Gold Standard for the Global Goals

TEMPLATE

MONITORING REPORT

PUBLICATION DATE **14.10.2020**

VERSION **v. 1.1**

RELATED SUPPORT **- TEMPLATE GUIDE Monitoring Report v. 1.1**

This document contains the following Sections

KEY PROJECT INFORMATION

This template has been revised to aid a consistent interpretation and to better support project developers submitting documentation for certification. Please read the accompanying guide to understand how to complete this template accurately.
TEMPLATE GUIDE Monitoring Report v. 1.1

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

GS ID of Programme	GS 10818
Title of Programme	"Dissemination of Improved Cookstoves in India by Greenway"
Version of POA-DD applicable to this monitoring report	5.1
Name and GS ID of fully Validated CPA/VPAs (i.e. non compliance check)	VPA Titles PoA Title: "Dissemination of Improved Cookstoves in India by Greenway" VPA Titles: 1. VPA 01: GS10818 - Dissemination of Improved Cookstoves in India by Greenway - Dissemination of Improved Cookstoves in Karnataka by Greenway - VPA001 (GS 10821) 2. VPA 02: GS10818 - Dissemination of Improved Cookstoves in India by Greenway - Dissemination of Improved Cookstoves in Karnataka by Greenway - VPA002 (GS 10825) 3. VPA 03: GS10818 - Dissemination of Improved Cookstoves in India by Greenway - Dissemination of Improved Cookstoves in Karnataka by Greenway - VPA003 (GS 11218) 4. VPA 04: GS10818 - Dissemination of Improved Cookstoves in India by Greenway - Dissemination of Improved Cookstoves in Karnataka by Greenway - VPA004 (GS 11309)

5. VPA 05: GS10818 - Dissemination of Improved Cookstoves in India by Greenway - Dissemination of Improved Cookstoves in Karnataka by Greenway - VPA005 (GS 11310)

6. VPA 06: GS10818 - Dissemination of Improved Cookstoves in India by Greenway - Dissemination of Improved Cookstoves in Karnataka by Greenway - VPA006 (GS 11311)

7. VPA 07: GS10818 - Dissemination of Improved Cookstoves in India by Greenway - Dissemination of Improved Cookstoves in Karnataka by Greenway - VPA007 (GS 11312)

8. VPA 08: GS10818 - Dissemination of Improved Cookstoves in India by Greenway - Dissemination of Improved Cookstoves in Karnataka by Greenway - VPA008 (GS 11313)

9. VPA 09: GS10818 - Dissemination of Improved Cookstoves in India by Greenway - Dissemination of Improved Cookstoves in Karnataka by Greenway - VPA009 (GS11628)

10. VPA 10: GS10818 - Dissemination of Improved Cookstoves in India by Greenway - Dissemination of Improved Cookstoves in Karnataka by Greenway - VPA010 (GS11629)

11. VPA 11: GS10818 - Dissemination of Improved Cookstoves in India by Greenway - Dissemination of Improved Cookstoves in Karnataka by Greenway - VPA011 (GS11630)

12. VPA 12: GS10818 - Dissemination of Improved Cookstoves in India by Greenway - Dissemination of

	Improved Cookstoves in Karnataka by Greenway - VPA012 (GS 11631) 13. VPA 13: GS10818 - Dissemination of Improved Cookstoves in India by Greenway - Dissemination of Improved Cookstoves in Karnataka by Greenway - VPA013 (GS11632) 14. VPA 14: GS10818 - Dissemination of Improved Cookstoves in India by Greenway - Dissemination of Improved Cookstoves in Karnataka by Greenway - VPA014 (GS 11633) 15.: VPA015: GS10818 - Dissemination of Improved Cookstoves in India by Greenway - Dissemination of Improved Cookstoves in Karnataka by Greenway - VPA015 (GS 11634) GS IDs: GS 10821, GS 10825, GS 11218, GS 11309, GS 11310, GS 11311, GS 11312, GS 11313, GS 11628, GS 11629, GS 11630, GS 11631, GS 11632, GS 11633, GS 11634 (VPA 016-026 were self-included and design certified by GS and covered under the monitoring period)

Key Project Information

GS ID (s) of Project (s)	GS IDs: GS 10821, GS 10825, GS 11218, GS 11309, GS 11310, GS 11311, GS 11312, GS 11313, GS 11628, GS 11629, GS 11630, GS 11631, GS 11632, GS 11633, GS 11634, GS 12123, GS 12124, GS 12125, GS 12126, GS 12127, GS 12128, GS 12129, GS 12130, GS 12131, GS 12132, GS 12141
Title of the project (s) covered by monitoring report	VPA Titles:

1. VPA 01: GS10818 - Dissemination of Improved Cookstoves in India by Greenway - Dissemination of Improved Cookstoves in Karnataka by Greenway - VPA001 (GS 10821)

2. VPA 02: GS10818 - Dissemination of Improved Cookstoves in India by Greenway - Dissemination of Improved Cookstoves in Karnataka by Greenway - VPA002 (GS 10825)

3. VPA 03: GS10818 - Dissemination of Improved Cookstoves in India by Greenway - Dissemination of Improved Cookstoves in Karnataka by Greenway - VPA003 (GS 11218)

4. VPA 04: GS10818 - Dissemination of Improved Cookstoves in India by Greenway - Dissemination of Improved Cookstoves in Karnataka by Greenway - VPA004 (GS 11309)

5. VPA 05: GS10818 - Dissemination of Improved Cookstoves in India by Greenway - Dissemination of Improved Cookstoves in Karnataka by Greenway - VPA005 (GS 11310)

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13. VPA 13: GS10818 - Dissemination of Improved Cookstoves in India by Greenway - Dissemination of Improved Cookstoves in Karnataka by Greenway - VPA013 (GS11632)

14. VPA 14: GS10818 - Dissemination of Improved Cookstoves in India by Greenway - Dissemination of Improved Cookstoves in Karnataka by Greenway - VPA014 (GS 11633)

15.: VPA015: GS10818 - Dissemination of Improved Cookstoves in India by Greenway - Dissemination of Improved Cookstoves in Karnataka by Greenway - VPA015 (GS 11634)

16.: VPA016: GS10818 - Dissemination of Improved Cookstoves in India by

Greenway - Dissemination of Improved Cookstoves in Karnataka by Greenway - VPA016 (GS 12123)
17.: VPA017: GS10818 - Dissemination of Improved Cookstoves in India by Greenway - Dissemination of Improved Cookstoves in Karnataka by Greenway - VPA017 (GS 12124)
18.: VPA018: GS10818 - Dissemination of Improved Cookstoves in India by Greenway - Dissemination of Improved Cookstoves in Karnataka by Greenway - VPA018 (GS 12125)
19.: VPA019: GS10818 - Dissemination of Improved Cookstoves in India by Greenway - Dissemination of Improved Cookstoves in Karnataka by Greenway - VPA019 (GS 12126)
20.: VPA020: GS10818 - Dissemination of Improved Cookstoves in India by Greenway - Dissemination of Improved Cookstoves in Karnataka by Greenway - VPA020(GS 12127)
21.: VPA021: GS10818 - Dissemination of Improved Cookstoves in India by Greenway - Dissemination of Improved Cookstoves in Karnataka by Greenway - VPA021 (GS 12128)
22.: VPA022: GS10818 - Dissemination of Improved Cookstoves in India by Greenway - Dissemination of Improved Cookstoves in Karnataka by Greenway - VPA022 (GS 12129)
23.: VPA023: GS10818 - Dissemination of Improved Cookstoves in India by Greenway - Dissemination of Improved Cookstoves in Karnataka by Greenway - VPA023 (GS 12130)
24.: VPA024: GS10818 - Dissemination of Improved Cookstoves in India by Greenway - Dissemination of Improved Cookstoves in Karnataka by Greenway - VPA024(GS 12131)
25.: VPA025: GS10818 - Dissemination of Improved Cookstoves in India by Greenway - Dissemination of

	Improved Cookstoves in Karnataka by Greenway - VPA025 (GS 12132) 26.: VPA026: GS10818 - Dissemination of Improved Cookstoves in India by Greenway - Dissemination of Improved Cookstoves in Karnataka by Greenway - VPA026 (GS 12141)
Version number of the PDD/VPA-DD (s) applicable to this monitoring report	<table><tr><th>VPA No.</th><th>Applicable Version</th></tr><tr><td>VPA#001</td><td>08</td></tr><tr><td>VPA#002-015</td><td>3.0</td></tr><tr><td>VPA#016-026</td><td>2.0</td></tr></table>
Version number of the monitoring report	4.0
Completion date of the monitoring report	30/12/2023
Date of project design certification	PoA & VPA#001: 16/09/2021 VPA#002-0015: 03/11/2022 VPA#016-026: 19/06/2023
Date of Last Annual Report	N/A (The VPA#01-015 already verified and due date for VPA#016-026 is 31/12/2023 , annual reports will be submitted as per the GS requirements)
Monitoring period number	01 For (VPA#016-026) 02 for (VPA#01-15)
Duration of this monitoring period	29/04/2022 to 31/05/2023 (Both dates included)
Project Representative	Greenway Grameen Infra Pvt Ltd
Host Country	India
Activity Requirements applied	☒ Community Services Activities ☐ Renewable Energy Activities ☐ Land Use and Forestry Activities/Risks & Capacities ☐ N/A
Methodology (ies) applied and version number	AMS.II.G version 12

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	Emission Reduction	VPA	2022	2023	Total ER (ex-post)	tCO2e
		VPA1	24,540	11,922	36,462	
		VPA 2	24,540	11,922	36,462	
		VPA 3	24,540	11,922	36,462	
		VPA 4	24,540	11,922	36,462	
		VPA 5	24,540	11,922	36,462	
		VPA 6	24,540	11,922	36,462	
		VPA 7	24,540	11,922	36,462	
		VPA 8	24,540	11,922	36,462	
		VPA 9	24,540	11,922	36,462	
		VPA 10	24,540	11,922	36,462	
		VPA 11	24,540	11,922	36,462	
		VPA 12	24,540	11,922	36,462	
		VPA 13	24,540	15,001	39,541	
		VPA 14	24,540	11,922	36,462	
		VPA 15	24,540	15,001	39,541	
		VPA 16	21,152	15,001	36,153	

<table>
<tr><td></td><td></td><td>
<table>
<tr><td>VPA 17</td><td>18,718</td><td>15,001</td><td>33,719</td></tr>
<tr><td>VPA 18</td><td>16,713</td><td>11,922</td><td>28,635</td></tr>
<tr><td>VPA 19</td><td>14,897</td><td>11,922</td><td>26,819</td></tr>
<tr><td>VPA 20</td><td>12,008</td><td>11,922</td><td>23,930</td></tr>
<tr><td>VPA 21</td><td>10,519</td><td>11,922</td><td>22,441</td></tr>
<tr><td>VPA 22</td><td>8,805</td><td>11,922</td><td>20,727</td></tr>
<tr><td>VPA 23</td><td>6,228</td><td>11,922</td><td>18,150</td></tr>
<tr><td>VPA 24</td><td>3,121</td><td>11,922</td><td>15,043</td></tr>
<tr><td>VPA 25</td><td>254</td><td>10,719</td><td>10,973</td></tr>
<tr><td>VPA 26</td><td>-</td><td>3,072</td><td>3,072</td></tr>
<tr><td>Total</td><td>480,515</td><td>312,235</td><td>792,750</td></tr>
</table>
</td><td></td></tr>
<tr><td>SDG-3: Good Health and Well Being</td><td>Mortality rate attributed to household and ambient air pollution</td><td>53%</td><td>%</td></tr>
<tr><td>SDG-5: Gender Equality</td><td>Time spent collecting fuelwood from the forests and for cooking.</td><td>2.62 hours of time saving in the fuel wood collection (Same value applicable for all VPAs)</td><td>Hours/ week/HH</td></tr>
<tr><td>SDG 7- Affordable and Clean energy</td><td>Number of project households predominantly using clean cooking devices such as Improved Cook Stoves</td><td>
<table>
<tr><th>VPA Number</th><th>2022</th><th>2023</th></tr>
<tr><td>VPA1</td><td>15,500</td><td>15,500</td></tr>
<tr><td>VPA 2</td><td>15,500</td><td>15,500</td></tr>
<tr><td>VPA 3</td><td>15,500</td><td>15,500</td></tr>
<tr><td>VPA 4</td><td>15,500</td><td>15,500</td></tr>
<tr><td>VPA 5</td><td>15,500</td><td>15,500</td></tr>
<tr><td>VPA 6</td><td>15,500</td><td>15,500</td></tr>
<tr><td>VPA 7</td><td>15,500</td><td>15,500</td></tr>
<tr><td>VPA 8</td><td>15,500</td><td>15,500</td></tr>
<tr><td>VPA 9</td><td>15,500</td><td>15,500</td></tr>
<tr><td>VPA 10</td><td>15,500</td><td>15,500</td></tr>
<tr><td>VPA 11</td><td>15,500</td><td>15,500</td></tr>
<tr><td>VPA 12</td><td>15,500</td><td>15,500</td></tr>
<tr><td>VPA 13</td><td>15,500</td><td>15,500</td></tr>
</table>
</td><td>Households</td></tr>
</table>

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<td></td>
<td></td>
<td>
<table>
<tr><td>VPA 14</td><td>15,500</td><td>15,500</td></tr>
<tr><td>VPA 15</td><td>15,500</td><td>15,500</td></tr>
<tr><td>VPA 16</td><td>15,500</td><td>15,500</td></tr>
<tr><td>VPA 17</td><td>15,500</td><td>15,500</td></tr>
<tr><td>VPA 18</td><td>15,500</td><td>15,500</td></tr>
<tr><td>VPA 19</td><td>15,500</td><td>15,500</td></tr>
<tr><td>VPA 20</td><td>15,500</td><td>15,500</td></tr>
<tr><td>VPA 21</td><td>15,500</td><td>15,500</td></tr>
<tr><td>VPA 22</td><td>15,500</td><td>15,500</td></tr>
<tr><td>VPA 23</td><td>15,500</td><td>15,500</td></tr>
<tr><td>VPA 24</td><td>15,500</td><td>15,500</td></tr>
<tr><td>VPA 25</td><td>5,124</td><td>10,376</td></tr>
<tr><td>VPA 26</td><td>0</td><td>9,334</td></tr>
</table>
Total: 396,834 (HHs using in vintage 2022 & 2023 vintages)
</td>
<td></td>
</tr>
<tr>
<td>SDG 8- Promote sustained, inclusive, and sustainable economic growth, full and productive employment, and decent work for all</td>
<td>Number of Employment (Personnel are responsible for all VPAs except VPA 001)</td>
<td>
<table>
<tr><th>VPA ID</th><th>Vintage
2022</th><th>Vintage
2023</th></tr>
<tr><td>VPA 1</td><td>0</td><td>0</td></tr>
<tr><td>VPA 2</td><td>101</td><td>101</td></tr>
<tr><td>VPA 3</td><td>101</td><td>101</td></tr>
<tr><td>VPA 4</td><td>101</td><td>101</td></tr>
<tr><td>VPA 5</td><td>101</td><td>101</td></tr>
<tr><td>VPA 6</td><td>101</td><td>101</td></tr>
<tr><td>VPA 7</td><td>101</td><td>101</td></tr>
<tr><td>VPA 8</td><td>101</td><td>101</td></tr>
<tr><td>VPA 9</td><td>101</td><td>101</td></tr>
<tr><td>VPA 10</td><td>101</td><td>101</td></tr>
<tr><td>VPA 11</td><td>101</td><td>101</td></tr>
<tr><td>VPA 12</td><td>101</td><td>101</td></tr>
<tr><td>VPA 13</td><td>101</td><td>101</td></tr>
<tr><td>VPA 14</td><td>101</td><td>101</td></tr>
<tr><td>VPA 15</td><td>101</td><td>101</td></tr>
<tr><td>VPA 16</td><td>115</td><td>115</td></tr>
<tr><td>VPA 17</td><td>115</td><td>115</td></tr>
<tr><td>VPA 18</td><td>115</td><td>115</td></tr>
<tr><td>VPA 19</td><td>115</td><td>115</td></tr>
<tr><td>VPA 20</td><td>115</td><td>115</td></tr>
<tr><td>VPA 21</td><td>115</td><td>115</td></tr>
<tr><td>VPA 22</td><td>115</td><td>115</td></tr>
<tr><td>VPA 23</td><td>115</td><td>115</td></tr>
<tr><td>VPA 24</td><td>115</td><td>115</td></tr>
<tr><td>VPA 25</td><td>0</td><td>115</td></tr>
<tr><td>VPA 26</td><td>0</td><td>115</td></tr>
</table>
</td>
<td>Number of Employment</td>
</tr>
</table>

Table 2 – Product Vintages

<table>
<tr><th></th><th></th><th colspan="3">Amount Achieved</th></tr>
<tr><th>Start Dates</th><th>End Dates</th><th>ERs</th><th>…</th><th>…</th></tr>
<tr><td>29/04/2022</td><td>31/12/2022</td><td>
<table>
<tr><td></td><td>2,022</td></tr>
<tr><td>VPA1</td><td>24,540</td></tr>
<tr><td>VPA 2</td><td>24,540</td></tr>
<tr><td>VPA 3</td><td>24,540</td></tr>
<tr><td>VPA 4</td><td>24,540</td></tr>
<tr><td>VPA 5</td><td>24,540</td></tr>
<tr><td>VPA 6</td><td>24,540</td></tr>
<tr><td>VPA 7</td><td>24,540</td></tr>
<tr><td>VPA 8</td><td>24,540</td></tr>
<tr><td>VPA 9</td><td>24,540</td></tr>
<tr><td>VPA 10</td><td>24,540</td></tr>
<tr><td>VPA 11</td><td>24,540</td></tr>
<tr><td>VPA 12</td><td>24,540</td></tr>
<tr><td>VPA 13</td><td>24,540</td></tr>
<tr><td>VPA 14</td><td>24,540</td></tr>
<tr><td>VPA 15</td><td>24,540</td></tr>
<tr><td>VPA 16</td><td>21,152</td></tr>
<tr><td>VPA 17</td><td>18,718</td></tr>
<tr><td>VPA 18</td><td>16,713</td></tr>
<tr><td>VPA 19</td><td>14,897</td></tr>
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<tr><td>VPA 24</td><td>3,121</td></tr>
<tr><td>VPA 25</td><td>254</td></tr>
<tr><td>VPA 26</td><td>0</td></tr>
<tr><td>Total</td><td>480,515</td></tr>
</table>
</td><td></td><td></td></tr>
<tr><td>01/01/2023</td><td>31/05/2023</td><td>
<table>
<tr><td></td><td>2,023</td></tr>
<tr><td>VPA1</td><td>11,922</td></tr>
<tr><td>VPA 2</td><td>11,922</td></tr>
<tr><td>VPA 3</td><td>11,922</td></tr>
<tr><td>VPA 4</td><td>11,922</td></tr>
<tr><td>VPA 5</td><td>11,922</td></tr>
<tr><td>VPA 6</td><td>11,922</td></tr>
<tr><td>VPA 7</td><td>11,922</td></tr>
<tr><td>VPA 8</td><td>11,922</td></tr>
<tr><td>VPA 9</td><td>11,922</td></tr>
<tr><td>VPA 10</td><td>11,922</td></tr>
<tr><td>VPA 11</td><td>11,922</td></tr>
</table>
</td><td></td><td></td></tr>
</table>

		VPA 12	11,922		
		VPA 13	15,001		
		VPA 14	11,922		
		VPA 15	15,001		
		VPA 16	15,001		
		VPA 17	15,001		
		VPA 18	11,922		
		VPA 19	11,922		
		VPA 20	11,922		
		VPA 21	11,922		
		VPA 22	11,922		
		VPA 23	11,922		
		VPA 24	11,922		
		VPA 25	10,719		
		VPA 26	3,072		
		Total	**312,235**		

SECTION A. DESCRIPTION OF PROJECT

A.1. General description of project

>> The VPAs (1-26) covered by the monitoring report under the PoA GS 10818 include dissemination of Improved Cookstoves by Greenway in Karnataka, a state of India. The project is eligible under the CDM methodology AMS.II.G. version 12.0. The VPAs disseminated improved cook stoves (ICS) – to households within Karnataka. By providing clean cooking solutions, the project is ensuring that rural households, who depend on firewood for their daily cooking needs, consume less firewood. As a result, there is a reduction of the need of firewood and in the carbon dioxide emissions from the combustion process. Moreover, it ensures that the household woman spends less time in collecting firewood and cooking. She has more time away from drudgery which can be used in productive economic labor. And a healthy indoor environment is maintained for the household members.

Access to energy is still a huge challenge for rural India. Over 54%[1] Indians use traditional biomass cookstoves for their cooking needs. The widespread use of traditional cookstoves poses serious risks to health and women's empowerment which are avoidable if they get access to modern fuel-efficient cookstoves. Access to these basic resources and amenities is a prerequisite for healthy living and sanitation in rural India. It is also interconnected with the health and economic well-being of the people. Greenway Grameen Infra Private Limited is India's largest manufacturer of improved biomass cookstoves. These devices are designed with patented, air regulation technology, and ensure a high degree of combustion for the fuel used. Greenway aims to continually develop products that solve some of the most pressing needs of rural households.

[1] https://en.gaonconnection.com/cooking-gas-lpg-firewood-ujjwala-scheme-rural-india-women-health-risks-air-pollution/#:~:text=54%25%20Indian%20households%20still%20using,Your%20Connection%20with%20Rural%20India

In addition to reducing Greenhouse Gas emissions, and contributing to the mitigation of climate change, this project will also provide the following benefits to local communities:

- Reduced deforestation and degradation of surrounding forests, as less wood will be needed to cook;
- Reduced soil erosion and nutrient loss as trees protect the land;
- Reduced risk of flooding in hilly areas as trees and plants on slopes soak up rain;
- Reduced poverty, as the efficient wood stove reduces annual expenditure on cooking fuels;
- Reduced adverse health effects associated with smoke inhalation;
- Reduced cooking and wood collection time, which will allow more time to be spent on other important household tasks and/or supervising children;

  In line to its vision of delivering high impact related to health, savings and convenience, Greenway has undertaken an extensive distribution programme to create a nation-wide access of Improved Cookstoves for low-income consumers. Greenway is planning to support this programme through an innovative approach of climate financing, helping households to overcome barriers like affordability, availability, and financing. Greenway is providing modern energy-efficient replacements for traditional three stone stoves (chulhas) while delivering 65% fuel savings and 70% smoke reduction. These modern cookstoves can run on all kinds of solid biomass fuels.

Greenway clean cookstoves can play a vital role in eliminating severe health impacts and resource inefficiency arising out of traditional cookstoves. Greenway cookstoves minimize noxious CO, PM and GHG emissions in the kitchen leading to better health outcomes. This impacts both active beneficiaries such as women, who are engaged in cooking and passive beneficiaries such as children, elderly and disabled. The passive beneficiaries are usually confined to the home and suffer from indoor air pollution. Moreover, they facilitate income savings due to low fuel consumption and combating climate change by reducing deforestation.

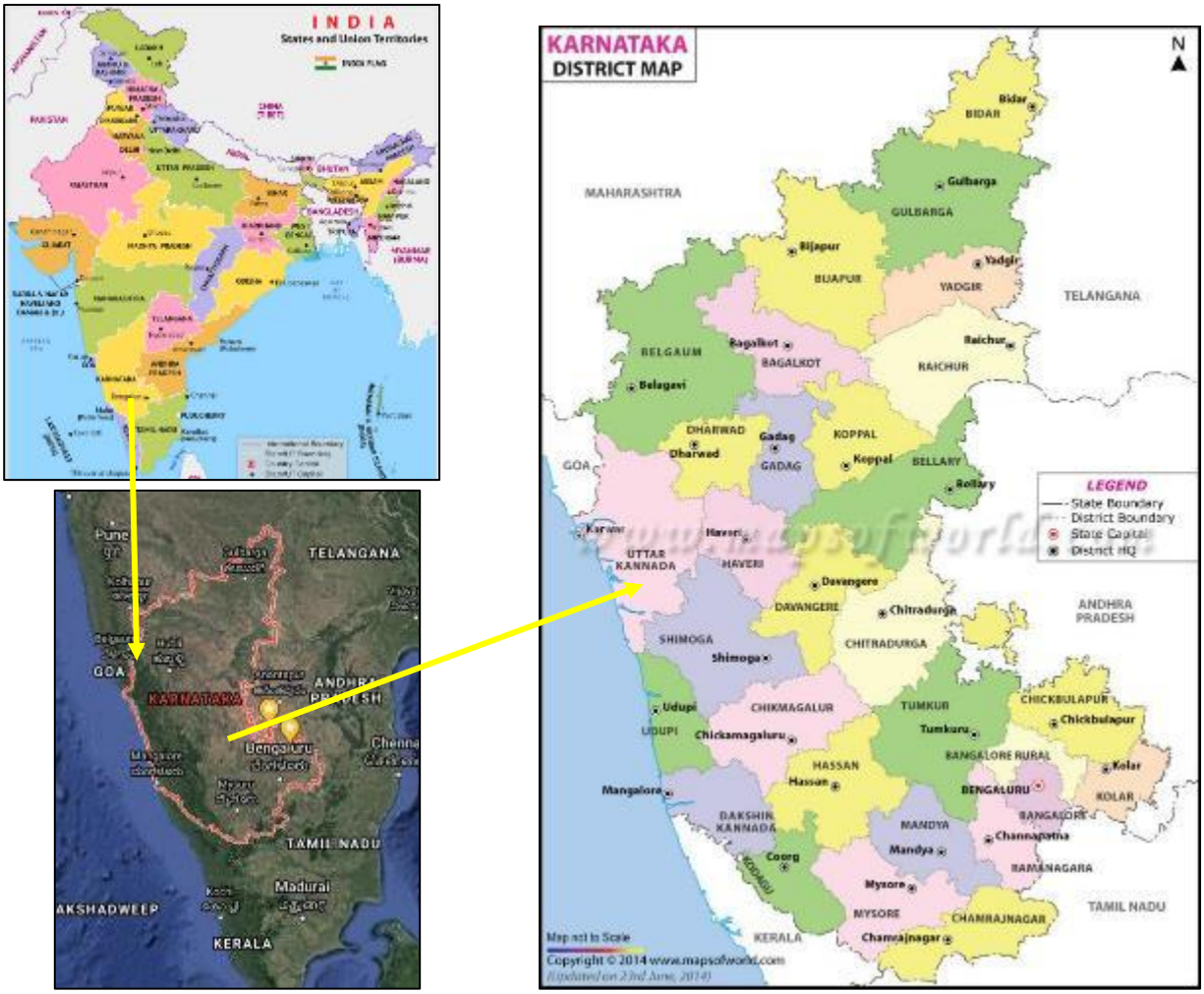
Fig: A project beneficiary using the ICS

The VPAs have contributed in achieving SDGs including, SDG-3: Good Health and Well Being, SDG-5: Gender Equality, SDG 7-, SDG 8 (except VPA#01) Affordable and Clean energy and SDG-13: Climate Action. The programme would result in GHG emission reductions and other impact outcomes which can be monetized, and the revenue collected will benefit the scaling up of the project and thereby assist households who are still using traditional stoves.

A.2. Location of project

>>The locations of all 26 VPAs is in Karnataka state of India, in various districts. The location is shown below:

Geographical coordinates of the Karnataka state (15.317° N, 75.714° E)



A.3. Reference of applied methodology

>> CDM approved small-scale methodology-AMS.II.G is chosen for the PoA.

AMS-II.G.: "Energy efficiency measures in thermal applications of non-renewable biomass" – (Version 12.0)

The project adheres to the following conditions making it methodologically eligible:

Methodological tools

Tool19: Demonstration of additionality of microscale project activities (version 09.0)
Tool21: Demonstration of additionality of small-scale project activities (version 13.1)
Tool20: Assessment of debundling for small-scale project activities (version 04.0)

Standard for sampling and surveys for CDM project activities and programmes of activities (version 09.0).

A.4. Crediting period of project

>>5 years, renewable twice

PoA Period: 14/05/2020 - 13/05/2025

Crediting period of VPAs covered by the monitoring report are tabulated below:

VPA No.	Crediting Period
VPA#001	14/05/2020 - 13/05/2025
VPA#002	03/11/2020 - 02/11/2025
VPA#003	03/11/2020 - 02/11/2025
VPA#004	03/11/2020 - 02/11/2025
VPA#005	15/12/2020-14/12/2025
VPA#006	18/01/2021-17/01/2026
VPA#007	12/02/2021-11/02/2026
VPA#008	24/03/2021-23/03/2026
VPA#009	02/09/2021-01/09/2026
VPA#010	27/09/2021-16/09/2026
VPA#011	19/10/2021-18/10/2026
VPA#012	20/11/2021-19/10/2026
VPA#013	20/12/2021-19/12/2026
VPA#014	21/01/2022-20/01/2027
VPA#015	01/03/2022 - 01/03/2027
VPA#016	19/05/2022 – 18/05/2027
VPA#017	16/06/2022 -15/06/2027
VPA#018	08/07/2022-07/07/2027
VPA#019	24/07/2022-23/07/2027
VPA#020	16/08/2022-15/08/2027
VPA#021	09/09/2022-08/09/2027
VPA#022	24/09/2022-23/09/2027
VPA#023	18/10/2022-17/10/2027
VPA#024	14/11/2022-13/11/2027
VPA#025	19/12/2022-18/12/2027

VPA#026	08/02/2023-07/02/2028

SECTION B. IMPLEMENTATION OF PROJECT

B.1. Description of implemented project

>> Stoves disseminated under this POA and the VPAs covered under this monitoring report are targeted towards rural and semi- urban households of Karnataka state of India. These households are using traditional, unimproved cookstoves and open fires for cooking in baseline. The VPAs under the PoA have distributed improved wood cookstove to households, a portable improved-efficiency stove manufactured by Greenway. The ICS will have an average lifespan of 7 years and thermal efficiency of about 38% (Designed Efficiency).

ICSs are more efficient than conventional firewood stoves as they reduce heat loss and improve heat transfer and combustion efficiency. The ICS models are fuel efficient, resulting in a decrease in fuel use in comparison to conventional pre-project stoves while also reducing particulate matter and carbon emissions. Design considerations have also incorporated ergonomics and safety.

The PoA continually assessed biomass stove technology options with the goal of providing the high performing, affordable and locally appropriate technologies to the local environments when possible.

Below are the details of the distributed ICS, *Greenway Jumbo stove.*

The ICS cooking system is made of a fuel chamber for combusting the renewable biomass. The pot-rest is above the fuel chamber. The stove has one air inlet and weighs approximately 3782 grams.

Fig. Greenway Jumbo ICS

In the project, a record keeping system is being maintained and unique identification is given to all the ICSs in the project. The user information is collected through a defined process and the Beneficiary Agreement is also generated and compiled in the distribution records. This includes user name, identification number and address/location of the user's house, stove unique serial code and distribution date. The record keeping system ensures that each ICS can be traced to project to avoid double counting. Each VPA (From 1-25) has distributed 15,500 ICS and the distribution in VPA#026 was 9,334 ICS till the end of monitoring period. Each VPA was supposed to distribute 15,500 ICS as the VPA DDs, the distribution of process of VPA#001-0026 was completed and VPA#026 the distribution is undergoing and therefore only the SDGs were claimed up to the distribution at the end of monitoring period. In total 396,834 ICS were distributed during the monitoring period.

Fig: Monitoring Survey

The ICSs under the 26 VPAs clubbed for the verification/performance review were distributed in a phased manner. The database consisting of each ICS under the project activity is part of ER spreadsheet. The database includes the details of HHs, address, location inter alia as per the GS requirements.

B.1.1 Forward Action Requests

>>NO FAR were raised during the design review of PoA and VPA#001, the VPA#002-15 were validated along the first verification. During the design review of VPA#16-026 inclusions following FAR was raised.

FAR#1: 5.1.39- Transparent, annual update reports need to be provided for Projects that have achieved the Project Design Certification stage or have successfully transitioned to Gold Standard for the Global Goals. An annual report shall be submitted for each monitoring year by end of next calendar year for which verification is not completed. If a verification is in progress but not completed, then an Annual Report is still required by the end of calendar year.
CME will submit the annual reports before the end of calendar years in case the verification is not completed before the end of Dec 2023. The VPAs (016-026) were design certified on 19/06/2023 therefore the deadline of first annual report will be 31/12/2023 subject to no verification submission. Annual reports will be submitted as per the GS requirements before the end of each calendar year.

B.2. Post-Design Certification changes

>>

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

>>

No deviation applied or sought during the current performance review.

B.2.2. Corrections

>>

Not applicable

B.2.3. Changes to start date of crediting period

>> Not applicable

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

>>

Not applicable

B.2.5. Changes to project design of approved project

>> Not applicable

SECTION C. DESCRIPTION OF MONITORING SYSTEM APPLIED BY THE PROJECT

A. Total Sales Record

>> Sales records are maintained continuously by the Project Proponent (PP). These records provide a summary of daily sales and are entered into electronic databases using a mobile app. This eventually helps in calculating the stove age for each stove under the VPAs, which is further considered for the emission reduction calculations. The calculation is demonstrated in the ER spreadsheet.

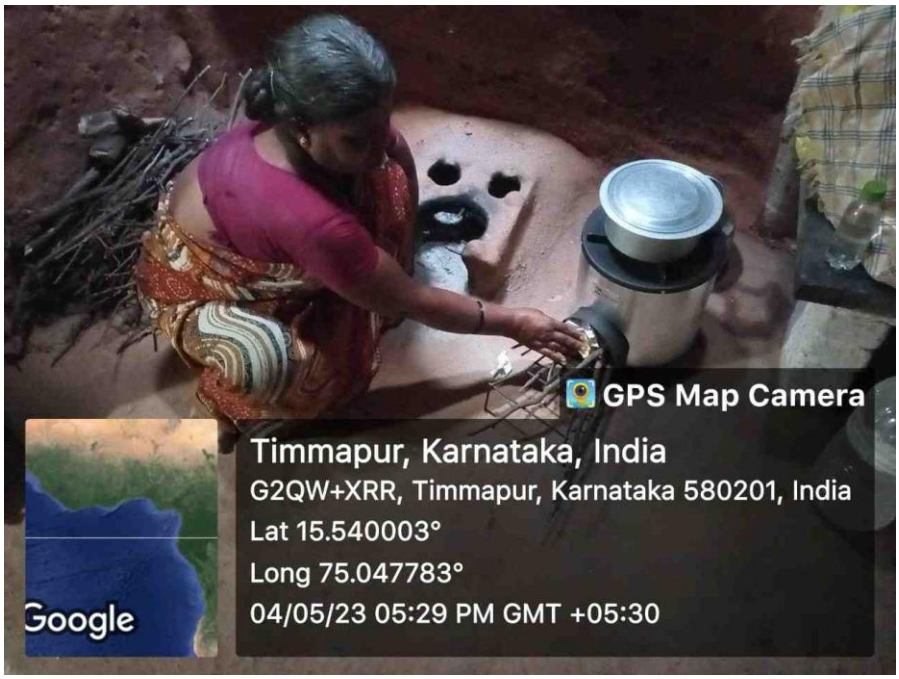


Fig: Monitoring Survey

B. Monitoring Data Management and Storage

The results of all Usage cum Kitchen Surveys (UKS) are collated in an electronic format with the help of an app and stored on a central server. The original copies of our project documentation are retained in the Coordinating / Managing Entity's (CME) central office.

All surveys are administered by trained staff who are conversant in the local dialect to ensure that response collection was consistent and not affected by any regional language barriers. Field staffs were provided with an English and local language version of the questionnaire to provide for the greatest possible standardization of responses.

The UKS provides information regarding the usage or project stoves, kitchen conditions (number of meals cooked, operational status, continual use of baseline stove inter alia) and sustainable development indicators to the project scenario.

UKSs are carried out via physical visit to VPAs households. Data collected during an UKS contains the following type of data:

- General information - Name, address, telephone number etc.
- Household socio-demographic information
- Cooking behavior (number of meals cooked, commercial cooking), Stove type (number of project stoves & mix)
- Usage levels in terms of operational status of stove
- Photographs with the primary cook or available HH
- Location (Geocoordinate)
- Photographs

After the data is collected, it is further analysed for any inconsistency or short coming by a data team. The same is eventually addresses as required by the applicable Gold Standard Methodology. The UKS is conducted annually to capture emerging trends.

Fig: A Happy User

C. Periodic Monitoring Task

The periodic monitoring tasks are as follow:

- Usage cum Kitchen Surveys are conducted annually to determine usage, emerging trends in demographics, fuel use and sustainability indicators. This is the second verification for VPAs (1-015) covered by the PoA and the first verification for the VPAs 016-026. The filed survey was undertaken by the trained staff of Greenway in the month of May-June 2023 for all VPAs (VPA01-026) covered by the monitoring report. Some monitoring parameters requires biennial sampling as indicated in the registered monitoring plan (e.g. μ_y, Air Quality, etc) and some requires annual ($N_{y,i,a}$, $\eta_{new,i,j}$, employment records etc.). CME undertaken the annual monitoring for each of the parameter even for the parameters required biennial monitoring on conservative grounds. The surveys for the previous

monitoring period were undertaken from 28/04/2022 to 13/06/2022. The monitoring survey for this verification cycles were undertaken from 04/05/2023 to 03/06/2023 therefore the annual monitoring requirement is complied. The survey dates are also part of the section D.2 of the MR, for each of the monitored parameter determined through surveys.

- WBT has been carried out in accordance with the WBT protocols. The sample size is considered by using 95/10 confidence precession conservatively against the required confidence precession of 90/10 as per the methodology and registered monitored plan. The details of sampling are produced in ER spreadsheet.
- Project Technology Days is reviewed continuously throughout the project in order to determine the number of crediting stoves and the period for which they should be credited in a given monitoring period (based on stove installation and expiry date). The calculation is demonstrated in the ER spread sheet.

- NRB fraction is validated ex-ante as part of PoA/VPAs.

All data recorded will be stored by the project proponents for a minimum of two years after the end of the crediting period or the last issuance of VERs, whichever occurs later.

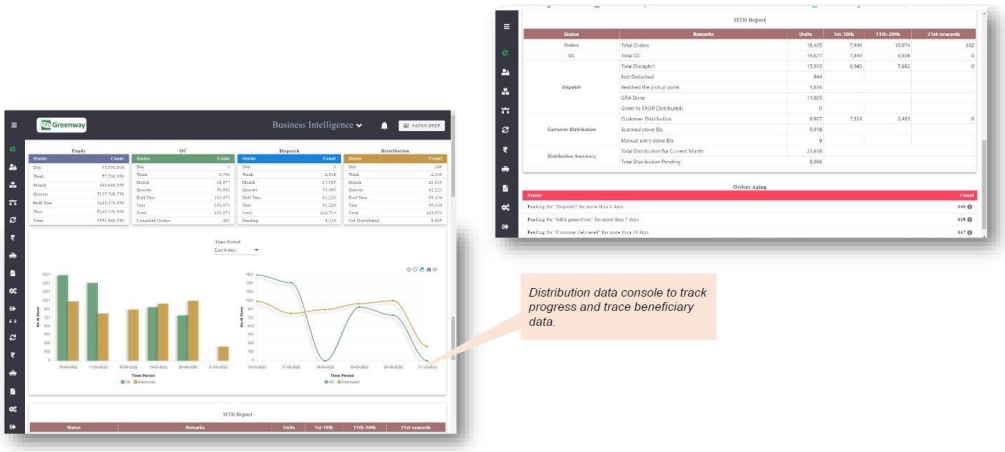


Fig: Distribution data console for tracking and tracing beneficiary data

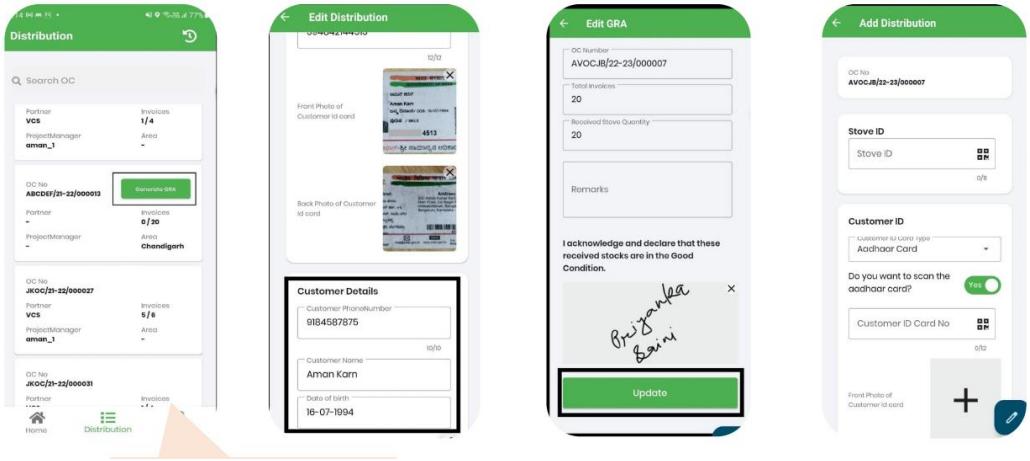


Fig: Mobile application for distribution and collection of beneficiary data

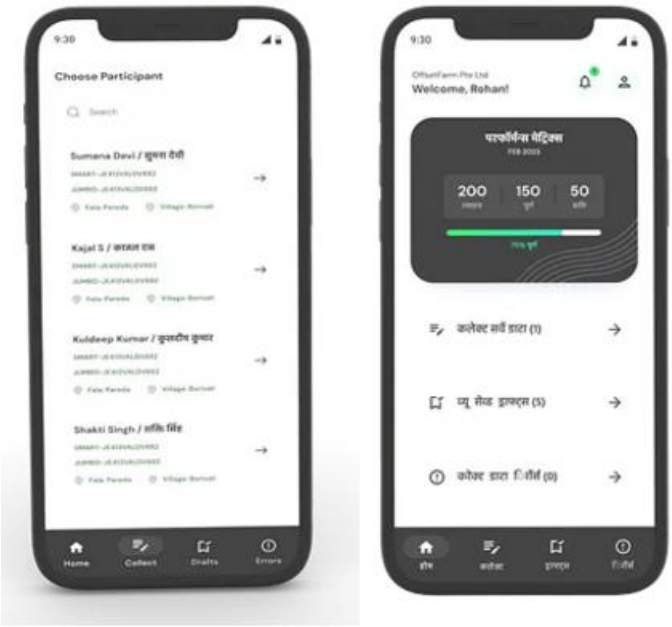


Fig: Mobile application 'Trace' used during the monitoring survey

SECTION D. DATA AND PARAMETERS

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

>>

Data/parameter	$NCV_{biomass}$
Unit	TJ/tonne
Description	Net calorific value of the non-renewable woody biomass that is substituted
Source of data	approved methodology AMS II.G/v12
Value(s) applied	0.0156
Choice of data or Measurement methods and procedures	Not applicable
Purpose of data	Baseline emission calculation
Additional comment	Not Applicable

Data/parameter	$B_{old,HH}$
Unit	Tonnes/household/year
Description	Quantity of woody biomass used per HH in the absence of the project activity
Source of data	Baseline Survey
Value(s) applied	3.83
Choice of data or Measurement methods and procedures	Baseline Survey
Purpose of data	Baseline emission calculation
Additional comment	This parameter shall remain fixed for the crediting period.

Data/parameter	η_{old}
Unit	Percentage
Description	Efficiency of the system being replaced (Traditional Cooking Stoves). The cookstoves are designed for using wood as fuel and is not compatible with charcoal
Source of data	approved methodology AMS II.G/v12
Value(s) applied	10%
Choice of data or Measurement methods and procedures	The default value of 0.10 is used as the replaced system is a three stone fire, or a conventional device with no improved combustion air supply or flue gas ventilation, i.e. without a grate or a chimney.
Purpose of data	Calculation of share of non-renewable biomass
Additional comment	This parameter shall remain fixed for the crediting period.

Data/parameter	$f_{NRB,y}$
Unit	Percentage
Description	Fraction of woody biomass saved by the project activity in year y that can be established as non-renewable biomass
Source of data	State of forest report 2019
Value(s) applied	93.66%

Choice of data or Measurement methods and procedures	FSI report 2019 is the most recent nationally acceptable report, providing information on fuelwood production and usage in India and its states
Purpose of data	Baseline Emission calculation
Additional comment	This parameter shall remain fixed for the crediting period.

Data/parameter	EFprojected_fossilfuel
Unit	tCO2/TJ
Description	Emission factor for the substitution of non-renewable woody biomass by similar consumers.
Source of data	approved methodology AMS II.G/v12
Value(s) applied	64.40
Choice of data or Measurement methods and procedures	The value represents the emission factor of the substitution fuels likely to be used by similar users, on a weighted average basis. The value is calculated, based on the global average ratio of cooking fuels (the normalized ratio of kerosene and liquefied petroleum gas (LPG) excluding coal), i.e. 9 per cent for kerosene (71.5 t CO2/TJ) and 91 per cent for LPG (63.0 t CO2/TJ)
Purpose of data	Baseline Emission calculation
Additional comment	This parameter shall remain fixed for the crediting period.

Data/parameter	LEy
Unit	Fraction
Description	Net to Gross adjustment factor
Source of data	approved methodology AMS II.G/v12
Value(s) applied	0.95
Choice of data or Measurement methods and procedures	Default value as prescribed by methodology applied
Purpose of data	Baseline Emission calculation
Additional comment	This parameter shall remain fixed for the crediting period.

Data/parameter	$S_{install}$
Unit	Number
Description	Number of stoves installed
Source of data	CME Data Based
Value(s) applied	15,500/VPA (for VPA 1-025) 9,334 (For VPA#026 till the end of monitoring period)
Choice of data or Measurement methods and procedures	NA
Purpose of data	SDG3 monitored

Additional comment	It will be fixed for the crediting period

D.2 Data and parameters monitored

>>

Data / Parameter	$N_{y,i,a}$
Unit	Number
Description	Number of project devices of type i and age a that are operating in year y
Source of data	ICS users' survey
Value(s) applied	396,834 VPA wise break-up is provided below:

VPA1	15,500
VPA 2	15,500
VPA 3	15,500
VPA 4	15,500
VPA 5	15,500
VPA 6	15,500
VPA 7	15,500
VPA 8	15,500
VPA 9	15,500
VPA 10	15,500
VPA 11	15,500
VPA 12	15,500
VPA 13	15,500
VPA 14	15,500
VPA 15	15,500
VPA 16	15,500
VPA 17	15,500
VPA 18	15,500
VPA 19	15,500
VPA 20	15,500
VPA 21	15,500
VPA 22	15,500
VPA 23	15,500

	VPA 24 — 15,500 VPA 25 — 10,376 VPA 26 — 9,334
Measurement methods and procedures	The information on the number of devices operational is determined by the ICS users' survey through monitoring of the user households drawn as random sample.
Monitoring frequency	Annually
QA/QC procedures	During the annual users' survey, survey team will inspect representative sample households to check if the devices are operating or not. Sample for this survey will be drawn as per the "Guidelines for sampling and surveys for CDM project activities and programme of activities, version 04".
Purpose of data	Emission reduction calculation
Additional comment	For the determination of ex-ante emission reductions 100% usage rate is considered for simplification, for ex-post the actual discount will be considered into calculation and discount will be monitored through sampling)

Data / Parameter	$\eta_{new,i,j}$
Unit	Fraction
Description	Efficiency of the device (Stove) of each type i and batch j implemented as part of the project activity
Source of data	WBT Sample results/ default schedule of linear decrease in efficiency up to the terminal efficiency of 20% per para 37(a) of AMS II G ver 12
Value(s) applied	36.63 %
Measurement methods and procedures	Efficiency based on water boiling test (WBT) considered. The WBT carried out in accordance with the WBT Protocol listed by Clean Cooking Alliance. The annual monitoring of WBTs were undertaken from 27/05/2023 to 01/06/2023. The previous WBTs were undertaken from 02/06/2022 to 10/06/2022. Therefore, the annual frequency monitoring requirement met.
Monitoring frequency	Annual
QA/QC procedures	All
Purpose of data	The monitored value of this parameter used in the determination of the ex-post emission reduction.
Additional comment	Calibrated instruments used for the WBT determination. Competent personnel carried out the WBT tests. Refer the ER spreadsheet for the details of WBT carried out.

Data / Parameter	μ_y
Unit	Fraction
Description	Adjustment to account for any continued use of pre-project devices during the year y
Source of data	Biennial User survey results
Value(s) applied	0.918
Measurement methods and procedures	Surveys conducted since the use of data loggers to record the continued operation of baseline devices is not practical, because the baseline device is the three-stone fire.
Monitoring frequency	At least once every two years (biennial) The surveys for the previous monitoring g period were undertaken from 28/04/2022 to 13/06/2022. The monitoring survey for this verification cycles were undertaken from 04/05/2023 to 03/06/2023 therefore the annual monitoring requirement is complied.
QA/QC procedures	Trained staff was deputed on site and software used to record all the surveys.
Purpose of data	For baseline emission
Additional comment	NA

Data / Parameter	Life Span
Unit	Number of years

Description	The operating lifetime of the project device. The life span should be reported in case where the PP are opting to account the efficiency loss as per paragraph 37.
Source of data	Manufacturer (certified by a national standards body or an appropriate certifying agent recognized by that body)
Value(s) applied	7
Measurement methods and procedures	NA
Monitoring frequency	Fixed and recorded at the time of commissioning/distribution
QA/QC procedures	NA
Purpose of data	Emission reduction calculation if using efficiency loss as per paragraph 37.
Additional comment	This efficiency dropdown is not considered during the monitoring period. Therefore, not applicable.

Data / Parameter	Date of commissioning of project device i
Unit	Date
Description	Actual date of commissioning of the project device
Source of data	Internal records
Value(s) applied	Refer the ER sheet for details.
Measurement methods and procedures	Sales records
Monitoring frequency	Fixed and recorded at the time of commissioning/distribution

QA/QC procedures	NA
Purpose of data	Emission reduction calculation
Additional comment	NA

Data / Parameter	$N_{d,HH}$
Unit	Number
Description	Number of project devices distributed per household
Source of data	Internal records
Value(s) applied	1
Measurement methods and procedures	Sales records
Monitoring frequency	Recorded at the time of commissioning/distribution of project devices
QA/QC procedures	NA
Purpose of data	Emission reduction calculation
Additional comment	NA

Data / Parameter	Air Quality
Unit	Qualitative (%)
Description	Users' perception on smoke reduction and Incidence of disease: perceived smoke levels, incidence of coughing, incidence of respiratory illness, Incidence of itchy eyes
Source of data	Monitoring survey

<table>
<tr><td>Value(s) applied</td><td>The survey was developed to capture the results and the following results were concluded.

<table><tr><th>Smoke Levels Reduction</th><th>Incidence of coughing Reduction</th><th>Incidence of difficulty in breathing Reduction</th><th>Incidence of itchy eyes Reduction</th></tr><tr><td>53%</td><td>54%</td><td>54%</td><td>52%</td></tr></table></td></tr>
<tr><td>Measurement methods and procedures</td><td>Air quality will be assessed through users interviews during the ICS User Survey. Observations as to inside/outside cooking area to confirm answers. During the survey HH users will be interviewed for the number of diseases caused by the smoke and also the number of times they (HH) visit hospitals for treatment related to breathing problems in the monitoring year.</td></tr>
<tr><td>Monitoring frequency</td><td>Annually/Biennial

CME has undertaken the annual surveys for the monitoring period.

The surveys for the previous monitoring period were undertaken from 28/04/2022 to 13/06/2022. The monitoring survey for this verification cycles were undertaken from 04/05/2023 to 03/06/2023 therefore the annual monitoring requirement is complied.</td></tr>
<tr><td>QA/QC procedures</td><td>NA</td></tr>
<tr><td>Purpose of data</td><td>Sustainable Development Assessment.</td></tr>
<tr><td>Additional comment</td><td>-</td></tr>
</table>

Data / Parameter	Gender Equality: Number of Hours
Unit	Hours
Description	Time Saving per household in collecting fuelwood
Source of data	Monitoring Survey
Value(s) applied	2.62 hours[2]
Measurement methods and procedures	Number of hours consumed in collecting fuelwood will be quantified through ICS user survey.
Monitoring frequency	Annual The surveys for the previous monitoring g period were undertaken from 28/04/2022 to 13/06/2022. The monitoring survey for this verification cycles were undertaken from 04/05/2023 to 03/06/2023 therefore the annual monitoring requirement is complied.
QA/QC procedures	NA
Purpose of data	Sustainable Development Assessment
Additional comment	NA

[2] Average of all monitored values

Data / Parameter	Access to affordable and improved energy services
Unit	Numbers
Description	Number of ICS under the project
Source of data	Commissioning records
Value(s) applied	396,834 VPA wise break-up is provided below:
Measurement methods and procedures	Sample survey to confirm if project ICS are operational. Operational status will confirm that the users are accessed to affordable and improved energy

VPA1	15,500
VPA 2	15,500
VPA 3	15,500
VPA 4	15,500
VPA 5	15,500
VPA 6	15,500
VPA 7	15,500
VPA 8	15,500
VPA 9	15,500
VPA 10	15,500
VPA 11	15,500
VPA 12	15,500
VPA 13	15,500
VPA 14	15,500
VPA 15	15,500
VPA 16	15,500
VPA 17	15,500
VPA 18	15,500
VPA 19	15,500
VPA 20	15,500
VPA 21	15,500
VPA 22	15,500
VPA 23	15,500
VPA 24	15,500
VPA 25	10,376
VPA 26	9,334

Monitoring frequency	Annual The surveys for the previous monitoring period were undertaken from 28/04/2022 to 13/06/2022. The monitoring survey for this verification cycles were undertaken from 04/05/2023 to 03/06/2023 therefore the annual monitoring requirement is complied.
QA/QC procedures	N/A
Purpose of data	Sustainable Development Assessment.
Additional comment	NA

Data / Parameter	Number of employments generated (Ne)
Unit	Numbers
Description	full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value.
Source of data	Employment records
Value(s) applied	110 employments (VPA02-VPA15) and 115 employment (VPA16-VPA 26)
Measurement methods and procedures	The HR records
Monitoring frequency	Annually
QA/QC procedures	N/A
Purpose of data	Sustainable Development Assessment.
Additional comment	NA

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

Data/Parameter	Value obtained in this monitoring period	Value obtained in the last monitoring period
$N_{y,I,a}$	396,834	227,089
$\eta_{new,I,j}$	(Vintage 1) 37.71% (Vintage 2) 36.42% (Vintage 3) 35.23%	(Vintage 1) 38.1% (Vintage 2) 36.5%
μ_y	0.918	0.925
Life Span	7	7
Date of commissioning of project device i	Refer the ER sheet (No change in dates for the VPAs part of previous monitoring)	Refer the ER sheet
$N_{d,HH}$	1	1
Air Quality	53% reductions	47% reduction in smoke levels
Gender Equality: Number of Hours	2.62 (Hours saved)	2.35 Hours saved
Access to affordable and improved energy services	396,834	227,089
Number of employments generated (Ne)	101 for VPA02-015 115 for VPA016-26	110 for VPA02-015 (Only 15 VPAs were part of previous verification)

D.4. Implementation of sampling plan

>>

Due to the large number of ICS installed under the projects it was not economically feasible to monitor each individual ICS unit installed, therefore, a representative sampling was undertaken as part of grouped project Sampling Plan. The Sampling Standard version 07.0 (paragraph 22) mandates application of 95/10 for the biennial survey and 90/10 confidence/precision for the annual frequency.

Fig: Monitoring Survey

The objective of the sampling was to obtain an unbiased and reliable estimate of the proportion or mean value of the following parameters over the course of the monitoring period, and with 95/10 confidence/precision. The sampling plan consist of monitoring the following parameters as mentioned below:

S.No.	Monitoring Parameter	Description of Monitoring Parameter
1.	$N_{y,I,j}$	Number of project devices of type I and batch j operating during year y
2.	μ_y	Adjustment to account for any continued use of pre-project devices during the year y

3.	$\eta_{new,I,j}$	Efficiency of the project device of each type I and batch j

The target population is the total ICS population served under the grouped project (and covered under the monitoring report), and the sampling frame consists of aggregated data of end-users of the ICS as recorded in the project Databases.
The sampling was conducted using simple random sampling technique over the sampling frame for each voluntary project activities (VPAs). The ICS in the sampling frame were stratified by ICS vintage (Year 1, 2 etc.). The sample size was calculated as per the CDM guidelines. The expected parameter values (mean, standard deviation and proportion) have been determined based on project developer's knowledge and experience as per para 12(b) and 12(c) of the Sampling and surveys for CDM project activities and program of activities, Version 09.0. The summary is provided below:

The sample size Is determined using the following formulas:

$$n \geq \frac{z^2 * N * V}{(N-1) * precision^2 + z^2 * V}$$

Where,

n = number of ICS to be sampled

N = Total number of ICS in the population

Z = Constant referring to level of confidence (1.96 for 95 % confidence)

Precision = Required precision (e.g. 10% = 0.1)

For Proportion based parameters (Ny,I,j and μy)

$$V = \frac{SD^2}{\overline{p}^2}$$

Where:

$$SD^2 = \frac{\sum_{i=1}^{k} g_i * p_i * (1 - p_i)}{N}$$

$$\overline{p} = \frac{\sum_{i=1}^{k} g_i * p_i}{N}$$

Where,

gi = weight of strata I in the population

pi = expected proportion of strata I in the population

k = total number of strata in the population

For Mean based parameters (ηy,I,j)

$$V = \left(\frac{SD}{Mean} \right)^2$$

Where

$$SD^2 = \frac{\sum_{i=1}^{k} g_i * SD_i^{\,2}}{N}$$

$$Mean = \frac{\sum_{i=1}^{k} g_i * m_i}{N}$$

Where

Sdi = expected standard deviation of strata I in the population

mi = expected mean of strata I in the population

The outcome of sampling is presented below and demonstrated in the ER sheet in detail.

Sampling Constants	Values
Monitoring period start	29-04-2022
Monitoring period end	31-05-2023
Level of Sampling	PoA
Confidence (%) (90 or 95)	95%
Margin of Error (%)	10%
Z value	1.960

Monitoring Parameter	Stove Efficiency $\eta_{new,i,j}$				
Sampling Frame requirement as per PoA-DD	Given stove model and vintage population				
Sampling approach	Simple random sampling across vintage				
Sampling Population (i)	Batch (j)	Sampling frame size	Expected Mean Efficiency(%)	Expected SD	Calculated Sample Size
1	2020-2021 (Vintage 3)	110,771	36.0	2.7	2
2	2021-2022 (Vintage 2)	118,803	37.0	3.7	2
3	2022-2023 (Vintage 1)	167,260	38.0	3.8	3
Sample size determination					
Estimated efficiency (mean)					37.14
Estimated Standard Deviation of efficiency (SD)					3.26
V_{mean} = (SD/mean)^2					0.01
Minimum Sample Size required (efficiency)					3
tDistribution sample size adjustment				**Iteration 1**	15
				Iteration 2	4
				Iteration 3	8
				Iteration 4	5
				Iteration 5	6
				Iteration 6	**6**
Monitoring results					
Sampling Population (i)	Batch (j)	Sampling frame size	Monitored Sample Size	Monitored Efficiency (%)	Monitored Standard Deviation
1	2020-2021 (Vintage 3)	110,771	5	35.23%	1.19%
2	2021-2022 (Vintage 2)	118,803	6	36.42%	1.09%
3	2022-2023 (Vintage 1)	167,260	4	37.71%	0.71%
Reliability Check					
Samples Monitored					15
Mean Efficiency					36.45%
Standard error of mean					0.25%
Relative precision (Margin of error) (%)					0.04%
Result					Ok, reliability level met
Lower Bound confidence value					Not applicable

Sampling frame(s)	Given stove model and vintage population
Sampling approach	Stratified random sampling across stove model and vintage

Sampling Population (i)	Vintage (j)	Stove population	Expected operational proportion (SoF)	Calculated Sample Size (n)
1	2020-2021 (Vintage 3)	110,771	0.95	9
	2021-2022 (Vintage 2)	118,803	0.95	9
2	2022-2023 (Vintage 1)	167,260	0.95	13
Sample size determination				
Estimated SOF (p)				0.95
Estimated Standard Deviation of SOF (SD)				0.218
$V_{SOF} = (SD/p)^2$				0.053
Sample Size required (SOF)				30
Monitoring results				
Sampling Population (Batch)	Sampling frame size	Monitored Sample Size ($n_{,I,j,total}$)	Operational Sample ($n_{,I,j,operational}$)	Monitored Operating Fraction ($n_{,I,j,operationaol}/n_{,I,j,total}$)
2020-2021 (Vintage 3)	110,771	70	70	1.00
2021-2022 (Vintage 2)	118,803	76	76	1.00
2022-2023 (Vintage 1)	167,260	114	114	1.00
Reliability Check				
Samples Monitored			260	
SoF Measured			1.00	
Standard Error of SoF			0.00%	
Relative precision (Margin of error)			0.00%	
Result			Ok, reliability level met	
Lower Bound confidence value			Not applicable	
Monitoring parameter(s)	Utilization of Project stoves - μ_y			
Sampling frame(s)	Given stove model population			
Sampling approach	Stratified random sampling across stove models			
Sampling Population (i)	Stove population	Expected value	Calculated Sample Size (n)	
2020-2021 (Vintage 3)	110,771	0.90	13	
2021-2022 (Vintage 2)	118,803	0.90	13	
2022-2023 (Vintage 1)	167,260	0.90	19	
Estimated results-based sample size determination				
Estimated utilization (p)			0.90	
$V_{Utilization} = p(1-p)/p^2$			0.11	
Minimum Sample Size required (days of utilization)			43	
Monitoring results				

Sampling Population	Sampling frame size	Monitored Sample Size	Monitored Utilization
2020-2021 (Vintage 3)	110,771	70	0.91
2021-2022 (Vintage 2)	118,803	76	0.92
2022-2023 (Vintage 1)	167,260	114	0.92
Reliability Check			
Samples Monitored			260
Utilization Measured			0.92
Standard Error of Utilization			1.71%
Relative precision (Margin of error)			3.65%
Result			Ok, reliability level met
Lower Bound confidence value			Not applicable

SECTION E. CALCULATION OF SDG IMPACTS

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

>>

The emission reductions are calculated as follows:

As per the registered VPA PDDs/PoA DD, emission reductions for both the scenarios have been calculated as per the following formulas given in the applicable meth, AMS-II.G. version 12.0;

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

Where

i	=	Indices for the situation where more than one type of project device is introduced to replace the pre-project devices3
j	=	Indices for the situation where there is more than one batch of project device
ER_y	=	Emission reductions during year y in t CO2e
$ER_{y,i,j}$	=	Emission reductions by project device of type i and batch j during year y in t CO2e
LE_y	=	Leakage emissions in the year y

Where

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

Where

[3] For example, in some instances, full replacement of the pre-project device would require the implementation of more than one project device (e.g. one stove suitable for cooking and the other stove suitable for cooking/boiling water)

$B_{y,savings,i,j}$ = Quantity of woody biomass that is saved in tonnes per cook stove device of type i and batch j during year y

$f_{NRB,y}$ = Fraction of woody biomass that can be established as non-renewable biomass using survey methods or government data or default country specific fraction of non-renewable woody biomass (fNRB) values available on the CDM website

$NCV_{biomass}$ = Net calorific value of the non-renewable woody biomass that is substituted (IPCC default for wood fuel, 0.015 TJ/tonne, based on the gross weight of the wood that is 'air-dried')

$EF_{projected\_fossilfuel}$ = Emission factor for the fossil fuels projected to be used for substitution of non-renewable woody biomass by similar consumers. Use a value of 64.40 t CO2/TJ

$N_{y,i,j}$ = Number of project devices of type i and batch j operating during year y

μ_y = Adjustment to account for any continued use of pre-project devices during the year y when applying equations 6 (fraction).

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

Where

$B_{old,i,j}$ = Annual quantity of woody biomass that would have been used in the absence of the project activity to generate useful thermal energy equivalent to that provided by the project device type i and batch j

$\eta_{new,i,j}$ = Efficiency of the device of each type i and batch j implemented as part of the project activity.

$\eta_{old,i,j}$ = Efficiency of pre - project device, which is a three-stone fire using firewood (not charcoal), or a conventional device with no improved combustion air supply or flue gas ventilation, that is without a grate or a chimney;

$$B_{old,i,j} = B_{old,HH} = B_{old,p} \times N_{p,HH}$$

Where

$B_{old,HH}$ = Annual quantity of woody biomass that would have been used in the household in the absence of the project activity to generate useful thermal energy equivalent to that provided by the project devices

$B_{old,p}$ = Annual quantity of woody biomass that would have been used per person in the household in the absence of the project activity to generate useful thermal energy equivalent to that provided by the project devices

$N_{p,HH}$ = Average number of persons served per household prior to the project implementation

Data Ex Ante	Unit	Value	Source
$B_{old,i,j} = B_{old,HH}$	tonnes/household/ year	3.83	VPA DD
$f_{NRB,y}$	Fraction	0.9366	VPA DD
$Ef_{project\_fossil\ fuel}$	tCO_{2e}/TJ	64.40	VPA DD
LAF_y	Fraction	0.95	VPA DD
$NCV_{biomass}$	TJ/tonne	0.0156	VPA DD
$\eta_{old,I,jfirewood}$	Percentage	10.00%	VPA DD
Data Ex Post	**Unit**	**Value**	**Source**
$N_{y,}$	Number	396,834	ICS Installation database
η_{new}	Percentage	36.63%	Efficiency test records and results
$B_{,saving,}$	Tonnes/year	2.78	Calculated
μ_y	fraction	0.918	Monitoring survey records
$N_{y,}$	Number	396,834	Sales database and monitoring survey records
Factors used for Ex-ante Estimations			
μ_y	1.0		
Ny	396,834		
By_{saving} (Ex-ante)	2.82		
Common Multiplier for VPA wiser ER Calculation	2.40		

For the ER calculation the use of parallel LPG as recorded in the monitoring survey was adjusted and the corresponding emissions due to the LPG consumption were deducted from the total ERs. The ERs before the LPG consumption were 814, 554 t CO_2e and after considering the LPG as project emissions the value comes out as 792, 750 t CO_2e. The demonstration is provided in the ER sheet under tab "LPG Emissions".

Ex-post: VPA wise ER calculation for the monitoring period with stove age in each calendar year and numbers of ICS, refer ER spreadsheet for the details:

VPA	2022	2023	Total ER (Ex-post)
VPA1	24,540	11,922	36,462
VPA 2	24,540	11,922	36,462
VPA 3	24,540	11,922	36,462
VPA 4	24,540	11,922	36,462
VPA 5	24,540	11,922	36,462
VPA 6	24,540	11,922	36,462
VPA 7	24,540	11,922	36,462
VPA 8	24,540	11,922	36,462
VPA 9	24,540	11,922	36,462
VPA 10	24,540	11,922	36,462
VPA 11	24,540	11,922	36,462
VPA 12	24,540	11,922	36,462
VPA 13	24,540	15,001	39,541
VPA 14	24,540	11,922	36,462
VPA 15	24,540	15,001	39,541
VPA 16	21,152	15,001	36,153
VPA 17	18,718	15,001	33,719
VPA 18	16,713	11,922	28,635
VPA 19	14,897	11,922	26,819
VPA 20	12,008	11,922	23,930
VPA 21	10,519	11,922	22,441
VPA 22	8,805	11,922	20,727

VPA 23	6,228	11,922	18,150
VPA 24	3,121	11,922	15,043
VPA 25	254	10,719	10,973
VPA 26	0	3,072	3,072
Total	4,80,515	3,12,235	7,92,750

For SDG other than SDG-13

SDG-3: Good Health and Well Being	**Mortality rate attributed to household and ambient air pollution**	100**%**	**Due to poor indoor air quality and due to the higher** volume **of smoke.**
SDG-5: Gender Equality	Time spent collecting fuelwood from the forests and for cooking.	4.38 hours	collecting firewood Hours/week/HH
SDG 7- Affordable and Clean energy	Number of project households predominantly using clean cooking devices such as Improved Cook Stoves	0	Households
SDG 8- Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all	Number of employments generated (Ne)	0	Persons

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

>>

For SDG other than SDG-13

SDG#13	Emission Reduction	0	Due to improved Energy Efficiency.
SDG-3: Good Health and Well Being	Mortality rate attributed to household and ambient air pollution	53% reduction (project value is 47%)	Smoke reduction.
SDG-5: Gender Equality	Time spent collecting fuelwood from the forests and for cooking.	1.76 hours	collecting firewood Hours/week/HH
SDG 7- Affordable and Clean energy	Number of project households	396,834	Households

	predominantly using clean cooking devices such as Improved Cook Stoves		
SDG 8- Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all	Number of employments generated (Ne)	101 for (VPA02-15) 115 for (VPA016-026) 0 for VPA#1 as it does not claim SDG 8	Persons

E.3. Calculation of leakage

>> N/A (Leakage is already accounted in baseline emission as 5% in accordance with the methodology)

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

SDG	SDG Impact	Baseline estimate	Project estimate	Net benefit
13	Emission Reduction	792,750	0	792,750
3	Mortality rate attributed to household and ambient air pollution	100%	47%	53% decrease in smoke level.
7	Number of project households predominantly using clean cooking devices such as Improved Cook Stoves	0	396,834	396,834 Households
8	Number of employments generated (Ne)	0	110 employments (VPA02-VPA15) and 115 employments (VPA16-VPA 26) 0 for VPA#1 as it does	110 employments (VPA02-VPA15) and 115 employments (VPA16-VPA 26) 0 for VPA#1 as it does not claim SDG 8

			not claim SDG 8	
5	Time spent collecting fuelwood from the forests and for cooking.	4.38 Hours (As per the survey undertaken during the VPA inclusions)	1.76 Hours	2.62 Hours/week/HH

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

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

13

VPAs	2022	2023	Total ER (Ex-ante)
VPA1	27,832	13,522	41,354
VPA 2	27,832	13,522	41,354
VPA 3	27,832	13,522	41,354
VPA 4	27,832	13,522	41,354
VPA 5	27,832	13,522	41,354
VPA 6	27,832	13,522	41,354
VPA 7	27,832	13,522	41,354
VPA 8	27,832	13,522	41,354
VPA 9	27,832	13,522	41,354
VPA 10	27,832	13,522	41,354
VPA 11	27,832	13,522	41,354
VPA 12	27,832	13,522	41,354
VPA 13	27,832	17,015	44,847
VPA 14	27,832	13,522	41,354
VPA 15	27,832	17,015	44,847
VPA 16	23,991	17,015	41,006
VPA 17	21,230	17,015	38,245
VPA 18	18,956	13,522	32,477
VPA 19	16,896	13,522	30,418
VPA 20	13,620	13,522	27,141
VPA 21	11,931	13,522	25,453
VPA 22	9,987	13,522	23,509
VPA 23	7,063	13,522	20,585
VPA 24	3,540	13,522	17,062

VPA	2022	2023	Total ER (Ex-post)
VPA1	24,540	11,922	36,462
VPA 2	24,540	11,922	36,462
VPA 3	24,540	11,922	36,462
VPA 4	24,540	11,922	36,462
VPA 5	24,540	11,922	36,462
VPA 6	24,540	11,922	36,462
VPA 7	24,540	11,922	36,462
VPA 8	24,540	11,922	36,462
VPA 9	24,540	11,922	36,462
VPA 10	24,540	11,922	36,462
VPA 11	24,540	11,922	36,462
VPA 12	24,540	11,922	36,462
VPA 13	24,540	15,001	39,541
VPA 14	24,540	11,922	36,462
VPA 15	24,540	15,001	39,541
VPA 16	21,152	15,001	36,153

[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.

	<table><tr><td>VPA 25</td><td>287</td><td>12,154</td><td>12,441</td></tr><tr><td>VPA 26</td><td>0</td><td>3,485</td><td>3,485</td></tr><tr><td>Total</td><td>544,985</td><td>354,133</td><td>899,118</td></tr></table>	<table><tr><td>VPA 17</td><td>18,718</td><td>15,001</td><td>33,719</td></tr><tr><td>VPA 18</td><td>16,713</td><td>11,922</td><td>28,635</td></tr><tr><td>VPA 19</td><td>14,897</td><td>11,922</td><td>26,819</td></tr><tr><td>VPA 20</td><td>12,008</td><td>11,922</td><td>23,930</td></tr><tr><td>VPA 21</td><td>10,519</td><td>11,922</td><td>22,441</td></tr><tr><td>VPA 22</td><td>8,805</td><td>11,922</td><td>20,727</td></tr><tr><td>VPA 23</td><td>6,228</td><td>11,922</td><td>18,150</td></tr><tr><td>VPA 24</td><td>3,121</td><td>11,922</td><td>15,043</td></tr><tr><td>VPA 25</td><td>254</td><td>10,719</td><td>10,973</td></tr><tr><td>VPA 26</td><td>0</td><td>3,072</td><td>3,072</td></tr><tr><td>Total</td><td>480,515</td><td>312,235</td><td>792,750</td></tr></table>
3	70%	53% (Number decreased due to continue use of baseline practices observed)
7	403, 000 House Holds	396,834 House Holds
8	390 Persons	115 Persons (The employments in future will be increased up to the target)
5	1.15 hrs	1.76 Hours (Based on the survey results, refer the ER spreadsheet for the survey details)

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

>>The ex-ante ERs for SDG 13 were calculated based on the equivalent stove year in actual case, and the number of stoves to be planned along with the value of Ny and μy assumed during the validation. The calculation is demonstrated in ER spreadsheet.

E.6. Remarks on increase in achieved SDG Impacts from estimated value in approved PDD

>>There is no increase in SDGs in the ex-post scenario, except SDG#005. The reason in the VPA DDs the assumptions were made during the first VPA design certification

and remaining VPAs followed the same. In the performance review an actual survey was undertaken by the CME to calculate the baseline and project scenario for time calculation, therefore the actual results were found higher and also realistic.

The actual emission reductions are lesser as compared to ex-ante calculation on the registered PDD, due to correction factor applied for the continual use of baseline by few of the sampled households. The calculation is demonstrated in ER sheet.

SECTION F. SAFEGUARDS REPORTING

>> A grievance redress mechanism is constituted into the system, in order to ensure continuous quality service delivery to end user/consumer. Here, the grievance redressal team tries to resolve usage & safety related issues associated with the product/project technology. All the customer's product related queries are first noted once received. Post that, based on the problem, the customer is advised with relevant solutions, and as necessary, the technical team visits the customer's household for ensuring a smooth grievance redressal.

To help customers voice their concerns, technology supplier contact points are imprinted on the sales receipt. In case, the technology supplier team fails to provide a resolution, CME's Carbon team approaches the customers, as a next step to the grievance redress mechanism.

The customer can contact the technology supplier team. Once they resolve the issue, the case is closed. In case, they are not able to resolve, the grievance is escalated to PP team for addressal. Though it happens rarely, as most of the issues are resolved at the technology supplier end itself.

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.

>> CME has the laid down procedure for the the grievance addressal and the seeking the feedback/grievance from the stakeholders. No grievance/complaint received during the monitoring period. The grievance addressal procedure has been submitted to the VVB along with the records of no grievance.

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

>> Not Applicable

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

>> There are No Inputs and Grievances received. A grievance redress mechanism is constituted into the system, in order to ensure continuous quality service delivery to end user/consumer. Here, the grievance redress team tries to resolve usage & safety related issues associated with the product/project technology. The complaints and feedbacks received dedicated lines, email and the supplier network.

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