2)
Ger_Bayan	83	83
Ger_Song	79	77
Ger_Others	78	76
House_Bayan	80	80
House_Song	79	77
House_Others	78	74

VPA 4

Household-district	Usage rate in % (Year 1)	Usage rate in % (Year 2)
Ger_Bayan	83	83
Ger_Song	79	78

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Ger_Others	77	75
House_Bayan	80	80
House_Song	80	78
House_Others	78	74

VPA 5

Household-district	Usage rate in % (Year 1)	Usage rate in % (Year 2)
Ger_Bayan	77	77
Ger_Song	77	76
Ger_Others	78	75
House_Bayan	80	77
House_Song	79	77
House_Others	74	74

Measurement methods and procedures	Ex-post Sampling surveys are conducted to record the continued operation of project devices. Sample size is determined using as per TPDDTEC methodology requirement of minimum 30 samples per age cohort.

The PP follows the cookstove usage guidelines which mentions that a project can claim upto 90% if it complies with both the 'mandatory' and 'good practice' level. Following levels are monitored:

1. Mandatory:

a. Define use and nonuse - To define the use and non-use of project technology, the project developer would use the following criteria: time when last used, frequency of use, extent to which the traditional technology is displaced etc.

b. In person household usage survey- this included household observation by gathering photos on whether the stove has been recently used and, interviewing the household member responsible to gather the following information- presence of improved stove or traditional stove, fuel used, when was stove last used and if combustion chamber looks intact, any other stove used for

	heating, if the usage of cookstove been affected by the use of improved stove etc information on use patterns, including information on duration and frequency of use, as well as information on multiple stove use ('stove stacking') and seasonal trends; photos of the stove etc. c. Verification of accuracy of results-the project developer representative telephoned a randomly selected 4-5% of the surveyed households from each VPA to verify that homes were visited by surveyors and the recorded responses are correct. 2. Good practices: • Field team training and supervision- training records submitted to VVB • End-user training and follow up visits- end user training records, photos submitted to VVB Awareness campaign- the agenda and photos of the awareness campaign have been submitted to the VVB.
Monitoring frequency	Annually
QA/QC procedures	Compliance with the general requirements for sampling and general requirements for QA/QC of TPDDTEC v4.0 methodology.
Purpose of data	Calculation of project scenario
Additional comment	NA

SDG 13 and SDG 7

Data / Parameter	$N_{b,p,y}$
Unit	Days
Description	Number of project technology-days included in the project database for baseline b/project p pair in year y
Source of data	Each PO shall maintain these records in the Credit Tracker Platform (Project Database).
Value(s) applied	VPA 2

Household-district	Value (Year 1)	Value (Year 2)
House-Song	450480	450480
House-Bayan	960	960
House-Other	1020960	1020960
Ger-Song	913200	913200
Ger-Bayan	3120	3120
Ger-Other	1670640	1670640

VPA 3

Household-district	Value (Year 1)	Value (Year 2)
House-Song	541200	541200
House-Bayan	1200	1200
House-Other	781200	781200
Ger-Song	978960	978960
Ger-Bayan	2880	2880
Ger-Other	1438560	1438560

VPA 4

Household-district	Value (Year 1)	Value (Year 2)
House-Song	3,73,680	3,73,680
House-Bayan	1,200	1,200
House-Other	9,13,440	9,13,440
Ger-Song	9,33,840	9,33,840
Ger-Bayan	2,880	2,880
Ger-Other	16,71,360	16,71,360

VPA 5

Household-district	Value (Year 1)	Value (Year 2)
House-Song	2,96,160	2,96,160
House-Bayan	1,93,920	1,93,920
House-Other	8,18,160	8,18,160
Ger-Song	7,10,400	7,10,400
Ger-Bayan	4,56,480	4,56,480
Ger-Other	15,50,160	15,50,160

Measurement methods and procedures	$N_{b,p,y}$ = no. of CEP sales * technology days

	The heating season in Ulaanbaatar is from September-April. Therefore, accordingly these 8 months of heating season shall be considered for claiming emission reductions.
Monitoring frequency	Annually
QA/QC procedures	The cross check the results of the usage survey with the contents of the project database to confirm whether the project technology units surveyed are present at end user locations as expected, or not. No such discrepancy was found during the current Monitoring period
Purpose of data	Calculation of project scenario
Additional comment	NA

SDG 13

Data / Parameter	$LE_{p,y}$	
Unit	tCO_2e per year	
Description	Leakage in project scenario p during year y	
Source of data	Sources established by section 2.4.A Leakage emissions of TPDDTEC version 4.0	
Value(s) applied	Household-district	Value
	House-Song	0
	House-Banyan	0
	House-Other	0
	Ger-Song	0
	Ger-Banyan	0
	Ger-Other	0
	The value of leakage is 0 for all the VPAs covered under the monitoring period (VPA 2- VPA 5)	
Measurement methods and procedures	During project/Usage survey it was checked from sample households if they were still using baseline stoves available at the time of distribution of project stoves. Based on the response whether baseline stoves were dismantled, gave away, using or sold the leakage value was calculated. For this programme while distribution of the project stoves, the baseline stoves were collected by XacBank for safer disposal, ensuring that there is no leakage of emissions due to baseline stoves getting used elsewhere	

Monitoring frequency	Every 2 years
QA/QC procedures	Compliance with the general requirements for sampling and general requirements for QA/QC of TPDDTEC v4.0 methodology.
Purpose of data	Calculation of leakage scenario
Additional comment	NA

SDG 8

Data / Parameter	Number of Jobs
Unit	Number
Description	Employment generation
Source of data	HR records/employee list
Value(s) applied	4 (for each of the VPA covered under the monitoring period i.e, VPA 2-VPA 5)
Measurement methods and procedures	-
Monitoring frequency	Annually
QA/QC procedures	-
Purpose of data	-
Additional comment	-

D.3. Comparison of monitored parameters with last monitoring period

The monitoring period for the project is 06/04/2020-05/04/2022, which is the first monitoring period under GS4GG while the last monitoring period for the project activity was from 02/09/2012- 30/04/2013 under old version of GS

Data/Parameter	Value obtained in this monitoring period	Value obtained last monitoring period
SDG 13	**VPA 2:** 1,31,313 (for MP 06/04/2020-05/04/2022) **VPA 3:** 1,12,226 (for MP 06/04/2020-05/04/2022) **VPA 4:** 1,16,960 (for MP 06/04/2020-05/04/2022)	For MP 02/09/2012-30/04/2013: **VPA 2-** 46,519 **VPA 3-** 42,528 **VPA 4-** 40,814 **VPA 5-** 25,944

VPA 5: 1,27,725(for MP 06/04/2020-05/04/2022)

SDG 7	**VPA 2** Year 1: 13,278 Year 2: 12,960 **VPA 3:** Year 1: 12,249 Year 2:11,841 **VPA 4:** Year 1: 12,670 Year 2: 12,328 **VPA 5** Year 1: 12,933 Year 2: 12,628	**VPA 2–** 17,052 **VPA 3–** 14,813 **VPA 4–** 13,319 **VPA 5–** 12,591
SDG 8	4 (for each VPA 2, VPA3, VPA 4, VPA 5)	13 for each VPA

$N_{b,p,y}$

VPA 2

Household-district	Value (Year 1)	Value (Year 2)
House-Song	450480	450480
House-Bayan	960	960
House-Other	1020960	1020960
Ger-Song	913200	913200
Ger-Bayan	3120	3120
Ger-Other	1670640	1670640

VPA 2

House	15,83,760
Ger	24,75,600

VPA 3

Household-district	Value (Year 1)	Value (Year 2)
House-Song	541200	541200
House-Bayan	1200	1200
House-Other	781200	781200
Ger-Song	978960	978960

VPA 3

House	13,41,120
Ger	24,03,120

| Ger-Bayan | 2880 | 2880 |
| Ger-Other | 1438560 | 1438560 |

VPA 4

Household-district	Value (Year 1)	Value (Year 2)
House-Song	3,73,680	3,73,680
House-Bayan	1,200	1,200
House-Other	9,13,440	9,13,440
Ger-Song	9,33,840	9,33,840
Ger-Bayan	2,880	2,880
Ger-Other	16,71,360	16,71,360

VPA 4

House	12,88,320
Ger	26,08,080

VPA 5

Household-district	Value (Year 1)	Value (Year 2)
House-Song	2,96,160	2,96,160
House-Bayan	1,93,920	1,93,920
House-Other	8,18,160	8,18,160
Ger-Song	7,10,400	7,10,400
Ger-Bayan	4,56,480	4,56,480
Ger-Other	15,50,160	15,50,160

VPA 5

House	13,08,240
Ger	27,17,040

VPA 2

VPA-2

Household-district	Usage rate in % (Year 1)	Usage rate in % (Year 2)
Ger_Bayan	69	69
Ger_Song	78	75
Ger_Others	78	76
House_Bayan	50	50
House_Song	80	79
House_Others	79	78

House	**Ger**
91.58%	96.93%

$U_{p,y}$

VPA 3

VPA-3

Household-district	Usage rate in % (Year 1)	Usage rate in % (Year 2)
Ger_Bayan	83	83
Ger_Song	79	77
Ger_Others	78	76
House_Bayan	80	80
House_Song	79	77
House_Others	78	74

House	**Ger**
91.58%	96.93%

VPA 4

VPA-4

Household-district	Usage rate in % (Year 1)	Usage rate in % (Year 2)
Ger_Bayan	83	83
Ger_Song	79	78
Ger_Others	77	75

House	**Ger**
91.58%	96.93%

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House_Bayan	80	80
House_Song	80	78
House_Others	78	74

VPA 5

VPA-5

Household-district	Usage rate in % (Year 1)	Usage rate in % (Year 2)
Ger_Bayan	77	77
Ger_Song	77	76
Ger_Others	78	75
House_Bayan	80	77
House_Song	79	77
House_Others	74	74

House	Ger
91.58%	96.93%

VPA 2

Approximately 0.0125 tonnes/HH-day for each VPA

Household-district	Value (tonnes/HHday)
Ger_Bayan	0.0053
Ger_Song	0.0057
Ger_Others	0.0060
House_Bayan	0.0058
House_Song	0.0056
House_Others	0.0059

$P_{p,y}$

VPA 3

Household-district	Value (tonnes/HH-day)
Ger_Bayan	0.0054
Ger_Song	0.0055
Ger_Others	0.0057
House_Bayan	0.0049
House_Song	0.0058
House_Others	0.0057

VPA 4

Household-district	Value (tonnes/HH-day)
Ger_Bayan	0.0057
Ger_Song	0.0070
Ger_Others	0.0059
House_Bayan	0.0061
House_Song	0.0062
House_Others	0.0055

VPA 5

Household-district	Value (tonnes/HH-day)
Ger_Bayan	0.0054
Ger_Song	0.0058
Ger_Others	0.0056
House_Bayan	0.0057
House_Song	0.0057
House_Others	0.0054

D.4. Implementation of sampling plan

\>>

Sampling plan

\>> A statistically valid sample was used to determine parameter values, as per the relevant requirements for sampling in the "Guidelines for Sampling and surveys for CDM project activities and programmes of activities Version 04.0." Minimum 90% confidence interval and a 10% margin of error requirement was achieved for the sampled parameters.

Parameter values were estimated by sampling in accordance with the requirements in the applied methodology, in which case 90/10 confidence/precision has been applied.

Sampling Methodology

A simple random sampling method was applied through each of the VPA across the six dwelling-district combinations mentioned below. A simple random sample is a subset of a population (e.g. villages, individuals, buildings, pieces of equipment) chosen randomly, such that each element (or unit) of the population has the same probability of being selected. The sample-based estimate (mean or proportion) is an unbiased estimate of the population parameter.

Simple random sampling method has been applied to determine the samples for the monitored parameters (U_p, $P_{p,y}$) randomly from the total population. Randomization was done using random function on Microsoft excel. The monitoring parameter, $N_{b,p,y}$ is monitored 100% and continuously through the online credit tracker platform and the monitoring parameter $P_{p,y}$ is calculated using project KPT guidelines as per Annex 2 of TPDDTEC 4.0 and procedure for calculation of the same is fixed.

Sampling Size

Sample size was determined using the following formula:

$$n \geq \frac{1.645N \times p(1-p)}{(N-1) \times 0.12 \times p2 + 1.645p(1-p)}$$

Sampling frame

Sample sizes was sufficient to ensure that the precision of the sample means/proportions are in accordance to the Sampling Frame established for the VPA within the PoA to estimate emissions reductions. As per the methodology, in cases where survey results indicate that the desired precision is not achieved, the upper bound value of corresponding confidence interval of the parameter value may be used as an alternative to repeat the survey. Alternatively, the survey may be expanded to reach the required confidence/precision. To ensure a simple random sample selection, random number generators was applied. Each unit in the target population was uniquely identifiable by its Serial ID number. Each CEP was allocated a Sample Selection Number in each monitoring period, starting at 1 and increasing up to the total number of CEPs in the Database for that pre-defined simple random sampling frame. Applying the

random number generators, the CEP were randomly chosen from the defined population up to the required sample size as calculated by the CME.

The dwelling type is decisive for project coal consumption and hence both dwelling types i.e. ger and houses are included in this VPA and sampling has been done for both dwelling types. The total samples determined through simple random sampling on the total population has been further split into districts – Bayangol, Songinokhairkhan and Other. Further, considering possible low response rate and households response bias into account, oversampling has been applied.

The sample size that has been taken for the current Monitoring period is 90 for the Project KPT for each dwelling-district combination. Monitoring surveys have been carried out in six dwelling district combinations or frames namely:

Frame 1: Stove in house dwelling type, located in Songinokhairkhan district
Frame 2: Stove in house dwelling type, located in Bayangol district
Frame 3: Stove in house dwelling type, located in other district
Frame 4: Stove in ger dwelling type, located in Songinokhairkhan district
Frame 5: Stove in ger dwelling type, located in Bayangol district
Frame 6: Stove in ger dwelling type, located in other district

The mean value of each of the surveyed parameter, standard deviation, standard error, and precision has been calculated as per best practice examples for reliability calculations provided in the "Guidelines for Sampling and surveys for CDM project activities and programmes of activities Version 04.0." For proportion-based reliability test, Standard Error and precision has been calculated as per best practice examples for reliability calculations provided in the "Guidelines for Sampling and surveys for CDM project activities and programmes of activities Version 04.0."

The sampling for the project survey for the current Monitoring period was done using following approach:

In person Surveys
In person surveys were conducted for the purpose of both the usage/monitoring survey and KPTs. Data was collected by trained enumerators who spoke the local language.

Usage Survey

The usage survey determines the usage proportion for each age cohort of technologies being credited for each project scenario p. The age cohorts in the survey are established as follows:

- Participants in a usage survey with technologies in the first year of use (age0-1) must have technologies that have been in use on average at least 0.5 years or longer.
- Participants in a usage survey with technologies in the second year of use (age1-2) must be conducted with technologies that have been in use on average at least 1.5 years, and so on.

The parameter of interest is the usage proportion for each age cohort, the sample size is defined for each age cohort following the general requirements for sampling with a minimum of 30 samples for project technologies of each age cohort being credited, except where the age cohort comprised of fewer than 30 units, all units have been sampled.

Since the project surveys were combined with Usage surveys a total of 100 end users were monitored.

VPA 2

Dwelling-district	Sample Size for project/Usage survey		
	2011	2012	2013
House-Bayangol	2	2	
House-Song	70	30	
House-Others	47	30	23
Ger-Bayangol	10	03	
Ger-Song	69	30	01
Ger-Others	40	30	30

VPA 3:

Dwelling-district	Sample Size for project/Usage survey		
	2011	2012	2013
House-Bayangol		4	1
House-Song		70	30
House-Others		70	30
Ger-Bayangol		11	1
Ger-Song		70	30
Ger-Others		70	30

VPA 4:

Dwelling-district	Sample Size for project/Usage survey		
	2011	2012	2013
House-Bayangol		2	3
House-Song		70	30
House-Others		70	30
Ger-Bayangol		6	6
Ger-Song		70	30
Ger-Others		70	30

VPA 5:

Dwelling-district	Sample Size for project/Usage survey	
	2012	2013
House-Bayangol		100
House-Song	70	30
House-Others	70	30
Ger-Bayangol	2	98
Ger-Song	70	30
Ger-Others	70	30

Project KPTs

For determining the fuel consumption in the project scenarios, the random sampling for KPTs was applied. For determining the fuel consumption in the project scenario the KPT sample size determination was based on Table 4 of Complementary on guidelines for

Kitchen Performance Testing given in Annex 2 of the methodology, TPDDTEC version 4.0.

Table 4: Sample sizes in cases of INDEPENDENT samples (households sampled in the project situation are different from households sampled in the baseline situation). This is the size required for each of the project samples.

COV	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0
90/30 precision	90	105	122	140	159	180	201	224	248

Each combination of household category (house/Ger) & district combination was represented by a sample size calculated using Independent sampling process for which the project KPTs were performed. The details of the sampling are tabulated below:

Combination	Sample Size for project KPTs			
	VPA 2	VPA 3	VPA 4	VPA 5
House-Bayangol	2	3	4	90
House-Song	90	90	90	90
House-Others	90	90	90	90
Ger-Bayangol	9	10	10	90
Ger-Song	90	90	90	90
Ger-Others	90	90	90	90

The KPTs deployed high performance moisture meters of make 'Labcare Scientific' GIDM to measure moisture content in the coal briquettes used in Households for testing.

The monitoring frequency specified in the registered monitoring plan for different technologies within these VPAs for second CP is met as follows:

Parameter	Monitoring frequency	CEPs added during this MP (06/04/2020-05/04/2022)	Previous monitoring dates	Validity of previous Monitoring till	New monitoring for this MP

Usage Survey	Annual	No	NA	NA	Yes
Project KPT	Bi-annual	No	NA	NA	Yes

Improved Cookstoves: Monitoring usage surveys for various parameters in this monitoring period was conducted annually in April'21 and April'22. Project KPT was conducted in the month of January' 2021 (winter season) and Sep-Oct'21 (autumn season) and the conservative value was used for ER calculation. For next monitoring period, fresh usage survey and KPT will be conducted.

The sampling approach followed, and the sample size obtained in this monitoring report is summarized as follows –

S. No.	Parameter	Sampling approach	Sample size
1.	Usage rate in project scenario p during year y ($U_{p,y}$)	Simple random sampling for proportion-based parameter	100
2.	Quantity of fuel that is consumed in project scenario p during year y ($P_{p,y}$)	Carry out KPTs- Simple random sampling for mean based parameter	90

Where the sales are less than 100, total sales have been considered for Usage results whereas active stoves have been considered for project KPTs.

Collected data/analysis of collected data and meeting required confidence/precision

The data collected after carrying out the monitoring surveys was further analysed to see if the required confidence/precision is met. The data collected from the surveys were compiled into the Excel spreadsheet. In order to achieve the 90/10 reliability level for simple random sampling few additional stoves were sampled from the database than that required to cover for non-responses, if any. The confidence/precision of 90/10 is met for all the parameters for heating stoves as per TPDDTEC v4.0. In case, the confidence/precision is not met for any parameter for improved cookstove, the upper or lower bound is conservatively applied to arrive at final values for the parameter as per TPDDTEC v4.0.

Demonstration of whether the selected samples are representative of the population
and are randomly selected

The selected samples are representative of the population as they are selected using
the guidance given in TPDDTEC v4.0 and CDM standard on "Sampling and surveys for
CDM project activities and programme of activities version 9.0" using simple random
sampling approaches.

Excel based randomization tool was used to randomly select samples from a population.
This tool provides randomly generated numbers when the population size to be sampled
and number of samples required are inputted

Coordination of overall monitoring is the responsibility of MEC, the CME. The VPA
implementer, XacBank, conducted the monitoring. Roles and responsibilities of MEC
follow:

- Develop, approve, execute, and improve the monitoring/reporting procedures
- Organize training of XacBank on monitoring requirements and procedures
- Use MEC Tracker database to conduct random sampling
- Coordinate monitoring work of XacBank
- Validate monitoring data and manage and update MEC Tracker Platform
- Calculate and report the emission reductions
- Coordinate the VVB work during the verification audit

Roles and responsibilities of XacBank follow:

- Conduct monitoring according to procedures directed by CME
- Use provided electronic monitoring form
- Use list of randomly sampled households from MEC Tracker to conduct monitoring
- Conduct spot-check results of individual surveys
- Store primary data

The MEC Credit Tracker Platform is used to keep detailed records of all CEPs under each
VPA. Each installation is monitored annually to check usage status. Annual monitoring
records are maintained in the Credit Tracker Platform to confirm usage status and client
information. Each CEP is assigned a unique identification code, a 'sysnum', to ensure
no double counting occurs. Each CEP is assigned to a VPA in the Credit Tracker Platform.
The sampling frame for the VPA is all CEPs assigned to the VPA in Credit Tracker
Platform. Procedures for maintenance of monitoring records in the Credit Tracker
Platform are included in the PoA Sampling Plan.

Quality assurance and quality control of the monitoring procedures and data collection
are ensured through the following measures:

- Survey is conducted using electronic survey form, which enables use of constraints to reduce enumerator error in entering respondent answers; automatic data entry, reducing risk of error in entering data from paper surveys; ongoing check of data to identify enumerator error or survey issues.
- Survey questions designed and tested to avoid recall bias, confirmation bias, and leading questions. Survey reviewed and commented by local team to ensure local applicability.
- Enumerators receive extensive training, using materials provided by CME (or contracted third party), to ensure survey is used properly.
- Survey manager conducts spot-checks of enumerator responses to ensure accuracy in responses.
- Primary data of electronic survey records are backed up on the internet, reducing risk of any loss of data.
- Survey enables a further check of data held in Credit Tracker Platform to ensure accuracy of overall PoA and VPA database

SECTION E. CALCULATION OF SDG IMPACTS

E.1. Calculation of baseline value or estimation of baseline situation of each SDG Impact

>>

Since the methodology refers to one equation for calculation of Emission Reductions, the baseline and project emissions are not calculated separately and the SDG Impacts are described in this section.

The sample calculations for the combination house-bayangol has been mentioned for the three SDG impacts.

SDG 13: Climate Action (Improved Cookstoves)

The overall GHG reductions achieved by the project activity will be calculated as follows:

$$ER_y = \sum_{b,p} (N_{b,p,y} * U_{p,y} * SFS_{p,b,y} * NCV_{b, fuel} * (f_{NRB,b, y} * EF_{fuel, CO2} + EF_{fuel, nonCO2})) - \sum LE_{p,y}$$

Where:

$\sum_{b,p}$	Sum over all relevant (baseline b/project p) couples
$N_{b,p,y}$	Number of project technology-days included in the project database for baseline b/project p pair in year y (days)
$U_{p,y}$	Cumulative Usage rate for technologies in project scenario p in year y (fraction)
$SFS_{p,b,y}$	Specific fuel savings for an individual project technology of baseline b/project p pair in year y (mass or volume units/technology*day)

$f_{NRB,b,y}$ Fractional non-renewability status of woody biomass fuel during year y (fraction). For biomass, it is the fraction of woody biomass that can be established as non-renewable. This parameter is omitted when f is a fossil fuel.

$NCV_{b,fuel}$ Net calorific value of the fuel(s) that is substituted or reduced in baseline b (TJ/mass or volume units)

$EF_{b,fuel,CO2}$ CO_2 emission factor from use of fuel that is substituted or reduced.

$EF_{b,fuel,nonCO2}$ Non-CO_2 emission factor of the fuel that is reduced

$LE_{p,y}$ Leakage for project scenario p in year y (tCO$_2$e/yr)

Since the project activity uses fossil fuel the fNRB value is not relevant and is removed from the above equation. Similarly, no non-CO2 emissions are estimated from the use of fossil fuel (coking coal briquette), therefore it is also removed from the above equation. The revised equation is:

$$ER_y = \sum_{b,p} (N_{b,p,y} * U_{p,y} * SFS_{p,b,y} * NCV_{b,fuel} * EF_{fuel,CO2}) - \sum LE_{p,y}$$

The below sample calculation has been done for the dwelling-district combination of Ger- Others (for VPA 2)

Parameter	Value (1st year)	Value (2nd Year)	Unit	Description	Source
$NCV_{b,fuel}$	0.0282	0.0282	TJ/tonne	Net calorific value of the fuel that is substituted or reduced (IPCC default for coking coal)	IPCC default
$EF_{b,fuel\ CO2}$	94.6	94.6	tCO2/TJ	CO2 emission factor of the fuel that is substituted or reduced (coking coal)	IPCC default
$N_{p,y}$	16,70,640	16,70,640	Days	Project technology-days in the project database for project scenario p through year y	database
$U_{p,y}$	78%	76%	Fraction	Cumulative usage rate for technologies in project scenario j during year y, based on cumulative installation rate and drop-off rate	Monitored
$P_{b,y}$	0.0131	0.0131	tonne/HH-day	Specific fuel consumption for an individual technology in baseline scenario b during year y converted to tons/day	Fixed ex-ante, Baseline KPTs
$P_{p,y}$	0.0060	0.0060	tonne/HH-day	Specific fuel consumption for an individual technology in project scenario p during year y converted to tons/day	Project KPT
$SFS_{b,p,y}$	0.0071	0.0071	tonne/stove-day	Specific fuel savings for an individual project technology	Calculated

Parameter	Value	Value	Unit	Description	Source
				of baseline b/project p pair in year y	
LE_y	0	0	tCO2e/year	Leakage for project scenario p in year y	Calculated
ER_y	24,801	24,158	tCO2e/year	Emission Reduction during the year y	Calculated

Where, the value for 06/04/2020-05/04/2021 has been calculated using the following equation,

$ERy = \sum_{b,p} (N_{b,p,y} * U_{p,y} * SFS_{p,b,y} * NCV_{b,fuel} * EF_{fuel, CO2}) - \sum LE_{p,y}$

$\quad\quad = 16,70,640 * 78\% * 0.0071 * 0.0282 * 94.6 - 0$

$\quad\quad = 24,801\ tCO_2e$

For detailed calculations please refer to ER_Calculation Sheet_VPA2.

The below sample calculation has been done for the dwelling-district combination of House-others (for VPA 3)

Parameter	Value (1st year)	Value (2nd Year)	Unit	Description	Source
$NCV_{b,fuel}$	0.0282	0.0282	TJ/tonne	Net calorific value of the fuel that is substituted or reduced (IPCC default for coking coal)	IPCC default
$EF_{b,fuel\ CO2}$	94.6	94.6	tCO2/TJ	CO2 emission factor of the fuel that is substituted or reduced (coking coal)	IPCC default
$N_{p,y}$	7,81,200	7,81,200	Days	Project technology-days in the project database for project scenario p through year y	database
$U_{p,y}$	78%	74%	Fraction	Cumulative usage rate for technologies in project scenario j during year y, based on cumulative installation rate and drop-off rate	Monitored
$P_{b,y}$	0.0124	0.0124	tonne/HH-day	Specific fuel consumption for an individual technology in baseline scenario b during year y converted to tons/day	Fixed ex-ante, Baseline KPTs
$P_{p,y}$	0.0057	0.0057	tonne/HH-day	Specific fuel consumption for an individual technology in project scenario p during year y converted to tons/day	Project KPT
$SFS_{b,p,y}$	0.0067	0.0067	tonne/stove-day	Specific fuel savings for an individual project technology of baseline b/project p pair in year y	Calculated

LE$_y$	0	0	tCO2e/year	Leakage for project scenario p in year y	Calculated
ER$_y$	11,001	10,429	tCO2e/year	Emission Reduction during the year y	Calculated

Where, the value for 06/04/2020-05/04/2021 has been calculated using the following equation,

ERy = $\sum_{b,p}$ (N$_{b,p,y}$* U$_{p,y}$* SFS$_{p,b,y}$* NCV$_{b, fuel}$ * EF$_{fuel, CO2}$)− $\sum$ LE$_{p,y}$

$\qquad$ = 7,81,200* 78% * 0.0067 * 0.0282 * 94.6 – 0

$\qquad$ = 11,001 tCO$_2$e

For detailed calculations please refer to ER_Calculation Sheet_VPA3.

The below sample calculation has been done for the dwelling-district combination of Ger- Songinokhairkhan (for VPA 4)

Parameter	Value (1st year)	Value (2nd Year)	Unit	Description	Source
NCV$_{b,fuel}$	0.0282	0.0282	TJ/tonne	Net calorific value of the fuel that is substituted or reduced (IPCC default for coking coal)	IPCC default
EF$_{b,fuel CO2}$	94.6	94.6	tCO2/TJ	CO2 emission factor of the fuel that is substituted or reduced (coking coal)	IPCC default
N$_{p,y}$	933840	933840	Days	Project technology-days in the project database for project scenario p through year y	database
U$_{p,y}$	79%	78%	Fraction	Cumulative usage rate for technologies in project scenario j during year y, based on cumulative installation rate and drop-off rate	Monitored
P$_{b,y}$	0.0140	0.0140	tonne/HH-day	Specific fuel consumption for an individual technology in baseline scenario b during year y converted to tons/day	Fixed ex-ante, Baseline KPTs
P$_{p,y}$	0.0070	0.0070	tonne/HH-day	Specific fuel consumption for an individual technology in project scenario p during year y converted to tons/day	Project KPT
SFS$_{b,p,y}$	0.0070	0.0070	tonne/stove-day	Specific fuel savings for an individual project technology of baseline b/project p pair in year y	Calculated
LE$_y$	0	0	tCO2e/year	Leakage for project scenario p in year y	Calculated
ER$_y$	13,637	13,605	tCO2e/year	Emission Reduction during the year y	Calculated

Where, the value for 06/04/2020-05/04/2021 has been calculated using the following equation,

$ER_y = \sum_{b,p} (N_{b,p,y} * U_{p,y} * SFS_{p,b,y} * NCV_{b,fuel} * EF_{fuel, CO2}) - \sum LE_{p,y}$

      $= 9,33,840 * 79\% * 0.0070 * 0.0282 * 94.6 - 0$

      $= 13,637 \text{ tCO}_2\text{e}$

For detailed calculations please refer to ER_Calculation Sheet_VPA4.

The below sample calculation has been done for the dwelling-district combination of Ger- Songinokhairkhan (for VPA 5)

Parameter	Value (1st year)	Value (2nd Year)	Unit	Description	Source
$NCV_{b,fuel}$	0.0282	0.0282	TJ/tonne	Net calorific value of the fuel that is substituted or reduced (IPCC default for coking coal)	IPCC default
$EF_{b,fuel\ CO2}$	94.6	94.6	tCO2/TJ	CO2 emission factor of the fuel that is substituted or reduced (coking coal)	IPCC default
$N_{p,y}$	710400	710400	Days	Project technology-days in the project database for project scenario p through year y	database
$U_{p,y}$	77%	76%	Fraction	Cumulative usage rate for technologies in project scenario j during year y, based on cumulative installation rate and drop-off rate	Monitored
$P_{b,y}$	0.0135	0.0135	tonne/HH-day	Specific fuel consumption for an individual technology in baseline scenario b during year y converted to tons/day	Fixed ex-ante, Baseline KPTs
$P_{p,y}$	0.0058	0.0058	tonne/HH-day	Specific fuel consumption for an individual technology in project scenario p during year y converted to tons/day	Project KPT
$SFS_{b,p,y}$	0.0077	0.0077	tonne/stove-day	Specific fuel savings for an individual project technology of baseline b/project p pair in year y	Calculated
LE_y	0	0	tCO2e/year	Leakage for project scenario p in year y	Calculated
ER_y	11,224	10,994	tCO2e/year	Emission Reduction during the year y	Calculated

Where, the value for 06/04/2020-05/04/2021 has been calculated using the following equation,

$\underline{ER_y}$ = $\sum_{b,p}$ ($N_{b,p,y}$ * $U_{p,y}$ * $SFS_{p,b,y}$ * $NCV_{b, fuel}$ * $EF_{fuel, CO2}$) − $\sum LE_{p,y}$

       = 7,10,400 * 77% * 0.0077 * 0.0282 * 94.6 − 0

       = 11,224 tCO_2e

For detailed calculations please refer to ER_Calculation Sheet_VPA5.

E.2. Calculation of project value or estimation of project situation of each SDG Impact

Since the methodology refers to one equation for calculation of Emission Reductions, the baseline and project emissions are not calculated separately and the SDG Impacts are described in section E.1.

SDG 7: Affordable and Clean Energy

The number of active CEPs disseminated by the project, during year y is calculated as follows:

$CEP_{a,y}$ = No. of installed CEPs * $U_{p,y}$

For VPA 2

06/04/2020-05/04/2021

Combination	Installed CEPs	Average Usage Rate for MP ($U_{p,y}$)	Number of active CEPs ($CEP_{a,y}$)
Ger-Bayan	13	69%	9
Ger-Song	3,805	78%	2974
Ger-Other	6,961	78%	5431
House-Bayan	4	50%	2
House-Song	1,877	80%	1502
House-Other	4,254	79%	3360

06/04/2021-05/04/2022

Combination	Installed CEPs	Average Usage Rate for MP ($U_{p,y}$)	Number of active CEPs ($CEP_{a,y}$)
Ger-Bayan	13	69%	9
Ger-Song	3,805	75%	2854
Ger-Other	6,961	76%	5290
House-Bayan	4	50%	2
House-Song	1,877	79%	1477
House-Other	4,254	78%	3328

So, the project activity (VPA 2) leads to the dissemination of 13,278 active CEPs for 1st year and 12,960 active CEPs for year 2.

For VPA 3

06/04/2020-05/04/2021

Combination	Installed CEPs	Average Usage Rate for MP ($U_{p,y}$)	Number of active CEPs ($CEP_{a,y}$)
Ger-Bayan	12	83%	10
Ger-Song	4079	79%	3204
Ger-Other	5994	78%	4705
House-Bayan	5	80%	4
House-Song	2255	79%	1771
House-Other	3256	78%	2555

06/04/2021-05/04/2022

Combination	Installed CEPs	Average Usage Rate for MP ($U_{p,y}$)	Number of active CEPs ($CEP_{a,y}$)
Ger-Bayan	12	83%	10
Ger-Song	4079	77%	3143
Ger-Other	5994	76%	4533
House-Bayan	5	80%	4
House-Song	2255	77%	1729
House-Other	3256	74%	2423

So, the project activity (VPA 4) leads to the dissemination of 12249 active CEPs in year 1 and 11841 CEPs in year 2.

For VPA 4

06/04/2020-05/04/2021

Combination	Installed CEPs	Average Usage Rate for MP ($U_{p,y}$)	Number of active CEPs ($CEP_{a,y}$)
Ger-Bayan	12	83%	10

Ger-Song	3891	79%	3060
Ger-Other	6964	77%	5369
House-Bayan	5	80%	4
House-Song	1557	80%	1243
House-Other	3806	78%	2984

06/04/2021-05/04/2022

Combination	Installed CEPs	Average Usage Rate for MP ($U_{p,y}$)	Number of active CEPs ($CEP_{a,y}$)
Ger-Bayan	12	83%	10
Ger-Song	3891	78%	3053
Ger-Other	6964	75%	5238
House-Bayan	5	80%	4
House-Song	1557	78%	1222
House-Other	3806	74%	2812

So, the project activity (VPA 4) leads to the dissemination of 12670 active CEPs for year 1 and 12338 CEPs for year 2.

For VPA 5

06/04/2020-05/04/2021

Combination	Installed CEPs	Average Usage Rate for MP ($U_{p,y}$)	Number of active CEPs ($CEP_{a,y}$)
Ger-Bayan	1902	77%	1456
Ger-Song	2960	77%	2282
Ger-Other	6459	78%	5052
House-Bayan	808	80%	646
House-Song	1234	79%	971
House-Other	3409	74%	2525

06/04/2021-05/04/2022

Combination	Installed CEPs	Average Usage Rate for MP ($U_{p,y}$)	Number of active CEPs ($CEP_{a,y}$)
Ger-Bayan	1902	77%	1456
Ger-Song	2960	76%	2236
Ger-Other	6459	75%	4827
House-Bayan	808	77%	622

House-Song	1234	77%	947
House-Other	3409	74%	2539

So, the project activity (VPA 5) leads to the dissemination of 12933 active CEPs for year 1 and 12628 CEPs for year 2.

SDG 8: Decent Work and Economic Growth

The number of jobs created by the project activity is 4 (no specific calculation is needed) for each VPA (VPA 2-VPA 5) covered under the monitoring report.

E.3. Calculation of leakage

>>

Leakage has been assessed as per Option 2 of the methodology in the VPA-DD and it was concluded that the project developer shall monitor if the displaced baseline technologies are reused outside the project boundary in place of lower emitting technology or with a higher intensity than would have occurred in the absence of the project. For this, the CME has monitored the households during Usage Survey for leakage emissions by verifying if the baseline stove available during distribution was destroyed or is in use or was given away or sold.

E.4. Calculation of net benefits or direct calculation for each SDG Impact

SDG	SDG Impact	Baseline estimate	Project estimate	Net benefit
13	GHG emission reductions	**VPA 2:** 1,31,313 **VPA 3:** 1,12,226 **VPA 4:** 1,16,960 **VPA 5:** 1,27,725	-	**VPA 2:** 1,31,313 **VPA 3:** 1,12,226 **VPA 4:** 1,16,960 **VPA 5:** 1,27,725
7	The number of active stoves disseminated by the project, during year y	-	**VPA 2:** 13,278 **VPA 3:** 12,249 **VPA 4:** 12,670 **VPA 5:** 12,933 (06/04/2020-05/04/2021)	**VPA 2:** 13,278 **VPA 3:** 12,249 **VPA 4:** 12,670 **VPA 5:** 12,933 (06/04/2020-05/04/2021)

			VPA 2: 12,960 **VPA 3:** 11,841 **VPA 4:** 12,328 **VPA 5:** 12,628 (06/04/2021-05/04/2022)	**VPA 2:** 12,960 **VPA 3:** 11,841 **VPA 4:** 12,328 **VPA 5:** 12,628 (06/04/2021-05/04/2022)
8	Number of jobs created by the project activity	0	**VPA 2:** 4 **VPA 3:** 4 **VPA 4:** 4 **VPA 5:** 4 (06/04/2020-05/04/2021) **VPA 2**: 4 **VPA 3:** 4 **VPA 4:** 4 **VPA 5:** 4 (06/04/2021-05/04/2022)	**VPA 2:** 4 **VPA 3:** 4 **VPA 4:** 4 **VPA 5:** 4 (06/04/2020-05/04/2021) **VPA 2:** 4 **VPA 3:** 4 **VPA 4:** 4 **VPA 5:** 4 (06/04/2021-05/04/2022)

E.5. Comparison of actual SDG Impacts with estimates in approved PDD

SDG	Values estimated in ex ante calculation of approved PDD	Actual values[4] achieved during this monitoring period

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[4] Whenever emission reductions are capped, both the original and capped values used for calculations must be transparently reported. Use brackets to denote original values.

	for this monitoring period	
13	**VPA 2:** 1,84,654 **VPA 3:** 2,44,702 **VPA 4:** 1,73,996 **VPA 5:** 1,79,404	**VPA 2:** 1,31,318 **VPA 3:** 1,12,226 **VPA 4:** 1,16,960 **VPA 5:** 1,27,725
7	**VPA 2:** 15,222 **VPA 3:** 14,040 **VPA 4:** 14,611 **VPA 5:** 15,094	**VPA 2:** Year 1: 13,278 Year 2: 12,960 **VPA 3:** Year 1: 12,249 Year 2: 11,841 **VPA 4:** Year 1: 12,670 Year 2: 12,328 **VPA 5:** Year 1: 12,933 Year 2: 12,628
8	4 (VPA 2- VPA 5)	4 (VPA 2-VPA 5)

E.5.1. Explanation of calculation of value estimated ex ante calculation of approved PDD for this monitoring period

>>

The ex-ante PDD calculation have been proportionately calculated for the Monitoring period from the Total emission reduction estimated for year of operation of the VPA and number of crediting days in the current monitoring period.

To achieve a comparable value of estimates for this monitoring period for VPA1, these are the factors/values considered:

• Total ex ante estimated value for Year-1, Year-2 and Year 3 of operation of the VPA from start date of crediting period is considered

The estimation of ex ante value is made for 149 days (Year 1) which includes the period, 06/04/2020-01/09/2020, 365 days for the period 02/09/2020-01/09/2021 and 216 days (2/09/2021-05/04/2022) totaling to 730 days (which is crediting days for this monitoring period).

Details given in worksheet 'ER summary' of the ER calculation sheet.

E.6. Remarks on increase in achieved SDG Impacts from estimated value in approved PDD
>>
None of the SDG Impacts have an increased value from estimated PDD values.

SECTION F. SAFEGUARDS REPORTING

>>

Assessment Questions/ Requirements	Justification of Relevance (Yes/potentially/No)	How Project will achieve Requirements through design, management or risk mitigation.	Mitigation Measures added to the Monitoring Plan (if required)
Principle 1. Human Rights			
1. The Project Developer and the Project shall respect internationally proclaimed human rights and shall not be complicit in violence or human rights abuses of any kind as defined in the Universal Declaration of Human Rights	No No	The PO and CME both respect human rights and are not complicit in violence or human rights abuses.	Not Required
2. The Project shall not discriminate with		The VPA does not discriminate with regards to	Not Required

regards to participation and inclusion		participation and inclusion	
Principle 2. Gender Equality			
1. The Project shall not directly or indirectly lead to/contribute to adverse impacts on gender equality and/or the situation of women	No	The Project takes into account the Law on Promotion of Gender Equality of 2011[5]	Not Required
2. Projects shall apply the principles of non-discrimination, equal treatment, and equal pay for equal work	No	The project shall apply the principle of non-discrimination, equal treatment, and equal pay for equal work as per the Mongolian Law[6].	Not Required
3. The Project shall refer to the country's national gender strategy or equivalent national commitment to aid in assessing gender risks	No	The Project is designed to empower women and improve livelihoods. No gender risks are envisaged in the PoA.	Not Required
4. (where required) Summary of opinions and recommendations of an Expert Stakeholder(s)	No	As discussed above the PO/CME doesn't envisage any gender risks	

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[5] https://evaw-global-database.unwomen.org/-
/media/files/un%20women/vaw/full%20text/asia/law%20on%20gender%20equality%20-%20february%202011%20-
%20mongolian/law%20on%20gender%20equality%20-%20february%202011%20-%20mongolian.pdf?vs=2618
[6] https://www.ilo.org/dyn/natlex/docs/WEBTEXT/57592/65206/E99MNG01.htm

		from the project and therefore expert opinion on the same is not required.	
Principle 3. Community Health, Safety and Working Conditions			
1. The Project shall avoid community exposure to increased health risks and shall not adversely affect the health of the workers and the community	Yes	The VPA reduces exposure to indoor air pollutants and smoke levels, further reducing incidence of respiratory illness compared to heating on traditional biomass stoves using solid biomass fuel.	
Principle 4.1 Sites of Cultural and Historical Heritage			
Does the Project Area include sites, structures, or objects with historical, cultural, artistic, traditional or religious values or intangible forms of culture? >>	No	Since this is a Improved stove project distributed to households, there is no risk to cultural, historical, traditional or religious values. Not relevant	Not Required
Principle 4.2 Forced Eviction and Displacement			
Does the Project require or cause the physical or economic relocation of peoples (temporary or permanent, full or partial)? >>	No	The project is a distribution project for replacement of traditional inefficient stoves with Improved stoves. The	Not Required

		project shall not result in physical or economic relocation of people.	
Principle 4.3 Land Tenure and Other Rights			
a. Does the Project require any change, or have any uncertainties related to land tenure arrangements and/or access rights, usage rights or land ownership? b. For Projects involving land use tenure, are there any uncertainties with regards to land tenure, access rights, usage rights or land ownership? >>	No	The project is a distribution project for replacement of traditional inefficient stoves with Improved stoves. The project shall not result in any change to land use.	Not Required
Principle 4.4 - Indigenous people			
Are indigenous peoples present in or within the area of influence of the Project and/or is the Project located on land/territory claimed by indigenous peoples? >>	No	There is no risk to land/territory claimed by indigenous people. Since this is an Improved stove project which will be distributed to all willing customers within the project boundary.	Not Required
Principle 5. Corruption			
1. The Project shall not involve, be complicit in or inadvertently contribute to or	No	The PO and CME does not promote/ or is complicit in	Not Required

reinforce corruption or corrupt Projects		direct or indirect corruption.	
Principle 6.1 Labour Rights			
1. The Project Developer shall ensure that all employment is in compliance with national labour occupational health and safety laws and with the principles and standards embodied in the ILO fundamental conventions	No	The VPA does not involve any forced labour and the CME/PO ensures that all employment is in compliance with local labour regulations and laws[7].	Not required
	No		Not required
2. Workers shall be able to establish and join labour organisations	No	The PO/CME puts no constraints / limitation on employees to form a union.	Not required
3. Working agreements with all individual workers shall be documented and implemented and include: a) Working hours (must not exceed 48 hours per week on a regular basis), AND b) Duties and tasks, AND		The PO and CME's policies and employment contracts are compliant with the requirement	

[7] https://www.ilo.org/dyn/natlex/docs/WEBTEXT/57592/65206/E99MNG01.htm

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c) Remuneration (must include provision for payment of overtime), AND	No		
d) Modalities on health insurance, AND	No		Not required
e) Modalities on termination of the contract with provision for voluntary resignation by employee, AND		The PO/CME does not promote / or is complicit in child labour	Not required
f) Provision for annual leave of not less than 10 days per year, not including sick and casual leave.			
4. No child labour is allowed (Exceptions for children working on their families' property requires an Expert Stakeholder opinion)		Since this is a distribution project it is irrelevant for the project activity	
5. The Project Developer shall ensure the use of appropriate equipment, training of workers, documentation and reporting of accidents and incidents, and emergency preparedness and response measures			
Principle 6.2 Negative Economic Consequences			

1. Does the project cause negative economic consequences during and after project implementation?	No	No negative economic consequences are deemed applicable	Not required
Principle 7.1 Emissions			
Will the Project increase greenhouse gas emissions over the Baseline Scenario?	No	Since the project involves improved stove technology which is energy efficient as compared to traditional stoves used in baseline scenario, the VPA reduces GHG emissions relative to baseline scenario	Not required
Principle 7.2 Energy Supply			
Will the Project use energy from a local grid or power supply (i.e., not connected to a national or regional grid) or fuel resource (such as wood, biomass) that provides for other local users?	No	The project will use fossil fuel i.e coking coal briquettes which is also used in baseline scenario.	Not Required
Principle 8.1 Impact on Natural Water Patterns/Flows			

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Will the Project affect the natural or pre-existing pattern of watercourses, ground-water and/or the watershed(s) such as high seasonal flow variability, flooding potential, lack of aquatic connectivity or water scarcity?	No	The project not affect the natural or pre-existing pattern of watercourses, ground-water and/or the watershed(s) such as high seasonal flow variability, flooding potential, lack of aquatic connectivity or water scarcity. Hence not applicable.	Not Required
Principle 8.2 Erosion and/or Water Body Instability			
a. Could the Project directly or indirectly cause additional erosion and/or water body instability or disrupt the natural pattern of erosion? b. Is the Project's area of influence susceptible to excessive erosion and/or water body instability?	No	The VPA shall result in reduction in demand of biomass fuel in the region putting less pressure of forests for deforestation and will hence indirectly avoid erosion associated with tree cutting/ felling.	Not Required
Principle 9.1 Landscape Modification and Soil			
Does the Project involve the use of land and soil for production of crops or other products?	No	The project doesn't involve the use of land or soil for production of crops. Hence not applicable.	Not Required

Principle 9.2 Vulnerability to Natural Disaster			
Will the Project be susceptible to or lead to increased vulnerability to wind, earthquakes, subsidence, landslides, erosion, flooding, drought or other extreme climatic conditions?	No	Since this is a distribution project, this condition is not applicable.	Not Required
Principle 9.3 Genetic Resources			
Could the Project be negatively impacted by or involve genetically modified organisms or GMOs (e.g., contamination, collection and/or harvesting, commercial development, or take place in facilities or farms that include GMOs in their processes and production)?	No	The Project is not negatively impacted by the use of genetically modified organisms or GMOs. Therefore, not applicable.	Not Required
Principle 9.4 Release of pollutants			
Could the Project potentially result in the release of pollutants to the environment?	No	The beneficiaries are informed about proper waste handling and disposal of scrap material due to end of life or non-operational product.	Not Required
Principle 9.5 Hazardous and Non-hazardous Waste			

Will the Project involve the manufacture, trade, release, and/ or use of hazardous and non-hazardous chemicals and/or materials?	No	The Project does not involve the manufacture, trade, release, and/or use of hazardous chemicals and or materials. Not applicable	Not Required
Principle 9.6 Pesticides & Fertilisers			
Will the Project involve the application of pesticides and/or fertilisers?	No	The project does not involve the application of pesticides and/or fertilisers. Not applicable	Not Required
Principle 9.7 Harvesting of Forests			
Will the Project involve the harvesting of forests?	No	The VPA does not involve harvesting of forests.	Not Required
Principle 9.8 Food			
Does the Project modify the quantity or nutritional quality of food available such as through crop regime alteration or export or economic incentives?	No	The project does not involve modification to food. Hence this condition is not applicable.	Not Required
Principle 9.9 Animal husbandry			

Will the Project involve animal husbandry?	No	The project does not involve animal husbandry. Not applicable	Not Required
Principle 9.10 High Conservation Value Areas and Critical Habitats			
Does the Project physically affect or alter largely intact or High Conservation Value (HCV) ecosystems, critical habitats, landscapes, key biodiversity areas or sites identified?	No	The project doesn't affect the biodiversity. Not applicable	Not Required
Principle 9.11 Endangered Species			
a. Are there any endangered species identified as potentially being present within the Project boundary (including those that may route through the area)? b. Does the Project potentially impact other areas where endangered species may be present through transboundary affects?	No	The project is related to distribution and does not affect the endangered species in the area. Not applicable	Not Required

SECTION G. STAKEHOLDER INPUTS AND LEGAL DISPUTES

G.1. List all Inputs and Grievances which have been received via the Continuous Input and Grievance Mechanism together with their respective responses/mitigations.

>> During the monitoring period no grievances received from any stakeholders.

G.2. Report on any stakeholder mitigations that were agreed to be monitored.

>> No stakeholders mitigations were identified for monitoring of this VPA. Therefore,

this is not required

G.3. Provide details of any legal contest that has arisen with the project during the monitoring period

>> No legal contest arisen during the monitoring period.

Revision History

Version	Date	Remarks
1.1	14 October 2020	Hyperlinked section summary to enable quick access to key sections Improved clarity on Key Project Information Section for POA monitoring Forward action request section Improved Clarity on SDG contribution/SDG Impact term used throughout Clarity on safeguard reporting Clarity on design changes Leakage section added for VER/CER projects Addition of Comparison of monitored parameters with last monitoring period Provision of an accompanying Guide to help the user understand detailed rules and requirements
1.0	10 July 2017	Initial adoption