



Gold Standard[®]
for the Global Goals

TEMPLATE

MONITORING REPORT

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VERSION v. 1.1

RELATED SUPPORT - TEMPLATE GUIDE Monitoring Report v. 1.1

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Please note that although this monitoring report is prepared using GS4GG template, the monitoring report has been developed as per GS version 2.2 as per the deviation approved by Gold Standard (DEV_163).

KEY PROJECT INFORMATION

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

GS ID of Programme	GS 3112
Title of Programme	GHG Emission Reduction through use of Bondhu Chula (Improved Cook Stoves) in Bangladesh
Version of POA-DD applicable to this monitoring report	4.0
Name and GS ID of fully Validated VPA/VPAs (i.e. non-compliance check)	GS 3544 VPA 01- GHG Emission Reduction through use of Bondhu Chula (Improved Cook Stoves) in Bangladesh
	GS 3482 VPA 02- GHG Emission Reduction through use of Bondhu Chula (Improved Cook Stoves) in Bangladesh
	GS 3619 VPA 04- GHG Emission Reduction through use of Bondhu Chula (Improved Cook Stoves) in Bangladesh
	GS 3620 VPA 05- GHG Emission Reduction through use of Bondhu Chula (Improved Cook Stoves) in Bangladesh
	GS 3618 VPA 06- GHG Emission Reduction through use of Bondhu Chula (Improved Cook Stoves) in Bangladesh
	GS 4372 VPA 07 - GHG Emission Reduction through use of Bondhu Chula (Improved Cook Stoves) in Bangladesh
	GS 4373 VPA 08 - GHG Emission Reduction through use of Bondhu Chula (Improved Cook Stoves) in Bangladesh
	GS 4374 VPA 09 - GHG Emission Reduction through use of Bondhu Chula (Improved Cook Stoves) in Bangladesh
	GS 4375 VPA 10 - GHG Emission Reduction through use of Bondhu Chula (Improved Cook Stoves) in Bangladesh
	GS 4376 VPA 11 - GHG Emission Reduction through use of Bondhu Chula (Improved Cook Stoves) in Bangladesh
	GS 4377 VPA 12 - GHG Emission Reduction through use of Bondhu Chula (Improved Cook Stoves) in Bangladesh
	GS 4378 VPA 13 - GHG Emission Reduction through use of Bondhu Chula (Improved Cook Stoves) in Bangladesh
	GS 4379 VPA 14 - GHG Emission Reduction through use of Bondhu Chula (Improved Cook Stoves) in Bangladesh
	GS 4380 VPA 15 - GHG Emission Reduction through use of Bondhu Chula (Improved Cook Stoves) in Bangladesh

GS 4381 VPA 16 - GHG Emission Reduction through use of Bondhu Chula (Improved Cook Stoves) in Bangladesh

GS 4382 VPA 17 - GHG Emission Reduction through use of Bondhu Chula (Improved Cook Stoves) in Bangladesh

GS 4384 VPA 18 - GHG Emission Reduction through use of Bondhu Chula (Improved Cook Stoves) in Bangladesh

GS 4383 VPA 19 - GHG Emission Reduction through use of Bondhu Chula (Improved Cook Stoves) in Bangladesh

GS 4385 VPA 20 - GHG Emission Reduction through use of Bondhu Chula (Improved Cook Stoves) in Bangladesh

GS 4386 VPA 21 - GHG Emission Reduction through use of Bondhu Chula (Improved Cook Stoves) in Bangladesh

GS 4387 VPA 22 - GHG Emission Reduction through use of Bondhu Chula (Improved Cook Stoves) in Bangladesh

GS 4388 VPA 23 - GHG Emission Reduction through use of Bondhu Chula (Improved Cook Stoves) in Bangladesh

GS 4389 VPA 24 - GHG Emission Reduction through use of Bondhu Chula (Improved Cook Stoves) in Bangladesh

GS 4390 VPA 25 - GHG Emission Reduction through use of Bondhu Chula (Improved Cook Stoves) in Bangladesh

GS 4391 VPA 26 - GHG Emission Reduction through use of Bondhu Chula (Improved Cook Stoves) in Bangladesh

GS 4392 VPA 27 - GHG Emission Reduction through use of Bondhu Chula (Improved Cook Stoves) in Bangladesh

GS 4393 VPA 28 - GHG Emission Reduction through use of Bondhu Chula (Improved Cook Stoves) in Bangladesh

GS 4394 VPA 29 - GHG Emission Reduction through use of Bondhu Chula (Improved Cook Stoves) in Bangladesh

GS 4395 VPA 30 - GHG Emission Reduction through use of Bondhu Chula (Improved Cook Stoves) in Bangladesh

GS 4396 VPA 31 - GHG Emission Reduction through use of Bondhu Chula (Improved Cook Stoves) in Bangladesh

GS 4397 VPA 32 - GHG Emission Reduction through use of Bondhu Chula (Improved Cook Stoves) in Bangladesh

	<p>GS 4398 VPA 33 - GHG Emission Reduction through use of Bondhu Chula (Improved Cook Stoves) in Bangladesh</p> <p>GS 4399 VPA 34 - GHG Emission Reduction through use of Bondhu Chula (Improved Cook Stoves) in Bangladesh</p> <p>GS 4400 VPA 35 - GHG Emission Reduction through use of Bondhu Chula (Improved Cook Stoves) in Bangladesh</p> <p>GS 4401 VPA 36 - GHG Emission Reduction through use of Bondhu Chula (Improved Cook Stoves) in Bangladesh</p>
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Key Project Information

GS ID (s) of Project (s)	<p>VPA ID:</p> <p>GS 3544, GS 3482, GS 3619, GS 3620, GS 3618, GS 4372, GS 4373, GS 4374, GS 4375, GS 4376, GS 4377, GS 4378, GS 4379, GS 4380, GS 4381, GS 4382, GS 4384, GS 4383, GS 4385, GS 4386, GS 4387, GS 4388, GS 4389, GS 4390, GS 4391, GS 4392, GS 4393, GS 4394, GS 4395, GS 4396, GS 4397, GS 4398, GS 4399, GS 4400, GS 4401</p>
Title of the project (s) covered by monitoring report	<p>GS 3544 VPA 01- GHG Emission Reduction through use of Bondhu Chula (Improved Cook Stoves) in Bangladesh</p> <p>GS 3482 VPA 02- GHG Emission Reduction through use of Bondhu Chula (Improved Cook Stoves) in Bangladesh</p> <p>GS 3619 VPA 04- GHG Emission Reduction through use of Bondhu Chula (Improved Cook Stoves) in Bangladesh</p> <p>GS 3620 VPA 05- GHG Emission Reduction through use of Bondhu Chula (Improved Cook Stoves) in Bangladesh</p> <p>GS 3618 VPA 06- GHG Emission Reduction through use of Bondhu Chula (Improved Cook Stoves) in Bangladesh</p> <p>GS 4372 VPA 7 - GHG Emission Reduction through use of Bondhu Chula (Improved Cook Stoves) in Bangladesh</p> <p>GS 4373 VPA 8 - GHG Emission Reduction through use of Bondhu Chula (Improved Cook Stoves) in Bangladesh</p> <p>GS 4374 VPA 9 - GHG Emission Reduction through use of Bondhu Chula (Improved Cook Stoves) in Bangladesh</p> <p>GS 4375 VPA 10 - GHG Emission Reduction through use of Bondhu Chula (Improved Cook Stoves) in Bangladesh</p> <p>GS 4376 VPA 11 - GHG Emission Reduction through use of Bondhu Chula (Improved Cook Stoves) in Bangladesh</p> <p>GS 4377 VPA 12 - GHG Emission Reduction through use of Bondhu Chula (Improved Cook Stoves) in Bangladesh</p>

GS 4378 VPA 13 - GHG Emission Reduction through use of Bondhu Chula (Improved Cook Stoves) in Bangladesh

GS 4379 VPA 14 - GHG Emission Reduction through use of Bondhu Chula (Improved Cook Stoves) in Bangladesh

GS 4380 VPA 15 - GHG Emission Reduction through use of Bondhu Chula (Improved Cook Stoves) in Bangladesh

GS 4381 VPA 16 - GHG Emission Reduction through use of Bondhu Chula (Improved Cook Stoves) in Bangladesh

GS 4382 VPA 17 - GHG Emission Reduction through use of Bondhu Chula (Improved Cook Stoves) in Bangladesh

GS 4384 VPA 18 - GHG Emission Reduction through use of Bondhu Chula (Improved Cook Stoves) in Bangladesh

GS 4383 VPA 19 - GHG Emission Reduction through use of Bondhu Chula (Improved Cook Stoves) in Bangladesh

GS 4385 VPA 20 - GHG Emission Reduction through use of Bondhu Chula (Improved Cook Stoves) in Bangladesh

GS 4386 VPA 21 - GHG Emission Reduction through use of Bondhu Chula (Improved Cook Stoves) in Bangladesh

GS 4387 VPA 22 - GHG Emission Reduction through use of Bondhu Chula (Improved Cook Stoves) in Bangladesh

GS 4388 VPA 23 - GHG Emission Reduction through use of Bondhu Chula (Improved Cook Stoves) in Bangladesh

GS 4389 VPA 24 - GHG Emission Reduction through use of Bondhu Chula (Improved Cook Stoves) in Bangladesh

GS 4390 VPA 25 - GHG Emission Reduction through use of Bondhu Chula (Improved Cook Stoves) in Bangladesh

GS 4391 VPA 26 - GHG Emission Reduction through use of Bondhu Chula (Improved Cook Stoves) in Bangladesh

GS 4392 VPA 27 - GHG Emission Reduction through use of Bondhu Chula (Improved Cook Stoves) in Bangladesh

GS 4393 VPA 28 - GHG Emission Reduction through use of Bondhu Chula (Improved Cook Stoves) in Bangladesh

GS 4394 VPA 29 - GHG Emission Reduction through use of Bondhu Chula (Improved Cook Stoves) in Bangladesh

GS 4395 VPA 30 - GHG Emission Reduction through use of Bondhu Chula (Improved Cook Stoves) in Bangladesh

GS 4396 VPA 31 - GHG Emission Reduction through use of Bondhu Chula (Improved Cook Stoves) in Bangladesh

GS 4397 VPA 32 - GHG Emission Reduction through use of Bondhu Chula (Improved Cook Stoves) in Bangladesh
 GS 4398 VPA 33 - GHG Emission Reduction through use of Bondhu Chula (Improved Cook Stoves) in Bangladesh
 GS 4399 VPA 34 - GHG Emission Reduction through use of Bondhu Chula (Improved Cook Stoves) in Bangladesh
 GS 4400 VPA 35 - GHG Emission Reduction through use of Bondhu Chula (Improved Cook Stoves) in Bangladesh
 GS 4401 VPA 36 - GHG Emission Reduction through use of Bondhu Chula (Improved Cook Stoves) in Bangladesh

Version number of the PDD/VPA-DD (s) applicable to this monitoring report

PoA DD ID	Version No:
GS3112	4.0
VPA IDs	Version No
GS 3544 VPA 01	7.0
GS 3482 VPA 02	4.0
GS 3619 VPA 04	3.0
GS 3620 VPA 05	3.0
GS 3618 VPA 06	3.0
GS 4372 VPA 07	3.0
GS 4373 VPA 08	3.0
GS 4374 VPA 09	3.0
GS 4375 VPA 10	3.0
GS 4376 VPA 11	3.0
GS 4377 VPA 12	3.0
GS 4378 VPA 13	3.0
GS 4379 VPA 14	3.0
GS 4380 VPA 15	3.0
GS 4381 VPA 16	3.0
GS 4382 VPA 17	3.0
GS 4384 VPA 18	3.0
GS 4383 VPA 19	3.0
GS 4385 VPA 20	3.0
GS 4386 VPA 21	2.0
GS 4387 VPA 22	2.0
GS 4388 VPA 23	2.0
GS 4389 VPA 24	2.0
GS 4390 VPA 25	2.0
GS 4391 VPA 26	2.0
GS 4392 VPA 27	2.0
GS 4393 VPA 28	2.0
GS 4394 VPA 29	2.0
GS 4395 VPA 30	2.0
GS 4396 VPA 31	2.0
GS 4397 VPA 32	2.0
GS 4398 VPA 33	2.0
GS 4399 VPA 34	2.0
GS 4400 VPA 35	2.0
GS 4401 VPA 36	2.0

Version number of the monitoring report

5.0

Completion date of the monitoring report	26/09/2022
Date of project design certification	01/04/2014
Date of Last Annual Report	Not applicable. The PoA/VPAs have not been transitioned to GS4GG yet
Monitoring period number	3 rd
Duration of this monitoring period	VPA 01-06: 22/02/2016 ¹ - 28/02/2018 VPA 07-36: 01/08/2016 - 28/02/2018
Project Representative	Bangladesh Bondhu Foundation
Host Country	People’s Republic of Bangladesh
Activity Requirements applied	<input checked="" type="checkbox"/> Community Services Activities <input type="checkbox"/> Renewable Energy Activities <input type="checkbox"/> Land Use and Forestry Activities/Risks & Capacities <input type="checkbox"/> N/A
Methodology (ies) applied and version number	The Gold Standard Simplified Methodology for Efficient Cookstoves, Version 1.0, dated February 2013
Product Requirements applied	<input checked="" type="checkbox"/> GHG Emissions Reduction & Sequestration <input type="checkbox"/> Renewable Energy Label <input type="checkbox"/> N/A

Table 1 - Sustainable Development Contributions Achieved

Sustainable Development Goals Targeted	SDG Impact	Amount Achieved	Units/ Products
13 Climate Action	Amount of CO ₂ e emissions reduced by the project per year	MS#1: 128,393 MS#2: 184,321 Total: 312,714	tCO ₂ e

Table 2 – Product Vintages

Start Dates	End Dates	Amount Achieved
		VERs (tCO ₂ e)
22/02/2016	31/12/2016	97,883
01/01/2017	31/12/2017	185,019
01/01/2018	28/02/2018	29,812

¹ Although the monitoring period for VPAs 01-06 mentioned above is 22/02/2016 - 28/02/2018, the effective monitoring period start date being considered is 01/03/2016. This has been conservatively applied in accordance with the Para 4.3.1 of the COVID 19: INTERIM MEASURE v5, (21.12.2021) to limit the length of the monitoring period, being assessed remotely, to two years (from 01/03/2016 to 28/02/2018). Thus, VPAs 01-06 are claiming **zero** ERs for the period 22/02/2016 – 29/02/2016.

SECTION A. DESCRIPTION OF PROJECT

A.1. General description of project

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The micro-scale PoA (“mSC-PoA”) involves the installation and maintenance of domestic improved cooking stoves (“ICS” branded as Bondhu Chulha) in Bangladesh. These stoves burn fuel more efficiently than the “three-stone” cooking stove (popularly known as traditional stoves), which is the current cooking practice in Bangladesh. The inherent inefficiency of such stoves, combined with the high moisture content of biomass cooking fuels, results in incomplete combustion, producing IAP. Further, the combustion of the non-renewable fraction of woody biomass of the cooking fuel generates Greenhouse Gases –specifically, Carbon Dioxide (CO₂), Nitrous Oxide (N₂O) and Methane (CH₄).

The PoA attempts to address these issues by implementing the widespread adoption of energy efficient stoves to households all over Bangladesh. The replacement of traditional stoves by ICS improves heat transfer, hence reducing the total amount of fuel required for cooking and reducing amount of GHG emitted into the atmosphere. The project ICS burn fuel more efficiently and have been shown to use about 50% less fuel to cook the same amount of food. They are designed to draw off smoke and toxins, thus creating cleaner indoor air for women and children.

This program is managed by Bangladesh Bondhu Foundation (BBF) as the Coordinating/Managing Entity (CME). BBF coordinates the installation of the ICS by local partners, at a subsidized cost for users, in exchange for the rights to the Voluntary Emission Reductions (VERs). The PoA is a voluntary action by the CME.

A.2. Location of project

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Host Party(ies): Bangladesh

Region/State/Province: All across Bangladesh

City/Town/Community: All across Bangladesh

Physical Geographical location: The geographical boundary of Bangladesh is depicted by the map given below.



Figure 1: The geographic boundary of the VPA – the People’s Republic of Bangladesh

The VPAs are located within Bangladesh as can be verified from the ICS installation database. Dhaka is the national capital of Bangladesh. Bangladesh lies between 20° 34' to 26° 38' north latitude and between 88° 01' to 92° 41' east longitude.

A.3. Reference of applied methodology

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The Gold Standard Simplified Methodology for Efficient Cookstoves, Version 1.0, dated February 2013

https://globalgoals.goldstandard.org/standards/408_V1.0_EE_ICs_Simplified-Methodology-for-Efficient-Cookstoves.pdf

A.4. Crediting period of project

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GS Ref ID	Crediting Period Start Date	Length of Crediting Period
GS 3544 VPA 01	01/04/2014	10 YEARS
GS 3482 VPA 02	05/05/2014	10 YEARS
GS 3619 VPA 04	15/09/2014	10 YEARS
GS 3620 VPA 05	15/09/2014	10 YEARS
GS 3618 VPA 06	28/10/2014	10 YEARS
GS 4372 VPA 07	01/08/2014	10 YEARS
GS 4373 VPA 08	15/08/2014	10 YEARS
GS 4374 VPA 09	27/08/2014	10 YEARS
GS 4375 VPA 10	15/09/2014	10 YEARS
GS 4376 VPA 11	27/09/2014	10 YEARS
GS 4377 VPA 12	08/10/2014	10 YEARS
GS 4378 VPA 13	21/10/2014	10 YEARS
GS 4379 VPA 14	02/11/2014	10 YEARS
GS 4380 VPA 15	15/11/2014	10 YEARS
GS 4381 VPA 16	26/11/2014	10 YEARS
GS 4382 VPA 17	04/12/2014	10 YEARS
GS 4384 VPA 18	15/12/2014	10 YEARS
GS 4383 VPA 19	19/12/2014	10 YEARS
GS 4385 VPA 20	28/12/2014	10 YEARS
GS 4386 VPA 21	07-01-2015	10 YEARS
GS 4387 VPA 22	15-01-2015	10 YEARS
GS 4388 VPA 23	24-01-2015	10 YEARS
GS 4389 VPA 24	14-02-2015	10 YEARS
GS 4390 VPA 25	21-02-2015	10 YEARS
GS 4391 VPA 26	21-02-2015	10 YEARS
GS 4392 VPA 27	15-03-2015	10 YEARS
GS 4393 VPA 28	15-03-2015	10 YEARS
GS 4394 VPA 29	24-03-2015	10 YEARS
GS 4395 VPA 30	15-04-2015	10 YEARS
GS 4396 VPA 31	26-04-2015	10 YEARS
GS 4397 VPA 32	30-04-2015	10 YEARS
GS 4398 VPA 33	23-05-2015	10 YEARS
GS 4399 VPA 34	30-05-2015	10 YEARS
GS 4400 VPA 35	30-05-2015	10 YEARS
GS 4401 VPA 36	23-06-2015	10 YEARS

SECTION B. IMPLEMENTATION OF PROJECT

B.1. Description of implemented project

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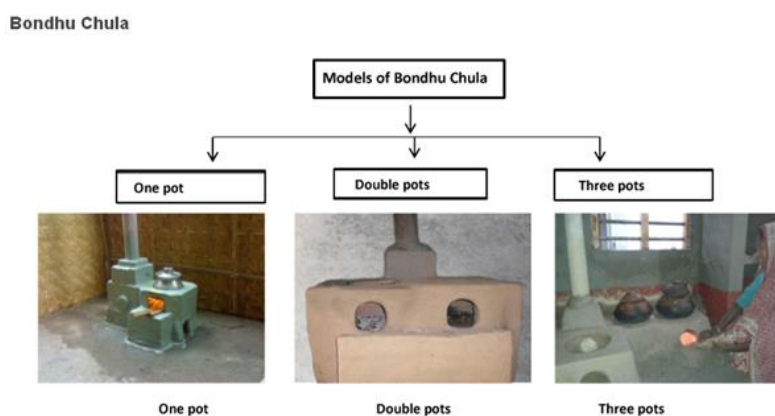
(a) Purpose of the specific-case VPA(s) and the measures taken for GHG emission reductions or net GHG removals by sinks;

All VPAs included in the monitoring report are identical in measure. All VPAs are micro-scale VPAs and have been implemented by the Bangladesh Bondhu Foundation. All VPAs involve installation and maintenance of domestic improved cooking stoves (“ICS” branded as Bondhu Chula) in Bangladesh. These stoves burn fuel more efficiently than the “three-stone” cooking stove, (popularly known as traditional stoves) which is the current practice for cooking in Bangladesh. The inherent inefficiency of such stoves, combined with the high moisture content of biomass cooking fuels, results in incomplete combustion, producing IAP. Further, the combustion of the non-renewable fraction of woody biomass of the cooking fuel generates Greenhouse Gases –specifically, Carbon Dioxide (CO₂), Nitrous Oxide (N₂O) and Methane (CH₄).

The replacement of traditional stoves by ICS improves heat transfer, hence reducing the total amount of fuel required for cooking and reducing amount of GHG emitted into the atmosphere. These stoves burn fuel more efficiently and have been shown to use less fuel to cook the same amount of food. They are designed to draw off smoke and toxins, thus creating cleaner indoor air for women and children.

(b) Description of the technology employed and installed equipment and/or infrastructure, including information requested by the eligibility criteria;

All VPAs included in the monitoring report use the same technology for emission reduction. All ICS installed under the VPA are constructed from brick and/or cement concrete and have as accessories - a chimney with a cap, and grate. ICSs are designed to increase heat transfer, while also matching traditional utensils and cooking habits of people in Bangladesh. The improvement in efficiency is achieved by properly adjusting the dimensions of the combustion chamber and ensuring effective air flow. In comparison to traditional stoves, the VPA ICS provide a fuel savings of around 50% to cook the same amount of food. Various models of Bondhu Chulas disseminated under the VPAs included in the monitoring report are given below:



Information requested by Eligibility criteria

Refer registered VPA-DDs for detailed description of compliance with eligibility criteria for inclusion of a VPA in the PoA.

The eligibility criteria # 1, 3, 4 and 10 are discussed below, which are relevant to the technology involved in the VPAs.

Eligibility criteria #	Eligibility criteria requirements	Explanation for a typical VPA included in the PoA
1. PoA Boundary and automatic additionality with respect to LDC as a region.	The geographical boundary of the VPA including any time-induced boundary consistent with the geographical boundary set in the PoA;	All the stoves included in the VPAs are within the VPA specific boundary. Please refer the Sales database for the same.
3. Methodology applicability criteria 2	The ICS shall have a design efficiency of more than 20%.	This has been substantiated at the time of VPA inclusion. The VPAs include the models that have been already described in the VPA-DD. No new model other than those described in VPA-DDs has been sold/distributed.
4. Methodology applicability criteria 3	Conditions that avoid double counting of emission reductions like unique identifications of product and end-user locations	All ICS are provided with unique serial number and address of the cook stove location is collected at the time of installation.
10. Micro Scale Limit	Annual ER from each VPA shall be limited to 10000 tCO ₂ e	Refer ER calculator. The ER per annum is in each VPA is much lesser / capped at 10,000 per annum

(c) Relevant dates for the specific-case VPA(s) (e.g. construction, commissioning, continued operation periods, etc.);

VPA	GS ID	Commissioning date of VPA	Monitoring period	
			MS1	MS2
VPA 01	GS 3544	01/04/2014		
VPA 02	GS 3482	05/05/2014		
VPA 04	GS 3619	15/09/2014	22/02/2016 - 28/02/2017	01/03/2017 - 28/02/2018
VPA 05	GS 3620	15/09/2014		
VPA 06	GS 3618	28/10/2014		
VPA 07	GS 4372	01/08/2014		
VPA 08	GS 4373	15/08/2014		
VPA 09	GS 4374	27/08/2014		
VPA 10	GS 4375	15/09/2014		
VPA 11	GS 4376	27/09/2014	01/08/2016 - 28/02/2017	01/03/2017 - 28/02/2018
VPA 12	GS 4377	08/10/2014		
VPA 13	GS 4378	21/10/2014		
VPA 14	GS 4379	02/11/2014		
VPA 15	GS 4380	15/11/2014		
VPA 16	GS 4381	26/11/2014		

VPA	GS ID	Commissioning date of VPA	Monitoring period	
			MS1	MS2
VPA 17	GS 4382	04/12/2014		
VPA 18	GS 4384	15/12/2014		
VPA 19	GS 4383	19/12/2014		
VPA 20	GS 4385	28/12/2014		
VPA 21	GS 4386	07/01/2015		
VPA 22	GS 4387	15/01/2015		
VPA 23	GS 4388	24/01/2015		
VPA 24	GS 4389	14/02/2015		
VPA 25	GS 4390	21/02/2015		
VPA 26	GS 4391	21/02/2015		
VPA 27	GS 4392	15/03/2015		
VPA 28	GS 4393	15/03/2015		
VPA 29	GS 4394	24/03/2015		
VPA 30	GS 4395	15/04/2015		
VPA 31	GS 4396	26/04/2015		
VPA 32	GS 4397	30/04/2015		
VPA 33	GS 4398	23/05/2015		
VPA 34	GS 4399	30/05/2015		
VPA 35	GS 4400	30/05/2015		
VPA 36	GS 4401	23/06/2015		

(d) Total GHG emission reductions or net GHG removals by sinks achieved in this monitoring period for the specific-case VPA(s), including information on how double counting is avoided.

VPA	Emission Reductions tCO _{2e}		
	MS1	MS2	Total
VPA 01	9,169	8,985	18,154
VPA 02	8,757	8,581	17,338
VPA 04	9,224	9,038	18,262
VPA 05	8,974	8,794	17,768
VPA 06	8,790	8,613	17,403
VPA 07	2,025	3,408	5,433
VPA 08	2,575	4,332	6,907
VPA 09	1,740	2,928	4,668
VPA 10	2,025	3,407	5,432
VPA 11	1,389	2,338	3,727
VPA 12	2,665	4,485	7,150
VPA 13	2,214	3,725	5,939
VPA 14	3,706	6,235	9,941
VPA 15	2,296	3,863	6,159
VPA 16	1,822	3,067	4,889
VPA 17	2,782	4,682	7,464
VPA 18	1,681	2,829	4,510
VPA 19	2,561	4,308	6,869
VPA 20	2,248	3,782	6,030
VPA 21	4,508	7,584	12,092
VPA 22	3,153	5,306	8,459
VPA 23	3,429	5,770	9,199

VPA 24	2,834	4,769	7,603
VPA 25	366	615	981
VPA 26	3,583	6,020	9,603
VPA 27	995	1,671	2,666
VPA 28	2,405	4,036	6,441
VPA 29	5,357	8,991	14,348
VPA30	3,160	5,303	8,463
VPA31	3,911	6,564	10,475
VPA32	5,481	9,199	14,680
VPA33	1,229	2,063	3,292
VPA34	174	292	466
VPA35	5,574	9,355	14,929
VPA36	5,591	9,383	14,974
Total	128,393	184,321	312,714

Avoidance of double counting:

For each Bondhu Chula installed, the end user signs an agreement (customer agreement) with the PO/PE transferring the ownership of credits to PO/PE. At the time of installation, each Bondhu Chula is assigned a unique serial number. The PO/PE’s technician collects information about the user, serial number of stove and the installation date at the time of installation in the customer agreement form. The agreement is signed by the user and the PO/PE authorized representative. The PO/PE is under contractual obligation with BBF to manufacture the stove using standard grade material and standard design specifications provided by BBF. Also, the POs/PEs assign the ownership of credits to BBF through this contract. Further, all VPAs included in the monitoring report are implemented by the CME, thus ensuring that the PO/PEs are aware of and agree that the cook stoves are included in this PoA.

For all VPAs included in the Monitoring Report, the information collected by PO/PEs technicians is transferred to its BBF’s Head office – where they are screened to eliminate any double counting of ICS and/or incomplete, invalid entries. The electronic files containing each installation record are duplicated by paper documents received from individual householders. BBF maintains a summary of all installations in an excel sheet with a clear demarcation of the VPA Boundaries This PoA level database, containing stove and user record is maintained and updated regularly.

B.1.1 Forward Action Requests

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Not Applicable

B.2. Post-Design Certification changes

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

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DEV_163 has been approved by GS allowing credits for the concerned monitoring period to be claimed under GS ver 2.2. Please refer the approved deviation at:

https://globalgoals.goldstandard.org/standards/DEV_163_Deviation-Request.pdf

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

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BBF is the implementer for all VPAs included in the concerned monitoring period. Thus, all VPAs included in the monitoring report follow the same management system.

The partner organizations / entrepreneurs (PO/PEs) developed by BBF are responsible for manufacturing, sales and installation of Bondhu Chulas. The training of the user on how to operate and maintain the Bondhu Chula is provided by the PO/PEs as well by the promotional volunteers of BBF. Physical maintenance of the Bondhu Chula is undertaken by the PO/PEs and its associated technicians at a marginal fee from the user, depending on the nature of maintenance.

Each Bondhu Chulha carries a unique serial number. Information on details about the user, serial number of stove and the installation date is recorded at the time of installation of the stove by the PO/PEs technicians. For all VPAs included in the Monitoring Report, the information collected by PO/PEs technicians is transferred to its BBF's Office – where they are QA/QC'ed to eliminate any double counting or and/or incomplete, invalid entries. BBF maintains a summary of all installations in an electronic format with a clear demarcation of the VPA Boundaries. This PoA level database, containing stove and user records is maintained and updated regularly.

Data on other ex-post parameters, including operational performance of Bondhu Chulha, continued usage of baseline Chulha, etc. are recorded objectively during sample surveys conducted annually. For the current monitoring period, sampling was done at a PoA level (across multiple VPAs) using 95/10 as confidence / precision. Monitoring consisted of checking the representative samples against monitoring plan parameters using a questionnaire-based survey. The survey was conducted by BBF to collect feedback from sampled households. The data collected was transferred into excel sheet

for analysis and calculation of emission reductions. The CME is responsible for developing the Monitoring Report; and for ensuring adherence to the monitoring procedures set in the monitoring plan.

The data recorded at the time of installation, as well as that collected through sampling surveys are transferred onto the emission reduction calculation workbook. For results of the ER calculations, refer VER calculation sheet.

SECTION D. DATA AND PARAMETERS

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

>>

Data/parameter	$B_{b,y}$
Unit	Tons of firewood per household per year
Description	Quantity of firewood consumed in baseline scenario during year y (tons per household per year)
Source of data	World Bank Study, Restoring Balance: Bangladesh's Rural Energy Realities, March 2009
Value(s) applied	1.06484 tons
Choice of data or measurement methods and procedures	The Gold Standard Simplified Methodology for Efficient Cookstoves, option (a), Section 4.2
Purpose of data	Calculation of baseline emissions or baseline net GHG removals by sinks
Additional comments	Fixed for the entire crediting period

Data/parameter	$f_{NRB,y}$
Unit	Fraction
Description	Fraction of biomass in year y that can be established as non-renewable using survey methods
Source of data	Default Values of Fraction of Non-Renewable Biomass for Least Developed Countries and Small Island Developing States (EB 67 Annex 22)
Value(s) applied	0.83
Choice of data or measurement methods and procedures	The value is provided by CDM EB as required by the methodology
Purpose of data	Calculation of baseline emissions or baseline net GHG removals by sinks
Additional comments	

Data/parameter	$EF_{b,fuel,CO_2}$
Unit	tCO ₂ /ton of wood
Description	CO ₂ emission factor of firewood that is substituted or reduced

Source of data	The Gold Standard Simplified Methodology for Efficient Cookstoves
Value(s) applied	1.747
Choice of data or measurement methods and procedures	Default value as prescribed by methodology applied
Purpose of data	Calculation of baseline emissions or baseline net GHG removals by sinks
Additional comments	

Data/parameter	$EF_{b,fuel,non_CO2}$
Unit	tCO ₂ /ton of wood
Description	Non_CO ₂ emission factor of firewood that is substituted or reduced
Source of data	The Gold Standard Simplified Methodology for Efficient Cookstoves, http://www.goldstandard.org/sites/default/files/documents/er_calculation_tool_cookstove_meth_v2.00.xlsx
Value(s) applied	0.533
Choice of data or measurement methods and procedures	Default value as prescribed by methodology applied
Purpose of data	Calculation of baseline emissions or baseline net GHG removals by sinks
Additional comments	The value mentioned in PoA-DD (0.455) is valid for first commitment period only. The calculation tool link referred above mentions the emission factor as 0.533 for post 2012 period.

Data/parameter	η_b
Unit	Fraction
Description	Efficiency of the cookstove being used in the baseline scenario
Source of data	The Gold Standard Simplified Methodology for Efficient Cookstoves
Value(s) applied	0.1
Choice of data or measurement methods and procedures	Default value as prescribed by methodology applied
Purpose of data	Calculation of baseline emissions or baseline net GHG removals by sinks
Additional comments	

Data/parameter	$\eta_{p,y}$
Unit	Fraction
Description	Efficiency of the cookstove being used in the project scenario

Source of data	Third party test report as per PCIA protocol
Value(s) applied	0.2326 (23.26%) average of the test values obtained
Choice of data or measurement methods and procedures	The stove thermal efficiency test reports as provided by University of Dhaka
Purpose of data	Calculation of baseline emissions or baseline net GHG removals by sinks
Additional comments	

Data/parameter	DF _n
Unit	Fraction
Description	Discount factor to account for efficiency loss of project cookstove per year of operation (Fraction)
Source of data	The Gold Standard Simplified Methodology for Efficient Cookstoves
Value(s) applied	0.99
Choice of data or measurement methods and procedures	Default value as prescribed by methodology applied
Purpose of data	Calculation of baseline emissions or baseline net GHG removals by sinks
Additional comments	

Data/parameter	LAF
Unit	Fraction
Description	Leakage adjustment factor
Source of data	The Gold Standard Simplified Methodology for Efficient Cookstoves
Value(s) applied	0.95
Choice of data or measurement methods and procedures	Default value as prescribed by methodology applied
Purpose of data	Calculation of leakage
Additional comments	

D.2 Data and parameters monitored

>>

Data/parameter	U _{p,y}												
Unit	Fraction / Percentage												
Description	Usage rate in project scenario p during year y												
Source of data	Sampling Surveys/ Annual usage survey/Monitoring survey												
Value(s) applied	<table border="1"> <thead> <tr> <th colspan="2">MS1</th> <th colspan="2">MS2</th> </tr> <tr> <th>1-2 years</th> <th>2-3 years</th> <th>2-3 years</th> <th>3-4 years</th> </tr> </thead> <tbody> <tr> <td>0.9804</td> <td>0.9709</td> <td>0.9703</td> <td>0.9619</td> </tr> </tbody> </table>	MS1		MS2		1-2 years	2-3 years	2-3 years	3-4 years	0.9804	0.9709	0.9703	0.9619
MS1		MS2											
1-2 years	2-3 years	2-3 years	3-4 years										
0.9804	0.9709	0.9703	0.9619										

Measurement methods and procedures	Proportion of number of projects cookstoves found to be operational during the survey to the total number of samples surveyed.
Monitoring frequency	Annual
QA/QC procedures	The parameter is determined based on sample surveys. The sample size is such determined to yield results with 95/10 confidence/precision. Proportion of number of projects cookstoves found to be operational during the survey to the total number of samples surveyed.
Purpose of data	Calculation of baseline emissions or baseline net GHG removals by sinks. The parameter is determined based on sample surveys. The sample size is such determined to yield results with 95/10 confidence/precision.
Additional comment	Calculation of baseline emissions or baseline net GHG removals by sinks

Data/parameter	$N_{p,y}$												
Unit	Number of projects cookstove credited (units)												
Description	Cookstove in the project database for project scenario p through year y												
Source of data	Sales Record												
Value(s) applied	<table border="1"> <thead> <tr> <th colspan="2">MS1</th> <th colspan="2">MS2</th> </tr> <tr> <th>1-2 years</th> <th>2-3 years</th> <th>2-3 years</th> <th>3-4 years</th> </tr> </thead> <tbody> <tr> <td>59,438</td> <td>124,444</td> <td>59,438</td> <td>124,444</td> </tr> </tbody> </table>	MS1		MS2		1-2 years	2-3 years	2-3 years	3-4 years	59,438	124,444	59,438	124,444
	MS1		MS2										
	1-2 years	2-3 years	2-3 years	3-4 years									
59,438	124,444	59,438	124,444										
Measurement methods and procedures	Aggregate of all sales/installed since the start of each VPA												
Monitoring frequency	Continuous												
QA/QC procedures	The sales record is cross checked to eliminate duplications.												
Purpose of data	Calculation of baseline emissions or baseline net GHG removals by sinks												
Additional comments	-												

Data/parameter	$DF_{b,stove,y}$												
Unit	Fraction												
Description	Discount factor to account for the baseline stove use in project scenario during the year y												
Source of data	Sampling Surveys/ Annual usage survey/Monitoring survey												
Value(s) applied	<table border="1"> <thead> <tr> <th colspan="2">MS1</th> <th colspan="2">MS2</th> </tr> <tr> <th>1-2 years</th> <th>2-3 years</th> <th>2-3 years</th> <th>3-4 years</th> </tr> </thead> <tbody> <tr> <td>0.0131</td> <td>0.0196</td> <td>0.0195</td> <td>0.0244</td> </tr> </tbody> </table>	MS1		MS2		1-2 years	2-3 years	2-3 years	3-4 years	0.0131	0.0196	0.0195	0.0244
	MS1		MS2										
	1-2 years	2-3 years	2-3 years	3-4 years									
0.0131	0.0196	0.0195	0.0244										
Measurement methods and procedures	Proportion of number of meals cooked using the baseline stove vs total number of meals (if baseline stove is in use). If the baseline stove is not in use, the value is taken to be zero.												
Monitoring frequency	Annual												
QA/QC procedures	NA for this monitoring period												
Purpose of data	Calculation of baseline emissions or baseline net GHG removals by sinks												

Additional comments -

Data/parameter	Stove Condition
Unit	Qualitative
Description	Inspection of physical condition of project
Source of data	Sampling Surveys/ Annual usage survey/Monitoring survey
Value(s) applied	All the stoves were found in good condition. Refer ER calculator for detail on each sample
Measurement methods and procedures	-
Monitoring frequency	Annual
QA/QC procedures	-
Purpose of data	SD Assessment
Additional comments	-

Data/parameter	Stove Replacement				
Unit	Qualitative				
Description	Replacements of project ICS with new project ICS, if applicable				
Source of data	Sales and warranty replacement records				
Value(s) applied	<table border="1"> <thead> <tr> <th>MS1</th> <th>MS2</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> </tr> </tbody> </table> <p>These replacements were under warranty and the users were provided with new units.</p>	MS1	MS2	0	0
MS1	MS2				
0	0				
Measurement methods and procedures	-				
Monitoring frequency	Continuous				
QA/QC procedures	Recording the ICS model replaced as well as ICS model installed as a replacement				
Purpose of data	SD Assessment				
Additional comments	No new ICS have been installed in the monitoring period.				

Data/parameter	Air Quality
Unit	Qualitative
Description	Visible Reduction in smoke, soot deposition on utensils
Source of data	Sampling Surveys/ Annual usage survey/Monitoring survey
Value(s) applied	Refer VER calculation workbook. All respondents mentioned reduction in smoke and soot while cooking with project cook stoves
Measurement methods and procedures	-
Monitoring frequency	Annual
QA/QC procedures	-

Purpose of data	Sustainable Development Assessment-
Additional comment	-

Data/parameter	Access to affordable and clean energy services
----------------	--

Unit	Dimensionless
Description	Number of ICS sold under the VPA
Source of data	Sales Record

	VPA number	No. of ICS installed
	VPA 01	9,029
	VPA 02	8,623
	VPA 03	0
	VPA 04	9,083
	VPA 05	8,837
	VPA 06	8,656
	VPA 07	3,425
	VPA 08	4,354
	VPA 09	2,943
	VPA 10	3,424
	VPA 11	2,350
	VPA 12	4,507
	VPA 13	3,744
	VPA 14	6,266
	VPA 15	3,882
	VPA 16	3,082
	VPA 17	4,705
Value(s) applied	VPA 18	2,843
	VPA 19	4,330
	VPA 20	3,801
	VPA 21	7,622
	VPA 22	5,332
	VPA 23	5,799
	VPA 24	4,793
	VPA 25	619
	VPA 26	5,968
	VPA 27	1,642
	VPA 28	3,966
	VPA 29	8,834
	VPA 30	5,211
	VPA 31	6,449
	VPA 32	9,038
	VPA 33	2,027
	VPA 34	287
	VPA 35	9,192
	VPA 36	9,219
	Total	183,882

Measurement methods and procedures	Aggregate of all sales/installed since the start of each VPA
Monitoring frequency	Continuous
QA/QC procedures	The sales record is cross checked to eliminate duplications.

Purpose of data	Sustainable Development Assessment
Additional comments	-

Data/parameter	Quality of Employment				
Unit	Dimensionless				
Description	Number of Trainings, Workshops for training of POs/Field Officers				
Source of data	Training Records by PO/PE/CME				
Value(s) applied	<table border="1"> <thead> <tr> <th>MS1</th> <th>MS2</th> </tr> </thead> <tbody> <tr> <td>63</td> <td>65</td> </tr> </tbody> </table>	MS1	MS2	63	65
MS1	MS2				
63	65				
Measurement methods and procedures	Aggregate of the number of trainings organised				
Monitoring frequency	Continuous				
QA/QC procedures	Aggregate of the number of trainings organised				
Purpose of data	Sustainable Development Assessment-				
Additional comments	-				

Data/parameter	Livelihood of poor
Unit	Qualitative
Description	Reduction in fuel expenditure/reduction in fuel collection time
Source of data	Sampling Surveys/ Annual usage survey/Monitoring survey
Value(s) applied	Refer VER calculation workbook. All respondents mentioned either reduction in fuel expenditure or reduction in fuel collection time after they have started using Bondhu Chulha.
Measurement methods and procedures	-
Monitoring frequency	Annual
QA/QC procedures	--
Purpose of data	Sustainable Development Assessment-
Additional comments	-

Data/parameter	Human and Institutional capacity
Unit	Dimensionless
Description	Number of end-user awareness initiatives/events/workshops
Source of data	Records of end user awareness initiatives/events/workshops
Value(s) applied	0
Measurement methods and procedures	Aggregate of the number of end user awareness initiatives/events/workshops organised
Monitoring frequency	Continuous
QA/QC procedures	-
Purpose of data	Sustainable Development Assessment

Additional comments	New ICSs were not sold in this monitoring period hence there is no requirement for end-user awareness initiatives/ events/workshops.
---------------------	--

Data/parameter	Quantitative employment and Income Generation	
Unit	Dimensionless	
Description	Number of Jobs Created	
Source of data	Records of Number of Jobs Created	
Value(s) applied	MS1	MS2
	425	445
Measurement methods and procedures	Aggregate of Number of Jobs Created	
Monitoring frequency	Continuous	
QA/QC procedures	-	
Purpose of data	Sustainable Development Assessment	
Additional comments	-	

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

Data/Parameter	VPA IDs	Value obtained in this monitoring period			Value obtained last monitoring period
		MS1	MS2	Total	
Emission Reductions (tCO _{2e})	VPA 1	9,169	8,985	18,154	7,982
	VPA 2	8,757	8,581	17,338	7,982
	VPA 4	9,224	9,038	18,262	7,982
	VPA 5	8,974	8,794	17,768	7,982
	VPA 6	8,890	8,613	17,403	7,982
	VPA 7	2,025	3,408	5,433	19,968
	VPA 8	2,575	4,332	6,907	19,507
	VPA 9	1,740	2,928	4,668	19,235
	VPA10	2,025	3,407	5,432	18,612
	VPA11	1,389	2,338	3,727	18,358
	VPA12	2,665	4,485	7,150	17,990
	VPA13	2,214	3,725	5,939	17,637
	VPA14	3,706	6,235	9,941	17,226
	VPA15	2,296	3,863	6,159	17,001
	VPA16	1,822	3,067	4,889	16,759
	VPA17	2,782	4,682	7,464	16,366
	VPA18	1,681	2,829	4,510	16,243
	VPA19	2,561	4,308	6,869	16,016
	VPA20	2,248	3,782	6,030	15,893
	VPA21	4,508	7,584	12,092	15,709
	VPA22	3,153	5,306	8,459	15,485
	VPA23	3,429	5,770	9,199	15,185
	VPA24	2,834	4,769	7,603	14,670
	VPA25	366	615	981	14,611
	VPA26	3,583	6,020	9,603	14,271

VPA27	995	1,671	2,666	14,010
VPA28	2,405	4,036	6,441	13,972
VPA29	5,357	8,991	14,348	13,377
VPA30	3,160	5,303	8,463	13,016
VPA31	3,911	6,564	10,475	12,781
VPA32	5,481	9,199	14,680	12,404
VPA33	1,229	2,063	3,292	11,948
VPA34	174	292	466	11,930
VPA35	5,574	9,355	14,929	11,522
VPA36	5,591	9,383	14,974	11,125
Total	128,393	184,321	312,714	502,737

D.4. Implementation of sampling plan

>>

a) List of VPAs to which the single sampling was applied

GS ID	No of stoves Active in MS1	No of stoves Active in MS2
GS 3544 VPA 01	9,029	9,029
GS 3482 VPA 02	8,623	8,623
GS 3619 VPA 04	9,083	9,083
GS 3620 VPA 05	8,837	8,837
GS 3618 VPA 06	8,656	8,656
GS 4372 VPA 07	3,425	3,425
GS 4373 VPA 08	4,354	4,354
GS 4374 VPA 09	2,943	2,943
GS 4375 VPA 10	3,424	3,424
GS 4376 VPA 11	2,350	2,350
GS 4377 VPA 12	4,507	4,507
GS 4378 VPA 13	3,744	3,744
GS 4379 VPA 14	6,266	6,266
GS 4380 VPA 15	3,882	3,882
GS 4381 VPA 16	3,082	3,082
GS 4382 VPA 17	4,705	4,705
GS 4384 VPA 18	2,843	2,843
GS 4383 VPA 19	4,330	4,330
GS 4385 VPA 20	3,801	3,801
GS 4386 VPA 21	7,622	7,622
GS 4387 VPA 22	5,332	5,332
GS 4388 VPA 23	5,799	5,799
GS 4389 VPA 24	4,793	4,793
GS 4390 VPA 25	619	619
GS 4391 VPA 26	5,968	5,968
GS 4392 VPA 27	1,642	1,642
GS 4393 VPA 28	3,966	3,966

GS 4394 VPA 29	8,834	8,834
GS 4395 VPA 30	5,211	5,211
GS 4396 VPA 31	6,449	6,449
GS 4397 VPA 32	9,038	9,038
GS 4398 VPA 33	2,027	2,027
GS 4399 VPA 34	287	287
GS 4400 VPA 35	9,192	9,192
GS 4401 VPA 36	9,219	9,219

b) Description of implemented single sampling design.

- **Objectives and reliability requirements:** Sampling done at a PoA level (across multiple VPAs), using 95/10 as confidence / precision given annual monitoring frequency is being maintained.
- **Sampling Schedule:** Usage survey on the sampled cook stoves was conducted during Jan 2017 (for MS1) and Jan 2018 (for MS2).
- **Target Population/ Sampling Frame:** The Target population is the stoves sold under PoA. The database of the stoves sold under the PoA (including information on date of sale, serial number and user details) serve as the sampling frame.
- **Sampling Method:** As per the sampling plan, sampling is based on simple random sampling approach (based on age). All stoves under the PoA (i.e., from VPA01-VPA36) were categorized into age class belonging to their respective monitoring sessions depending upon their age as at end of monitoring period as a conservative measure, as follow:
 - 1-2 years and 2-3 years for MS1
 - 2-3 years and 3-4 years for MS2
- The sample size for each stratum was calculated independently using random sampling approach. Each stove under a given age category were assigned a sampling serial number. Required number of random numbers were generated using online tool i.e., STATTREK random number² generator after merging all the stoves across VPAs for a given age class together. The results from the corresponding age category have been applied for ER calculations.
- **Sampling Size:** Sample size was determined according to the applied methodologies that states:
 The survey should be conducted following simple random sampling approach and the minimum sample size should be determined as per the guidelines below:
 - Project target population < 300: Minimum sample size 30
 - Project target population 300 to 1000: Minimum sample size 10% of group size
 - Project target population > 1000 Minimum sample size 100

²<http://stattrek.com/statistics/random-number-generator.aspx>

Population Data							
Monitoring Session	Age Category	Number of Stoves installed	Estimated $U_{p,y}$ (p)	SD^2	$V = (SD/p)^2$	Sample Size required	Samples covered during monitoring
MS1	1-2 years	59438	0.975	0.02	0.03	100	102
	2-3 years	124444	0.950	0.05	0.05	100	103
Total/Average		183882	0.958			200	205
MS2	2-3 years	59438	0.950	0.05	0.05	100	101
	3-4 years	124444	0.925	0.07	0.08	100	105
Total/Average		183882	0.933			200	206

Population Data							
Monitoring Session	Age Category	Number of Stoves installed	Estimated $U_{p,y}$ (p)	SD^2	$V = (SD/p)^2$	Sample Size required	Samples covered during monitoring
MS1	1-2 years	59438	0.975	0.02	0.03	100	102
	2-3 years	124444	0.950	0.05	0.05	100	103
Total/Average		183882	0.958			200	205
MS2	2-3 years	59438	0.950	0.05	0.05	100	101
	3-4 years	124444	0.925	0.07	0.08	100	105
Total/Average		183882	0.933			200	206

c) Collected data (electronic spreadsheets may be attached and referenced).

Refer appendix 2 for the monitoring questionnaire that was used to collect the monitoring data. The data collected on the sampled stoves is presented in the worksheets titled “Monitoring Summary MS1” and “Monitoring Summary MS2” in the VER Calculation workbook.

d) Analysis of the collected data;

Analysis of the data monitored through sampling revealed the following results and precisions:

U _{P,y}	MS1		MS2		Unit
	1-2 years	2-3 years	2-3 years	3-4 years	
	0.9804	0.9709	0.9703	0.9619	
Population Size	59438	124444	59438	124444	number
Sample Size	102	103	101	105	number
Proportion for U _{P,y}	0.9804	0.9709	0.9703	0.9619	fraction
Standard error of proportion for	1.37%	1.66%	1.69%	1.87%	%
Precision for U _{P,y}	2.74%	3.34%	3.41%	3.80%	%
Result for U _{P,y}	ok, acceptable	ok, acceptable	ok, acceptable	ok, acceptable	--

DF _{b,Stove,y}	MS1		MS2		Unit
	1-2 years	2-3 years	2-3 years	3-4 years	
	0.0131	0.0196	0.0195	0.0244	
Population Size	59438	124444	59438	124444	number
Sample Size	102	103	101	105	number
Proportion for non baseline stove	0.987	0.980	0.980	0.976	fraction
Standard error of proportion for	1.13%	1.37%	1.38%	1.51%	%
Precision for non baseline stove	2.24%	2.73%	2.75%	3.03%	%
Result for non baseline stove use	ok, acceptable	ok, acceptable	ok, acceptable	ok, acceptable	--

The VER calculation spreadsheet contains calculation of relative precision. Since the relative margin of error obtained is less than 10%, the data are statistically acceptable and deemed representative of the population.

e) Demonstration of whether the samples were randomly selected and are representative of the population.

The sales data of VPA 01- 36 combined was arranged in the order of date in excel, with serial numbers assigned to each sale (separately for each age class). Random numbers for each age class were generated using the online random number generator available at **STATTREK³** random number generator. The samples with same serial number as those generated by random number were selected for monitoring. Thus, the samples identified are purely random. Refer ER calculator and VPA01-36 combined database for details.

SECTION E. CALCULATION OF SDG IMPACTS

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

>>

The methodology directly provides equation for emission reductions (without separate baseline, projector leakage emission reduction equations). As per the methodology, and the PoA-DD, emission reductions are calculated as:

³ <https://stattrek.com/statistics/random-number-generator.aspx>

$$ER_y = \sum_{total}^{xtoy} N_{P,y} * P_y * U_{P,y} * (f_{NRB,y} * EF_{b,fuel,CO2} + EF_{b,fuel,non_CO2}) * (1 - DF_{b,Stove,y})$$

Where,

$N_{P,y}$	Number of project cook stoves of each age group operational in the year y
P_y	Quantity of firewood that is saved in the year y (tons per household in year y)
$U_{P,y}$	Usage rate for project cook stoves in year y, based on adoption rate and drop off rate revealed by usage surveys (fraction)
$f_{NRB,b,y}$	Fraction of biomass, used in year y for baseline scenario, which can be established as non-renewable. The project proponents shall estimate project specific national/ regional value or apply the default f_{NRB} value provided by the CDM Executive Board and endorsed by the host country DNA.
$EF_{b,fuel,CO2}$	CO ₂ emission factor of firewood that is substituted or reduced. (Default value for wood fuel 1.747 tCO ₂ /ton of wood)
$EF_{b,fuel,non_CO2}$	Non-CO ₂ emission factor of firewood that is substituted or reduced. (Default value for wood fuel 0.533 tCO ₂ /ton of wood)
$DF_{b,Stove,y}$	Usage of baseline cook stove during the year y (fraction) in project scenario
x	y - 1
y	Year of the crediting period

Determination of quantity of biomass saved (P_y):

Quantity of firewood that is saved (P_y) is estimated as follows:

$$P_y = B_{b,y} * (1 - \eta_b / \eta_{p,y}) * LAF$$

$B_{b,y}$	Quantity of firewood consumed in baseline scenario during year y (tones per household per year)
$\eta_{p,y}$	Efficiency of project cook stove in year y (fraction)
η_b	Efficiency of the baseline cook stove being replaced (fraction). A default value of 10% shall be used if the replaced cook stove is a three stone fire, or a conventional device without a grate or a chimney i.e. with no improved combustion air supply or flue gas ventilation
LAF	Default leakage adjustment factor= 0.95 to account for leakages related to non-renewable biomass saved by the project activity

Determination of quantity of firewood consume in the baseline ($B_{b,y}$):

The firewood consumed is the estimated average annual consumption of firewood per household (tons/year), which may be derived using option (a) of the methodology, i.e. historical data. Accordingly, $B_{b,y}$ is referenced from historical data as available in published literature. As per table 2.2 of the World Bank Study, Restoring Balance: Bangladesh’s Rural Energy Realities, March 2009, the fuel wood usage per household for cooking is 1.06484 tons per annum.

Determination of project cook stove efficiency ($\eta_{p,y}$):

Efficiency of project cook stove in year y ($\eta_{p,y}$) is estimated as follows:

$$\eta_{p,y} = \eta_p * (DF_{\eta})^{y-1} * 0.94$$

Where,

$\eta_{p,y}$	Efficiency of project cook stove in year y (fraction)
--------------	---

η_p	Efficiency of project cook stove (fraction) determined at the start of the project activity.
DF_η	Discount factor to account for efficiency loss of project cook stove per year of operation (Fraction). The default value for this parameter is 0.99 i.e. 1% efficiency loss/year.
0.94	Adjustment factor to account for uncertainty related to project cook stove efficiency test

Sample calculation:

Monitoring Session	Age category	y-1	ER multiplier	$U_{p,y}$	$DF_{b,Stove,y}$	$\eta_{p,y}$	P_y
MS1	1-2 years	1	1.044	98.04%	0.013	21.65%	0.5443
	2-3 years	2	1.018	97.09%	0.020	21.43%	0.5395
MS2	2-3 years	2	1.018	97.03%	0.020	21.43%	0.5395
	3-4 years	3	0.995	96.19%	0.024	21.22%	0.5348

VPA NUMBER	Monitoring Session #1			Monitoring Session #2		
	# of stoves		ERs	# of stoves		ERs
	1-2 years	2-3 years		2-3 years	3-4 years	
VPA 01	0	9029	9169	0	9029	8985
VPA 02	0	8623	8757	0	8623	8581
VPA 03	0	0	0	0	0	0
VPA 04	0	9083	9224	0	9083	9038
VPA 05	0	8837	8974	0	8837	8794
VPA 06	0	8656	8790	0	8656	8613
VPA 07	0	3425	2025	0	3425	3408
VPA 08	0	4354	2575	0	4354	4332
VPA 09	0	2943	1740	0	2943	2928
VPA 10	0	3424	2025	0	3424	3407
VPA 11	0	2350	1389	0	2350	2338
VPA 12	0	4507	2665	0	4507	4485
VPA 13	0	3744	2214	0	3744	3725
VPA 14	0	6266	3706	0	6266	6235
VPA 15	0	3882	2296	0	3882	3863
VPA 16	0	3082	1822	0	3082	3067
VPA 17	0	4705	2782	0	4705	4682
VPA 18	0	2843	1681	0	2843	2829
VPA 19	0	4330	2561	0	4330	4308
VPA 20	0	3801	2248	0	3801	3782
VPA 21	0	7622	4508	0	7622	7584
VPA 22	0	5332	3153	0	5332	5306
VPA 23	0	5799	3429	0	5799	5770
VPA 24	0	4793	2834	0	4793	4769
VPA 25	0	619	366	0	619	615
VPA 26	3573	2395	3583	3573	2395	6020
VPA 27	1642	0	995	1642	0	1671
VPA 28	3966	0	2405	3966	0	4036
VPA 29	8834	0	5357	8834	0	8991
VPA 30	5211	0	3160	5211	0	5303
VPA 31	6449	0	3911	6449	0	6564
VPA 32	9038	0	5481	9038	0	9199
VPA 33	2027	0	1229	2027	0	2063
VPA 34	287	0	174	287	0	292
VPA 35	9192	0	5574	9192	0	9355
VPA 36	9219	0	5591	9219	0	9383
Total	59438	124444	128393	59438	124444	184321

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

>>

Not Applicable

E.3. Calculation of leakage

>>

Not applicable

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

SDG	SDG Impact	Baseline estimate		Project estimate		Net benefit	
		MS1	MS2	MS1	MS2	MS1	MS2
13 Climate Action							
(VPA 01)		9,169	8,985	0	0	9,169	8,985
(VPA 02)		8,757	8,581	0	0	8,757	8,581
(VPA 04)		9,224	9,038	0	0	9,224	9,038
(VPA 05)		8,974	8,794	0	0	8,974	8,794
(VPA 06)		8,890	8,613	0	0	8,890	8,613
(VPA 07)		2,025	3,408	0	0	2,025	3,408
(VPA 08)		2,575	4,332	0	0	2,575	4,332
(VPA 09)		1,740	2,928	0	0	1,740	2,928
(VPA 10)		2,025	3,407	0	0	2,025	3,407
(VPA 11)		1,389	2,338	0	0	1,389	2,338
(VPA 12)		2,665	4,485	0	0	2,665	4,485
(VPA 13)		2,214	3,725	0	0	2,214	3,725
(VPA 14)		3,706	6,235	0	0	3,706	6,235
(VPA 15)		2,296	3,863	0	0	2,296	3,863
(VPA 16)	Amount of CO ₂ e emissions reduced by the project per year	1,822	3,067	0	0	1,822	3,067
(VPA 17)		2,782	4,682	0	0	2,782	4,682
(VPA 18)		1,681	2,829	0	0	1,681	2,829
(VPA 19)		2,561	4,308	0	0	2,561	4,308
(VPA 20)		2,248	3,782	0	0	2,248	3,782
(VPA 21)		4,508	7,584	0	0	4,508	7,584
(VPA 22)		3,153	5,306	0	0	3,153	5,306
(VPA 23)		3,429	5,770	0	0	3,429	5,770
(VPA 24)		2,834	4,769	0	0	2,834	4,769
(VPA 25)		366	615	0	0	366	615
(VPA 26)		3,583	6,020	0	0	3,583	6,020
(VPA 27)		995	1,671	0	0	995	1,671
(VPA 28)	2,405	4,036	0	0	2,405	4,036	
(VPA 29)	5,357	8,991	0	0	5,357	8,991	
(VPA 30)	3,160	5,303	0	0	3,160	5,303	
(VPA 31)	3,911	6,564	0	0	3,911	6,564	
(VPA 32)	5,481	9,199	0	0	5,481	9,199	
(VPA 33)	1,229	2,063	0	0	1,229	2,063	
(VPA 34)	174	292	0	0	174	292	
(VPA 35)	5,574	9,355	0	0	5,574	9,355	
(VPA 36)	5,591	9,383	0	0	5,591	9,383	
Total		128,393	184,321	0	0	128,393	184,321

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 Climate Action: Amount of CO ₂ emissions reduced		
GS 3544 VPA 01	18,664	18,154 ⁵
GS 3482 VPA 02	18,664	17,338
GS 3619 VPA 04	18,664	18,262
GS 3620 VPA 05	18,664	17,768
GS 3618 VPA 06	18,664	17,403
GS 4372 VPA 07	14,776	5,433
GS 4373 VPA 08	14,794	6,907
GS 4374 VPA 09	14,807	4,668
GS 4375 VPA 10	14,833	5,432
GS 4376 VPA 11	14,844	3,727
GS 4377 VPA 12	14,860	7,150
GS 4378 VPA 13	14,875	5,939
GS 4379 VPA 14	14,893	9,941
GS 4380 VPA 15	14,895	6,159
GS 4381 VPA 16	14,912	4,889
GS 4382 VPA 17	14,929	7,464
GS 4384 VPA 18	14,934	4,510
GS 4383 VPA 19	14,944	6,869
GS 4385 VPA 20	14,950	6,030
GS 4386 VPA 21	14,966	12,092
GS 4387 VPA 22	14,975	8,459
GS 4388 VPA 23	14,988	9,199
GS 4389 VPA 24	15,011	7,603
GS 4390 VPA 25	15,013	981
GS 4391 VPA 26	15,029	9,603
GS 4392 VPA 27	15,041	2,666
GS 4393 VPA 28	15,041	6,441
GS 4394 VPA 29	15,069	14,348
GS 4395 VPA 30	15,085	8,463
GS 4396 VPA 31	15,095	10,475
GS 4397 VPA 32	15,112	14,680
GS 4398 VPA 33	15,132	3,292
GS 4399 VPA 34	15,133	466
GS 4400 VPA 35	15,151	14,929
GS 4401 VPA 36	15,169	14,974
Total	542,572	312,714

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

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.

5 This value is for the entire monitoring period, which is roughly 18 months long, hence not capped, as the respective annual value does not exceed 10,000tCO₂e/year for any of the VPAs listed (refer the ER calculation spreadsheet).

>>

The ex-ante estimate per VPA for the monitoring period has been calculated as follows:

= Ex-ante ER as per VPA-DD (Section A.4.4) * (Number of Days monitored / No. of days in a year)

A sample calculation For VPA 01⁶:

= Ex-ante ER for Year 2016⁷ + Ex-ante ER for Year 2017 + Ex-ante ER for Year 2018
= $9,397 * 306^8 / 366 + 9,315 * 365^9 / 365 + 9,231 * 59^{10} / 365$
= 18,664

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

>>

Not Applicable, the ERs are lower than ex-ante estimates in the approved PDD.

SECTION F. SAFEGUARDS REPORTING

>>

Not applicable as this is under GS version 2.2

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.

>>

No negative comments received during the monitoring period.

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

>>

Not applicable

⁶ For other VPAs, refer sheet "Monitoring report Table".

⁷ As per section A.4.4 of the registered VPA-DDs

⁸ No. of Days monitored in Year 2016 = 31 Dec 2016 - 01 Mar 2016 + 1 = 306

⁹ No. of Days monitored in Year 2017 = 31 Dec 2017 - 01 Jan 2017 + 1 = 365

¹⁰ No. of Days monitored in Year 2018 = 28 Feb 2018 - 01 Jan 2018 + 1 = 59

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

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Not applicable, no legal contests occurred during the monitoring period.

APPENDIX 1

Entity responsible for completing the TEMPLATE- Monitoring Report	
Organization name	Climate Secure India Private Limited
Street/P.O. Box	Club Road
Building	Pragati Apartments
City	West Delhi
State/Region	Delhi
Postcode	110063
Country	India
E-mail	info@climate-secure.com
Website	www.climate-secure.com
Contact Person	<u>Rohit Lohia</u>

Revision History

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