المجلس العالمي للبصمة الكربونية
GLOBAL CARBON COUNCIL

Project Submission Form

V3.2 - 2020

Contents

COVER PAGE- Project Submission Form (PSF)

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

BASIC INFORMATION

Title of the Project Activity	Household biodigesters - Eco Cooking
PSF version number	01
Date of completion of this form	13/09/2022
Project Owner(s) (Shall be consistent with De-registered CDM Type B Projects)	ClimatePartner GmbH
Country where the Project Activity is located	India
GPS coordinates of the project site(s)	

Physical address	Latitude	Longitude
Kerela	11.817944 N (11° 49' 4.6")	76.166554 E (76° 9' 59.59")
Madhya Pradesh	22.057484 N (22° 3' 26.94")	78.434389 E (78° 26' 3.8")
Bihar	25.410655 N (25° 24' 38.36")	85.405312 E (85° 24' 19.12")
Jharkhand	23.598696 N (23° 35' 55.31")	85.683634 E (85° 41' 1.08")

Eligible GCC Project Type as per the Project Standard
(Tick applicable project type)

☒ **Type A:**
- ☐ Type A1
- ☒ Type A2

☐ **Type B – De-registered CDM Projects:**[1]
- ☐ Type B1
- ☐ Type B2

[1] Owners of Type B projects shall fill in the form provided in Appendix 7.

<table>
<tr><td>Minimum compliance requirements</td><td>☒ Real and Measurable GHG Reductions
☒ National Sustainable Development Criteria (if any)
☒ Apply credible baseline and monitoring methodologies
☒ Additionality
☒ Local Stakeholder Consultation Process
☒ Global Stakeholder Consultation Process
☒ No GHG Double Counting
☒ Contributes to United Nations Sustainable Development Goal 13 (Climate Action)</td></tr>
<tr><td>Choose optional and additional requirements
(Tick applicable label categories)</td><td>☒ Do-no-net-harm Safeguards to address Environmental Impacts
☒ Do-no-net-harm Safeguards to address Social Impacts
☒ Contributes to United Nations Sustainable Development Goals (in addition to Goal 13)</td></tr>
<tr><td>Applied methodologies
(Shall be approved by the GCC or the CDM)</td><td>AMS-I.E.: Switch from non-renewable biomass for thermal applications by the user --- Version 12.0</td></tr>
<tr><td>GHG Sectoral scope(s) linked to the applied methodology(ies)</td><td>S.S 01: Energy industries (renewable - / non-renewable sources)</td></tr>
<tr><td>Applicable Rules and Requirements for Project Owners
(Tick applicable Rules and Requirements)</td><td>
<table>
<tr><th colspan="2">Rules and Requirements</th><th>Reference</th><th>Version</th></tr>
<tr><td colspan="2">☒ ISO 14064-2</td><td></td><td></td></tr>
<tr><td colspan="2">☒ Applicable host country legal requirements /rules</td><td></td><td></td></tr>
<tr><td rowspan="6"></td><td>☒ Project Standard</td><td>31/12/2020</td><td>03.1</td></tr>
<tr><td>☐ Approved GCC Methodology (XXXXX)</td><td></td><td></td></tr>
<tr><td>☒ Program Definitions</td><td>31/12/2020</td><td>03.1</td></tr>
<tr><td>☒ Environment and Social Safeguards Standard</td><td>17/08/2020</td><td>02</td></tr>
<tr><td>☒ Project Sustainability Standard</td><td>31/12/2020</td><td>02.1</td></tr>
<tr><td>☒ Instructions in Project Submission Form (PSF)-template</td><td>31/12/2020</td><td>03.2</td></tr>
</table>
</td></tr>
</table>

	☒ GCC Rules and Requirements[2]	☐ Add rows if required		
	☒ CDM Rules[3]	☒ Approved CDM Methodology (AMS-I. E)	AMS-I. E	12.0
		☐ Tool for the demonstration and assessment of additionality	TOOL 01	
		☐ Combined tool to identify the baseline scenario and demonstrate additionality	TOOL 02	
		☐ Tool to calculate the emission factor for an electricity system	TOOL 07	
		☐ Demonstration of additionality of microscale project activities	TOOL 19	
		☐ Demonstration of additionality of small-scale project activities	TOOL 21	
		☐ Additionality of first-of-its-kind project activities	TOOL 23	
		☐ Common practice	TOOL 24	
		☐ Investment analysis	TOOL 27	
		☒ Positive lists of technologies	TOOL 32	04
		☐ Guidelines for objective demonstration and assessment of barriers		
		☒ Calculation of the fraction of non-renewable biomass	Tool 30	03
Choose Third Party External Project Verification by	☒ GHG emission reductions (i.e., Approved Carbon Credits **(ACCs)**) ☒ Environmental No-net-harm Label (**E+**) ☒ Social No-net-harm Label (**S+**) ☒ United Nations Sustainable Development Goals (**SDG+**) ☐ Bronze SDG Label			

[2] GCC Program rules and requirements: https://www.globalcarboncouncil.com/resource-centre.html
[3] CDM Program rules: https://cdm.unfccc.int/Reference/index.html

approved GCC Verifiers[4] (Tick applicable verification categories)	☐ Silver SDG Label ☐ Gold SDG Label ☒ Platinum SDG Label ☐ Diamond SDG Label ☒ CORSIA requirements (**C**[+]) ☐ Host Country Attestation on Double counting
Declaration to be made by the Project Owner(s)[5] (Tick all applicable statements)	The Project Owner(s) declares that: ☒ The Project Activity complies with the eligibility of the applicable project type (A1, A2, B1 or B2) as stipulated by the Project Standard. ☒ The Project Activity shall start operations, and start generating emission reductions, on or after 1 January 2016. ☒ The Project Activity is eligible to be registered under the GCC program. ☒ No carbon credits generated by the proposed Project Activity will be claimed as carbon credits in any other GHG program anywhere in the world, either for compliance or voluntary purposes, for the entire 10-year GCC crediting period. ☒ The proposed Project Activity, if Type A, is NOT registered as a GHG Project Activity in any other GHG program or any other voluntary program anywhere in the world. ☒ The proposed Project Activity is NOT included as a component Project Activity (CPA) in a registered GHG Programme of Activities (PoA) under any GHG program (such as the CDM or any other voluntary program) anywhere in the world. ☒ The proposed Project Activity is NOT a CPA that has been excluded from a registered PoA under any GHG program (such as the CDM or any other voluntary program) anywhere in the world. Provide details (if any) below for the boxes ticked above.
	☒ If a GCC project chooses to apply to use ACCs under CORSIA, the Project Owner(s) is required to declare that they are aware that they must obtain and provide to the GCC and its Registry (operated by IHS Markit) a written attestation from the host country's national focal point (e.g., Ministry of Environment or Civil Aviation Authority) or focal point's designee, as required by CORSIA Emissions Unit Eligibility Criteria, which:

[4] **Note:** GCC Verifiers under the Individual Track are not eligible to conduct verifications for GCC Project Activities whose owners intend to supply carbon credits (ACCs) for use within CORSIA.

[5] The "Project Owner" means the legal entity or organization that has overall control and responsibility for the Project Activity.

	☒ Confirms the avoidance of double counting as required by CORSIA; ☒ Shall be made publicly available prior to the use of units from the host country under CORSIA; and ☒ Places all responsibility on the Project Owner(s) to replace any and all doubly claimed or counted ACCs by the host country, in the GCC registry operated by IHS Markit. Provide details below for the boxes ticked above
	The Project Owner(s) declares that: ☒ All of the information provided in this document, including any supporting documents submitted to the GCC or its registry operator IHS Markit at any time, is true and correct; ☒ They understand that a failure by them to provide accurate information or data, or concealing facts and information, can be considered as negligence, fraud or willful misconduct. Therefore, they are aware that they are fully responsible for any liability that arises as a result of such actions. Provide details below for the boxes ticked above
Appendixes 1-7	Details about the Project Activity are provided in Appendixes 1 through 7 to this document.
Name, designation, date and signature of the Project Owner(s)	**Mr. Nikunj Agrawal**  **Dated: 13/09/2022** **Climate Partner- GmbH** **Jimmy sah**  **Dated: 13/09/2022** **Infinite Environmental solutions LLP**

1. PROJECT SUBMISSION FORM

Section A. Description of the Project Activity

A.1. Purpose and general description of the Project Activity

>>
The project activity involves operation of 14,800 household biogas plants (biodigesters) in Kerela, Madhya Pradesh Bihar and Jharkhand state, India. The biogas type is fixed dome type. The purpose of the project is to replace the commonly used inefficient wood fired mud stoves technology, with clean, sustainable, and efficient biogas. Each household utilizes cow dung to feed the digester to produce biogas for cooking purpose and heating water. In addition, the hygienic conditions in the rural areas will be improved by an appropriate disposal of organic waste. Further, residue from the bio digesters can be used as organic fertilizer and will improve soil conditions in rural areas leading to increase in soil productivity. Project activity will contribute towards sustainable development by replacing nonrenewable firewood with biogas generated from the bio digesters. Project activity involves bundling of 14,800 plants installed in rural areas of in Kerela, Madhya Pradesh, Bihar and Jharkhand state, India.

Pre project Scenario:

Household survey was conducted to assess the baseline fuel and quantity used. As per the Survey, firewood was the main fuel used to suffice domestic needs. Usage of inefficient firewood leads to indoor pollution and land use patterns have been showing a decrease in forest land cover and increase in degraded land. Increasing pressure from human and livestock population and indiscriminate and illegal exploitation of forest resources are among factors that have led to further intensification of the problem. Degradation of forest lands has exacerbated the already existing problem of desertification. There is a need to maintain adequate forest cover in the state to mitigate climate change effects. The project envisages to reduce fuel wood consumption along with an improvement of lives by reducing indoor air pollution.

Project Scenario:

Project activity involves bundling of **14800** plants installed from **01 April 2016 onwards.**

Estimate of annual average GHG emission

The estimated annual emission reductions over a 10-year period from initial project activity instances are 47,588 tonnes of tCO_2/year.

The estimated annual emission reductions over a 10-year period 475,880 tonnes of tCO_2

A.2. Location of the Project Activity

>>

Address and geodetic coordinates of the physical site of the Project Activity		
Physical address	**Latitude**	**Longitude**
Kerela	11.817944 N (11° 49' 4.6")	76.166554 E (76° 9' 59.59")
Madhya Pradesh	22.057484 N (22° 3' 26.94")	78.434389 E (78° 26' 3.8")
Bihar	25.410655 N (25° 24' 38.36")	85.405312 E (85° 24' 19.12")
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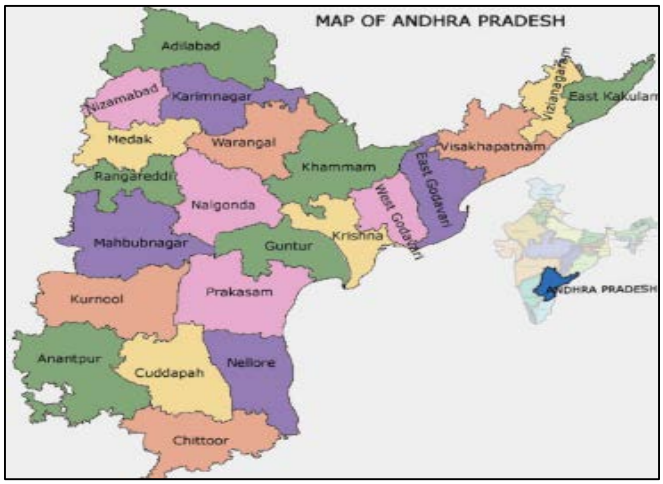
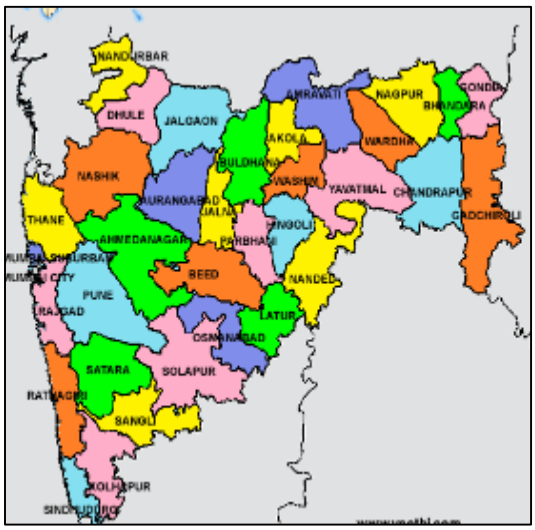
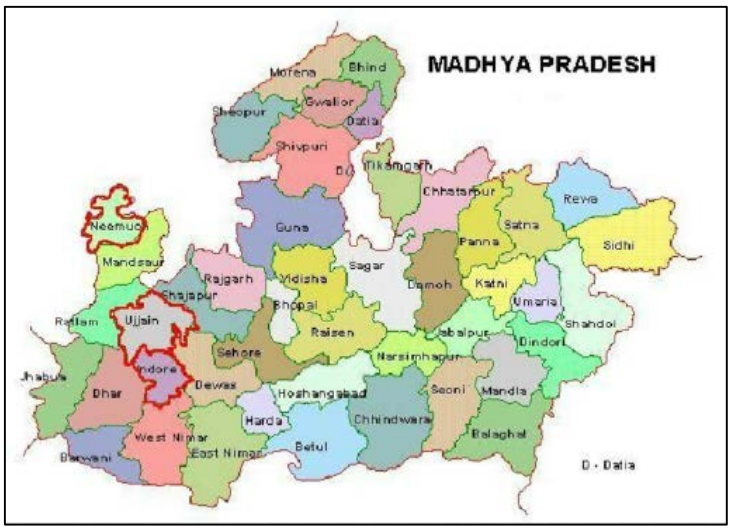
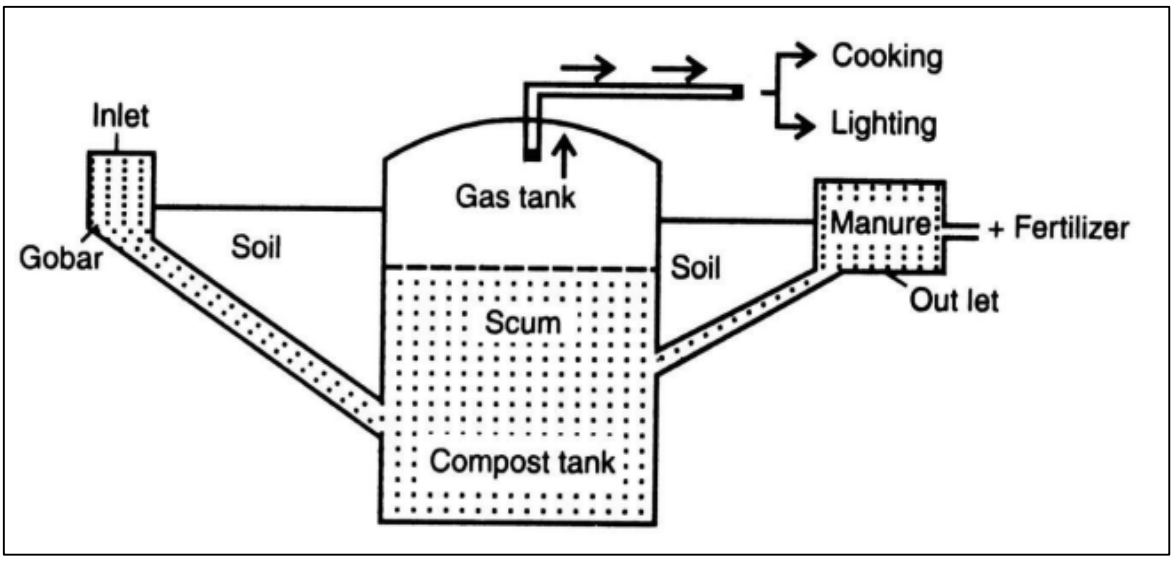






A.3. Technologies/measures

>>
The household bio-digesters involved in the project activity are Fixed –Dome Digester technology. The major feed cattle dung is mixed with water and fed into the plant through the inlet chamber of the plant. This waste is converted into biogas with the help of a special type of anaerobic bacteria. The digested material, which comes out of the plant, is enriched manure. The main feature of the biogas plant is the fixed underground digester chamber, constructed with a layer of bricks and an additional layer of cement mortar forming the roof above. Connected to the underground chamber is an inlet tank, through which manure is fed into the plant. The manure then ferments separating the slurry from the methane gas which rises and collects at the top of the digester tank and is released through the gas outlet pipe. The slurry passes into the outlet tank where it is ejected from the plant and can be used as fertilizer on the field.



The cattle dung otherwise would have been left to decay in open which leads to methane emissions and by utilizing the same for generation of biogas leads to capture of methane and utilize as fuel. The biogas thus generated replaces firewood that otherwise would have been used for cooking and heating purposes.

Life Span

Biodigesters constructed using cement and bricks which are building materials typically used across infrastructure sector as well as in the housing sector where the life is more than 25 years. This is also in line with the Indian Code, **from IS 9478: 1989 Family Size Bio-Gas Plant - Code of Practice**[6] that describes the different types of bio digesters which also mentions (section 3.3) that main construction material is Cement and bricks. PP has followed the practice and all the biodigesters units are entirely made up of Cement and bricks. Apart from that, a study is conducted & developed by the AFPRO, Action for Food Production, New Delhi, on the Biogas Units. (Page no: 7)[7] In which it is concluded the average lifetime of the biogas units is 25 years. In addition, The PP involved in the periodic maintenance of the bio digester and will address any functional issue during the lifetime of the project. Hence based on the type of bio digester, material of construction and periodic maintenance, the life will exceed more than 25 years

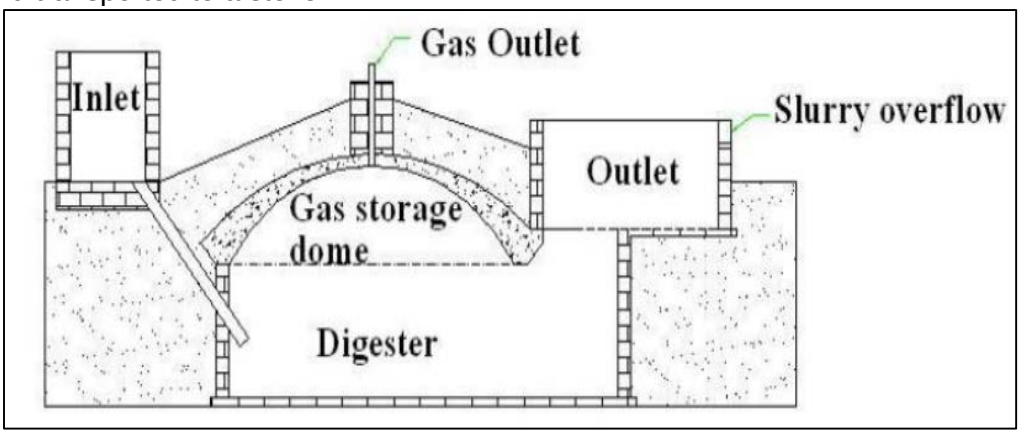
Technical Description of the project activity

The technologies used in the proposed project are biogas stoves that are fed by household biogas digesters. The digesters have a sludge and gas holding. The project activity consists of 14,800 biodigesters which are fixed dome type. These digesters include a compartment for the preparation of the digester feedstock at the inlet, the main digester, and an overflow for the digestion product. The digester itself is a closed underground container made of concrete or other materials. The

[6] https://law.resource.org/pub/in/bis/S08/is.9478.1989.pdf

[7] https://sswm.info/sites/default/files/reference_attachments/AFPRO%202005%20Deenbandhu%20Model%202000%20Biogas%20Plant.pdf

feedstock consists mainly of cattle manure to which water is added. The biogas is extracted from the digester and transported to a stove.



Biogas Users' Survey

The Survey uses a random sample of biogas plant users of the programme to primarily assess 1) the reduction in woody biomass post biogas installation and 2) the portion of nonrenewable woody biomass displaced.

Description of baseline scenario

As per "AMS I.E- Switch from non-renewable biomass for thermal applications by the user, Version 12.0" 'the baseline scenario would be the use of fossil fuels for meeting similar thermal energy needs. The project activity involves the installation of anaerobic bio digesters to produce biogas which will replace nonrenewable biomass, used as a fuel for household cooking purposes. A survey has been done to estimate the average firewood consumption prior to project activity at user point following sampling standard as per UNFCCC 'Sampling and surveys for CDM project activities and programs of activities' version 07 and guideline 'Sampling and surveys for CDM project activities and programs of activities' version 04. Below parameter needed to identify:

a) Type of fuel used prior to biogas
b) Average fuel consumption before biogas

A simple random sampling approach has been applied as the target population are of homogeneous nature. However, samples are drawn for each size of digester and for each state separately so that, a clear and more reliable result is arrived. A 90% confidence interval and 10% margin of error has been considered to determine the sample size. Expected proportion is considered 90%. As per the baseline survey 100% of the sampled households were using firewood and traditional (mud based/clay based) cookstoves before biogas installation. Therefore, baseline scenario for the project activity is use of non-renewable biomass (firewood) for thermal energy needs (cooking). In common practice, cattle manure is either directly used in crop lands to use as fertilizer or dried up as dung cake to use as fuel. However, the practice of using cattle dung as fuel is not hygienic. According to world health organization, about 1.6 million people, mostly women and children[8], die each year due to cooking and heating with wood, dung, coal or crop waste. In addition, applying cattle dung directly at crop lands results in lower fertile value whereas, anaerobic digestion of the sludge releases greater

[8] https://www.irjet.net/archives/V2/i5/IRJET-V2I506.pdf

amount of phosphate into the slurry. During the digestion process, nitrogen in the organic matter is converted to ammonium. Ammonium is readily accepted by the soil and is absorbed by plants slowly. This form is more stable when ploughed into the soil, unlike nitrogen that oxidizes into nitrates and nitrites which do not get absorbed by the plants and are readily washed away. Therefore, by utilizing cattle dung in biogas production results in positive outcome environmentally and socio-economically.

A.4. Project Owner(s)

Location/ Country	Project Owner(s)	Where applicable[9], indicate if the host country has provided approval (Yes/No)
Kerela	Climate Partner-GmbH	NA
Bihar		
Madhya Pradesh		
Jharkhand		

A.5. Declaration of intended use of Approved Carbon Credits (ACCs) generated by the Project Activity

>> The Project Activity is expected to generate ACCs for a full 10-year crediting period and supply the credits to offset the following GHG emissions:

Period		Name of the Entities	Purpose and Quantity of ACCs to be supplied
From	To		
01/04/2016	31/03/2026	CORSIA (Carbon Offsetting and Reduction Scheme for International Aviation)	For offsetting Greenhouse gases 475,882 tCO_2 for 10-year period

Project owner hereby confirms that the proposed project activity is neither applied nor registered under any other GHG reduction certification mechanism. Hence, the ACCs generated from this project activity will not be double counted under any other mechanism.

A.6. Additional requirements for CORSIA

>> Please see Section E and F.

Section B. Application of selected methodology(ies)

[9] For example, *Project Coordination Form* is to be filled-in by Project Owners for projects located in Qatar. A written attestation from the host country's national focal point or the focal point's designee, as required by CORSIA (Refer section A.5 of the PSF guidelines).

B.1. Reference to methodology(ies)

>>
AMS-I.E.: Switch from non-renewable biomass for thermal applications by the user --- Version 12.0
TOOL30: Calculation of the fraction of non-renewable biomass

B.2. Applicability of methodology(ies)

>> As per AMS-I.E. Small-scale Methodology Switch from non-renewable biomass for thermal applications by the user Version 12.0

Criteria for the applicability of the methodology	Justification why the methodology is suitable for the proposed project activity
1. Project participants can show that non-renewable biomass has been used in the project region since 31 December 1989, using survey methods or referring to published literature, official reports or statistics.	Several studies on bio resource use in Jharkhand show that non-renewable biomass has been used since 31 December 1989. Further, third party survey has been conducted prior to project activity to understand & calculate the estimate average firewood consumption for the project region. PP has followed sampling standard as per UNFCCC 'Sampling and surveys for CDM project activities and programs of activities' version 04.
2. In the case that technologies using renewable biomass are used under the project activity, this methodology is applicable where all emissions related to processing of biomass are fully accounted for and biomass is sourced from biomass residues and/or a dedicated plantation of the CDM project activity, meeting the following conditions: (a) For projects that use biomass residues, prior to the implementation of the project activity, the biomass residues have not been collected and used but been left for decay and would, in the absence of the project activity, continue to be left for decay; and (b) For projects that use biomass residues from a production process (e.g., production	This project activity is not registered under the CDM and any other mechanism The major feed cattle dung is mixed with water and fed into the plant through the inlet chamber of the plant. This waste is converted into biogas with the help of a special type of anaerobic bacteria. a). It is not applicable as the major feed cattle dung. b). The major feed cattle dung is mixed with water hence it is not applicable. c). as discussed for the current project activity the major feed is cow dung and this waste is converted into biogas by anaerobic reaction.

of sugar or wood panel boards), the implementation of the project does not result in an increase of the processing capacity of raw input (e.g. sugar, rice, logs, etc.) or in other substantial changes (e.g. product change) in this process; and **(c)** The biomass used by the project facility is not stored for more than one year; and **(d)** In the case biomass from dedicated plantations are used, the applicability conditions of TOOL16 "Project and leakage emissions from biomass" are satisfied.	Hence once the biogas has been created it is used directly by the end user. Hence it is not applicable. d). The major feed cattle dung is mixed with water hence it is not applicable.
3. For electric cookstoves with integrated renewable energy device or with grid connected renewable energy system employing net metering, project participants shall demonstrate that, on an annual basis, at least 80% of the electricity generated is consumed by the electric cook stoves (i.e. 20% or less of electricity is consumed by other loads connected).	NA
4. For electric cook stoves, in all cases under paragraph 2(d) above where back-up diesel generators are used, this methodology is only applicable when no more than 1% of total electricity supply occurs from back up diesel generators on an annual basis	NA
5. Under this methodology, emission reductions cannot be claimed only due to fuel-switch aspect and proposed project activities shall introduce new renewable energy-based technologies, i.e. technology switch is also involved.	Project activity involves installation of biodigesters, biogas thus produced will displace the use of nonrenewable biomass to major extent. Therefore, condition is justified.
6. Project participants shall describe in the PDD/PoA-DD the proposed method for distribution of project devices and how the double counting of emission reductions has been addressed, for example, using methods such as unique identifications of product and end-user locations (e.g. programme logo), to prevent double counting of emission reductions from the	Each of the bio-digesters shall be allocated a unique id against each end users. End user and project implementer shall have an agreement to avoid any double counting.

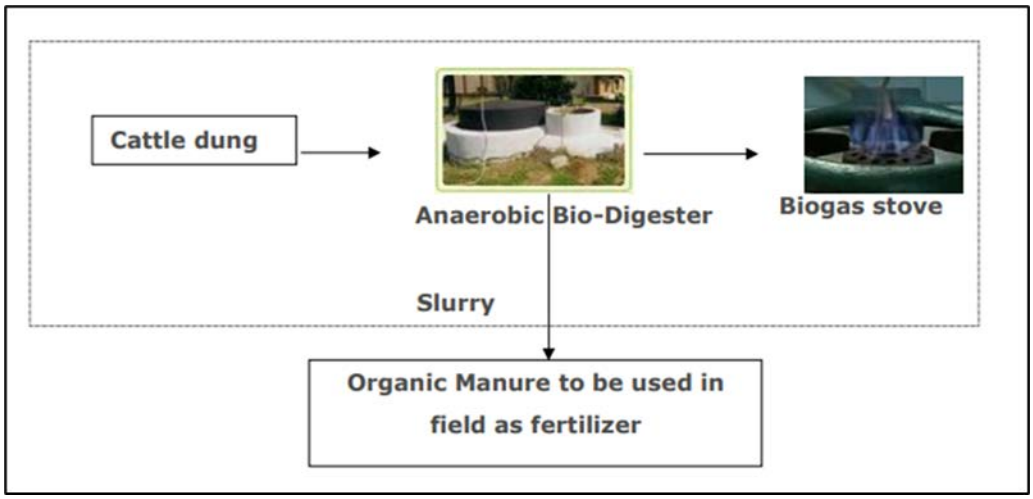
	project devices (e.g. between end users, distributors and producers of stoves, producers of renewable energy, producers of processed renewable biomass).	
7.	For project activities introducing bio-ethanol cookstoves, project participants shall demonstrate that the bioethanol cookstoves are designed, constructed and operated to the requirements (e.g. with regard to safety) of a relevant national or local standard or comparable literature. Latest guidelines issued by a relevant national authority, or an international organization may also be used.	NA

TOOL30: Calculation of the fraction of non-renewable biomass

Criteria for the applicability of the methodology	Justification why the methodology is suitable for the proposed project activity
This tool may be used by: (a) DNAs to submit region- or country-specific default fNRB values, following the procedures for development, revision, clarification, and update of standardized baselines (SB procedures); or	The current Project activity is installation of the fixed dome type Biodigesters throughout the Kerela, Madhya Pradesh Bihar and Jharkhand state, India. Hence the PP has calculate the F_{NRB} value based on studies published for states. For detailed calculation kindly refer to the ER sheet.
project participants to calculate project- or PoA-specific fNRB values	

B.3. Project boundary, sources and greenhouse gases (GHGs)

>>



The project boundary encompasses the sum of all the 14800 physical geographical sites of all individual biogas plants (digester system, pipe leading to the stove and the stove itself) realized by the project activity. The table below provides an overview of the emissions sources included or excluded from the project boundary for determination of baseline and project emissions.

Source		GHG	Included?	Justification/Explanation
Baseline	Firewood	CO_2	Yes	The major source of emissions in the baseline due to burning of firewood
		CH_4	No	Excluded for simplification, this is conservative
		N_2O	No	Not applicable for the project activity
		Other	NA	Not applicable
Project	Not applicable	CO_2	NA	Not applicable
		CH_4	NA	Not applicable
		N_2O	NA	Not applicable
		Other	NA	Not applicable
Leakage	The use/diversion of non-renewable woody biomass saved under the project activity by non-project households/users	CO_2	Yes	Default option as per methodology to be applied
		CH_4	No	Not applicable for the project activity
		N_2O	No	Not applicable for the project activity
		Other	NA	Not applicable for the project activity

B.4. Establishment and description of the baseline scenario

>>
As per “AMS I.E- Switch from non-renewable biomass for thermal applications by the user, Version 12.0” ‘the baseline scenario would be the use of fossil fuels for meeting similar thermal energy needs. The project activity involves the installation of anaerobic bio digesters to produce biogas which will replace nonrenewable biomass, used as a fuel for household cooking purposes. A survey has been done to estimate the average firewood consumption prior to project activity at user point following sampling standard as per UNFCCC ‘Sampling and surveys for CDM project activities and programs of activities’ version 07. Below parameter needed to identify:
a) Type of fuel used prior to biogas

b) Average fuel consumption before biogas

A simple random sampling approach has been applied as the target population are of homogeneous nature. However, samples are drawn for each size of digester and for each state. separately so that, a clear and more reliable result is arrived. A 90% confidence interval and 10% margin of error has been considered to determine the sample size. Expected proportion is considered 90%. As per the baseline survey 100% of the sampled households were using firewood and traditional (mud based/clay based) cookstoves before biogas installation. Therefore, baseline scenario for the project activity is use of non-renewable biomass (firewood) for thermal energy needs (cooking).

B.5. Demonstration of additionality

>>
The project activity is substituting the use of non-renewable fuel wood by using biogas which is renewable to meet the thermal requirements for cooking and heating water with the primary aim of reducing carbon dioxide emissions. Additionality is demonstrated based on the UNFCCC Methodological Tool "Demonstration of additionality of small-scale project activities, , Tool 21. According to para 11 of the guidelines "Documentation of barriers, as per paragraph 1 of the tool, is not required for the positive list of technologies and project activity types that are defined as automatically additional for project sizes up to and including the small-scale CDM thresholds. According to 11(c), the positive list comprises of: (c) Project activities solely composed of isolated units where the users of the technology/measure are households or communities or Small and Medium Enterprises (SMEs) and where the size of each unit is no larger than 5% of the small-scale CDM thresholds.

Project Case:

- The project activity is domestic household level biogas units designed for purposes of cooking and heating water. Thus, it is isolated energy generation units, which produces thermal energy at the individual household level.
- Each of the independent biogas unit in the project activity has a thermal energy installed capacity of 0.27 to 17 kWth.
- The total installed capacity is 31.861 (total) MW, which is lesser than 45 MWth

Thus Para 11(c) of the guidelines is satisfied i.e., activities is solely composed of isolated units where the users of the technology/measure are households, and the size of each unit is no larger than 5% of the small-scale CDM thresholds. Hence, the project activity is part of the positive list of technologies and project activity types that are defined as automatically additional.

B.6. Estimation of emission reductions

>>
Emission reductions are to be estimated based on the equation below.
$ERy = BEy - PEy - LEy$

B.6.1. Explanation of methodological choices

>>

As per "AMS I.E- Switch from non-renewable biomass for thermal applications by the user, Version12.0 , the baseline emissions (BEy) are calculated as:

$BE_y = B_y \times f_{NRB,y} \times NCV_{biomass} \times EF_{projected\_fossil\_fuel}$

Where,

By is determined by using option (a) paragraph 15 of the methodology as follows:

"Calculated as the product of the number of households multiplied by the estimate of average annual consumption of woody biomass per household that is displaced by the project activity (tons/household/year)";

$By = N_{HH} \times (BC_{BL,HH,y} - BC_{PJ,HH,y})$

Where,

N_{HH}	=	Number of households in the project activity, number
$BC_{BL,HH,y}$	=	Average annual consumption of woody biomass per household before the start of the project activity, tons/household/year
$BC_{PJ,HH,y}$	=	If it is found that pre-project devices were not completely displaced but continue to be used to some extent, average annual consumption of woody biomass per household in the pre-project devices during the project activity, tons/household/year

- $BC_{BL,HH,y}$ has been determined as per third party survey for the sample of households explained in section B.4 above. The average firewood consumption per month only on firewood is around 435 kg.
- Fraction of woody biomass used in the absence of the project activity in year y that can be established as non-renewable biomass (f_{NRB}) is determined as per methodological tool 'Calculation of the fraction of non- renewable biomass' as follows:

The fraction of woody biomass that can be established as non-renewable, is:

$f_{NRB}=N_{RB}/ (N_R+R_B)$

Where,

f_{NRB} = Fraction of non-renewable biomass (fraction or %) NRB = Quantity of non-renewable biomass (t/yr)

RB = Quantity of renewable biomass (t/yr)

Estimation of consumption of woody biomass (H/Bold, total) is done following paragraph 11 (a) of the tool 'Official Statistics'.

As per Forest Survey of India report 2019, Annual fuelwood consumption in household sector and consumption of wood in House construction, Furniture and Agriculture is given below:[10] Procedure to estimate RB: Renewable biomass (RB) in the country/region/area is estimated using the equation below:

$$RB = \sum (MAI_{forest,i} \times (F_{forest,i} - P_{forest})) + \sum (MAI_{other,i} \times (F_{other,i} - P_{other}))$$

- Where:

[10] http://fsi.nic.in/isfr19/vol1/chapter7.pdf

- $MAI_{forest,i}$ = Mean Annual Increment of woody biomass growth per hectare in subcategory i of forest areas (t/ha/yr). For this parameter report from Ministry of Environment and Forest, Govt. of India has been referred[11].
- $MAI_{other,\ i}$ = Mean Annual Increment of woody biomass growth per hectare in subcategory i of other wooded land areas (t/ha/yr). Same value as MAI forest,i is considered.
- $F_{forest,i}$ = Extent of forest in sub-category i (ha). India state of of forest report, has been referred for this parameter.
- $F_{other,i}$ = Extent of other wooded land in sub-category i (ha). the f_{NRB} would be:

State	fNRB
Kerela	96.92%
Madhya pradesh	91.36%
Bihar	91.76%
Jharkhand	86.37%

Project Emissions:

As per applied methodology AMS-I. E, version 12.0, project emissions are accounted for below activities:

- CO_2 emissions from on-site consumption of fossil fuels due to the project activity
- CO_2 emissions from electricity consumption by the project activity
- Methane emission from solid waste disposal or wastewater
- Project emissions related to cultivation of feedstock
- Project emissions from transportation

The project activity does not involve any of the above activity and hence, project emissions for the project activity is not applicable.

Leakage Emissions:

Leakage emissions (related to the non-renewable woody biomass saved by the project activity shall be assessed based on ex post surveys of users and the areas from which this woody biomass is sourced (using 90/30 precision for a selection of samples).

The following potential source of leakage shall be considered: The use/diversion of non-renewable woody biomass saved under the project activity by non-project households/users that previously used renewable energy sources.

If this leakage assessment quantifies an increase in the use of non-renewable woody biomass used by the non-project households/users that is attributable to the project activity, then B_y is adjusted to account for the quantified leakage. Alternatively, B_y is multiplied by a net to gross adjustment factor of 0.95 to account for leakages, in which case surveys are not required. PP has opted default option, and B_y shall be adjusted with adjustment factor of 0.95 to account leakage.

Emission reductions:

[11] http://www.moef.nic.in/sites/default/files/Pacific.pdf

Emission reductions are to be estimated based on the equation below:
$ER_y = BE_y – PE_y - LE_y$

B.6.2. Data and parameters fixed ex ante

>>

Data / Parameter Table 1.

Data / Parameter:	$f_{NRB,y}$
Methodology reference	AMS IE
Data unit	%
Description	Fraction of woody biomass saved by the project activity during year y that can be established as non-renewable biomass
Measured/calculated /default	Calculated
Data source	FSI Report
Value(s) of monitored parameter	fraction of non-renewable for biomass Kerela: 96.92 Bihar: 91.76 Madhya Pradesh: 91.36 Jharkhand: 86.37 Kerela, Madhya Pradesh Bihar and Jharkhand state, India
Measurement/ Monitoring equipment (if applicable)	Type of meter: NA Location of meter: NA Accuracy of meter: NA Serial number of meter: NA Calibration frequency: NA Date of Calibration/ validity: NA Reference No. of Calibration Certificate: NA Calibration Status: NA
Measuring/reading/ recording frequency (if applicable)	Ex-ante for the Crediting period.
Calculation method (if applicable)	As per CDM Tool 30: Calculated as per ‘tool for calculation of the fraction of non-renewable biomass’ version 03
QA/QC procedures	FSI Report

Purpose of data	Calculate the Baseline Emissions
Additional comments	-

Data / Parameter:	N_{HH}
Methodology reference	AMS IE
Data unit	Number
Description	Number of households in the project activity in year y
Measured/calculated /default	Measured
Data source	As per PP's project database
Value(s) of monitored parameter	14,800
Measurement/ Monitoring equipment (if applicable)	

Type of meter	NA
Location of meter	NA
Accuracy of meter	NA
Serial number of meter	NA
Calibration frequency	NA
Date of Calibration/ validity	NA
Reference No. of Calibration Certificate	NA
Calibration Status	NA

Measuring/reading/ recording frequency (if applicable)	Ex-ante for the Crediting period.
Calculation method (if applicable)	Total number of biodigester unit installed
QA/QC procedures	Commissioning Declaration & Database submitted by the PP with the unique serial number
Purpose of data	Calculate the Baseline Emissions
Additional comments	-

Data / Parameter:	$BC_{BL,HH,y}$
Methodology reference	AMS IE

Data unit	tonnes/household/year
Description	Average annual consumption of woody biomass per household before the start of the project activity
Measured/calculated /default	Measured
Data source	Baseline survey
Value(s) of monitored parameter	5.22 ton This is a weighted average calculated for all the households
Measurement/ Monitoring equipment (if applicable)	
Measuring/reading/ recording frequency (if applicable)	Ex-ante for the Crediting period.
Calculation method (if applicable)	Third party survey was conducted to know the firewood consumption pattern. Survey was conducted following UNFCCC sampling standard 'Sampling and surveys for CDM project activities and programs of activities' version 07 and guideline 'Sampling and surveys for CDM project activities and programs of activities' version 04.
QA/QC procedures	-
Purpose of data	*Baseline emissions estimation.*
Additional comments	-

Type of meter	NA
Location of meter	NA
Accuracy of meter	NA
Serial number of meter	NA
Calibration frequency	NA
Date of Calibration/ validity	NA
Reference No. of Calibration Certificate	NA
Calibration Status	NA

Data / Parameter:	$NCV_{biomass}$
Methodology reference	AMS IE
Data unit	TJ/tonne
Description	Net calorific value of the non-renewable woody biomass that is substituted
Measured/calculated /default	default
Data source	IPCC default for wood fuel

Value(s) of monitored parameter	0.0156 TJ/ton
Measurement/ Monitoring equipment (if applicable)	

Type of meter	NA
Location of meter	NA
Accuracy of meter	NA
Serial number of meter	NA
Calibration frequency	NA
Date of Calibration/ validity	NA
Reference No. of Calibration Certificate	NA
Calibration Status	NA

Measuring/reading/ recording frequency (if applicable)	Ex-ante for the Crediting period.
Calculation method (if applicable)	
QA/QC procedures	IPCC default for wood fuel
Purpose of data	Baseline emissions estimation.
Additional comments	-

Data / Parameter:	$EF_{project\_fossil\ fuel}$
Methodology reference	AMS IE
Data unit	tCO2/TJ
Description	Emission factor for the substitution of non-renewable woody biomass
Measured/calculated /default	default
Data source	AMS IE
Value(s) of monitored parameter	64.4 tCO2/TJ
Measurement/ Monitoring equipment (if applicable)	

Type of meter	NA
Location of meter	NA
Accuracy of meter	NA
Serial number of meter	NA
Calibration frequency	NA
Date of Calibration/ validity	NA
Reference No. of Calibration Certificate	NA
Calibration Status	NA

Measuring/reading/ recording frequency (if applicable)	Ex-ante for the Crediting period.
Calculation method (if applicable)	Default value as per AMS-I.E, version 12.0 .
QA/QC procedures	Default value as per AMS-I.E, version 12.0 .
Purpose of data	*Baseline emissions estimation.*
Additional comments	-

B.6.3. Ex-ante calculation of emission reductions

>>

Baseline Emissions:

$BE_y = B_y \times f_{NRB,y} \times NCV_{biomass} \times EF_{projected\_fossil\_fuel}$

Where,

$B_y = N_{HH} \times (BC_{BL,HH,y} - BC_{PJ,HH,y})$

$BC_{PJ,HH,y}$ (if it is found that pre-project devices were not completely displaced but continue to be used to some extent, average annual consumption of woody biomass. per household in the pre-project devices during the project activity, tones/household/year) is considered zero during design certification stage. The same shall be monitored ex-post certification.

$BE_y = B_y \times f_{NRB,\,y} \times NCV_{biomass} \times EF_{projected\_fossil\_fuel}$

Total population (NHH)	Average firewood consumption (kg/month) $BC_{BL,HH,y}$	Average firewood consumption (ton/yr)- $BC_{BL,HH,y}$	B_y (ton/year)
1500	435	5.22	7830
500	435	5.22	2610
200	435	5.22	1044
50	435	5.22	261
50	435	5.22	261
1000	435	5.22	5220
3500	435	5.22	18270
3500	435	5.22	18270
500	435	5.22	2610
3500	435	5.22	18270
500	435	5.22	2610

B.6.4. Summary of ex ante estimates of emission reductions

>>

Year	Baseline emissions (t CO_2e)	Project emissions (t CO_2e)	Leakage (t CO_2e)	Emission reductions (t CO_2e)
Year 1	50,093	2,505	0	47,588
Year 2	50,093	2,505	0	47,588
Year 3	50,093	2,505	0	47,588
Year 4	50,093	2,505	0	47,588
Year 5	50,093	2,505	0	47,588
Year 6	50,093	2,505	0	47,588
Year 7	50,093	2,505	0	47,588
Year 8	50,093	2,505	0	47,588
Year 9	50,093	2,505	0	47,588
Year 10	50,093	2,505	0	47,588
Total	5,00,928	250,50	0	475,880
Total number of crediting years	10			
Annual average over the crediting period	50,092.79	2,505	0	47,588

B.7. Monitoring plan

As per applied methodology AMS-I. E, version 12.0, when biennial inspection is chosen a 95 per cent confidence interval and a 10 per cent margin of error requirement shall be achieved for the sampling parameter. On the other hand, when the project proponent chooses to inspect annually, a 90 per cent confidence interval and a 10 per cent margin of error requirement shall be achieved for the sampled parameters. A simple random sampling will be adopted for estimating the sample size for the monitoring surveys. Simple random sampling is suited to populations that are homogenous (EB 75 annex 08). Further As the survey is to be carried out based on 90% confidence level and 10% precision is selected. 1 The Sampling Plan is framed based on "Guidelines for Sampling and Surveys for CDM Project Activities and Programme of Activities" Version 2, EB 69.

Objectives and Reliability Requirements

The sampling objective is to obtain a reliable estimate of the key variables used in the estimation of emission reductions. According to AMS-I.E. Version 12, the parameters chosen by project participants for monitoring are:

Average annual consumption of woody biomass per household in the pre-project devices during the project activity, if it is found that pre-project devices were not completely displaced but continue to be used to some extent.

The percentage of digesters operational in a year from among the digesters implemented to calculate By.

Sampling approach is proposed to be implemented to measure the above parameters. For representative sampling methods, AMS-I.E, Version 12 requires a 95% confidence interval and a 10% margin of error for annual inspection, which will be adopted for the sample design.

Moreover, the percentage of digesters operational and the average annual consumption of woody biomass per households is the most important parameter that directly affects the emission calculation and that can only be estimated from field survey.

Target population

The target population is the households using biogas digester units spread over in state of India where a total of 14800 biogas digesters units were installed

Quality Assurance/Quality Control:

A survey questionnaire was prepared to seek responses of operating status (yes or no) of biogas digesters within the project activity. The survey has been performed by the project developer appointing a third party.

Analysis:

The project developer collected, compiled, and analyzed the data to derive the number of bio-digesters within the project still operational and average firewood consumption at each bio- digester user (if any). The developer has prepared “monitoring report” based on the survey report. Qualified personnel with due training were engaged with ready-made survey questionnaire (please refer annex-2 for the survey questionnaire) to collect primary data from at least 355 households covering all sizes of bio-gas plants and all districts under the project. However, to get more accurate & more confidence result the PP has surveyed 370 Biodigesters units.

B.7.1. Data and parameters to be monitored

>>

Data / Parameter Table 01

Data / Parameter:	$N_{i,y}$
Methodology reference	AMS IE
Data unit	Number
Description	Number of project devices of type i operational in year y
Measured/calculated /default	Measured
Data source	Determined for all end-users or based on a representative sample (e.g.using survey methods). The "Standard: Sampling and surveys for CDM project activities and programme of activities" shall be used for determining the sample size to achieve 90/10 confidence/precision levels. Separate samples shall be taken for each batch.
Value(s) of monitored parameter	To be monitored
Measurement/ Monitoring equipment	<table><tr><td></td><td></td></tr><tr><td>Type of meter</td><td>NA</td></tr><tr><td>Location of meter</td><td>NA</td></tr><tr><td>Accuracy of meter</td><td>NA</td></tr><tr><td>Serial number of meter</td><td>NA</td></tr><tr><td>Calibration frequency</td><td>NA</td></tr><tr><td>Date of Calibration/ validity</td><td>NA</td></tr><tr><td>Reference No. of Calibration Certificate</td><td>NA</td></tr><tr><td>Calibration Status</td><td>NA</td></tr></table>
Measuring/reading/ recording frequency	At least once every two years (biennial)
Calculation method (if applicable)	NA
QA/QC procedures	Third party survey
Purpose of data	For calculate the baseline emissions
Additional comments	The following at minimum was adhered - The survey was done by qualified individuals - The people interviewed were adults - In many cases, the bio digester was operated to confirm the result.

Data / Parameter:	$BC_{PJ,HH,y}$
Methodology reference	AMS IE
Data unit	tonnes/household/year
Description	Average annual consumption of woody biomass per household in the pre-project devices during the project activity, if it is found that pre project devices were not completely displaced but continue to be used to some extent.
Measured/calculated /default	Measured
Data source	Survey
Value(s) of monitored parameter	To be monitored
Measurement/ Monitoring equipment	
Measuring/reading/ recording frequency	At least once every two years (biennial)
Calculation method (if applicable)	
QA/QC procedures	Survey to be conducted following standard sampling approach
Purpose of data	Baseline Emissions estimation
Additional comments	-

Type of meter	NA
Location of meter	NA
Accuracy of meter	NA
Serial number of meter	NA
Calibration frequency	NA
Date of Calibration/ validity	NA
Reference No. of Calibration Certificate	NA
Calibration Status	NA

Data / Parameter:	$N_{HH,y}$
Methodology reference	AMS IE
Data unit	Number
Description	Number of households (biogas system) in the project activity in operational per year.
Measured/calculated /default	Monitoring consists of checking of representative sample, to ensure that bio digesters operating
Data source	Third Party Survey

Value(s) of monitored parameter	Survey
Measurement/ Monitoring equipment	<table><tr><th colspan="2"></th></tr><tr><td>Type of meter</td><td>NA</td></tr><tr><td>Location of meter</td><td>NA</td></tr><tr><td>Accuracy of meter</td><td>NA</td></tr><tr><td>Serial number of meter</td><td>NA</td></tr><tr><td>Calibration frequency</td><td>NA</td></tr><tr><td>Date of Calibration/ validity</td><td>NA</td></tr><tr><td>Reference No. of Calibration Certificate</td><td>NA</td></tr><tr><td>Calibration Status</td><td>NA</td></tr></table>
Measuring/reading/ recording frequency	At least once every two years (biennial)
Calculation method (if applicable)	Third party survey
QA/QC procedures	Survey to be conducted following standard sampling approach.
Purpose of data	Baseline Emissions estimation
Additional comments	-

Data / Parameter:	Air Quality/ Reduction in health problems
Methodology reference	For SDG
Data unit	Number
Description	Impact on health due biogas use leading to improved air quality
Measured/calculated /default	Measured
Data source	Sampling Surveys/Annual usage survey/Monitoring survey
Value(s) of monitored parameter	To be monitored (Baseline survey and project survey to be conducted)

Measurement/ Monitoring equipment	<table><tr><td colspan="2"></td></tr><tr><td>Type of meter</td><td>NA</td></tr><tr><td>Location of meter</td><td>NA</td></tr><tr><td>Accuracy of meter</td><td>NA</td></tr><tr><td>Serial number of meter</td><td>NA</td></tr><tr><td>Calibration frequency</td><td>NA</td></tr><tr><td>Date of Calibration/ validity</td><td>NA</td></tr><tr><td>Reference No. of Calibration Certificate</td><td>NA</td></tr><tr><td>Calibration Status</td><td>NA</td></tr></table>
Measuring/reading/ recording frequency	At least once every two years (biennial)
Calculation method (if applicable)	
QA/QC procedures	Survey to be conducted following standard sampling approach; survey will try to capture the view of the women actually involved in cooking. Improve indoor air conditions and reduce respiratory problems especially for women and children. Monitor the number of biogas operating as per records from field supervisors. Annual survey to cross check the status of biogas plants and feedback from users on air quality/reduction in health problems.
Purpose of data	Sustainable Development Assessment.
Additional comments	Requirements as defined in the sampling plan shall be met.

Data / Parameter:	Time saving (Fuel wood collection and Cooking) and use of the time saved
Methodology reference	For SDG
Data unit	Number
Description	Users' perception on time saving due to project (comparing to baseline) and use of the saved time
Measured/calculated /default	Measured
Data source	Sampling Surveys/Annual usage survey/Monitoring survey
Value(s) of monitored parameter	To be monitored (Baseline survey and project survey to be conducted)

<table>
<tr><td>Measurement/ Monitoring equipment</td><td>
<table>
<tr><td colspan="2"></td></tr>
<tr><td>Type of meter</td><td>NA</td></tr>
<tr><td>Location of meter</td><td>NA</td></tr>
<tr><td>Accuracy of meter</td><td>NA</td></tr>
<tr><td>Serial number of meter</td><td>NA</td></tr>
<tr><td>Calibration frequency</td><td>NA</td></tr>
<tr><td>Date of Calibration/ validity</td><td>NA</td></tr>
<tr><td>Reference No. of Calibration Certificate</td><td>NA</td></tr>
<tr><td>Calibration Status</td><td>NA</td></tr>
</table>
</td></tr>
<tr><td>Measuring/reading/ recording frequency</td><td>At least once every two years (biennial)</td></tr>
<tr><td>Calculation method (if applicable)</td><td></td></tr>
<tr><td>QA/QC procedures</td><td>Survey to be conducted following standard sampling approach; survey will try to capture the view of the women involved in cooking. Improve indoor air conditions and reduce respiratory problems especially for women and children. Monitor the number of biogases operating as per records from field supervisors. Annual survey to cross check the status of biogas plants and feedback from users on air quality/reduction in health problems.</td></tr>
<tr><td>Purpose of data</td><td>Sustainable Development Assessment.</td></tr>
<tr><td>Additional comments</td><td>Requirements as defined in the sampling plan shall be met.</td></tr>
</table>

Data / Parameter:	Employment Generation
Methodology reference	For SDG
Data unit	Quantitative
Description	Number of employment generation
Measured/calculated /default	Measured
Data source	Salary slips, employment records to be used to cross check.
Value(s) of monitored parameter	To be monitored

Measurement/ Monitoring equipment	<table><tr><td colspan="2"></td></tr><tr><td>Type of meter</td><td>NA</td></tr><tr><td>Location of meter</td><td>NA</td></tr><tr><td>Accuracy of meter</td><td>NA</td></tr><tr><td>Serial number of meter</td><td>NA</td></tr><tr><td>Calibration frequency</td><td>NA</td></tr><tr><td>Date of Calibration/ validity</td><td>NA</td></tr><tr><td>Reference No. of Calibration Certificate</td><td>NA</td></tr><tr><td>Calibration Status</td><td>NA</td></tr></table>
Measuring/reading/ recording frequency	At least once every two years (biennial)
Calculation method (if applicable)	-
QA/QC procedures	Salary slips, employment records to be used to cross check.
Purpose of data	Sustainable Development Assessment.
Additional comments	-

B.7.2. Monitoring-program of risk management actions

>> The project is household biodigester project. There will be no harm identified form the project and hence no mitigations measures are applicable.

Data / Parameter:	**Not Applicable**
Objective of the Program of Risk Management Actions	**Not Applicable**
Purpose:	**Not Applicable**
Describe the environment /social impact risk that needs to be mitigated.	**Not Applicable**
Describe the actions and targets that will be implemented to ensure that the Project Activity will avoid negative impacts that cause harm.	**Not Applicable**
Program of Risk Management Actions to achieve the target(s):	**Not Applicable**
QA/QC procedures:	**Not Applicable**
Describe whether the Project Activity has achieved the targets set out in this Program of Risk Management Actions. If yes, describe the outcome(s).	**Not Applicable**

B.7.3. Sampling plan

>>

Sampling method

The Simple random sampling method will be used. As population of biodigester is homogenous.

Sample Size

The calculation of the required sample size for each parameter will be calculated at 95/10 confidence/precision as required for the annual monitoring. The sample size is determined using the Guidelines for Sampling and Surveys for CDM Project activities and program of Activities Ver. V4.0 (EB86, Annex 4). The minimum sample size to determine number of biogas system in operation using the procedure outlined in para 12 of appendix 1, EB 86 Annex 4, Guidelines for Sampling and Surveys for CDM Project activities and Program of Activities Ver. 4.0.

$$n \geq \frac{1.96^2 N \times p\,(1-p)}{(N-1) \times 0.1^2 \times p^2 + 1.96^2 p(1-p)}$$

Where:

n= Sample size

N = Total number of biogas system of type *i* installed under the project

p = expected proportion (0.5). Depending on results of surveys the proportion shall be adjusted in next surveys.

1.96 = represents the 95% confidence required

0.1 = represents the 10% relative precision (0.1x0.5=0.05 = 5% points either side of p)

Accordingly, the sample determined for the survey is 355

However, for more confidence PP has Surveyed the more people than the 355 i.e., 370

B.7.4. Other elements of the monitoring plan

>> NA

Section C. Start date, crediting period type and duration

C.1. Start date of the Project Activity

>>01/04/2016

C.2. Expected operational lifetime of the Project Activity

>>25 year

C.3. Crediting period of the Project Activity

>>10 year

01/04/2016 to 31/03/2026

C.3.1. Fixed crediting period

>>

The crediting period is fixed crediting period for 10 Years

C.3.2. Start date of the crediting period

>>
01/04/2016

C.3.3. Duration of the crediting period

>>
10 years

Section D. Environmental impacts

D.1. Analysis of environmental impacts

The project has several positive environmental impacts as detailed below:

Air quality:

The incomplete combustion of biomass releases complex mixture of organic compounds, which include suspended particulate matter, carbon monoxide, poly organic material, poly aromatic hydrocarbons, formaldehyde, sulfur, trace metals etc. that cause many health hazards such as respiratory infections, eye infections, otitis media, chronic obstructive pulmonary diseases, lung

cancer, pulmonary tuberculosis, cataract and also adverse pregnancy outcome[12] [13]. Indoor smoke is one of the health risk factors among Indians[14] .

Implementation of the project will eliminate indoor air pollution, as biogas is colorless and burns with a clean blue flame like that of liquid petroleum gas allowing for virtually smoke free combustion, thus reducing health hazards considerably. [15]Burden of disease due to indoor air pollution is highly concentrated among the society's most vulnerable groups: women and children in poor rural households. A wide range of interventions can contribute to reducing exposure to indoor air pollution. One such intervention which could improve the health of the poor is biogas[16] .

Other pollutants:

The slurry has lesser number of pathogens compared to dung. Most of the disease-causing organisms are killed. This serves as an effective control of parasitic diseases, hookworm, roundworm, etc. There is reduction of pathogens after digestion[17]. Mosquitoes and flies do not breed in digested slurry and thus biogas improves sanitation[18]

The project would also lead to improvement in the quality of life due to reduced drudgery and time spent for women and children in fuel procurement, transporting, processing, storing, and cooking time. Approximately two hours are spent in gathering biomass per day per household in the baseline. Women can take up income generation activities thus alleviating poverty. Children can attend school as women are able to cook and serve breakfast to the children in time to attend school. There is also more time for leisure at homes.

The national level evaluation studies also show that communities benefit from clean fuel for cooking, cleanliness of environment, improvement in the health of women, saving in manure cost, employment generation, saving in cooking time and traditional fuel. It is useful in the development of an economically viable system of use of this alternative resource through income and employment

[12] Tone Smith-Sivertsen, Esperanza Diaz, Dan Pope, Rolv T. Lie, Anaite Dıaz, John McCracken,Per Bakke, Byron Arana, Kirk R. Smith, and Nigel Bruce,Effect of Reducing Indoor Air Pollution on Womens Respiratory Symptoms andLung Function: The RESPIRE Randomized Trial, Guatemala.

[13] nergy Enterprises for development in rural areas: the case of clean cooking fuel designed by International Energy Initiative (IEI). (Page V)

[14] http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2568866/

[15] Jiwan Acharya, M. SundarBajgain, Mr PremSagarSubedi, Scaling up biogas in Nepal: What else is needed?(page 1)

[16] nergy Enterprises for development in rural areas: the case of clean cooking fuel designed by International Energy Initiative (IEI). (page V)

[17] http://www.greenpowerindia.org/index.php?file=biogas.html

[18] http://www.greenpowerindia.org/index.php?file=biogas.html

generation. Quantitative employment and income generation Construction of biogas units would create good employment opportunities in rural areas.

D.2. Environmental impact assessment

>>
The project activity does not fall under the purview of the Environmental Impact Assessment (EIA) notification of the Ministry of Environment and Forest, Government of India, 2006. Hence, it is not required by the host party[19] documentation on the analysis of the environmental impacts of the project activity.

[19] http://moef.nic.in/legis/eia/so1533.pdf

Section E. Environmental and social safeguards

E.1. Environmental safeguards

Impact of Project Activity on		**Information on Impacts, Do-No-Harm Risk Assessment and Establishing Safeguards**									**Project Owner's Conclusion**	
		Description of Impact *(both positive and negative)*	**Legal requirement / Limit**	**Do-No-Harm Risk Assessment**			**Risk Mitigation Action Plans**		**Do-No-Harm Residual Risk Assessment**		**Self-Declaration**	
				Not Applicable *(No actions required)*	**Harmless** *(No actions required)*	**Harmful** *(Actions required)*	**Operational Controls**	**Program of Risk Management Actions**	**Re-evaluate Risks**	**Monitoring**	**Explanation of Conclusion**	**The Project Activity will not cause any harm**
Environmental impacts on the identified categories[20] indicated below.	*Indicators for environmental impacts*	*Describe anticipated environmental impacts, both positive and negative from all sources (stationary and mobile), that may result from the Project Activity, within and outside the project boundary, over which the Project Owner(s) has control, and beyond what would reasonably be expected to occur in the absence of the Project Activity.*	*Describe the applicable national regulatory requirements /legal limits related to the identified risks of environmental impacts.*	*If no environmental impacts are anticipated, then the Project Activity is unlikely to cause any harm (is safe) and shall be indicated as **Not Applicable** (No actions required)*	*If environmental impacts are anticipated, but are expected to be in compliance with applicable national regulatory requirements/ below the legal limits, then the Project Activity is unlikely to cause any harm (is safe) and shall be indicated as **Harmless** (No actions required)*	*If environmental impacts are anticipated that will not be in compliance with the applicable national regulatory requirements or are likely to exceed legal limits, then the Project Activity is likely to cause harm (may be un-safe) and shall be indicated as **Harmful** (Actions required).*	*Describe the operational controls and best practices, focusing on how to implement and operate the Project Activity, to reduce the risk of impacts that have been identified as **Harmful**.*	*Describe the Program of Risk Management Actions (refer to Table 3), focusing on additional actions (e.g., installation of pollution control equipment) that will be adopted to reduce the risk of impacts that have been identified as **Harmful**.*	*Re-evaluate risks after Risk Mitigation Action Plans have been developed (refer to previous two columns) for impacts that have been identified as Harmful. Indicate whether the risks have been eliminated or reduced and, where appropriate, indicate them as **Harmless** (No actions required)*	*Describe the monitoring approach and the parameters to be monitored for each impact that has been identified as Harmful and described in the PSF (refer to Table 3).*	*Describe how the Project Owner has concluded that the Project Activity is likely to achieve the identified Risk Mitigation Action Plan targets for managing risks to levels that are unlikely to cause any harm.*	*Confirm that the Project Activity risks of negative environmental impacts are expected to be managed to levels that are unlikely to cause any harm (Mark +1 for **Yes** or and -1 for **No**)*
Environmental Safeguards												
Environment *- Air*	*SO_x emissions*	The Household Biogas project does not cause any NOx emissions in the project scenario.	The Air (Prevention & Control of Pollution) Act 1981	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	No Action Required	No Action Required	Household biogas doesn't have any pollution	0

[20] sourced from the CDM SD Tool and the sample reports are available (https://www4.unfccc.int/sites/sdcmicrosite/Pages/SD-Reports.aspx)

	NO_x emissions	The Household Biogas project does not cause any NOx emissions in the project scenario.	The Air (Prevention & Control of Pollution) Act 1981	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	No Action Required	No Action Required	Household biogas doesn't have any pollution	0
	CO_2 emissions	The Household Biogas project does not cause any Co2 emissions in the project scenario.	The Air (Prevention & Control of Pollution) Act 1981	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	No Action Required	No Action Required	Household biogas doesn't have any pollution	0
	CO emissions	The Household Biogas project does not cause any CO emissions in the project scenario.	The Air (Prevention & Control of Pollution) Act 1981	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	No Action Required	No Action Required	Household biogas doesn't have any pollution	0
	Suspended particulate matter (SPM) emissions	The Household Biogas project does not cause any SPM emissions in the project scenario.	The Air (Prevention & Control of Pollution) Act 1981	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	No Action Required	No Action Required	Household biogas doesn't have any pollution	0
	Fly ash emissions	The Household Biogas project does not cause any Fly ash emissions in the project scenario.	The Air (Prevention & Control of Pollution) Act 1981	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	No Action Required	No Action Required	Household biogas doesn't have any pollution	0
	Non-Methane Volatile Organic Compounds (NMVOCs)	The Household Biogas project does not cause any *NMVOCs)* emissions in the project scenario.	The Air (Prevention & Control of Pollution) Act 1981	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	No Action Required	No Action Required	Household biogas doesn't have any pollution	0
	Odor emissions	The Household Biogas project does not cause any NOx emissions in the project scenario.	The Air (Prevention & Control of Pollution) Act 1981	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	No Action Required	No Action Required	Household biogas doesn't have any pollution	0
	Noise Pollution	The Household Biogas project does not cause any NOx	Noise (Regulation and Control)	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	No Action Required	No Action Required	No significant noise emission is	+1

		emissions in the project scenario.	Rules 2000 amended in 2010)								expected from project activity during operational phase as there is no major equipment in household Biogas unit project which generate noise. The noise pollution during the construction phase was below 40 Db which is within the permissible range.	
Environment *- Land*	*Solid waste Pollution from Plastics*	Not Applicable	Plastic Waste (Management and Handling) Rules, 2016	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	No Action Required	Not Applicable	No significant plastic waste is expected from the project activity during operational phase Hence,, this parameter will not be scored.	0
	Solid waste Pollution from Hazardous wastes	Not Applicable	Plastic Waste (Management and Handling) Rules, 2016	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	No Action Required	Not Applicable	No significant Hazardous wastes is expected from the project activity during operational phase Hence,, this parameter	0

											will not be scored.	
	Solid waste Pollution from Bio-medical wastes	Not Applicable	Plastic Waste (Management and Handling) Rules, 2016	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	No Action Required	Not Applicable	No significant Bio-medical wastes is expected from the project activity during operational phase Hence,, this parameter will not be scored.	0
	Solid waste Pollution from E-wastes	Not Applicable	Plastic Waste (Management and Handling) Rules, 2016	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	No Action Required	Not Applicable	No significant *E-wastes* is expected from the project activity during operational phase Hence,, this parameter will not be scored.	0
	Solid waste Pollution from Batteries	Not Applicable	Plastic Waste (Management and Handling) Rules, 2016	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	No Action Required	Not Applicable	No significant *Pollution from Batteries* is expected from the project activity during operational phase Hence,, this parameter will not be scored.	0
	Solid waste Pollution from end-of-life products/ equipment	Not Applicable	Plastic Waste (Management and Handling) Rules, 2016	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	No Action Required	Not Applicable	The current biogas unit has end life of the 20-258 year made up	0

											form the Brik & Cement construction . Hence by the end of the life PP will treat the waste significantly.	
	Soil Pollution from Chemicals (including Pesticides, heavy metals, lead, mercury)	Not Applicable	Plastic Waste (Management and Handling) Rules, 2016	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	No Action Required	Not Applicable	No significant *Soil Pollution* is expected from the project activity during operational phase Hence,, this parameter will not be scored.	0
	Soil erosion	Not Applicable	Plastic Waste (Management and Handling) Rules, 2016	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	No Action Required	Not Applicable	No significant *Soil erosion* is expected from the project activity during operational phase Hence,, this parameter will not be scored. However PP the left over manure from the Biodigester can be used as a natural fertilizer to increase the soil fertility	0
Environment - *Water*	*Reliability/ accessibility of water supply*	Depletion of Water resources and Water contamination	The Water (Prevention & Control of Pollution) Act 1974	Not Applicable	No Action Required	No Action Required	Not Applicable	Construction labor deputed onsite to be sensitized about water	No Action Required	Not Applicable	No significant *Soil erosion* is expected from the	0

								conservation and encouraged for optimal use of water.			project activity during operational phase Hence,, this parameter will not be scored.	
	Water Consumption from ground and other sources	Not Applicable	Permission for abstraction of Ground water under Environmental (Protection) Act 1986	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	No Action Required	Not Applicable	No ground water will be consumed in all sites of the project activity & necessary permission to be obtained from concerned local authority in case use ground water in future.	0
	Generation of wastewater	Not Applicable	The Water (Prevention & Control of Pollution) Act 1974	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	No Action Required	Not Applicable	There is no significant effect as provisions of septic tank and soak pits will be provided onsite for treatment and disposal of sewage, thereby minimizing the impacts of wastewater discharge. Planning of toilets, soak pits and septic tanks, waste collection areas will be away from natural drainage channels	0

	Wastewater discharge without/with insufficient treatment	Not Applicable	The Water (Prevention & Control of Pollution) Act 1974	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	No Action Required	Not Applicable	There is no significant effect as provisions of septic tank and soak pits will be provided onsite for treatment and disposal of sewage, thereby minimizing the impacts of wastewater discharge. Planning of toilets, soak pits and septic tanks, waste collection areas will be away from natural drainage channels	0
	Pollution of Surface, Ground and/or Bodies of water	Not Applicable	The Water (Prevention & Control of Pollution) Act 1974	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	No Action Required	Not Applicable	There is no significant effect as provisions of septic tank and soak pits will be provided onsite for treatment and disposal of sewage, thereby minimizing the impacts of wastewater discharge. Planning of toilets, soak pits and septic tanks, waste collection areas will be	0

											away from natural drainage channels	
Environment – *Natural Resources*	*Conserving mineral resources*	Not Applicable	In India, there are no conserving mineral resources regulations and standards to ascertain	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	No Action Required	Not Applicable	This is Household biogas project activity and it is not using any natural minerals. therefore, this parameter will not be scored.	0
	Protecting/ enhancing plant life	Not Applicable	In India, there are no comprehen sive regulations and standards to ascertain for protecting plant life	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	No Action Required	Not Applicable	The project activity has been implemente d in barren land of the household. There were no trees at the start during the start of the project so and no trees have been removed from the site due to project activity therefore this parameter will not be scored.	0
	Protecting/ enhancing species diversity	Not Applicable	In India, there are no comprehen sive regulations and standards to ascertain for protecting plant life	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	No Action Required	Not Applicable	The project activity has been implemente d in barren land of the household. There were no trees at the start during the start of the	0

											project so and no trees have been removed from the site due to project activity therefore this parameter will not be scored.	
	Protecting/ enhancing forests	Not Applicable	The Forest (Conservation) Act 1980 & 1981	Not Applicable	No Action Required	No Action Required	Not Applicable	No Action Required	Not Applicable	Not Applicable	No forest land has been used for the project activity.	0
	Protecting/ enhancing other depletable natural resources	Not Applicable	National Forest Policy (Revised) 1988	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	No action required	Not Applicable	The project activity has been implemented in barren land of the household and no trees have been removed from the site due to project activity or no other natural resource has been used to operate project activity therefore this parameter will not be scored.	0
	Conserving energy	Not Applicable	Energy Conservation Act 2001	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	No Action Required	Not Applicable	All efficient products & instruments has been used in the project activity, hence no	0

											significant impact due to this. therefore, this parameter will not be scored	
	Replacing fossil fuels with renewable sources of energy	Not Applicable fuel plants.	In India, there are no comprehen sive regulations and standards for replacing fossil fuels with renewable sources of energy	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	No Action Required	Continuous measuring for electricity generation will be done	NA	0
	Replacing ODS with non-ODS refrigerants	Not Applicable	In India, there are no comprehen sive regulations and standards to ODS & non ODS	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	No Action Required	Not Applicable	No impact Therefore this parameter will not be scored.	0
Note: If the score is: (a) zero or greater, the overall impact is neutral or positive and there is no net harm; and (b) less than zero, the overall impact is negative and there is net harm to Environment. Score is obtained after adding the individual scores in each of the rows in the last column of the above table.												
Net Score:			**+1**									
Project Owner's Conclusion in PSF:			The Project Owner confirms that the Project Activity will not cause any net harm to the environment.									

E.2. Social Safeguards

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Impact of Project Activity on		Information on Impacts, Do-No-Harm Risk Assessment and Establishing Safeguards									Project Owner's Conclusion	
		Description of Impact (*both positive and negative*)	**Legal requirement /Limit**	**Do-No-Harm Risk Assessment**			**Risk Mitigation Action Plans**		**Do-No-Harm Residual Risk Assessment**		**Self-Declaration**	
				Not Applicable *(No actions required)*	**Harmless** *(No actions required)*	**Harmful** *(Actions required)*	**Operational Controls**	**Program of Risk Management Actions**	**Re-evaluate Risks**	**Monitoring**	**Explanation of Conclusion**	**The Project Activity will not cause any harm**
Social impacts on the identified categories[21] indicated below.	*Indicators for social impacts*	*Describe the impacts on society and stakeholders, both positive and negative, that may result from constructing and operating of the Project Activity.*	*Describe the applicable national regulatory requirements / legal limits related to the identified risks of social impacts.*	*If no social impacts are anticipated, then the Project Activity is unlikely to cause any harm (is safe) and shall be indicated as **Not Applicable** (No actions required)*	*If social impacts are anticipated, but are expected to be in compliance with applicable national regulatory requirements/ legal limits, then it the Project Activity is unlikely to cause any harm (is safe) and shall be indicated as **Harmless** (No actions required)*	*If social impacts are anticipated that will not be in compliance with the applicable national regulatory requirements/ legal limits, then the Project Activity is likely to cause harm (may be unsafe) and shall be indicated as **Harmful** (Actions required).*	*Describe the operational controls and best practices, focusing on how to implement and operate the Project Activity, to reduce the risk of impacts that have been identified as **Harmful**.*	*Describe the Program of Risk Management Actions (refer to Table 3), focusing on additional actions (e.g., construction of crèche for workers) that will be adopted to reduce the risk of impacts that have been identified as **Harmful**.*	*Re-evaluate risks after Risk Mitigation Actions plans have been developed (refer to previous two columns) for impacts that have been identified as Harmful. Indicate whether the risks have been eliminated or reduced and, where appropriate, indicate them as **Harmless** (No actions required)*	*Describe the monitoring approach and the parameters to be monitored for each impact that has been identified as Harmful and to be described in the PSF (refer to Table 3).*	*Describe how the Project Owner has concluded that the Project Activity is likely to achieve the identified Risk Mitigation Action Plan targets for managing risks to levels that are unlikely to cause any harm.*	*Confirm that the Project Activity risks of negative social impacts are expected to be managed to levels that are unlikely to cause any harm (Mark +1 for **Yes** or and -1 for **No**)*
Social Safeguards												
	Long-term jobs (> 1	The project creates long	There is no legal	Not Applicable	-	-	Not Applicable	Not Applicable	No Action Required	15 Number of people	There is no mandatory law to	+1

[21] sourced from the CDM SD Tool and the sample reports are available (https://www4.unfccc.int/sites/sdcmicrosite/Pages/SD-Reports.aspx)

Social - *Jobs*	*year) created/ lost*	term job opportunities during construction.	requirement from local authority to create permanent employment from the project activity							employed by the project will be monitored through checking payroll records or the social insurance	generate permanent employment from the project activity, however, project Owner has been decided to provide training to the local people & generate permanent employment for local people. Therefore, this parameter will be scored.	
	New short-term jobs (< 1 year) created/ lost	The project creates short term job opportunities during construction	There is no legal requirement from local authority to create permanent employment from the project activity	Not Applicable	-	-	Not Applicable	Not Applicable	No Action Required	10 Local labor force will be employed during construction period. Since the employment is temporary and provided during construction phase only, therefore it will not be monitored throughout the crediting period.	There is no mandatory law to generate employment from the project activity, however, Project Owner has decided to generate temporary employment in construction phase for local people. Since the employment is temporary and provided during construction phase only, therefore it will not be monitored throughout the crediting period. Therefore, this parameter will not be scored.	0
	Sources of income generation increased / reduced	Not Applicable	There is no legal requirement from local authority	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	No Action Required	Not Applicable		0

			to create permanent employment from the project activity									
Social - *Health & Safety*	*Disease prevention*	Not Applicable	The Factories Act, 1948	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	No Action Required	Not Applicable	It will be ensured that proper and adequate number of toilets is constructed for the Labor's so that hygienic conditions prevail in the site area. Therefore this parameter will not be scored.	0
	Reducing / increasing accidents	Working at heights; Working with live electrical components; and Operation of cranes and other mechanical lifting equipment	The Factories Act, 1948 & EHS policy	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	No Action Required	Health & safety training to be provided to all the workers during both construction and operation phase	The project owner will provide regular safety training to their workers	0
	Reducing / increasing crime	Not Applicable	Crime comes under law & order of local government authority and there is no legal requirement from local authority to project owner to liable to reduce crime.	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	No Action Required	Not Applicable	Project activity will increase local employment so there is no chance to increase crime in the local area due to the household biogas Therefore, this parameter will not be scored.	0
	Reducing / increasing	Not Applicable	THE COMPUL	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	No Action Required	Not Applicable	The PO will use a 2-bin system so	0

	food wastage		S ORY FOOD WASTE REDUCT IO N BILL, 2018								that food waste and recyclables viz. paper, plastic, glass, scrap metal waste etc. are segregated and stored in designated waste bins/ containers. Therefore, this parameter will not be scored.	
	Reducing / increasing indoor air pollution	The main objective of the current project activity is to empower the women form the Rural part of the India and by using the biogas unit for the cooking a significant result can be shown by reduction in the indoor air pollution	There is no legal requirem ent	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	No Action Required	PP has appointed the third party for the all survey to ensure the indoor air pollution and has reduced in a significant manner.	PP has appointed the third party for the all survey to ensure the indoor air pollution and has reduced in a significant manner.	+1
	Efficiency of health services	Not Applicable	No local regulation available	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	No Action Required	Not Applicable	Health services are limited to villages falls under project activity.	0
	Sanitation and waste management	Not Applicable	Hazardou s and Other Wastes (Manage ment and Transbou ndary Movemen t) Amendm ent Rules, 2016	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	No Action Required	Not Applicable	NA	0
	Other health and safety issues	Not Applicable	NA	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	No Action Required	Not Applicable	NA	0

Social - *Education*	*Job related training imparted or not*	The project owner provides 1 job related training according to the positions	There is no legal requirement from local authority to provide training to local people	Not Applicable	-	-	Not Applicable	Not Applicable	No Action Required	Training records/evidence by the project owner and it will be monitored under the parameter Employment Trainings of section B.7.1	The project Owner will provide regular job related technical training to their workers. Since the number of trainings imparted can be measured. Therefore this parameter will be scored.	+1
	Educational services improved or not	Not Applicable	CSR policy	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	No Action Required	Not Applicable	Project will take initiative for Promotion of education, including special education and employment enhancing vocation skills especially among children, women, elderly and the differently abled and livelihood enhancement projects	0
	Project-related knowledge dissemination effective or not	Not Applicable	CSR policy of	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	No Action Required	Not Applicable	Stakeholder consultation meeting was done before starting of project work where project owner was informed about the project and taken their comments. Further meeting can be planned in future as per stakeholder request. Therefore this parameter will not be scored.	0

	Other educational issues	Not Applicable	CSR policy of	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	No Action Required	Not Applicable	Project will take initiative Promotion of education, including special education and employment enhancing vocation skills especially among children, women, elderly and the differently abled and livelihood enhancement projects Therefore this parameter will not be scored.	0
Social - *Welfare*	*Improving/ deteriorating working conditions*	Not Applicable	EHS policy	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	No Action Required	Not Applicable	There is no chance of deteriorating working conditions as project will maintain high working culture for their employee with complying EHS guideline & local regulation Therefore this parameter will not be scored.	0
	Community and rural welfare	The main objective of the current project activity is to empower the women form the Rural part of the India and by using the biogas unit for the cooking a significant result can be shown by reduction in the indoor air pollution	Third party survey	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	No Action Required	Not Applicable	In the stakeholder meeting, the local communities were of the opinion that apart from the economic opportunities.	+1
	Poverty alleviation	Not Applicable	No local regulation	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	No Action Required	Not Applicable	The objective of the company	0

	(more people above poverty level)										policy of Project is to assist project sites to reduce poverty and enhance economic growth, human well-being, and development effectiveness by addressing the gender disparities and inequalities that are barriers to development, and by assisting member countries in formulating and implementing their gender and development goals Therefore this parameter will not be scored.	
	Improving / deteriorating wealth distribution/ generation of income and assets	Not Applicable	No local regulation	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	No Action Required	Not Applicable	Local community might choose to work during the construction of access roads and other project components and as security guards for the plant. There is also a likelihood of reduced dependence on agriculture for income. Therefore this parameter will not be scored.	0
	Increased or / deteriorating municipal revenues	Not Applicable	No local regulation	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	No Action Required	Not Applicable	Projects is not falling under municipal areas, hence same will not be applicable. Therefore, this parameter will not be scored.	0

	Women's empowerment	The main objective of the current project activity is to empower the women form the Rural part of the India and by using the biogas unit for the cooking a significant result can be shown by reduction in the indoor air pollution Further aim to provide cleaner, more efficient Biogas to women while also giving them income-generation opportunities as business owners and entrepreneurs at the center of the clean cookstoves value chain.	There is no legal requirement	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	No Action Required	PP has appointed the third party for the all survey to ensure the indoor air pollution and has reduced in a significant manner.	PP has appointed the third party for the all survey to ensure the indoor air pollution and has reduced in a significant manner.	+1
	Reduced / increased traffic congestion	Not Applicable	NA	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	No Action Required	Not Applicable	NA	0
	Other social welfare issues	Not Applicable	NA	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	No Action Required	Not Applicable	NA	0

Note: If the score is: (a) zero or greater, the overall impact is neutral or positive and there is no net harm; and (b) less than zero, the overall impact is negative and there is net harm to society. Score is obtained after adding the individual scores in each of the rows in the last column of the above table.

Net Score:	+5
Project Owner's Conclusion in PSF:	The Project Owner confirms that the Project Activity will not cause any net harm to society.

Section F. United Nations Sustainable Development Goals (SDG)

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UN-level SDGs	UN-level Target	Declared Country-level SDG	Defining Project-level SDGs					Project Owner(s)'s Conclusion	
			Project-level SDGs	**Project-level Targets/ Actions**	**Project-level Indicators**	**Contribution of Project-level Actions to SDG Targets**	**Monitoring**	**Explanation of Conclusion**	**Are Goal/ Targets Likely to be Achieved?**
Describe UN SDG targets and indicators *See: https://unstats.un.org/sdgs/indicators/indicators-list/*	*Describe the UN-level target(s) and corresponding indicator no(s)*	*Has the host country declared the SDG to be a national priority? Indicate Yes or No*	*Define project-level SDGs by suitably modifying and customizing UN/ Country-level SDGs to the project scope.* ***For guidance see:*** *Integrating the SDGs into Corporate Reporting- A Practical Guide: https://www.unglobalcompact.org/docs/publications/Practical_Guide_SDG_Reporting.pdf* *Case-study from Coca-Cola and other organizations to develop organization-wide SDGs (page 114):* https://pub.iges.or.jp/pub/realising-transformative-potential-sdgs	*Define project-level targets/actions, by suitably modifying and customizing UN/Country-level targets to the project scope. Define the target date by which the Project Activity is expected to achieve the project-level SDG target(s). Refer to the previous column for guidance*	*Define project-level indicators by suitably modifying and customizing UN/Country-level indicators to the project scope or creating a new indicator(s). Refer to the previous column for guidance*	*Describe and justify how actions taken under the Project Activity are likely to result in a direct positive effect that contributes to achieving the defined project-level SDG targets and is additional to what would have occurred in the absence of the Project Activity*	*Describe the monitoring approach and the monitoring parameters to be applied for each project-level SDG target and Indicator*	*Describe how the Project Owner has concluded that the project is likely to achieve the identified Project level SDGs target(s).*	*Describe whether the project-level SDG target(s) is likely to be achieved by the target date (Yes or No)*
Goal 1: End poverty in all its forms everywhere	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goal 2: End hunger, achieve food security and improved nutrition and promote sustainable agriculture	NA	NA	NA	NA	NA	NA	NA	NA	NA

Goal 3. Ensure healthy lives and promote well-being for all at all ages	3.9 By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination	Yes	The main objective of the current project activity is to empower the women form the Rural part of the India and by using the biogas unit for the cooking a significant result can be shown by reduction in the indoor air pollution.	Around 14800 family have a positive impact	3.9.1 Mortality rate attributed to household and ambient air pollution	reduction in the indoor air pollution.	reduction in the indoor air pollution.	reduction in the indoor air pollution.	Yes
Goal 4. Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goal 5. Achieve gender equality and empower all women and girls	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goal 6. Ensure availability and sustainable management of water and sanitation for all	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goal 7. Ensure access to affordable, reliable, sustainable and modern energy for all	7.1 By 2030, ensure universal access to affordable, reliable and modern energy services	Yes	Quantity of thermal energy	10 MWh/yr	7.1.2 Proportion of population with primary reliance on clean fuels and technology	Contribute to the thermal energy for cooking	Contribute to the thermal energy for cooking	Contribute to the thermal energy for cooking	Yes
Goal 8. Promote sustained, inclusive and sustainable economic growth,	8.5 By 2030, achieve full and productive	Yes	Project activity supports creation of short term and long term job opportunities for men and women during the construction	Project creates new employment and generates income for 15 no	Project creates new employment and generates	1. Employment as per the national labour and company law including	Project owner monitors the implementation of the	Number of people (men & Women) employed	YES Targeted SDG is likely to be

full and productive employment and decent work for all	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 8.8 Protect labor rights and promote safe and secure working environments for all workers, including migrant workers, in		and operation of the project activity. Supports economic productivity through technology up gradation and innovation through training of labour in high intensive sector for both the genders. Project protects labour rights and promotes safe and secure working environments.	of people created. Through Project activity economic development has been achieved in the project location by creating employment opportunities to the other allied services and indirect employment for men and women.	income for 15 no of people including men and women during the project lifetime. 15 Long term jobs and 10 short term jobs will be provided	national geneder policy 2. Maintains company HR policy to create standard operating procedures (SOPs) to follow and maintain safe and secure work environment 3. paying the wages as per the minimum wages act of the country.	policies and employee grievances if any, through the separate HR manager and site in charge. Quantity of employment for both men and women will be monitored through employment records which will include Name, Gender and salary etc.	directly due to the project activity	achieved during the entire crediting period.
Goal 9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goal 10. Reduce inequality within and among countries	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goal 11. Make cities and human settlements inclusive, safe, resilient and sustainable	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goal 12. Ensure sustainable consumption and production patterns	NA	NA	NA	NA	NA	NA	NA	NA	NA

Goal 13. Take urgent action to combat climate change and its impacts	13.2 Integrate climate change measures into national policies, strategies and planning	Yes	Emission reductions achieved per year	47,588 tCO_2	SDG 13	Emission reduction achieved per year	Electricity produced by the renewable generating unit multiplied by an emission factor	Reduction of Greenhouse gases	Yes
Goal 14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goal 15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss	15.1 By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements	Yes	Reduction of wood consumption	5.22 ton/year	SDG15	Emission reduction achieved per year	Thermal energy produced by the renewable generating unit multiplied by an emission factor	Reduction of Greenhouse gases	Yes
Goal 16. Promote peaceful and inclusive societies for sustainable development, provide access to	NA	NA	NA	NA	NA	NA	NA	NA	NA

justice for all and build effective, accountable and inclusive institutions at all levels									
Goal 17. Strengthen the means of implementation and revitalize the global partnership for sustainable development	NA	NA	NA	NA	NA	NA	NA	NA	NA

SUMMARY	**Targeted**	**Likely to be Achieved**
Total Number of SDGs	**05**	**05**
Certification label (Bronze, Silver, Gold, Platinum, or Diamond) for the ACCs as defined in the PSF	**Platinum**	**Platinum**

Section G. Local stakeholder consultation

G.1. Modalities for local stakeholder consultation

- The scope of local stakeholder consultation: Awareness about Climate Change; Project and Sustainable Development Goals
- The group of stakeholders invited:
  - Land Lesser and Land Aggregator
  - Local Labourer and Grazers
  - Vulnerable social groups such as women, BPL, and Schedule Class
  - Regulatory Authorities at district levels, Sarpanch, ward member and Gram Sewak of Panchayats (where the project site)
  - Local Communities in Area of Interest villages
- The means for inviting stakeholders' participation.

  Most of the stakeholders were given private phone calls followed by official letters and Invitation posters where possible. Especially the nearby village heads were asked to inform the locals about the project and the meeting.
- Agenda of Meeting:
  - Introduction of the project
  - Brief of Climate Change and Certification Process
  - Social No-net-harm Label
  - Environmental No-net-harm Label
  - Sustainable Development Goals and project benefits to the local stakeholders
- A local stakeholder meeting was organized on **15/02/2016** before the project implementation began.

  A presentation about the project was given to stakeholders, which focused on the non-technical specifications of the project, its environmental affects, climate change issue and the climate change benefits of the project. Representatives of project owner also explained the benefits due to project like new employment generation and CSR activities conducted by the Project Owner. 50 questionnaires were distributed to collect comments from Government officials, Social Organizations and local residents, and all questionnaires have been recollected.
  The following questions were asked in the questionnaires:
  - Are you aware of the project?
  - In your opinion, what are the pros and cons of the project?

- What's your concern over the project?
- Do you support the implementation of the project?
- Any other comments?

G.2. Summary of comments received

All stakeholders interviewed are supportive to the implementation of the project, believing that the Project will help mitigate the air pollutions by reducing GHG, improve the community environment and promote local economic development.
Local stakeholders also have raised their concerns about environmental and social impacts of the project during construction and operation period. Comments are summarized below.

Comment: How would locals be employed by the company?	**Reply from PP/ PP Representative:** Employment opportunities are available in both technical and non-technical areas. For technical jobs qualified persons have been employed, however for non-technical jobs like security and transportation, construction preference has been for employment of local persons.
Comment: what is the biogas project and how it will affect directly to us?	**Reply from PP/ PP Representative:** Biogas is the mixture of gases produced by the breakdown of organic matter in the absence of oxygen. Biogas burns very cleanly and produces fewer pollutants during cooking than any other fuel except electricity. Biogas provides instant heat upon ignition, no pre-heating or waiting time is required.
Comment: What is the production costs of biogas plants?	**Reply from PP/ PP Representative:** Biogas is the mixture of gases produced by the breakdown of organic matter in the absence of oxygen. Biogas burns very cleanly and produces fewer pollutants during cooking than any other fuel except electricity. Biogas provides instant heat upon ignition, no pre-heating or waiting time is required.

G.3. Consideration of comments received

All comments raised during local stakeholder consultation have been considered in EIA report and corresponding precaution measures and corrective actions (if any) have been proposed to ensure all issues during construction and operation of the project are properly addressed.

Section H. Approval and authorization

>>
As per the guideline available in this regard, submission of Host Country Attestation (HCA) on Double Counting as and when required by CORSIA

Appendix 1. Contact information of project owners

Organization name	ClimatePartner GmbH
Country	Germany
Address	St. Martin Strasse 59, Munich
Telephone	+49 89 12228751279
Fax	
E-mail	Nikunj.Agarwal@climatepartner.com
Website	www.climatepartner.com
Contact person	Nikunj Agarwal

Appendix 2. Affirmation regarding public funding

>> Project owner would be no divergence of Official Development Assistance (ODA) in any of the project activity. This would be confirmed through undertaking / declaration from the project owner.

Appendix 3. Applicability of methodology(ies)

>>
Refer to section B.6.1.

Appendix 4. Further background information on ex ante calculation of emission reductions

>>
Refer to section B.6.2

Appendix 5. Further background information on monitoring plan

>>

Refer to section B.7

Appendix 6. Summary report of comments received from local stakeholders

>>

Not Applicable as project category is A1

Appendix 7. Summary of de-registered CDM project (Type B)

>>Not Applicable

Complete this form in accordance with the instructions attached at the end of this form.	
CDM Project registration number	
Date of registration of CDM Project	
Title of the Project Activity	
CDM Project de-registration reference number	
Date of de-registration of the CDM Project	
Project Participants (authorized by the host / annex 1 country letter of approval)	
Country where the project is located	

<table>
<tr><td>Applied CDM methodology(ies)
(provide reference and version number(s))</td><td></td></tr>
<tr><td>Pre-registration changes to the CDM Project Activity
(Tick as applicable)</td><td>
<table>
<tr><th>CDM Pre-registration Changes</th><th>Reference number</th><th>Approved</th><th>Provide a summary of pre-registration changes</th></tr>
<tr><td>Deviations from the CDM methodology</td><td></td><td>☐</td><td></td></tr>
<tr><td>Deviations from the CDM Tool</td><td></td><td>☐</td><td></td></tr>
<tr><td>Deviations from the CDM rules</td><td></td><td>☐</td><td></td></tr>
<tr><td>Other…….</td><td></td><td>☐</td><td></td></tr>
</table>
</td></tr>
</table>

Post-registration changes to the CDM Project Activity

(Tick as applicable)

CDM Post registration Changes	Reference number	Approved	Provide a summary of post-registration changes
Change in project design		☐	
Request for revision of monitoring plan		☐	
Request for change in start date of crediting period		☐	
Renewal of crediting period		☐	
Temporary deviations		☐	
Other…….		☐	

Crediting Period(s)

Crediting period(s)			Period (start & end dates)	ERs as per registered PDD/MR	CERs issued
Crediting Period (shall start on or after 1 Jan 2016)	Fixed 10 year				
	Renewable (7 years, with 2 approved renewals)	1st			
		2nd			
		3rd			
Period for which CERs have been issued					
Period for which CERs have been requested but not issued					-
Period for which CERs have never been requested for issuance (no monitoring reports submitted)					-
Period for which CERs have never been requested for issuance prior to CDM de-registration					-
Remaining Crediting period, after CDM de-registration, for which CERs have not been issued by the UNFCCC CDM Executive Board, subject to a ceiling of 10 years as allowed under the GCC Program					-

<table>
<tr><td>Details of Previous CDM Issuance Requests</td><td>
<table>
<tr><th>Issuance Request</th><th>Period
(start & end dates)</th><th>ERs as per registered PDD</th><th>Quantity of CERs requested to be issued</th><th>Quantity of CERs issued</th></tr>
<tr><td>1st</td><td></td><td></td><td></td><td></td></tr>
<tr><td>2nd</td><td></td><td></td><td></td><td></td></tr>
<tr><td>3rd</td><td></td><td></td><td></td><td></td></tr>
<tr><td>4th</td><td></td><td></td><td></td><td></td></tr>
<tr><td>5th</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Add rows ……</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Total</td><td></td><td></td><td></td><td></td></tr>
</table>
</td></tr>
<tr><td>List any open issues in the Validation and last Verification Report (e.g., FARs, if any) and how they have been addressed</td><td></td></tr>
<tr><td>Any other relevant information that has not been reported in the registered CDM documents and that may have adverse impacts on the environmental integrity of the Project Activity</td><td></td></tr>
<tr><td>Provide the list of all the registered documents related to this project, as available on the UNFCCC/CDM website and the corresponding URLs.</td><td></td></tr>
</table>

DOCUMENT HISTORY

Version	Date	Comment
V 3.2	31/12/2020	▪ The name of GCC Program's emission units has been changed from "Approved Carbon Reductions" or ACRs to "Approved Carbon Credits" or ACCs.
V 3.1	17/08/2020	▪ Editorial revisions made o Revised Table in section B.7.2 on Monitoring-program of risk management actions o Revised Table in section E.1 on Environmental Safeguards o Revised Table in section E.1 on Social Safeguards o Revised Table in section F on United Nations Sustainable Development Goals (SDG)
V 3.0	05/07/2020	▪ Revised version released on approval by Steering Committee as per GCC Program Process; ▪ Revised version contains following changes: o Change of name from Global Carbon Trust (GCT) to Global Carbon Council (GCC); o Considered and addressed comments raised by Steering Committee: ➢ during physical meeting (SCM 01, dated 29 Oct 2019, Doha Qatar); and ➢ electronic consultations EC01-Round 01 (15.09.2019 – 25.09.2019), EC01-Round 02 (27.03.2020 – 27.06.2020). o Feedback from Technical Advisory Board (TAB) of ICAO on GCC submission for approval under CORSIA[22];
V 2.0	25/06/2019	▪ Revised version released for approval by the GCC Steering Committee. ▪ Revised version includes additional details and instructions on the information to be provided, consequent to the latest developments world-wide (e.g., CORSIA EUC).
V 1.0	01/11/2016	Initial version released under the GCC Program Version 1

[22]See ICAO recommendation for conditional approval of GCC at https://www.icao.int/environmental-protection/CORSIA/Documents/TAB/Excerpt_TAB_Report_Jan_2020_final.pdf

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