المجلس العالمي للبصمة الكربونية
GLOBAL CARBON COUNCIL

Project Submission Form

V4.0- 2022

CONTENTS

COVER PAGE- Project Submission Form (PSF)

BASIC INFORMATION

Title of the Project Activity as per LON/LOA	Biomass thermal project in Maharashtra (002)
PSF version number	2.0
Date of completion / Updating of this form	14/11/2022
Project Owner(s) as per LON/LOA (Shall be consistent with De-registered CDM Type B Projects)	Thermax Onsite Energy Solutions Limited
Country where the Project Activity is located	India

GPS coordinates of the project site(s)

Sl. No	Capacity	Latitude (N)	Longitude (E)
1.	8 TPH	21.549780 (21°32'59.2"N)	73.000095 (73°00'00.3"E)
2.	4 TPH	19.849450, 74.050614 (19°50'58.0"N)	74.050614 (74°03'02.2"E)

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

- ☒ **Type A:**
  - ☐ Type A1
  - ☒ Type A2
    - ☒ Sub-Type 1
    - ☐ Sub-Type 2
    - ☐ Sub-Type 3
    - ☐ Sub-Type 4
  - ☐ Type A3
- ☐ **Type B – De-registered CDM Projects:**[1]

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

<table>
<tr><td></td><td>☐ Type B1
☐ Type B2</td></tr>
<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 including version No.
(Shall be approved by the GCC or the CDM)</td><td>AMS.I.C.: Thermal energy production with or without electricity - Version 22.0</td></tr>
<tr><td>GHG Sectoral scope(s) linked to the applied methodology(ies)</td><td>GHG – SS 1 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>Version</th></tr>
<tr><td colspan="2">☒ ISO 14064-2</td><td></td></tr>
<tr><td colspan="2">☒ Applicable host country legal requirements /rules</td><td></td></tr>
<tr><td rowspan="3">☒ GCC Rules and Requirements[2]</td><td>☒ Project Standard</td><td>3.1</td></tr>
<tr><td>☐ Approved GCC Methodology (XXXXX)</td><td></td></tr>
<tr><td>☒ Program Definitions</td><td>3.1</td></tr>
</table>
</td></tr>
</table>

[2] GCC Program rules and requirements: http://www.globalcarboncouncil.com/resource-centre/

		☒ Environment and Social Safeguards Standard	3.0
		☒ Project Sustainability Standard	3.0
		☒ Instructions in Project Submission Form (PSF)-template	4.0
		☒ Clarification No. 01	1.3
		☐ Clarification No. 02	
		☐ Clarification No. 03	
		☐ Clarification No. 04	
		☐ Clarification No. 05	
		☒ Standard on avoidance of double counting	1.0
		☐ Add rows if required	
	☒ CDM Rules[3]	☒ Approved CDM Methodology (XXXXX)	22.0
		☒ TOOL 1- Tool for the demonstration and assessment of additionality	7.0
		☐ TOOL 02- Combined tool to identify the baseline scenario and demonstrate additionality	
		☒ TOOL 3- Tool to calculate project or leakage CO2 emissions from fossil fuel combustion	3.0
		☒ TOOL 05- Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation	3.0
		☐ TOOL 07- Tool to calculate the emission factor for an electricity system	

[3] CDM Program rules: https://cdm.unfccc.int/Reference/index.html

		☒ TOOL 12-Project and leakage emissions from transportation of freight	1.1.0
		☒ TOOL 16-Project and Leakage emissions from biomass	5.0
		☐ TOOL 19- Demonstration of additionality of microscale project activities	
		☒ TOOL 20- Assessment of debundling for small-scale project activities	4.0
		☒ TOOL 21- Demonstration of additionality of small-scale project activities	13.1
		☐ TOOL 23- Additionality of first-of-its-kind project activities	
		☐ TOOL 24- Common practice	
		☒ TOOL 27- Investment analysis	11.0
		☐ TOOL 32- Positive lists of technologies	
		☐ Guidelines for objective demonstration and assessment of barriers	
Choose Third Party Project Verification by approved GCC Verifiers[4] (Tick applicable verification categories)	☒ 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 ☐ Silver SDG Label ☐ Gold SDG Label		

[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.

	☒ Platinum SDG Label ☐ Diamond SDG Label ☒ CORSIA requirements (**C$^+$**) ☒ Host Country Attestation on Double counting
Declaration by the 'Authorized Project Owner[5] and focal point' (Tick all applicable statements[6])	The Project Owner(s) declares that: **Generic Requirements applicable to all Project Types:** ☒ We confirm that the Project Activity complies with the eligibility of the applicable project type (A1, A2, A3, B1 or B2) as stipulated by the Project Standard and relevant clarifications. ☒ We confirm that the Project Activity shall start or have started operations, and shall start or have started generating emission reductions, on or after 1 January 2016. ☒ We confirm that the Project Activity is eligible to be registered under the GCC program. We shall ensure the following for the Project Activity (tick at least one of the two options): ☒ No outcomes (e.g., emission reductions, environmental attributes) generated by the Project Activity under GCC will be claimed as carbon credits or environmental attributes under any other GHG/non-GHG[7] program, either for compliance or voluntary purposes, during the entire GCC crediting period; or ☐ If the project activity has been issued with carbon credits or environmental attributes of compensating nature[8] by any other GHG/ non-GHG program, either for compliance or voluntary purposes, the ACCs will be claimed only for the remaining crediting period (subject to a maximum of 10 years of crediting period including the periods under other programs and GCC program) for which carbon credits/ environmental attributes of compensating nature have not been issued by any other GHG/ non-GHG program. **Specific requirements applicable to respective Project Types:**

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

[6] **Consequences in case of Non-compliance with declaration statements:**
If at any point in time non-compliance with the declared statements is established as a result of negligence, fraud or wilful misconduct of the GCC Project Owner/s the GCC project activity will be disqualified, and the registration of the proposed Project Activity will be rejected.

[7] Non-GHG programs could be such as I-REC facilitating reliable energy claims with Renewable Energy Certificate (REC) schemes

8 The environmental attributes of compensating nature are those which are used by captive users (e.g., corporates/industries) for offsetting their GHG emissions

For Project Type A1:

☐ For Project Type A1, we confirm that the Project Activity is NOT registered as a GHG Project Activity in any other GHG/non-GHG program or any other voluntary program and has not issued or will not issue credits under any other program.

For Project Type A2 (Sub-Type 1):

☒ For Project Type A2 Sub-Type 1, we confirm that the Project Activity is NOT registered as a GHG Project Activity in any other GHG/non-GHG program or any other voluntary program and has not issued or will not issue credits under any other program.

For Project Type A2 (Sub-Type 2 or Sub-Type 3):

For Project Type A2 Sub-Type 2 or Project Type A2 Sub-Type 3, we confirm that for Project Activity, which has been registered with CDM or any GHG/non-GHG Program and we shall (tick at least one of the two options):

☐ Submit a proof for deregistration from CDM; or

☐ Submit a signed & stamped public undertaking, stating that the Project Owner will never submit any request for Issuance of ACCs or request for renewal of crediting period to CDM-EB or under article 6.4 or any authority after submission to GCC Program and shall formally inform CDM-EB or authority under article 6.4 or any authority after submission to GCC Program.

☐ For Project Type A2 Sub-Type 2 or Project Type A2 Sub-Type 3, we confirm that the Project Activity is NOT included as a component Project Activity (CPA) in any registered GHG Programme of Activities (PoA) or any other functionally equivalent grouped/aggregated activities under any GHG program (such as the CDM or any other voluntary program).

For Project Type A2 (Sub-Type 4):

For Project Type A2 Sub-Type 4, we confirm that the Project Activity has been included in a registered CDM-POA and we shall (tick at least one of the two options):

☐ Submit the proof for exclusion of CPA(s) from registered CDM-POA prior to the date of initial submission to the GCC Program; or

☐ Submit the proof of exclusion of CPA(s) from the registered CDM-PoA after the request for registration has been submitted to GCC Program but before the final decision is made by the GCC Steering Committee.

For Project Type A3:

☐ For Project Type A3, we confirm that the Project Activity is NOT registered as a GHG Project Activity in any other GHG/non-GHG program or any other voluntary program and has not issued or will not issue credits under any other program.

For Project Type B1 or B2:

For Project Type B1 or Project Type B2, we confirm that for Project Activity, which has been registered with CDM or any GHG/non-GHG Program and we shall (tick at least one of the two options):

☐ Submit a proof for deregistration from CDM; or

☐ Submit a signed & stamped public undertaking, stating that the Project Owner will never submit any request for Issuance of ACCs or request for renewal of crediting period to CDM-EB or under article 6.4 or any authority after submission to GCC Program and shall formally inform CDM-EB or authority under article 6.4 or any authority after submission to GCC Program.

Requirements to avoid double counting:

We intend to submit or have submitted a written attestation[9] (Host Country Letter of Authorization - HCLOA) from the host country's national focal point or focal point designee for CORSIA eligible units generated beyond 31 December 2020 at the following stages[10] (tick at least one of the three options):

☐ The initial submission for GSC; or

☐ Along with the submission for a request for registration (after Project Verification is completed); or

☒ Along with the submission for a request for the first or subsequent issuance of ACCs.

Project specific requirements:

CORSIA specific requirements:

☒ We confirm that bundled projects or grouped projects shall have registered crediting period starting on or after 1 Jan 2016 for the grouped/aggregated project as a whole.

☒ We confirm that the Project Activity meets all the requirement of the CORSIA Eligible Emissions Units[11] required for GCC projects and does not fall under the excluded unit types, methodologies, programme elements, and/or procedural classes.

☒ We confirm that the Project Activity aims to achieve at least Silver or higher SDG+ label (i.e., positively impact at least 3 or more United Nations Sustainability Development Goals).

9 In case of any change of Host Country Letter of Authorisation (HCLOA) the project owner shall inform the GCC operations team immediately

10 If the host country attestation is not submitted at the initial submission of GSC, the project can be tagged with an indicative CORSIA flag if it's confirmed to be submitted later. If the host country attestation is not submitted at the request for registration, the project can be tagged with an indicative CORSIA flag if at least the PSF and Verification Report confirms to submit this letter, at first issuance. If the host country attestation is not submitted at request for first issuance, the ACCs will not be tagged as CORSIA (C+) compliant if this letter is not submitted.

11 CORSIA Eligible Emissions Units containing approval and conditions for GCC Program: https://www.icao.int/environmental-protection/CORSIA/Pages/CORSIA-Emissions-Units.aspx

	☒ We confirm that the Project Activity will be implemented in a country which is UN member state[12]. Provide details (if any) below for the boxes ticked above:
	The Project Owner(s) declares that: ☒ All 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 1-9	Details about the Project Activity are provided in Appendixes 1 through 9 to this document.
Name, designation, date and signature of the Focal point (as per LON/LOA)	**On Behalf of Project Owner** **Mallika Bose** **Sustainability Lead** Thermax Onsite Energy Solutions Ltd. Pune Mallika Bose **Thermax Onsite Energy Solutions Limited** **Date: 02/11/2022**
	On Behalf of External Representative Organization **Manish Dabkara** **MD & CEO** **EKI Energy Services Limited** **Date 02/11/2022** EKI ENERGY SERVICES LIMITED CIN-U74200MP2011PLC025964 EKIESL INDIA INDORE

[12] The list of UN member states countries can be found at https://www.un.org/en/about-us/member-states

1. PROJECT SUBMISSION FORM

Section A. Description of the Project Activity

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

Thermax Onsite Energy Solutions Limited undertaken a project activity, which entails generation of renewable energy from combustion of fuels (biomass) at site (through a steam purchase agreement between Thermax Onsite Energy Solutions Limited and consumer). The project activity involves installation of Boiler unit of 8 TPH and 4 TPH at Panoli, Gujarat and Nashik, Maharashtra respectively. The technology employed is biomass-based steam generation, thus avoiding GHG emissions from carbon intensive fossil fuel combustion for the same.

The project activity involves installation of biomass - based boilers with an installed capacity of 8 TPH and 4 TPH respectively. In the absence of this project activity, equivalent amount of thermal energy would have been generated from fossil fuel based boiler which would spew equivalent amount of GHGs into the atmosphere. Hence, implementation of this project activity leads to reduction in GHG emissions associated with the coal-based steam generation.

The project activity utilizes Biomass Briquette as a fuel for thermal energy generation. Biomass Briquette is made out of biomass residue. The project is expected to generate an average estimated emission reduction of about 23,127 tCO_2/year. Total estimated emission reduction for the entire duration of crediting period is 231,288 tCO_2.

The details of the project are provided as below:

Sl. No	Capacity	Location	Date of commissioning
1	Boiler Capacity – 8 TPH	Bharuch/ Panoli, Gujarat	19/02/2020
2	Boiler Capacity – 4 TPH	Nasik, Maharashtra	09/09/2020

The use of biomass briquette as a fuel for the plants in the proposed GCC project has several socio-economic and environmental benefits such as:

- Utilization of unused biomass residues for commercial application like energy generation would help in earning extra revenues through the supply chain network.
- Reduction of GHG emissions through increasing share of renewable resources.
- Contribution to economic development by creating direct and indirect job opportunities during construction and operation phases.
- Reduction of import dependency on fossil fuels and diversify generation mix through use of local resources.
- Utilization of biomass residues for energy generation in a controlled combustion process, which otherwise would have been generated through alternate fuel (coal) thereby contributing to reduction in GHG emissions.

- Contribution to sustainable development through supporting local community and local economy.

The project is expected to contribute 5 SDGs which are SDG 5, 7, 8, 9 and 13.

- SDG 5 Gender Equality: The project contributes to SDG target 5, “Achieve gender equality and empower all women and girls by 2030” by doing no discrimination against women employees and giving them equal rights.

- SDG 7 Energy: The project contributes SDG Target 7.2 “By 2030, increase substantially the share of renewable energy in the global energy mix” by the utilization of biomass as a renewable energy source.

- SDG 8 Economic Growth: The project creates direct and indirect employment opportunities during construction and operation phases, so it contributes to SDG Target 8.5 “By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities and equal pay for work of equal value”.

- SDG 9 Department of Economic and Social Affairs: The project contributes SDG target 9.4 “Upgrade all industries and infrastructure for sustainability”.

- SDG 13 Climate Change: The project produces clean renewable energy by diminishing CO_2 emissions. Therefore, it contributes to SDG Target 13.3 “Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning”.

A.2. Location of the Project Activity

Address and geodetic coordinates of the physical site of the Project Activity		
Physical address	**Latitude***	**Longitude***
Bharuch/ Panoli, Gujarat	21.549780 (21°32'59.2"N)	73.000095 (73°00'00.3"E)
Nasik, Maharashtra	19.849450 (19°50'58.0"N)	74.050614 (74°03'02.2"E)

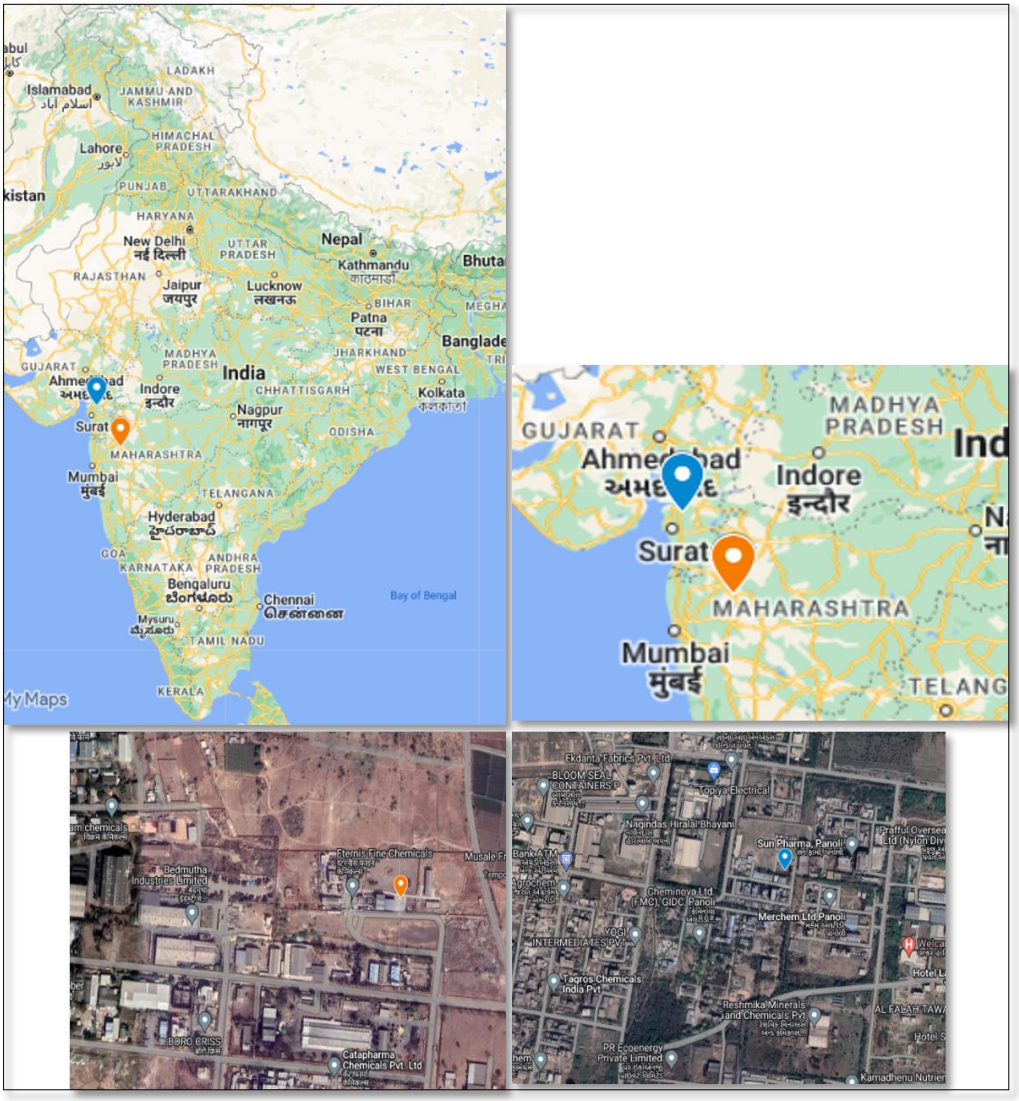


Figure 1. Satellite view of the project activity

A.3. Technologies/measures

The project activity has implemented biomass-based thermal unit comprising of boiler. The boiler unit is a renewable energy-based steam boiler of 8,000 Kg/hr and 4,000 Kg/hr steam when fired with biomass briquette. The basic technology is Rankine cycle route where direct combustion of fuel takes place through the biomass briquette fired boiler to generate steam.

The technical specifications of the critical parameters for 8 TPH plant are tabulated as below:

Boiler Details		
Parameters	**Units**	**Values/ Information**
Make	-	Thermax
Maximum steam output F&A 100°C	TPH	08

Operating Pressure	Kg/cm^2	10/15
Steam Temperature	°C	saturated
Condensate	-	20% at 70°C
Installation	-	Indoor
Design pressure	Kg/cm^2	17.5
Design code	-	IBR 1950 with latest amendments
Economizer	-	Tube- BS 3059 Part-I, Gr. 320
Smoke tubes & MPA tubes	-	BS 3059 Part I Gr. 320 ERW
Shell	-	SA 515/516 Gr. 60/70
Fans	-	IS 2062
Economizer	-	Tube – BS 3053 Part-I, Gr. 320 ERW; Jacket – IS 2062;
Fuel Type	-	Biomass briquette
Combustor Type	-	Reciprocating Grate
Firing Type	-	Screw Feeder
Turn-down ratio	-	30% to 100%
Panel Details	-	Separate MCC & PLC panel with SCADA
Degree of protection		IP52
Common de-aerator tank capacity for 1 purpose boiler + 1 future 8tph boiler		De-aerator head: 16 m^3/hr Storage tank: for 15 min
Fuel handling capacity upto crusher	TPH	3
Moving floor capacity	M^3	62 m^3

The technical specifications of the critical parameters for 4 TPH plant are tabulated as below:

Boiler Details		
Parameters	**Units**	**Values/ Information**
Make	-	Thermax
Maximum steam output F&A 100°C	TPH	04
Installation	-	Indoor
Design pressure	Kg/cm^2	17.5
Design code	-	IBR 1950 with latest amendments
Economizer	-	Tube- BS 3059 Part-I, Gr. 320
Smoke tubes & MPA tubes	-	BS 3059 Part I Gr. 320 ERW
Shell	-	SA 515/516 Gr. 60/70
Fans	-	IS 2062
Economizer	-	Tube – BS 3053 Part-I, Gr. 320 ERW; Jacket – IS 2062;
Fuel Type	-	Biomass briquette
Combustor Type	-	Reciprocating Grate
Firing Type	-	Screw Feeder
Turn-down ratio	-	30% to 100%
Panel Details	-	Separate MCC & PLC panel with SCADA

Degree of protection		IP52
Common de-aerator tank capacity for 1 purpose boiler + 1 future 8tph boiler		De-aerator head: 16 m^3/hr Storage tank: for 15 min
Fuel handling capacity upto crusher	TPH	3
Moving floor capacity	M^3	62 m^3

A.4. Project Owner(s)

Location/ Country	Project Owner(s)	Where applicable[13], indicate if the host country has provided approval (Yes/No)
India	Thermax Onsite Energy Solutions Limited	Not Applicable

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		
19/02/2020	18/02/2030	Thermax Onsite Energy Solutions Limited	153,780
09/09/2020	08/09/2030		77,490

The project owner confirms that the ACCs generated from the project will not be double counted in any other mechanism.

A.6. Additional requirements for CORSIA

Please refer to section E (for details on compliance to the Environment and Social Safeguards Standard) and F (for details on compliance to the Project Sustainability Standard to ensure that the Project Activity demonstrates the level of contribution towards achieving the United Nations Sustainability Development Goals (SDGs)).

[13] 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).

Section B. Application of selected methodology(ies)

B.1. Reference to methodology(ies) and tools applied in the project

Title: AMS.I.C: Thermal energy production with or without electricity - Version 22.0[14]

Tools involved in the project are listed below:

- TOOL 01: Tool for the demonstration and assessment of additionality – Version 7.0.0[15]
- TOOL 03: Tool to calculate project or leakage CO_2 emissions from fossil fuel combustion – Version 3.0[16]
- TOOL 05: Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation – Version 3.0[17]
- TOOL 12: Project and leakage emissions from transportation of freight – Version 1.1.0[18]
- TOOL 16: Project and leakage emissions from biomass – Version 5.0[19]
- TOOL 20: Assessment of debundling for small-scale project activities – Version 4.0[20]
- TOOL 21: Demonstration of additionality of small-scale project activities – Version 13.1[21]
- TOOL 27: Investment Analysis – Version 11.0[22]

B.2. Applicability of methodology(ies) and tools applied in the project

The project activity may include the following activity combinations of these activities or where applicable:

Sr. No.	Applicability Conditions of AMS.I.C.	Justification on the applicability of AMS.I.C. to the Project
1	This methodology comprises renewable energy technologies that supply users i.e., residential, industrial or commercial facilities with thermal energy that displaces fossil fuel use. These units include technologies such as solar	The project activity involves biomass (renewable) based thermal energy generation. It involves switching of fuel from fossil fuel (coal) to biomass (biomass briquette), therefore project is in line with the given criteria.

[14] https://cdm.unfccc.int/methodologies/DB/XABBE3C3PQYWZU7E79ZWMDIQ1KBUUW
[15] https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-01-v7.0.0.pdf
[16] https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-03-v3.pdf
[17] https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-05-v3.0.pdf
[18] https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-12-v1.1.0.pdf
[19] https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-16-v5.0.pdf
[20] https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-20-v1.pdf
[21] https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-21-v13.1.pdf
[22] https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-27-v11.0.pdf

	thermal water heaters and dryers, solar cookers, energy derived from renewable biomass and other technologies that provide thermal energy that displaces fossil fuel.	
2	Biomass-based cogeneration systems are included in this category.	Not applicable, does not involve cogeneration systems.
3	Emission reductions from a biomass cogeneration or trigeneration system can accrue from one of the following activities: (a) Electricity supply to a grid; (b) Electricity and/or thermal energy production for on-site consumption or for consumption by other facilities; (c) Combination of (a) and (b).	Not applicable, does not involve cogeneration and trigeneration systems.
4	Project activities that seek to retrofit or modify an existing facility for renewable energy generation are included in this category.	It is a Greenfield project and not the extension of an existing renewable energy facility.
5	In the case of new facilities (Greenfield projects) and project activities involving capacity additions the relevant requirements related to determination of baseline scenario provided in the "General guidelines for SSC CDM methodologies" for Type-II and Type-III Greenfield/capacity expansion project activities also apply.	The project activity is a Greenfield project, the criteria is applicable.
6	The total installed/rated thermal energy generation capacity of the project equipment is equal to or less than 45 MW thermal (see paragraph 8 for the applicable limits for cogeneration and trigeneration project activities).	The project activity is a biomass briquette-based thermal project and the rated thermal energy generation capacity of the project is 7.79 (5.18+2.61) MW_{th} which is less than 45 MW_{th}. Therefore, this applicability criterion has been met.
7	For co-fired systems, the total installed thermal energy generation capacity of the project equipment, when using both fossil and renewable fuel, shall not exceed 45 MW thermal (see paragraph 8 for the applicable limits for cogeneration project activities).	It may be noted that the project activity is not a co-fired system. Therefore, this criterion is not applicable.
8	The following capacity limits apply for biomass cogeneration and trigeneration units:	Not applicable, does not involve cogeneration and trigeneration systems.

	(a) If the emission reductions of the project activity are on account of thermal and electrical energy production, the total installed thermal and electrical energy generation capacity of the project equipment shall not exceed 45 MW thermal. For the purpose of calculating the capacity limit the conversion factor of 1:3 shall be used for converting electrical energy to thermal energy (i.e., for renewable energy project activities, the installed capacity of 15 MW(e) is equivalent to 45 MW thermal output of the equipment or the plant); (b) If the emission reductions of the project activity are solely on account of thermal energy production (i.e., no emission reductions accrue from the electricity component), the total installed thermal energy production capacity of the project equipment shall not exceed 45 MW thermal; (c) If the emission reductions of the project activity are solely on account of electrical energy production (i.e. no emission reductions accrue from the thermal energy component), the total installed electrical energy generation capacity of the project equipment shall not exceed 15 MW.	
9	The capacity limits specified in paragraphs 7 to 9 above apply to both new facilities and retrofit projects. In the case of project activities that involve the addition of renewable energy units at an existing renewable energy facility, the total capacity of the units added by the project shall comply with capacity limits specified in the paragraphs 7 to 9, and shall be physically distinct from the existing units.	The project activity is a new facility and is within the specified limit. Therefore, this criterion is not applicable.
10	If solid biomass fuel (e.g., briquette) is used, it shall be demonstrated that it has been produced using solely renewable biomass and all project or leakage	The project activity would use renewable biomass based briquettes, as fuel in the project equipment. Project and/or leakage emission

	emissions associated with its production shall be taken into account in the emissions reduction calculation.	due to briquette production have been taken into consideration.
11	Where the project participant is not the producer of the processed solid biomass fuel, the project participant and the producer are bound by a contract that shall enable the project participant to monitor the source of the renewable biomass to account for any emissions associated with solid biomass fuel production. Such a contract shall also ensure that there is no double-counting of emission reductions.	The project activity involves solid biomass fuel (briquette) usage, and the project participants are not the producer of processed solid biomass fuels being used in the project activity equipment. Ex-ante leakage emission associated with solid biomass fuel production (briquette manufacturing) has been accounted by taking default parameters from public sources and methodological tools.
12	If electricity and/or thermal energy produced by the project activity is delivered to a third party i.e., another facility or facilities within the project boundary, a contract between the supplier and consumer(s) of the energy will have to be entered into that ensures there is no double-counting of emission reductions.	The project activity produce thermal energy for onsite third party. The project activity generates thermal energy for steam off takers (8 TPH and 4 TPH of capacity). Thermax Onsite Energy Solutions Limited has obtained contract to ensure there is no double-counting of emission reductions. Therefore, this criterion is applicable.
13	If the project activity recovers and utilizes biogas for producing electricity and/or thermal energy and applies this methodology on a standalone basis i.e. without using a Type III component of a SSC methodology, any incremental emissions occurring due to the implementation of the project activity (e.g. physical leakage of the anaerobic digester, emissions due to inefficiency of the flaring), shall be taken into account either as project or leakage emissions as per relevant procedures in the tool "Emissions from solid waste disposal sites" and/or "Project emissions from flaring". In the event that the biomass fuel (solid/liquid/gas) is sourced from an existing CDM project, then the emissions associated with the production of the fuel shall be accounted with that project.	The project activity does not recover and utilizes biogas for producing electricity and/or thermal energy. Therefore, this criterion is not applicable.
14	If project equipment contains refrigerants, then the refrigerant used in the project case shall have no ozone depleting potential (ODP).	The project equipment does not contain refrigerants.

15	Charcoal based biomass energy generation project activities are eligible to apply the methodology only if the charcoal is produced from renewable biomass sources, provided: (a) Charcoal is produced in kilns equipped with methane recovery and destruction facility; or (b) If charcoal is produced in kilns not equipped with a methane recovery and destruction facility, methane emissions from the production of charcoal shall be considered. These emissions shall be calculated as per the procedures defined in the approved methodology "AMS-III.K.: Avoidance of methane release from charcoal production by shifting from traditional open-ended methods to mechanized charcoaling process". Alternatively, conservative emission factor values from peer reviewed literature or from a registered CDM project activity can be used, provided that it can be demonstrated that the parameters from these are comparable e.g., source of biomass, characteristics of biomass such as moisture, carbon content, type of kiln, operating conditions such as ambient temperature.	The project activity does not use charcoal-based biomass for steam generation. Therefore, this criterion is not applicable.
16	In the case the project activities utilize biomass, the "TOOL16: Project and leakage emissions from biomass" shall be applied to determine the relevant project emissions from the cultivation of biomass and the utilization of biomass or biomass residues.	The proposed project activity utilizes biomass (biomass briquette). However, the project owner does not source any biomass from dedicated plantation. Therefore, the criterion is not applicable.
In addition, the above applicability conditions, the applicability conditions of tool referred in the methodology has been referred here under:		
Tool 07: Tool to calculate the emission factor for an electricity system Version 7.0		
This tool may be applied to estimate the OM, BM and/or CM when calculating baseline emissions for a project activity that substitutes grid electricity that is where a project activity supplies electricity to a grid or a project activity that results in savings of electricity that would		The project activity is a greenfield biomass thermal energy generation project and hence, according to the applied methodology, the baseline scenario is fossil fuel based thermal energy generation.

have been provided by the grid (e.g. demand-side energy efficiency projects).	
Under this tool, the emission factor for the project electricity system can be calculated either for grid power plants only or, as an option, can include off-grid power plants. In the latter case, the conditions specified in "Appendix 2: Procedures related to off-grid power generation" should be met. Namely, the total capacity of off-grid power plants (in MW) should be at least 10 per cent of the total capacity of grid power plants in the electricity system; or the total electricity generation by off-grid power plants (in MWh) should be at least 10 per cent of the total electricity generation by grid power plants in the electricity system; and that factors which negatively affect the reliability and stability of the grid are primarily due to constraints in generation and not to other aspects such as transmission capacity.	The project activity is a greenfield biomass power plant and hence, according to the applied methodology, the baseline scenario is fossil fuel based thermal energy generation. The emission factor has been calculated accordingly.
In case of CDM projects the tool is not applicable if the project electricity system is located partially or totally in an Annex I country.	The project activity is located in India, a non-Annex I country. Therefore, this criterion is not applicable for the project activity
Under this tool, the value applied to the CO2 emission factor of bio fuels is zero	The project activity is greenfield biomass project and therefore, this criterion is not applicable for the project activity.
Tool 27: Investment analysis version 11.0.	
This methodological tool is applicable to project activities that apply the methodological tool "Tool for the demonstration and assessment of additionality", the methodological tool "Combined tool to identify the baseline scenario and demonstrate additionality", the guidelines "Non-binding best practice examples to demonstrate additionality for SSC project activities", or baseline and monitoring methodologies that use the investment analysis for the demonstration of additionality and/or the identification of the baseline scenario.	Project activity applies "Demonstration of additionality of small-scale project activities.". Hence this tool is applicable.
In case the applied approved baseline and monitoring methodology contains requirements for the investment analysis that are different from those described in this methodological tool, the requirements contained in the methodology shall prevail.	Applied methodology AMS I.C Version 22.0 doesn't specify any approach for the demonstration of Investment analysis. As per the methodology the additionality including investment analysis has been demonstrated as per the Tool 21: Demonstration of additionality of small-scale project activities" version 13.1 and Tool 27: Investment Analysis version 11.0 Hence Justified.

Tool 16: Project and leakage emissions from biomass	
The tool is also applicable if biomass residues are consumed in a CDM project activity, and the biomass residues can be utilized after processing or without processing. These could be: a) Procured by the project proponents; or b) The result of an agro-industrial process under the control of the project proponents.	The Biomass utilized in the project activity doesn't require any prep processing before the utilization. 100% biomass is procured from the outside the project boundary.
Tool 03: Tool to calculate project or leakage CO2 emissions from fossil fuel combustion version 3.0	
This tool provides procedures to calculate project and/or leakage CO2 emissions from the combustion of fossil fuels. It can be used in cases where CO2 emissions from fossil fuel combustion are calculated based on the quantity of fuel combusted and its properties. Methodologies using this tool should specify to which combustion process j this tool is being applied.	This tool will be used to demonstrate the project as applicable in line with the methodology requirements.
TOOL12: Project and leakage emissions from transportation of freight	
This tool is applicable to project activities which involve freight transportation by road and where transportation is not the main project activity. This tool is not applicable to project activities where transportation is the main source of greenhouse gases emissions.	As the project involves transportation of biomass therefore applicable
In addition, the tool is applicable for the determination of project or leakage emissions from freight transportation by rail in project activities where transportation is not the main project activity	Not Applicable
Tool 21: Demonstration of additionality of small-scale project activities- Version 13.1	
The use of the methodological tool "Demonstration of additionality of small-scale project activities" is not mandatory for project participants when proposing new methodologies. Project participants and coordinating/managing entities may propose alternative methods to demonstrate additionality for consideration by the Executive Board	Since the applied technology is not a new methodology project proponent has applied this tool for the demonstration additionality in compliance with the tool. Refer to section B.5 of the PSF for the detailed applicability of this tool and additionality assessment. Hence this tool is applicable.

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

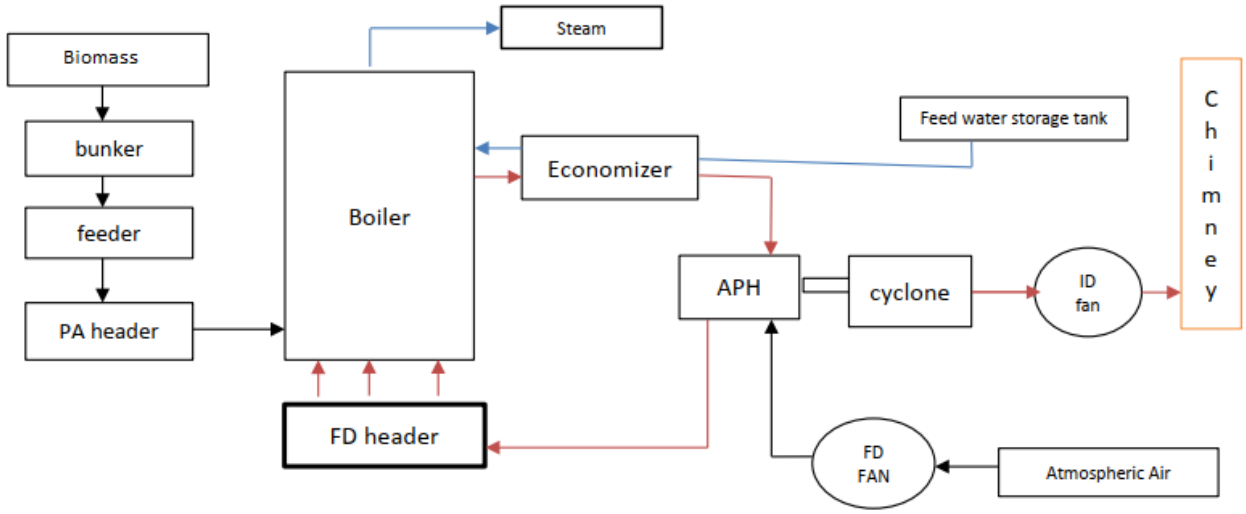
As per Paragraph 24 of applied baseline and monitoring methodology AMS I.C. Version – 22.0, the spatial extent of the project boundary encompasses:

(a) All plants generating electricity and/or thermal energy located at the project site, whether fired with biomass, fossil fuels or a combination of both;
(b) All power plants connected physically to the electricity system (grid) that the project plant is connected to;
(c) Industrial, commercial or residential facility, or facilities, consuming energy generated by the system and the processes or equipment affected by the project activity;
(d) The processing plant of biomass residues, for project activities using solid biomass fuel (e.g., briquette), unless all associated emissions are accounted for as leakage emissions or are part of an independently registered CDM project;
(e) The geographic boundaries of the dedicated plantations if the feedstock is biomass produced in dedicated plantations;
(f) The transportation itineraries, if the biomass is transported over distances greater than 200 kilometers, unless all associated emissions are accounted for as leakage emissions;
(g) The site of the anaerobic digester in the case of project activity that recovers and utilizes biogas for producing electricity and/or thermal energy and applies this methodology on a standalone basis, i.e., without using a Type III component of an SSC methodology.

The project boundary includes:

- Biomass briquette biomass-based thermal unit located at the project site (project activity)
- Fossil Fuel (Coal) based thermal unit (baseline activity)

The project boundary is depicted in the following diagram:



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	Baseline emissions from combustion of Coal in the Coal based cogeneration system	CO_2	Included	Main emission source due to coal combustion
		CH_4	Excluded	Minor emission source
		N_2O	Excluded	Minor emission source
Project Activity	Emissions from combustion of biomass (biomass briquette)	CO_2	Included	CO_2 emissions are emitted from the project.
		CH_4	Excluded	Excluded for simplification. This emission source is assumed to be very small.
		N_2O	Excluded	Excluded for simplification. This emission source is assumed to be very small.

B.4. Establishment and description of the baseline scenario

As per paragraph 29 of the approved methodology AMS I.C. Version 22.0, "Project activities producing both heat and electricity shall use one of the following baseline scenarios:

Baseline scenarios	Justification for choosing the most suitable baseline option
(a) Electricity is imported from a grid and thermal energy (steam/heat) is produced using fossil fuel;	Thermal energy generation using fossil fuel may be an alternative to the project activity. This scenario is considered as a plausible baseline alternative.
(b) Electricity is produced in an on-site captive power plant using fossil (with a possibility of export to the grid) and thermal energy (steam/heat) is produced using fossil fuel;	This project activity uses biomass briquette in boiler to produce heat (steam). This steam is used in the production process. No power is generated in this project. Hence, this scenario is not considered as a plausible baseline alternative.
(c) A combination of (a) and (b)	Since, option (b) has been eliminated, thus, this option is also not considered.
(d) Electricity and thermal energy (steam/heat) are produced in a cogeneration unit using fossil fuel (with a possibility of export of electricity to a grid/other facility and/or thermal energy to other facilities)	For the project activity, fossil fuel-based thermal unit can be a possible alternative. Wherein, power generation scenario in the Maharashtra state as per CEA report[23] is as follows: • Coal is covering 62.7% of the total capacity • Gas is covering 1.63% of the total capacity

[23] https://cea.nic.in/wp-content/uploads/2020/02/installed_capacity-12-2.pdf

	• Diesel is covering 0.0% of the total capacity It shows the abundant availability and usage of coal in the state for energy generation. Hence, this option is considered as an alternative baseline scenario for project activity.
(e) Electricity is imported from the grid and/or produced in an on-site captive power plant using fossil fuels (with a possibility of export to the grid); thermal energy is produced from biomass;	As explained over point (a) and (b) above, separate generation of energy is less efficient and more fuel consuming leading to higher cost of energy generation. Hence, this scenario is not considered as a plausible baseline alternative.
(f) Electricity is produced in an on-site captive power plant using biomass (with a possibility of export to a grid) and/or imported from a grid; steam/heat is produced using fossil fuel;	As discussed against point (b) above, separate generation of energy is less efficient and more fuel consuming leading to higher cost of energy generation. Hence, this scenario is not considered as a plausible baseline alternative.
(g) Electricity and thermal energy are produced in a biomass fired cogeneration unit (without a possibility of export of electricity either to the grid or to other facilities and without a possibility of export of thermal energy to other facilities).	The project activity is not an installation of "new grid connected biomass cogeneration system that produces surplus electricity and this surplus electricity is exported to a grid. Thus, this alternative is not considered.
(h) Electricity and/or thermal energy produced in a co-fired system.	This alternative is similar to the project option with the only difference being the provision of co-firing. As explained in section B.5 below, since unit cost of generation with coal is lower than that using biomass, evidently the unit cost of generation in a co-fired system will be higher than a coal-based system. Hence, this scenario is not considered as a plausible baseline alternative.
(i) Electricity is imported from a grid and/or produced in a biomass fired cogeneration unit (without a possibility of export of electricity either to the grid or to other facilities); thermal energy is produced in a biomass fired cogeneration or trigeneration unit and/or a biomass fired boiler (without a possibility of export of thermal energy to other facilities).	As discussed in bullet point (a) and (b) above, separate generation of energy is less efficient and more fuel consuming leading to higher cost of energy generation. Hence, this scenario is not considered as a plausible baseline alternative.
(j) Electricity is imported from a grid and/or produced in an on-site captive power plant using fossil fuel and thermal energy is produced using electricity.	As discussed in bullet point (a) and (b) above, separate generation of energy is less efficient and more fuel consuming leading to higher cost of energy generation. Hence, this scenario is not considered as a plausible baseline alternative.

On the basis of above discussion, it may be concluded that the only plausible alternative to the project activity is a coal-based thermal system.

Determination of the baseline emissions have been provided in section B.6.1 of the PSF.

As per Tool 16, "Project and leakage emissions from biomass" version 5.0, the alternative scenarios of the biomass residues in absence of the project activity shall be determined as:

Baseline scenario	Description of alternative	Comments
B1	The biomass residues are dumped or left to decay mainly under aerobic conditions. This applies, for example, to dumping and decay of biomass residues on fields;	The biomass briquette which is used in the project activity was manufactured using waste biomass. The waste biomass used to be disposed of in open areas. Hence, this could not be a possible alternative.
B2	The biomass residues are dumped or left to decay under clearly anaerobic conditions. This applies, for example, to landfills which are deeper than five meters. This does not apply to biomass residues that are stock-piled or left to decay on fields;	Land filling and other planned dumping of biomass residues in anaerobic conditions in the area is not practiced and hence, this alternative is not realistic.
B3	The biomass residues are burnt in an uncontrolled manner without utilizing it for energy purposes	This is the realistic alternative to the project activity as biomass waste is considered as a waste and dispose of by burning in the open areas.
B4	The biomass residues are used for energy or non-energy applications, or the primary source of the biomass residues and/or their fate cannot be clearly identified.	As explained above, the biomass briquette manufactured using biomass waste was not used by the local farmers for any energy or non-energy application.

Thus, it is demonstrated that the scenarios B3 is the plausible baseline alternative for biomass residues for the proposed project activity.

In accordance with the Tool 16: Project and leakage emissions from biomass, Version 5.0, the biomass residues that have been used by the project activity are given in the below:

Biomass residues category	Biomass residues type	Biomass residues source	Biomass residues fate in the absence of the project activity	Biomass residues use in project scenario
1	Biomass briquette	Off-site from a biomass residues retailer	B3: Disposed of in open areas	Thermal energy generation onsite

B.5. Demonstration of additionality

The additionality of a GCC Project shall be demonstrated by applying the following approach, consisting of two components:

I. A Legal Requirement Test; and
II. An Additionality Test either based on a Positive List test or a projects-specific additionality test.

(a) Legal Requirement Test

The project is not enforced by law. The project passes the legal requirement test since there are no enforced laws, statutes, regulations, court orders, environmental-mitigation agreements, permitting conditions of other legally-binding mandates requiring its implementation. Since voluntary commitments/agreements within a sector or by an entity do not constitute the legal requirement, the outcome of the legal requirement test is concluded as positive.

(b) Additionality Test

In accordance with applied Tool 21, "Demonstration of additionality of small-scale project activities" Version 13.1, the project owner shall provide an explanation to show that the project activity would not have occurred anyway due to at least one of the following barriers:

(a) **Investment barrier:** A financially more viable alternative to the project activity would have led to higher emissions;

(b) **Technological barrier:** A less technologically advanced alternative to the project activity involves lower risks due to the performance uncertainty or low market share of the new technology adopted for the project activity and so would have led to higher emissions;

(c) **Barrier due to prevailing practice:** Prevailing practice or existing regulatory or policy requirements would have led to implementation of a technology with higher emissions;

(d) **Other barriers:** Without the project activity, for another specific reason identified by the project participant, such as institutional barriers or limited information, managerial resources, organizational capacity, financial resources, or capacity to absorb new technologies, emissions would have been higher.

The project owner has identified "investment barrier" as the most relevant barrier faced by the project activity.

Investment Barrier:

The purpose of investment analysis is to determine whether the project activity is economically or financially less attractive than other alternatives without additional funding that may be derived from the sale of carbon credits. The investment analysis was conducted in accordance with methodological tool, Tool 27: Investment analysis, Version 11.0

Determination of appropriate analysis method:

In the Tool 01: "Tool for the demonstration and assessment of additionality" (version 7.0.0), three options are available for investment analysis: the simple cost analysis (Option I), the investment comparison analysis (Option II) and the benchmark analysis (Option III).

- Option I: Simple Cost Analysis - Since the project activity generates steam as output for the production process, it generates economic benefits other than carbon credit related income, therefore simple cost analysis is not applicable.

- Option II: Investment Comparison Analysis/ Option III - Benchmark Analysis–This analysis is based on the comparison of returns of the project investment with the returns of the investment required for an alternative to the project. In this case, credible alternatives to the project activity are available. The project activity service output is steam generated through renewable energy source and replaces the service output steam generated through fossil fuel - Coal and therefore entails reduction in Coal consumption and its associated CO2 emissions.

Given that the project owner has alternatives and comparable investment choices, investment comparison analysis (Option II) is more appropriate than benchmark analysis (Option III) for assessing the financial attractiveness of the project activity.

The project owner herein determines the relevant alternative scenarios that were available to the project owner and provide outputs or services with comparable quality, are in compliance with all mandatory applicable legal and regulatory requirements and faces no barriers that prevent implementation.

- Alternative – a: Generation of thermal energy using biomass-based system (project activity)

- Alternative – b: Coal based thermal system for generation of equivalent amount of steam.

None of the above alternatives are restricted by any local or National regulations or policies.

Additionality of the project is demonstrated in line with Tool 21: Methodological tool: "Demonstration of additionality of small-scale project activities", version 13.1, the project faces "**Investment barrier**".

Since both the baseline alternative, i.e., setting up a coal-based thermal unit for generation of equivalent amount of thermal energy as the project activity, and the project alternative, i.e., setting up of biomass-based thermal unit for generation of thermal energy, involves additional investment, which thus leave the project participant with no other choice than to make an investment, hence an investment comparison analysis has been conducted. The only difference between the project and baseline scenario is in the cost of thermal generation of energy. Thus, levelized unit cost of thermal energy generation has been considered for the investment comparison analysis between the two alternatives.

The financials have been worked out based on the following assumptions to arrive at the levelized unit cost generation of energy (thermal).

For 8 TPD site:

Parameter	Value	Unit	Data Source
Technical Details			
Boiler Capacity	8	TPH	Detailed Project Report
Operating days	340	days	
Operating hours per day	24	hours	Hours in a day
Annual operation	8160	hours	Calculated
Annual steam generation	31680	T/yr	Detailed Project Report
Steam Pressure	9	kg/cm2 (ATA)	Steam Supply Agreement
BFW Temperature	105	°C	Steam Supply Agreement
Steam Temperature	174.53	°C	https://www.tlv.com/global/TI/calculator/steam-table-pressure.html
Steam enthalpy	2772.26	kJ/Kg	https://www.tlv.com/global/TI/calculator/steam-table-pressure.html
BFW enthalpy	439.762	kJ/Kg	https://www.spiraxsarco.com/resources-and-design-tools/steam-tables/saturated-water-line
Net Enthalpy of Steam	2332.498	KJ/Kg	
Total thermal energy per year	152.265	TJ/yr	
Boiler Efficiency	85	%	
Briquette calorific value (NCV)	3700	kcal/kg	Test Report
NCV of briquette in TJ/tonne	0.02	TJ/tonne	Calculated
Fuel (Briquette) required	11577.0	T/yr	Calculated

Financial details			
TOTAL PROJECT COST (INR Mn.)	59.99	As per DPR	
Book Depreciation (SLM Method)			
Depreciation Rate till 14th year (%)	5.28%	As per CERC order page 49	http://www.cercind.gov.in/2018/orders/2.pdf
Depreciation Rate 14th year onwards (%)	3.05%	As per CERC order page 49	http://www.cercind.gov.in/2018/orders/2.pdf
Salvage Value (%)	10.00%	Calculated Value	https://herc.gov.in/WriteReadData/Pdf/RE20190401.pdf
Salvage value (INR Mn.)	6.00	Calculated Value	
IT Depreciation (SLM Method)			
IT Depreciation Available every year (%)	40.00%	As per Income Tax act	https://www.incometaxindia.gov.in/charts%20%20tables/depreciation%20rates.htm
Income Tax			
Financial Year	FY 2019-20		
Income tax rate (%)	30.00%	Tax rates applicable to a domestic company	http://www.incometaxindia.gov.in/Tutorials/2%20Tax%20Rates.pdf
MAT (%)	18.50%		
Surcharge (%)	12.00%	Tax rates applicable to a domestic company	http://www.incometaxindia.gov.in/Tutorials/2%20Tax%20Rates.pdf
Education cess (%)	3.00%		
Final Tax rates			

Income tax rate (%)	34.61%	Calculated Value	
MAT (%)	21.34%	Calculated Value	

For 4 TPD site:

Parameter	Value	Unit	Data Source
Technical Details			
Boiler Capacity	4	TPH	Detailed Project Report
Operating days	340	days	
Operating hours per day	24	hours	Hours in a day
Annual operation	8160	hours	Calculated
Annual steam generation	14256	T/yr	Detailed Project Report
Steam Pressure	15	kg/cm2 (ATA)	Steam Supply Agreement
BFW Temperature	105	°C	Steam Supply Agreement
Steam Temperature	197.371	°C	https://www.tlv.com/global/TI/calculator/steam-table-pressure.html
Steam enthalpy	2790.42	kJ/Kg	https://www.tlv.com/global/TI/calculator/steam-table-pressure.html
BFW enthalpy	439.762	kJ/Kg	https://www.spiraxsarco.com/resources-and-design-tools/steam-tables/saturated-water-line
Net Enthalpy of Steam	2350.658	KJ/Kg	
Total thermal energy per year	76.725	TJ/yr	
Boiler Efficiency	85	%	
Briquette calorific value (NCV)	3700	kcal/kg	Test Report
NCV of briquette in TJ/tonne	0.02	TJ/tonne	Calculated
Fuel (Briquette) required	5833.6	T/yr	Calculated

Financial details			
TOTAL PROJECT COST (INR Mn.)	33.10	As per DPR	
Book Depreciation (SLM Method)			
Depreciation Rate till 14th year (%)	5.28%	As per CERC order page 49	http://www.cercind.gov.in/2018/orders/2.pdf
Depreciation Rate 14th year onwards (%)	3.05%	As per CERC order page 49	http://www.cercind.gov.in/2018/orders/2.pdf
Salvage Value (%)	10.00%	Calculated Value	https://herc.gov.in/WriteReadData/Pdf/RE20190401.pdf
Salvage value (INR Mn.)	3.31	Calculated Value	
IT Depreciation (SLM Method)			
IT Depreciation Available every year (%)	40.00%	As per Income Tax act	https://www.incometaxindia.gov.in/charts%20%20tables/depreciation%20rates.htm
Income Tax			
Financial Year	FY 2020-21		
Income tax rate (%)	30.00%	Tax rates applicable to a	http://www.incometaxindia.gov.in/Tutorials/2%20Tax
MAT (%)	18.50%		

		domestic company	%20Rates.pdf
Surcharge (%)	12.00%	Tax rates applicable to a domestic company	http://www.incometaxindia.gov.in/Tutorials/2%20Tax%20Rates.pdf
Education cess (%)	3.00%		
Final Tax rates			
Income tax rate (%)	34.61%	Calculated Value	
MAT (%)	21.34%	Calculated Value	

Based on the above parameters, the levelized cost of energy (thermal) generation for baseline and the project activity has been calculated. The period of assessment of levelized cost for the two scenarios is taken as 20 years. As demonstrated in the table below, the levelized cost for the baseline and project scenario are as follows:

For 8 TPH site:

Levelized Cost	INR/Gcal
Baseline scenario (Coal based thermal unit)	605.84
Project activity (Biomass based thermal unit)	429.37

For 4 TPH site:

Levelized Cost	INR/Gcal
Baseline scenario (Coal based thermal unit)	580.75
Project activity (Biomass based thermal unit)	431.05

Sensitivity Analysis:

Addressing section 7 of EB 112, Annex 2, following factors as per the actual scenario have been considered for sensitivity analysis. While comparing the levelized cost of energy of coal and biomass-based thermal systems, values of most of the input parameters were found to be same or in the range of very insignificant variation and any change in such parameters in one alternative would also subject to change in the other alternative. E.g., any change in capital cost, O&M, operation days etc. in case of coal would also be applicable to biomass.

The only input parameter which is found to be critical in determining the levelized cost of energy is cost of fuel which is considered for sensitivity analysis.

For 8 TPH site:
With variation of Plant load factor:

Alternatives	Levelized Cost of Energy (INR/Gcal)	
	-10%	+10%
Levelized cost with Biomass (Biomass briquette)	607.78	604.25
Levelized cost with Coal	431.34	427.75

With variation of fuel cost:

Alternatives	Levelized Cost of Energy (INR/Gcal)	
	-10%	+10%
Levelized cost with Biomass (Biomass briquette)	547.00	664.67
Levelized cost with Coal	388.20	470.53

With variation of NCV:

Alternatives	Levelized Cost of Energy (INR/Gcal)	
	-10%	+10%
Levelized cost with Biomass (Biomass briquette)	671.21	552.35
Levelized cost with Coal	475.10	391.94

With variation of O&M cost:

Alternatives	Levelized Cost of Energy (INR/Gcal)	
	-10%	+10%
Levelized cost with Biomass (Biomass briquette)	605.18	606.49
Levelized cost with Coal	428.69	430.04

The levelized cost of steam generation with biomass (biomass briquette) breaches that of coal based when the cost of biomass reduces by 29.99% or NCV of biomass increased by 42.84% and NCV of coal decrease by 30.01% which are the unlikely scenarios.

For 4 TPH site:
With variation of Plant load factor:

Alternatives	Levelized Cost of Energy (INR/Gcal)	
	-10%	+10%
Levelized cost with Biomass (Biomass briquette)	582.88	579.01
Levelized cost with Coal	433.21	429.29

With variation of fuel cost:

Alternatives	Levelized Cost of Energy (INR/Gcal)	
	-10%	+10%
Levelized cost with Biomass (Biomass briquette)	524.59	636.91
Levelized cost with Coal	389.89	472.21

With variation of NCV:

Alternatives	Levelized Cost of Energy (INR/Gcal)	
	-10%	+10%
Levelized cost with Biomass (Biomass briquette)	643.15	529.69
Levelized cost with Coal	476.79	393.63

With variation of O&M cost:

Alternatives	Levelized Cost of Energy (INR/Gcal)	
	-10%	+10%
Levelized cost with Biomass (Biomass briquette)	580.04	581.46
Levelized cost with Coal	430.31	431.79

The levelized cost of steam generation with biomass (biomass briquette) breaches that of coal based when the cost of biomass reduces by 26.65% or NCV of coal decrease by -26.66% and NCV of biomass increase by 36.34% which are the unlikely scenarios.

Demonstration as per GCC Clarification No. 01, V1.3 – 2022:

De-bundling:

As per Tool 20: Methodological tool: Assessment of de-bundling for small-scale project activities Version 04.0,

A proposed small-scale project activity shall be deemed to be a de-bundled component of a large project activity if there is a registered small-scale CDM project activity or an application to register another small-scale CDM project activity:

(a) With the same project participants;
(b) In the same project category and technology/measure; and
(c) Registered within the previous 2 years; and
(d) Whose project boundary is within 1 km of the project boundary of the proposed small- scale activity at the closest point.

The project proponent does not have any other project meeting the above 4 conditions. Therefore, it is concluded that the proposed project activity is not a de-bundled component of a large project activity.

B.6. Estimation of emission reductions

B.6.1. Explanation of methodological choices

The project activity mainly reduces CO_2 emissions through by using biomass briquette-based thermal energy unit instead of coal-based steam generation unit.

The emission reductions by project activity are calculated as per equation 21 of the applied methodology AMS I.C. Version 22.0:

$ER_y = BE_y – PE_y – LE_y$

where:

ER_y = Emission reductions in year, y (tCO_2)
BE_y = Baseline emissions in year, y (tCO_2)
PE_y = Project emissions in year, y (tCO_2)
LE_y = Leakage emissions in year, y (tCO_2)

Baseline Emissions:

As per paragraph 34 of the applied methodology AMS.I.C. Version 22.0, for thermal energy produced using fossil fuels and/or grid electricity the baseline emissions are calculated as follows:

$$BE_{thermal,Co2,y} = \left(\frac{EG_{thermal,y}}{\eta_{BL,thermal}}\right) \times EF_{FF,CO2}$$

Where:

$BE_{thermal,Co2,y}$	=	Baseline emissions from thermal energy displaced by the project activity during the year *y* (t CO_2)
$EG_{thermal,y}$	=	Net quantity of thermal energy supplied by the project activity during the year *y* (TJ)
$EF_{FF,CO2}$	=	CO_2 emission factor of the fossil fuel that would have been used in the baseline plant obtained from reliable local or national data if available, alternatively, IPCC default emission factors can be used (t CO_2/TJ)
$\eta_{BL,thermal}$	=	Efficiency of the plant using fossil fuel that would have been used in the absence of the project activity

As per paragraph 41 of the applied methodology AMS I.C. Version 22.0,

In the case of a Greenfield thermal energy project where the baseline is a fossil fuel based thermal unit (e.g., that would have been built in the absence of the project activity), the total annual average efficiency of the thermal energy unit using fossil fuel shall be defined as the ratio of thermal energy produced to total thermal energy value of the fuel use. This ratio shall be determined using one of the two following options (in preferential order):

(a) Calculated as a single value with consideration of the following:

i. Step 1:

a. The total annual average efficiency of the thermal energy unit using fossil fuel is determined using documented efficiency specification for new steam generators

provided by two or more manufacturers for each type of such equipment within in the region

b. Efficiency values for the and steam generator(s) shall be based on steam generators with specifications nearly equivalent to baseline units that would have been utilized in the absence of the project activity

c. The efficiency values utilized shall be the highest individual efficiency values (over the full range of expected operating conditions of the baseline thermal energy units) that can be achieved by the steam generator(s);

ii. Step 2:

a. The total annual average efficiency of the thermal energy unit /plant using fossil fuel is then calculated as the product of the highest efficiency value for the steam generator(s), assuming the efficiencyis in the form of a percentage of output per input;

(b) Calculated as a single value with consideration of the following:

i. Step 1:

a. Default steam generator efficiency determined using the values provided in appendix;

ii. Step 2:

a. The total annual average efficiency of the thermal energy unit/plant using fossil fuel is then calculated as the product of the efficiency value for the steam generator(s), assuming the efficiency is in the form of a percentage of output per input.

Option (a) has been selected by the project owner to calculate the total annual average efficiency of the thermal energy unit/ plant using fossil fuel.

Project Emissions:

As per paragraph 66 of the approved methodology AMS.I.C. Version 22.0, project emissions shall be calculated using the following equation:

$$PE_y = PE_{FF,y} + PE_{Ec,y} + PE_{Geo,y} + PE_{ref,y} + PE_{Biomass,y}$$

Where:

PE_y	=	Project emissions from the project activity during the year y (tCO_2)
$PE_{FF,y}$	=	Project emissions from fossil fuel consumption during the year y (tCO_2)
$PE_{EC,y}$	=	Project emissions from electricity consumption during the year y (tCO_2)
$PE_{Geo,y}$	=	Project emissions from a geothermal project activity in year y (tCO_2)

$PE_{ref,y}$ = Project emissions from use of refrigerant in project activity in year y (tCO_2)

$PE_{Biomass,y}$ = Project emissions associated with biomass and biomass residues in year y (tCO_2)

Project emissions from fossil fuel consumption:

As per paragraph 67 of the applied methodology, Tool 03: "Tool to calculate project or leakage CO_2 emissions from fossil fuel combustion" should be used to calculate the emissions. The project activity does not involve any on-site consumption of fossil fuels.. Therefore, emissions from fossil fuel usage in the biomass briquette-based boiler shall be zero.

Therefore, $PE_{FF, y} = 0$

Project emissions from electricity consumption:

As per paragraph 69 of the applied methodology, Tool 05: "Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation" should be used to calculate the emissions due to electricity consumption. There is usage of 100% biomass to generate steam and to maintain conservativeness the emission reductions associated to auxiliary consumption has not been considered. Therefore, emissions from electricity consumption in the biomass briquette-based boiler shall be zero.

Therefore, $PE_{EC, y} = 0$

Project emissions from geothermal project activity:

The proposed project is not a geothermal project, hence project emission considered on account of that is considered as zero.

Therefore, $PE_{Geo, y} = 0$

Project emissions from use of refrigerant in project activity:

The proposed project is does not involve any usage of refrigerants, hence project emission considered on account of that is considered as zero.

Therefore, $PE_{ref, y} = 0$

Project emissions associated with biomass and biomass residues:

As per paragraph 81 of the applied methodology, the Project emissions associated with biomass and biomass residues is to be considered in leakage emissions. Therefore $PE_{Biomass,y} = 0$

Leakage Emissions:

Leakage emissions resulting from the cultivation of biomass in a dedicated plantation of a CDM project activity that uses biomass (PE_{BC});

The biomass is not from dedicated plantation therefore $PE_{BC} = 0$,

Leakage emissions resulting from the transportation of biomass (PE_{BT});

Tool 16: "Project and leakage emissions from biomass" will be used to calculate the emissions associated with biomass.

As per paragraph 30 of Tool 16: "Project and leakage emissions from biomass" Version 5.0, project emissions resulting from transport of biomass and biomass residues are determined separately by following the provisions from the Tool 12: "Project and leakage emissions from transportation of freight" Version 1.1.0.

As per paragraph 20 of the Tool 12: "Project and leakage emissions from transportation of freight" Version 1.1.0., Project or leakage emissions are determined as follows:

$$\left.\begin{matrix} PE_{TR,m} \\ LE_{TR,m} \end{matrix}\right\} = \sum_{f} D_{f,m} \times FR_{f,m} \times EF_{CO2,f} \times 10^{-6}$$

where,

$PE_{TR, m}$	=	Project emissions from transportation of freight monitoring period *m* (t CO_2)
$LE_{TR, m}$	=	Leakage emissions from transportation of freight monitoring period *m* (t CO_2)
$D_{f, m}$	=	Return trip distance between the origin and destination of freight transportation activity *f* in monitoring period *m* (km)
$FR_{f, m}$	=	Total mass of freight transported in freight transportation activity *f* in monitoring period *m* (t)
$EF_{CO2, f}$	=	Default CO_2 emission factor for freight transportation activity *f* (g CO_2/t km)
f	=	Freight transportation activities conducted in the project activity in monitoring period *m*

As per paragraph 81 of the applied methodology, Tool 16: "Project and leakage emissions from biomass" will be used to determine the leakage emissions associated with biomass. The main potential source of leakage for the project activity is due to diversion of biomass residues from other uses to the project plant as a result of the project activity.

Leakage emissions resulting from the processing of biomass (PE_{BP});

The leakage emission resulting from processing of biomass is being considered, the electricity consumed during the processing is being accounted as leakage emissions.

Leakage emissions resulting from the transportation of biomass residues (PE_{BRT}), if the project consumes biomass residues;

The project does not consume biomass residues, therefore, $PE_{BRT}=0$,

Leakage emissions resulting from the processing of biomass residues (PE_{BRP}), if the project consumes biomass residues.

The project does not process the biomass residues, therefore $PE_{BRP}=0$,

B.6.2. Data and parameters fixed *ex ante*

Data / Parameter Table 1.

Data / Parameter:	$EF_{FF,CO2}$
Methodology reference	AMS.I.C.: Thermal energy production with or without electricity - Version 22.0
Data unit	tCO_2/TJ
Description	CO_2 emission factor of the sub bituminous coal
Measured/calculated /default	Default
Data source	2006 IPCC Guidelines for National Greenhouse Gas Inventories, Volume 2, Energy https://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_1_Ch1_Introduction.pdf
Value(s) of monitored parameter	96.1
Measurement/ Monitoring equipment (if applicable)	Not Applicable
Calculation method (if applicable)	Not Applicable
QA/QC procedures	Not Applicable
Purpose of data	This parameter is fixed ex-ante for the entire crediting period.
Additional comments	For calculation of baseline emissions
	-

Data / Parameter:	$EF_{CO2,f}$
Methodology reference	AMS.I.C.: Thermal energy production with or without electricity - Version 22.0
Data unit	tCO_2/km
Description	Default CO_2 emission factor for freight transportation activity f
Measured/calculated /default	Default
Data source	IPCC 2006 default values and local data if available

Value(s) of monitored parameter	0.00060818
Measurement/ Monitoring equipment (if applicable)	Not Applicable
Calculation method (if applicable)	Not Applicable
QA/QC procedures	This parameter is fixed ex-ante for the entire crediting period.
Purpose of data	For calculation of project emissions
Additional comments	-

Data / Parameter:	$EF_{grid,y}$
Methodology reference	AMS.I.D. V18.0
Data unit	tCO_2e/kWh
Description	CO2 emission factor for the grid electricity in year y
Measured/calculated /default	Calculated as the last 3 year (2017-18, 2018-19, 2019-20) generation weighted average, sourced from Baseline CO2 Emission Database, Version 17.0, October 2021 published by Central Electricity Authority (CEA), Government of India.
Data source	CO_2 Emission Database, Version 17.0, October 2021 published by Central Electricity Authority (CEA), Government of India
Value(s) of monitored parameter	0.9087
Measurement/ Monitoring equipment (if applicable)	Not Applicable
Measuring/reading/ recording frequency (if applicable)	Not Applicable
Calculation method (if applicable)	The combined margin emissions factor is calculated as follows: $EF_{grid,CM,y} = EF_{grid,OM,y} * W_{OM} + EF_{grid,BM,y} * W_{BM}$ Where: $EF_{grid,BM,y}$= Build margin CO_2 emission factor in year *y* (tCO_2/MWh) $EF_{grid,OM,y}$= Operating margin CO_2 emission factor in year *y* (tCO_2/MWh) W_{OM} = Weighting of operating margin emissions factor (%) = 50% W_{BM}= Weighting of build margin emissions factor (%) = 50%
QA/QC procedures	This parameter is fixed ex-ante for the entire crediting period.
Purpose of data	For calculation of project emissions

Additional comments	-

B.6.3. Ex-ante calculation of emission reductions

Baseline emissions:

For thermal energy produced using fossil fuels and/or grid electricity the baseline emissions are calculated as follows:

$$BE_{thermal,Co2,y} = \left(\frac{EG_{thermal,y}}{\eta_{BL,thermal}}\right) \times EF_{FF,CO2}$$

Where:

$BE_{thermal,Co2,y}$ = Baseline emissions from thermal energy displaced by the project activity during the year *y* (t CO_2)

$EG_{thermal,y}$ = Net quantity of thermal energy supplied by the project activity during the year *y* (TJ)

$EF_{FF,CO2}$ = CO_2 emission factor of the fossil fuel that would have been used in the baseline plant obtained from reliable local or national data if available, alternatively, IPCC default emission factors can be used (t CO_2/TJ)

$\eta_{BL,thermal}$ = Efficiency of the plant using fossil fuel that would have been used in the absence of the project activity determined as per paragraph **Error! eference source not found.** or **Error! Reference source not found. Error! Reference source not found.**

Parameters:	**Units:**	**Values (8 TPD site)**	**Values (4 TPD site)**
$EG_{thermal,y}$	TJ/year	152.3	76.7
$\varepsilon_{boiler,\ thermal}$	Percentage	85.00	85.00
$EF_{fuel,b}$	TCO2/TJ	96.1	96.1
$BE_{Thermal}$	**tCO_2/yr**	**17,214**	**8,674**

Therefore, baseline emissions for the entire crediting period:

Year	Baseline emissions
09/09/2020 to 08/09/2021	25,888
09/09/2021 to 08/09/2022	25,888
09/09/2022 to 08/09/2023	25,888
09/09/2023 to 08/09/2024	25,888
09/09/2024 to 08/09/2025	25,888
09/09/2025 to 08/09/2026	25,888

09/09/2026 to 08/09/2027	25,888
09/09/2027 to 08/09/2028	25,888
09/09/2028 to 08/09/2029	25,888
09/09/2029 to 08/09/2030	25,888

Project emissions:

The project emissions shall be calculated using the following equation:

$$PE_y = PE_{FF,y} + PE_{Ec,y} + PE_{Geo,y} + PE_{ref,y} + PE_{Biomass,y}$$

Where:

PE_y = Project emissions from the project activity during the year y (tCO_2)

$PE_{FF,y}$ = Project emissions from fossil fuel consumption during the year y (tCO_2)

$PE_{EC,y}$ = Project emissions from electricity consumption during the year y (tCO_2)

$PE_{Geo,y}$ = Project emissions from a geothermal project activity in year y (tCO_2)

$PE_{ref,y}$ = Project emissions from use of refrigerant in project activity in year y (tCO_2)

$PE_{Biomass,y}$ = Project emissions associated with biomass and biomass residues in year y (tCO_2)

As per the analysis provided in section B.6.1,

$PE_{FF, y} = 0$; $PE_{EC, y} = 0$; $PE_{Geo, y} = 0$; $PE_{ref, y} = 0$

Therefore, project emissions for the entire crediting period:

Year	Project Emission
09/09/2020 to 08/09/2021	0
09/09/2021 to 08/09/2022	0
09/09/2022 to 08/09/2023	0
09/09/2023 to 08/09/2024	0
09/09/2024 to 08/09/2025	0
09/09/2025 to 08/09/2026	0
09/09/2026 to 08/09/2027	0
09/09/2027 to 08/09/2028	0
09/09/2028 to 08/09/2029	0
09/09/2029 to 08/09/2030	0

Leakage Emissions:

For Leakage emission due to raw material transportation:

Parameters:	**Units:**	**Value (8 TPD)**	**Value (4 TPD)**
Total mass of Biomass Briquettes transported in freight transportation activity f in monitoring	tonne	11,577	5,834
Electricity Consumption	MWh	486	245
Return trip road distance between the origin and destination of freight transportation of Biomass Briquettes	Km	480	480
Default CO2 emission factor for freight transportation activity	gCO_2/tKm	129	129
Leakage emission due to Biomass Briquette transportation	tCO2e/Yr	717	361
Leakage emissions due to Briquette Production	tCO2e/Yr	530	267
Total Leakage emission (Rounded)	**tCO2e**	**1247**	**628**

Leakage Emission from Electricity Consumption for Briquette manufacturing:

Description	**Unit**	**Value (8 TPD)**	**Value (4 TPD)**
Briquette Procured in project activity	Tonnes/yr	23667	5834
Rated capacity of Briquetting machine	Kg/hr	1200	1200
Connected load of Briquetting machine	kW	56	56
Electricity Consumption for processing biomass	kWh/Tonne	46.625	46.625
Total Electricity Consumed	MWh	1103.46	271.99
Grid emission factor	tCO2/MWh	1.09	1.09
Leakage Emissions due to Electricity consumption for manufacturing of briquettes at manufacturing plant, $LE_{y,process}$, tCO2e/yr	**tCO2/annum**	**589**	**297**

Year	Leakage Emission
09/09/2020 to 08/09/2021	2,761
09/09/2021 to 08/09/2022	2,761
09/09/2022 to 08/09/2023	2,761
09/09/2023 to 08/09/2024	2,761
09/09/2024 to 08/09/2025	2,761
09/09/2025 to 08/09/2026	2,761
09/09/2026 to 08/09/2027	2,761
09/09/2027 to 08/09/2028	2,761
09/09/2028 to 08/09/2029	2,761
09/09/2029 to 08/09/2030	2,761

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)
09/09/2020 to 08/09/2021	25,888	-	2,761	23,127
09/09/2021 to 08/09/2022	25,888	-	2,761	23,127
09/09/2022 to 08/09/2023	25,888	-	2,761	23,127
09/09/2023 to 08/09/2024	25,888	-	2,761	23,127
09/09/2024 to 08/09/2025	25,888	-	2,761	23,127
09/09/2025 to 08/09/2026	25,888	-	2,761	23,127
09/09/2026 to 08/09/2027	25,888	-	2,761	23,127
09/09/2027 to 08/09/2028	25,888	-	2,761	23,127
09/09/2028 to 08/09/2029	25,888	-	2,761	23,127
09/09/2029 to 08/09/2030	25,888	-	2,761	23,127
Total	**258,880**	**-**	**27,610**	**231,270**
Total number of crediting years	10			
Annual average over the crediting period	25,888	-	2,761	23,127

B.7. Monitoring plan

B.7.1. Data and parameters to be monitored *ex-post*

Data / Parameter Table 2.

Data / Parameter:	$EG_{PJ,thermal,y}$
Methodology reference	AMS.I.C.: Thermal energy production with or without electricity - Version 22.0
Data unit	TJ
Description	Net quantity of thermal energy supplied by the project activity
Measured/calculated /default	Calculated
Data source	Plant Records
Value(s) of monitored parameter applied with basis	229 (152.3+76.7) TJ/year
Measurement/ Monitoring equipment	Heat generation is determined as the difference of the enthalpy of the steam or hot fluid and/or gases generated by the heat generation equipment and the sum of the enthalpies of the feed-fluid and/or gases blow-down and if applicable any condensate returns. The respective enthalpies should be determined based on the mass (or volume) flows,

	the temperatures and, in case of superheated steam, the pressure. Steam tables or appropriate thermodynamic equations may be used to calculate the enthalpy as a function of temperature and pressure. Not Applicable Type of meter(s): - Location of meter(s): - Accuracy of meter(s): - Serial number of meter(s): - Calibration frequency: - Date of Calibration/ validity: - Reference No. of Calibration Certificates: - Calibration Status: -
Frequency of Measuring/reading	Continuous monitoring
Recording frequency	Monthly Recording
Calculation method (if applicable)	-
QA/QC procedures	-
Purpose of data	For calculation of baseline emissions
Additional comments	-

Data / Parameter:	**Pressure**
Methodology reference	AMS.I.C.: Thermal energy production with or without electricity - Version 22.0
Data unit	Kg/cm^2
Description	Pressure
Measured/calculated /default	Measured
Data source	Plant Records
Value(s) of monitored parameter applied with basis	-

Measurement/ Monitoring equipment	Measured using calibrated meters Type of meter(s): Pressure Gauge Location of meter(s): To be Provided Accuracy of meter(s): To be Provided Serial number of meter(s): To be Provided Calibration frequency: To be Provided Date of Calibration/ validity: To be Provided Reference No. of Calibration Certificates: To be Provided Calibration Status: To be Provided
Frequency of Measuring/reading	Continuous monitoring
Recording frequency	Monthly Recording
Calculation method (if applicable)	-
QA/QC procedures	-
Purpose of data	Not used for emission reduction calculation
Additional comments	-

Data / Parameter:	**$D_{f,m}$**
Methodology reference	-
Data unit	Km
Description	Return trip distance between the origin and destination of freight transportation activity
Measured/calculated /default	Measured
Data source	Records by project participants on the origin of the biomass
Value(s) of monitored parameter applied with basis	Will be updated at the verification

Measurement/ Monitoring equipment	No measuring equipment is to be used for this parameter. Not Applicable Type of meter(s): - Location of meter(s): - Accuracy of meter(s): - Serial number of meter(s): - Calibration frequency: - Date of Calibration/ validity: - Reference No. of Calibration Certificates: - Calibration Status: -
Frequency of Measuring/reading	Truck trip distances would be monitored continuously and aggregated monthly
Recording frequency	Monthly Recording
Calculation method (if applicable)	-
QA/QC procedures	Consistency of distance records provided by the truckers by comparing recorded distances shall be checked with other information from other sources (e.g., maps).
Purpose of data	For calculation of project emissions
Additional comments	The mean value of km traveled by trucks that supply the biomass plant shall be used to estimate CO_2 emissions from transportation.

Data / Parameter:	**Average truck load**
Methodology reference	-
Data unit	Tonnes
Description	Average truck load
Measured/calculated /default	Measured
Data source	Records by project participants on the origin of the biomass
Value(s) of monitored parameter applied with basis	Will be updated at the verification
Measurement/ Monitoring equipment	No measuring equipment is to be used for this parameter. Type of meter(s): Weigh Bridge Location of meter(s): To be updated Accuracy of meter(s): To be updated Serial number of meter(s): To be updated Calibration frequency: To be updated

	<table><tr><td>Date of Calibration/ validity</td><td>To be updated</td></tr><tr><td>Reference No. of Calibration Certificates</td><td>To be updated</td></tr><tr><td>Calibration Status</td><td>To be updated</td></tr></table>
Frequency of Measuring/reading	To be provided in the final version of the PSF.
Recording frequency	-
Calculation method (if applicable)	-
QA/QC procedures	-
Purpose of data	For calculation of project emissions
Additional comments	-

Data / Parameter:	**Quantity of biomass**
Methodology reference	AMS.I.C.: Thermal energy production with or without electricity - Version 22.0
Data unit	Tonne
Description	Quantity of biomass consumed in year y
Measured/calculated /default	Measured
Data source	On-site measurements
Value(s) of monitored parameter applied with basis	Will be updated at the verification
Measurement/ Monitoring equipment	<table><tr><td colspan="2"></td></tr><tr><td>Type of meter(s)</td><td>Weigh Bridge</td></tr><tr><td>Location of meter(s)</td><td>To be updated</td></tr><tr><td>Accuracy of meter(s)</td><td>To be updated</td></tr><tr><td>Serial number of meter(s)</td><td>To be updated</td></tr><tr><td>Calibration frequency</td><td>To be updated</td></tr><tr><td>Date of Calibration/ validity</td><td>To be updated</td></tr><tr><td>Reference No. of Calibration Certificates</td><td>To be updated</td></tr><tr><td>Calibration Status</td><td>To be updated</td></tr></table> To be provided in the final version of the PSF.
Frequency of Measuring/reading	Data monitored continuously
Recording frequency	Monthly Recording

Calculation method (if applicable)	-
QA/QC procedures	Crosschecking the measurements with an annual energy balance that is based on purchased quantities.
Purpose of data	Not used for emission reduction calculation
Additional comments	-

Data / Parameter:	**Net calorific value of biomass**
Methodology reference	AMS.I.C.: Thermal energy production with or without electricity - Version 22.0
Data unit	kcal/kg
Description	Net calorific value of biomass in year y
Measured/calculated /default	Measured
Data source	Periodic fuel calorific value test reports
Value(s) of monitored parameter applied with basis	Not used for ex-ante calculation
Measurement/ Monitoring equipment	To be provided in the final version of the PSF.
Frequency of Measuring/reading	Will be updated at the verification
Recording frequency	-
Calculation method (if applicable)	Measurements shall be carried out at reputed laboratories.
QA/QC procedures	Consistency of the measurements shall be checked by comparing the measurement results with measurements from previous years, relevant data sources (e.g., values in the literature, values used in the national GHG inventory) and default values by the IPCC.
Purpose of data	Not used for emission reduction calculation
Additional comments	-

Not Applicable	
Type of meter(s)	-
Location of meter(s)	-
Accuracy of meter(s)	-
Serial number of meter(s)	-
Calibration frequency	-
Date of Calibration/ validity	-
Reference No. of Calibration Certificates	-
Calibration Status	-

For Parameters to be monitored for E+/S+ assessments and SDG labels (positive impacts)

Monitoring of Environmental Safeguard Parameters:

Data / Parameter:	**SO_X emissions**
Purpose:	*To demonstrate positive impacts of aspects wrt baseline scenario / BAU / preexisting scenario and to demonstrate that they do not cause any net harm to environment / society or have an impact on SDG as per selected indicators.*
Describe the related environment /social/ SDG risk or SDG impact as a function of likelihood of occurrence and severity of impact.	There may be SOx emissions in the flue gas from the stack
Describe the parameters to be monitored to demonstrate compliance with requirements to demonstrate "harmless" condition or demonstrate Impact on SDG	Parameter to be monitored: SOx Concentration level (µg/m^3) Frequency of monitoring: Annual Legal /regulatory / corporate limits (if any): Air pollution Act, 1981 QA/QC: Testing will be done by the NABL Accredited Laboratories
Remarks	NA

Data / Parameter:	**NO_X emissions**
Purpose:	*To demonstrate positive impacts of aspects wrt baseline scenario / BAU / preexisting scenario and to demonstrate that they do not cause any net harm to environment / society or have an impact on SDG as per selected indicators.*
Describe the related environment /social/ SDG risk or SDG impact as a function of likelihood of occurrence and severity of impact.	There may be NOx emissions in the flue gas from the stack
Describe the parameters to be monitored to demonstrate compliance with requirements to demonstrate "harmless" condition or demonstrate Impact on SDG	Parameter to be monitored: NOx Concentration level (µg/m^3) Frequency of monitoring: Annual Legal /regulatory / corporate limits (if any): Air pollution Act, 1981 QA/QC: Testing will be done by the NABL Accredited Laboratories

Remarks	NA

Data / Parameter:	**CO_2 emissions**
Purpose:	*To demonstrate positive impacts of aspects wrt baseline scenario / BAU / preexisting scenario and to demonstrate that they do not cause any net harm to environment / society or have an impact on SDG as per selected indicators.*
Describe the related environment /social/ SDG risk or SDG impact as a function of likelihood of occurrence and severity of impact.	**CO_2 emissions reductions per year**
Describe the parameters to be monitored to demonstrate compliance with requirements to demonstrate "harmless" condition or demonstrate Impact on SDG	Parameter to be monitored: GHG emission reductions (tCO2/year) Frequency of monitoring: Continuously measured and monthly recorded Legal /regulatory / corporate limits (if any): - QA/QC: Monitored data will be stored and archived till the end of the crediting period.
Remarks	NA

Data / Parameter:	**Suspended Particulate matter (SPM) emissions**
Purpose:	*To demonstrate positive impacts of aspects wrt baseline scenario / BAU / preexisting scenario and to demonstrate that they do not cause any net harm to environment / society or have an impact on SDG as per selected indicators.*
Describe the related environment /social/ SDG risk or SDG impact as a function of likelihood of occurrence and severity of impact.	There may be SPM emissions in the flue gas from the stack

Describe the parameters to be monitored to demonstrate compliance with requirements to demonstrate "harmless" condition or demonstrate Impact on SDG	<table><tr><td colspan="2"></td></tr><tr><td>Parameter to be monitored</td><td>SPM Concentration level (µg/m^3)</td></tr><tr><td>Frequency of monitoring</td><td>Annual</td></tr><tr><td>Legal /regulatory / corporate limits (if any)</td><td>Air pollution Act, 1981</td></tr><tr><td>QA/QC</td><td>Testing will be done by the NABL Accredited Laboratories</td></tr></table>
Remarks	NA

Data / Parameter:	**Replacing fossil fuels with renewable sources of energy**
Purpose:	*To demonstrate positive impacts of aspects wrt baseline scenario / BAU / preexisting scenario and to demonstrate that they do not cause any net harm to environment / society or have an impact on SDG as per selected indicators.*
Describe the related environment /social/ SDG risk or SDG impact as a function of likelihood of occurrence and severity of impact.	Net quantity of thermal energy generated from the biomass plant which would have been otherwise generated from the combustion of fossil fuels
Describe the parameters to be monitored to demonstrate compliance with requirements to demonstrate "harmless" condition or demonstrate Impact on SDG	<table><tr><td colspan="2"></td></tr><tr><td>Parameter to be monitored</td><td>Net quantity of Thermal Energy (TJ/year)</td></tr><tr><td>Frequency of monitoring</td><td>Continuous monitoring Monthly recorded</td></tr><tr><td>Legal /regulatory / corporate limits (if any)</td><td>-</td></tr><tr><td>QA/QC</td><td>-</td></tr></table>
Remarks	NA

Data / Parameter:	**Generation of wastewater**
Purpose:	*To demonstrate positive impacts of aspects wrt baseline scenario / BAU / preexisting scenario and to demonstrate that they do not cause any net harm to environment / society or have an impact on SDG as per selected indicators.*
Describe the related environment /social/ SDG risk or SDG impact as a function of likelihood of occurrence and severity of impact.	Wastewater generated from the operation of the plant and domestic use.

Describe the parameters to be monitored to demonstrate compliance with requirements to demonstrate "harmless" condition or demonstrate Impact on SDG	<table><tr><td colspan="2"></td></tr><tr><td>Parameter to be monitored</td><td>Wastewater Quantity (Litres)</td></tr><tr><td>Frequency of monitoring</td><td>Continuous monitoring Monthly recorded</td></tr><tr><td>Legal /regulatory / corporate limits (if any)</td><td>Water pollution prevention and control act</td></tr><tr><td>QA/QC</td><td>-</td></tr></table>
Remarks	NA

Monitoring of Social Safeguard Parameters:

Data / Parameter:	**Long-term jobs (> 1 year) created**
Purpose:	*To demonstrate positive impacts of aspects wrt baseline scenario / BAU / preexisting scenario and to demonstrate that they do not cause any net harm to environment / society or have an impact on SDG as per selected indicators.*
Describe the related environment /social/ SDG risk or SDG impact as a function of likelihood of occurrence and severity of impact.	Long term job opportunities created during the operation due to the project activity.
Describe the parameters to be monitored to demonstrate compliance with requirements to demonstrate "harmless" condition or demonstrate Impact on SDG	<table><tr><td colspan="2"></td></tr><tr><td>Parameter to be monitored</td><td>Employment Records (Number)</td></tr><tr><td>Frequency of monitoring</td><td>Yearly</td></tr><tr><td>Legal /regulatory / corporate limits (if any)</td><td>Host country minimal wage requirements Regulations on Minimum Wage for Employees working by Labor Contract.</td></tr><tr><td>QA/QC</td><td>-</td></tr></table>
Remarks	NA

Data / Parameter:	**Sources of income generation increased/reduced**
Purpose:	*To demonstrate positive impacts of aspects wrt baseline scenario / BAU / preexisting scenario and to demonstrate that they do not cause any net harm to environment / society or have an impact on SDG as per selected indicators.*

Describe the related environment /social/ SDG risk or SDG impact as a function of likelihood of occurrence and severity of impact.	By creating additional employment and O&M services in the project region it creates the additional sources of income for the people employed for the project activity.
Describe the parameters to be monitored to demonstrate compliance with requirements to demonstrate "harmless" condition or demonstrate Impact on SDG	<table><tr><td colspan="2"></td></tr><tr><td>Parameter to be monitored</td><td>Employees/ HR Policy. (Number)</td></tr><tr><td>Frequency of monitoring</td><td>Yearly</td></tr><tr><td>Legal /regulatory / corporate limits (if any)</td><td>-</td></tr><tr><td>QA/QC</td><td>-</td></tr></table>
Remarks	NA

Data / Parameter:	**Job related training imparted or not**
Purpose:	*To demonstrate positive impacts of aspects wrt baseline scenario / BAU / preexisting scenario and to demonstrate that they do not cause any net harm to environment / society or have an impact on SDG as per selected indicators.*
Describe the related environment /social/ SDG risk or SDG impact as a function of likelihood of occurrence and severity of impact.	The project owner has allocated a special fund to develop skill development
Describe the parameters to be monitored to demonstrate compliance with requirements to demonstrate "harmless" condition or demonstrate Impact on SDG	<table><tr><td colspan="2"></td></tr><tr><td>Parameter to be monitored</td><td>No of Trainings (Number)</td></tr><tr><td>Frequency of monitoring</td><td>Yearly</td></tr><tr><td>Legal /regulatory / corporate limits (if any)</td><td>-</td></tr><tr><td>QA/QC</td><td>-</td></tr></table>
Remarks	NA

Data / Parameter:	**Non-Discrimination Practices**
Purpose:	*To demonstrate positive impacts of aspects wrt baseline scenario / BAU / preexisting scenario and to demonstrate that they do not cause any net harm to environment / society or have an impact on SDG as per selected indicators.*

Describe the related environment /social/ SDG risk or SDG impact as a function of likelihood of occurrence and severity of impact.	Project Owner establishes the policy to ensure that there is no discrimination based on gender, racism, religion etc. during the recruitment process.
Describe the parameters to be monitored to demonstrate compliance with requirements to demonstrate "harmless" condition or demonstrate Impact on SDG	<table><tr><td colspan="2"></td></tr><tr><td>Parameter to be monitored</td><td>Company Policy/HR Policy (Number)</td></tr><tr><td>Frequency of monitoring</td><td>-</td></tr><tr><td>Legal /regulatory / corporate limits (if any)</td><td>-</td></tr><tr><td>QA/QC</td><td>-</td></tr></table>
Remarks	NA

Data / Parameter:	**Occupational health hazards**
Purpose:	*To demonstrate positive impacts of aspects wrt baseline scenario / BAU / preexisting scenario and to demonstrate that they do not cause any net harm to environment / society or have an impact on SDG as per selected indicators.*
Describe the related environment /social/ SDG risk or SDG impact as a function of likelihood of occurrence and severity of impact.	There is a possibility of physical hazards in project sites due to human intervention or technical failure or emergency
Describe the parameters to be monitored to demonstrate compliance with requirements to demonstrate "harmless" condition or demonstrate Impact on SDG	<table><tr><td colspan="2"></td></tr><tr><td>Parameter to be monitored</td><td>Training Records (Number)</td></tr><tr><td>Frequency of monitoring</td><td>Yearly</td></tr><tr><td>Legal /regulatory / corporate limits (if any)</td><td>-</td></tr><tr><td>QA/QC</td><td>-</td></tr></table>
Remarks	NA

Data / Parameter:	**Reducing / increasing accidents/incidents/fatality**
Purpose:	*To demonstrate positive impacts of aspects wrt baseline scenario / BAU / preexisting scenario and to demonstrate that they do not cause any net harm to environment / society or have an impact on SDG as per selected indicators.*

Describe the related environment /social/ SDG risk or SDG impact as a function of likelihood of occurrence and severity of impact.	There is a possibility of accidents/incidents/near miss in project sites due to human intervention or technical failure or emergency.
Describe the parameters to be monitored to demonstrate compliance with requirements to demonstrate "harmless" condition or demonstrate Impact on SDG	<table><tr><td colspan="2"></td></tr><tr><td>Parameter to be monitored</td><td>Incident Register (Number of Incidents)</td></tr><tr><td>Frequency of monitoring</td><td>Yearly</td></tr><tr><td>Legal /regulatory / corporate limits (if any)</td><td>-</td></tr><tr><td>QA/QC</td><td>-</td></tr></table>
Remarks	NA

Data / Parameter:	**Project-related knowledge dissemination effective or not**
Purpose:	To demonstrate positive impacts of aspects wrt baseline scenario / BAU / preexisting scenario and to demonstrate that they do not cause any net harm to environment / society or have an impact on SDG as per selected indicators.
Describe the related environment /social/ SDG risk or SDG impact as a function of likelihood of occurrence and severity of impact.	The employees will receive on job training as per training needs. It imparts positive impact by helping employees in all-round development.
Describe the parameters to be monitored to demonstrate compliance with requirements to demonstrate "harmless" condition or demonstrate Impact on SDG	<table><tr><td colspan="2"></td></tr><tr><td>Parameter to be monitored</td><td>Number of trainings (Number)</td></tr><tr><td>Frequency of monitoring</td><td>Yearly</td></tr><tr><td>Legal /regulatory / corporate limits (if any)</td><td>-</td></tr><tr><td>QA/QC</td><td>-</td></tr></table>
Remarks	NA

Data / Parameter:	**Community and rural welfare**
Purpose:	To demonstrate positive impacts of aspects wrt baseline scenario / BAU / preexisting scenario and to demonstrate that they do not cause any net harm to environment / society or have an impact on SDG as per selected indicators.

<table>
<tr><td>Describe the related environment /social/ SDG risk or SDG impact as a function of likelihood of occurrence and severity of impact.</td><td>Contribution of project activity to the Economic, Environmental, Economical and social well-being for the community</td></tr>
<tr><td>Describe the parameters to be monitored to demonstrate compliance with requirements to demonstrate “harmless” condition or demonstrate Impact on SDG</td><td><table>
<tr><td colspan="2"></td></tr>
<tr><td>Parameter to be monitored</td><td>Number of trainings (Number)</td></tr>
<tr><td>Frequency of monitoring</td><td>Yearly</td></tr>
<tr><td>Legal /regulatory / corporate limits (if any)</td><td>-</td></tr>
<tr><td>QA/QC</td><td>-</td></tr>
</table></td></tr>
<tr><td>Remarks</td><td>NA</td></tr>
</table>

<table>
<tr><td>Data / Parameter:</td><td>Women empowerment</td></tr>
<tr><td>Purpose:</td><td>To demonstrate positive impacts of aspects wrt baseline scenario / BAU / preexisting scenario and to demonstrate that they do not cause any net harm to environment / society or have an impact on SDG as per selected indicators.</td></tr>
<tr><td>Describe the related environment /social/ SDG risk or SDG impact as a function of likelihood of occurrence and severity of impact.</td><td>Providing employment to women in project operations and managerial role as well.</td></tr>
<tr><td>Describe the parameters to be monitored to demonstrate compliance with requirements to demonstrate “harmless” condition or demonstrate Impact on SDG</td><td><table>
<tr><td colspan="2"></td></tr>
<tr><td>Parameter to be monitored</td><td>No of woman employee (Number) & Employment Records</td></tr>
<tr><td>Frequency of monitoring</td><td>Yearly</td></tr>
<tr><td>Legal /regulatory / corporate limits (if any)</td><td>-</td></tr>
<tr><td>QA/QC</td><td>-</td></tr>
</table></td></tr>
<tr><td>Remarks</td><td>NA</td></tr>
</table>

SDG parameters monitoring:

Data / Parameter:	**No of women employed in managerial positions to total no of managerial positions**
Purpose:	*To demonstrate positive impacts of aspects wrt baseline scenario / BAU / preexisting scenario and to demonstrate that they do not cause any net harm to environment / society or have an impact on SDG as per selected indicators.*
Describe the related environment /social/ SDG risk or SDG impact as a function of likelihood of occurrence and severity of impact.	No of women employed in managerial positions to total no of managerial Positions.
Describe the parameters to be monitored to demonstrate compliance with requirements to demonstrate "harmless" condition or demonstrate Impact on SDG	Parameter to be monitored: No of woman employee (Number) & Employment Records Frequency of monitoring: Yearly Legal /regulatory / corporate limits (if any): - QA/QC: -
Remarks	NA

Data / Parameter:	**Reductions in Emissions (tCO_2e) per unit of product due to project**
Purpose:	*To demonstrate positive impacts of aspects wrt baseline scenario / BAU / preexisting scenario and to demonstrate that they do not cause any net harm to environment / society or have an impact on SDG as per selected indicators.*
Describe the related environment /social/ SDG risk or SDG impact as a function of likelihood of occurrence and severity of impact.	tCO_2e emissions reductions per year
Describe the parameters to be monitored to demonstrate compliance with requirements to demonstrate "harmless" condition or demonstrate Impact on SDG	Parameter to be monitored: GHG emission reductions (tCO2/year) Frequency of monitoring: Continuously measured and monthly recorded Legal /regulatory / corporate limits (if any): - QA/QC: Monitored data will be stored and archived till the end of the crediting period

Remarks	NA

B.7.2. Data and parameters to be monitored for E+/S+ assessments (negative impacts)

>> There is no parameter which has been identified as harmful and required to be monitored. The positive impact and social & environmental benefits generated out of the project shall be monitored as per the description provided in section E of the PSF against the parameters.

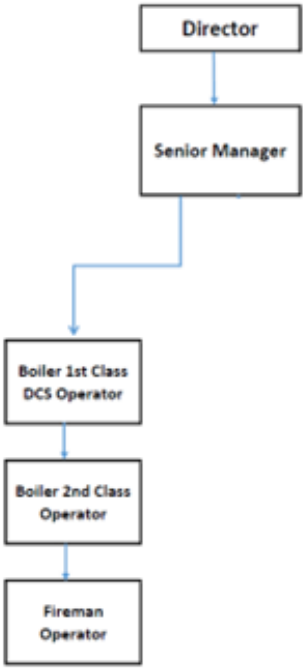
B.7.3. Sampling plan

>> Not applicable.

B.7.4. Other elements of the monitoring plan

>> For Project Management, Thermax Onsite Energy Solutions Limited will employ a senior manager having experience & expertise on installation of biomass fired thermal energy plant to be located at the project site. He will be assisted by team of Project operators having experience in erection & commissioning of boiler and turbine.

The project management hierarchy is as follows:



Section C. Start date, crediting period type and duration

C.1. Start date of the Project Activity

09/09/2020 & 19/02/2020

C.2. Expected operational lifetime of the Project Activity

20 years

C.3. Crediting period of the Project Activity

C.3.1. Start and end date of the crediting period

09/09/2020 to 08/09/2030

C.3.2. Duration of crediting period

10 years 00 month

Section D. Environmental impacts

D.1. Analysis of environmental impacts

The positive environmental impacts arising from the project activity are:

- Reduction in carbon dioxide (GHG) emissions that would take place for the same quantity of generation of thermal energy from fossil fuel dominated boilers. The thermal energy generated from fossil fuel-based boilers is considered as baseline scenario.
- Biomass residue in the absence of project activity would have been either left to decay in open areas.
- Project activity will help in improving the socio–economic status of the nearby area and will help towards better adaptation of climate change effects. Implementation of project activity will also create improved awareness about environmental upkeep and improve the general housekeeping and hygienic conditions.

There are no negative environmental impacts that will arise as a result of the project activity. However, the following factors were analyzed for potential impacts and these shall be handled as per applicable statutory guidelines and are mentioned as follows:

1. Impact on Land: The ash generated from the project activity will be disposed as per the state Pollution Control Board guidelines.
2. Impact on Water: Disposal will be as per Pollution Control Board guidelines.
3. Impact on Air: As stated above, the project activity will lead to reduction of GHG emissions.
4. Impact on Ecology: The project activity shall not have any harmful impact on the ecology. There are no nearby forests, or zones high on biodiversity, or other sensitive locations around the factory that may be affected negatively due to the project. Individuals working in high noise zones are provided adequate gadgets for protection.

The project activity has received the consent to establish from Pollution Control Board. The project will operate within the stipulated limits set by the Pollution Control Board and the same will be monitored as part of the overall GHG emission reduction project compliance.

D.2. Environmental impact assessment and management action plans

As per the MoEF notification, biomass power plants with installed capacity up to 15 MW are exempt from EIA[24].

Section E. Environmental and social safeguards

>>

[24] http://www.environmentwb.gov.in/pdf/EIA%20Notification,%202006.pdf

E.1. Environmental safeguards

Impact of Project Activity on		**Information on Impacts, Do-No-Harm Risk Assessment and Establishing Safeguards**								**Project Owner's Conclusion**		**GCC Project Verifier's Conclusion** **(To be included in Project Verification Report only)**
		Description of Impact *(positive or negative)*	**Legal/ voluntary corporate requirement / regulatory/ voluntary corporate threshold Limits**	**Do-No-Harm Risk Assessment (choose which ever is applicable)**			**Risk Mitigation Action Plans for aspects marked as Harmful**		**Performance indicator for monitoring of impact**	***Ex-ante* scoring of environmental impact**	***Explanation of the Conclusion***	**3rd Party Audit**
				Not Applicable	**Harmless**	**Harmful**	**Operational Controls**	**Program of Risk Management Actions**	**Monitoring parameter and frequency of monitoring**	**Ex- Ante scoring of the environmental impact (as per scoring matrix Appendix-02)**	**Ex- Ante description and justification/explanation of the scoring of the environmental impact**	**Verification Process**
Environmental Aspects on the identified categories [25] ***indicated below.***	*Indicators for environmental impacts*	*Describe and identify anticipated and actual significant environmental impacts, both positive and negative from all sources (stationary and mobile) during normal and abnormal/emergency conditions, that may result from the construction and operations of the Project Activity, within and outside the project boundary, over which the Project Owner(s) has/have control.*	*Describe the applicable national regulatory requirements /legal limits / voluntary corporate 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***	*If environmental impacts exist but are expected to be in compliance with applicable national regulatory /stricter voluntary corporate requirements and will be within legal/ voluntary corporate limits by way of plant design and operating principles, then the*	*If negative environmental impacts exist that will not be in compliance with the applicable national legal/ regulatory requirements or are likely to exceed legal limits, then the Project Activity is likely to cause harm (may be un-safe) and shall*	*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*** *at least to a level that is in compliance with applicable legal/regulatory requirements or industry best practice or stricter voluntary corporate requirements*	*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 or eliminate the risk of impacts that have been identified as* ***Harmful****.*	*Describe the monitoring approach and the parameters (KPI) to be monitored for each impact irrespective of whether it is harmless of harmful. The frequency of monitoring to be specified as well including the data source.*	*-1* *0* *+1*	*Confirm the score of environmental impact of the project with respect to the aspect and its monitored value in relation to legal /regulatory limits (if any) including basis of conclusion.*	*Describe how the GCC Verifier has assessed that the impact of the Project Activity against the particular aspect and in case of "harmful impacts" how has the project adopted Risk Mitigation Action Plans to mitigate the risks of negative environmental impacts to levels that are unlikely to cause any harm as well as the net positive impacts of the project with respect to the most likely baseline alternative.* .

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

					Project Activity is unlikely to cause any harm (is safe) and shall be indicated as ***Harmless*** */If the project has a positive impact on the environment mark it as "harmless" as well.*	*be indicated as* ***Harmful***						
Reference to paragraphs of Environmental and Social Safeguards Standard		*Paragraph 12 (a)*	*Paragraph 13 (c)*	*Paragraph 13 (d) (i)*	*Paragraph 13 (d) (ii)*	*Paragraph 13 (d) (iii)*	*Paragraph 13 (e) (i)*	*Paragraph 13 (e) (ii)*	*Paragraph 12 (c) and Paragraph 13 (f)*	*Paragraph 22*		*Paragraph 24 and Paragraph 26 (a) (i)*
Environment - *Air*	*SO_x emissions (EA01)*	There may be Sox emissions in the flue gas from the stack	Air Pollution Act, 1981[26]	-	Harmless. The Sox emission levels are within the applicable legal limits as per the regulator norms.	-	-	-	SOx emissions will be monitored and tested on annual basis. Test reports will be maintained.	+1	By monitoring the SOx emissions in compliance with the applicable regulations, project owner is likely to maintain the impact as harmless during the life time of the project.	-
	NO_x emissions (EA02)	There may be NOx emissions in the flue gas from the stack.	Air pollution Act, 1981	-	Harmless. The NOx emission levels are within the Applicable legal	-	-	-	NOx emissions will be monitored and tested on annual basis. Test reports will be maintained.	+1	By monitoring the NOx emissions in compliance with the applicable regulations, project owner is likely to maintain the impact as harmless during	

[26] https://legislative.gov.in/sites/default/files/A1981-14.pdf

					limits as per the regulator norms.						the life time of the project.	
	CO_2 emissions (EA03)	The project is expected to reduce CO2 emissions wrt to baseline scenario of generation of equivalent amount of power in grid connected power plant	-	-	Harmless The overall impact is positive with respect to the baseline alternative.	-	-	-	GHG emission Reduction (Tonnes of CO2e / Yr.) The parameter will be monitored on monthly basis	+1	The overall impact is positive with respect to the baseline and hence the impact is harmless.	
	CO emissions (EA04)	-	-	-	-	-	-	-	-	-		
	Suspended particulate matter (SPM) emissions (EA05)	There may be SPM emissions in the flue gas from the stack	Air pollution Act, 1981	-	Harmless. The SPM emission levels are within the applicable legal limits as per the regulatory norms.	-	-	-	SPM emissions will be monitored and tested on annual basis. Test reports will be maintained.	+1	By monitoring the SPM emissions in compliance with the applicable regulations, project owner is likely to maintain the impact as harmless during the lifetime of the project.	
	Fly ash generation (EA06)	-	-	-	-	-	-	-	-	-	-	
	Non-Methane Volatile Organic Compounds (NMVOCs) (EA07)	-	-	-	-	-	-	-	-	-	-	
	Odor (EA08)	-	-	-	-	-	-	-	-	-	-	
	Noise Pollution (EA09)	-	-	-	-	-	-	-	-	-	-	

	Others (EA10)	-	-	-	-	-	-	-	-	-	-	
Environment - *Land*	*Solid waste Pollution from Plastics (EL-01)*	-	-	-	-	-	-	-	-	-	-	
	Solid waste Pollution from Hazardous wastes (EL02)	-	-	-	-	-	-	-	-	-	-	
	Solid waste Pollution from Bio-medical wastes (EL03)	-	-	-	-	-	-	-	-	-	-	
	Solid waste Pollution from E-wastes (EL04)	-	-	-	-	-	-	-	-	-	-	
	Solid waste Pollution from Batteries (EL05)	-	-	-	-	-	-	-	-	-	-	
	Solid waste Pollution from end-of-life products/ equipment -(EL06)	-	-	-	-	-	-	-	-	-	-	
	Soil Pollution from	-	-	-	-	-	-	-	-	-	-	

	Chemicals (including Pesticides, heavy metals, lead, mercury) (EL07)											
	land use change (change from cropland /forest land to project land) (EL08)	-	-	-	-	-	-	-	-	-	-	
	Others (EL09)	-	-	-	-	-	-	-	-	-	-	
Environment - *Water*	*Reliability/ accessibility of water supply (EW01)*	-	-	-	-	-	-	-	-	-	-	
	Water Consumption from ground and other sources (EW02)	Water will be consumed for the steam generation	-	-	Harmless Groundwater will be used for the boiler unit. The biomass unit had obtained permission from the State Pollution Control Board for Water usage and the quantity of usage is within the regulator limits.	-	-	-	The impact is within the limits as per the regulatory limits and hence further monitoring is not required.	0	-	

	Generation of wastewater (EW03)	Wastewater will be generated from the operation of the plant and domestic use.	Water pollution prevention and control act.[27]	-	Harmless Wastewater/effluent from the plant will be treated and reused with in the plant premises.	-	-	-	Project owner will submit valid regulatory license/approval which confirms the waste water treatment/ discharge in compliance to the regulatory norms	+1	The impact is unlikely to cause any harm	-
	Wastewater discharge without/with insufficient treatment (EW04)	-	-	-	-	-	-	-	-	-	-	-
	Pollution of Surface, Ground and/or Bodies of water (EW05)	-	-	-	-	-	-	-	-	-	-	-
	Discharge of harmful chemicals like marine pollutants / toxic waste (EW06)	-	-	-	-	-	-	-	-	-	-	-
	Others (EW07)	-	-	-	-	-	-	-	-	-	-	-
Environment – *Natural Resources*	*Conserving mineral resources (ENR01)*	-	-	-	-	-	-	--	-	-	-	-
	Protecting/ enhancing	-	-	-	-	-	-	-	-	-	-	-

[27] https://cpcb.nic.in/upload/home/water-pollution/WaterAct-1974.pdf

	plant life (ENR02)											
	Protecting/ enhancing species diversity (ENR03)	-	-	-	-	-	-	--	-	-	-	-
	Protecting/ enhancing forests (ENR04)	-	-	-	-	-	-	-	-	-	-	-
	Protecting/ enhancing other depletable natural resources (ENR05)	This is a renewable energy based thermal project using biomass as a fuel source and hence there is no impact.	-	-	-	-	-	-	--	-	-	-
	Conserving energy (ENR06)	There is no scope for energy conservation since it is a Biomass based thermal energy project. Hence not applicable.										-
	Replacing fossil fuels with renewable sources of energy (ENR07)	The Biomass thermal energy project replaces fossil fuel usage as a fuel source, which would have been otherwise used to generate the thermal in the absence of the project activity.			Harmless The overall impact is positive compared to the baseline alternative.				Considering the occurrence of emission reductions through the thermal energy generation from the Biomass based thermal project. This parameter will be monitored through the monthly steam supply generation from the proposed biomass Project. Monthly steam supply generation will be monitored through the energy meters installed at the project site and steam Generation data will be	+1	The impact is unlikely to cause any harm.	-

									provided for the verification of generation			
	Replacing ODS with non-ODS refrigerants (ENR08)	-	-	-	-	-	-	--	-	-	-	-
	Others (ENR09)	-	-	-	-	-	-	-	-	-	-	-
Net Score:					**+6**							
Project Owner's Conclusion in PSF:					The Project Owner confirms that the Project Activity will not cause any net harm to Environment.							
GCC Project Verifier's Opinion:					-							

E.2. Social Safeguards

Impact of Project Activity on		Information on Impacts, Do-No-Harm Risk Assessment and Establishing Safeguards							Project Owner's Conclusion		GCC project Verifier's Conclusion (To be included in Project Verification Report only)
		Description of Impact (*positive or negative*)	**Legal requirement /Limit, Corporate policies / Industry best practice**	**Do-No-Harm Risk Assessment** (Choose which ever is applicable)			**Risk Mitigation Action Plans (for aspects marked as Harmful)**	**Performance indicator for monitoring of impact.**	**Ex-ante scoring of environmental impact**	**Explanation of the Conclusion**	**3rd Party Audit**
				Not Applicable	**Harmless**	**Harmful**	**Operational / Management Controls**	**Monitoring parameter and frequency of monitoring (as per scoring matrix Appendix-02)**	**Ex- Ante scoring of social impact of the project**	**Ex- Ante description and justification/explanation of the scoring of social impact of the project**	**Verification Process** **Will the Project Activity cause any harm?**
Social Aspects on the identified categories[28] indicated below.	*Indicators for social impacts*	*Describe and identify actual and anticipated impacts on society and stakeholders, both positive or negative, from all sources during normal and abnormal/emergency conditions that may result from constructing and operating of the Project Activity within or outside the project boundary, over which the project Owner(s) has/have control*	*Describe the applicable national regulatory requirements / legal limits or organizational policies or industry best practices 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***	*If social impacts exist but are expected to be in compliance with applicable national regulatory requirements/ stricter voluntary corporate limits by way of plant design and operating principles then the Project Activity is unlikely to cause any harm (is safe) and shall be indicated as* ***Harmless****), project having positive impact on society. To the BAU / baseline scenario must also mark their*	*If negative social impacts exist that will not be in compliance with the applicable national legal/ regulatory requirements or are likely to exceed legal limits, then the Project Activity is likely to cause harm and shall be indicated as* ***Harmful***	*Describe the operational or management controls that can be implemented as well as 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 monitoring approach and the parameters (KPI) to be monitored for each impact irrespective of whether it is harmless of harmful. The frequency of monitoring to be specified as well. Monitoring parameters can be quantitative or qualitative in nature along with the data source*	*-1* *0* *+1*	*Confirm the score of the social impacts of the project with respect to the aspect and its monitored value in relation to legal/regulatory limits (if any) including basis of conclusion*	*Describe how the GCC Verifier has assessed that the impact of Project Activity on social aspects (based on monitored parameters, quantitative or qualitative) and in* ***case of*** *"harmful aspects how has the project owner adopted Risk Mitigation Action / management actions plans and policies to mitigate the risks of negative social impacts to levels that are unlikely to cause any harm.* *Also describe the positive impacts of the project on the society as compared*

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

					*aspect as **"harmless"***						*to the baseline alternative or BAU scenario.*
Reference to paragraphs of Environmental and Social Safeguards Standard		*Paragraph 12 (a)*	*Paragraph 13 (c)*	*Paragraph 13 (d) (i)*	*Paragraph 13 (d) (ii)*	*Paragraph 13 (d) (iii)*	*Paragraph 13 (e) (i)*	*Paragraph 12 (c) and Paragraph 13 (f)*	*Paragraph 23*		*Paragraph 24 and Paragraph 26 (a) (ii)*
Social - *Jobs*	*Long-term jobs (> 10 year) created/ lost (SJ01)*	The project activity leads to the employment generation.	Any employment provided through the project is ensured to meet the criteria and requirement defined in applicable Indian labor laws.	-	Harmless As the impact is positive in nature.	-	-	No of Permanent Jobs to be monitored on annual basis. Ex-Ante 5 permanent jobs will be created.	+1	The project is unlikely to cause any harm.	-
	New short-term jobs (< 1 year) created/ lost (SJ02)	-	-	-	-	-	-	-	-	-	-
	Sources of income generation increased / reduced (SJ03)	By creating additional employment and O&M services in the project region it creates the additional sources of income for the people employed for the project activity.	None	-	Harless This is a positive impact	-	-	Number of employees. HR Records	+1	The project is unlikely to cause any harm	-
	Avoiding discrimin	Project Owner establishes the policy to	None	-	Harmless Project Owner	-	-	HR Policy	+1	The project is unlikely	-

	ation when hiring people from different race, gender, ethnics, religion, marginalized groups, people with disabilities (SJ04) *(Human rights)*	ensure that there is no discrimination based on gender, racism, religion etc. during the recruitment process.			establishes the policy to ensure that there is no discrimination based on gender, racism, religion etc. during the recruitment process.					to cause any harm.	
-Social - *Health & Safety*	*Disease prevention (SHS01)*	*This is a renewable energy-based thermal project using through biomass as a fuel which is clean energy and does not emit any gasses or chemicals impact the livelihood.* *There is no impact.*	-	-	-	-	-	-	-	-	-
	Occupational health hazards (SHS02)	*There is a possibility of physical hazards in project sites due to human intervention or technical failure or emergency*	EHS policy	-	Harmless By establishing EHS policy guidelines, and imparting periodic trainings and providing PPE kits to employees and visitors	-	Establishing EHS Guidelines Imparting Trainings, Keeping Sign boards.	Training to employees	+1	By implementing Risk mitigation measures the project is unlikely to cause any harm.	-
	Reducing / increasing accidents /Incidents/fatality (SHS03)	There is a possibility of accidents/incidents/near miss in project sites due to human intervention or technical failure or emergency.	EHS Policy	-	Harmless By establishing EHS policy guidelines, and imparting periodic trainings and providing PPE kits to	-	Establishing EHS Guidelines Imparting Trainings, Keeping Sign boards.	Training to employees	+1	By implementing Risk mitigation measures the project is unlikely to cause any harm.	-

					employees and visitors						
	Reducing / increasing crime (SHS04)	-	-	-	-	-	-	-	-	-	-
	Reducing / increasing food wastage (SHS05)	-	-	-	-	-	-	-	-	-	-
	Reducing / increasing indoor air pollution (SHS06)	-	-	-	-	-	-	-	-	-	-
	Efficiency of health services (SHS07)	-	-	-	-	-	-	-	-	-	-
	Sanitation and waste management (SHS08)	-	-	-	-	-	-	-	-	-	-
	Other health and safety issues (SHS09)	-	-	-	-	-	-	-	-	-	-
	Add more rows if required	-	-	-	-	-	-	-	-	-	-
Social - *Education*	*specialized training /*	*The employees will receive on job training as per training needs. It*	None	-	Harmless It has a positive impact.	-	-	Number of trainings	+1	This has a positive impact.	-

	education to local personnel (SE01)	*imparts a positive impact by helping employees in all-round development.*									
	Educational services improved or not (SE02)	-	-	-	-	-	-	-	-	-	-
	Project-related knowledge dissemination effective or not (SE03)	*The employees will receive on job training as per training needs. It imparts a positive impact by helping employees in all-round development.*	None	-	Harmless It has a positive impact.	-	-	Number of trainings	+1	This has a positive impact.	-
	Other educational issues (SE03)	-	-	-	-	-	-	-	-	-	-
	Add more rows if required (SE04)	-	-	-	-	-	-	-	-	-	-
Social - *Welfare*	*Improving/ deteriorating working conditions (SW01)*	-	-	-	-	-	-	-	-	-	-
	Community and rural welfare (indigenous people and communities) *(SW02)*	There is a positive impact on the community and rural welfare.	None	-	Harmless. Project activity implementation contributes to the Economic, Environmental, Economical, and social wellbeing for the community. Empower and upskill the local	-	Project Owner made the provision to receive any community needs if any and will address the needs during the project operational period.	The records of community development activities will be maintained	+1	This is a positive impact.	-

					people and youth by training and creating the employment to local people during construction and operation of the project activity.						
	Poverty alleviation (more people above poverty level) (SW03)	-	-	-	-	-	-	-	-	-	-
	Improving / deteriorating wealth distribution/ generation of income and assets (SW04)	-	-	-	-	-	-	-	-	-	-
	Increased or / deteriorating municipal revenues (SW05)	-	-	-	-	-	-	-	-	-	-
	Women's empowerment (SW06) *(Human rights)*	Project activity provides opportunity to provide employment to women in project operations and managerial role as well.	None	-	Harmless Project owner establishes HR policy with strict adherence to gender equality and equal opportunities to the men and	-	-	HR policy	+1	This is a positive impact	-

					women with our any gender discrimination during the recruitment and knowledge dissemination.						
	Reduced / increased traffic congestion (SW07)	-	-	-	-	-	-	-	-	-	-
	Exploitation of Child labour *(Human rights)* *(SW08)*	-	-	-	-	-	-	-	-	-	-
	Minimum wage protection *(Human rights) (SW09)*	-	-	-	-	-	-	-	-	-	-
	Abuse at workplace. (With specific reference to women and people with special disabilities / challenges) *(Human rights) (SW10)*	-	-	-	-	-	-	-	-	-	-

	Other social welfare issues (SW11)	-	-	-	-	-	-	-	-	-	-
	Avoidance of human trafficking and forced labour *(Human rights)* *(SW12)*	-	-	-	-	-	-	-	-	-	-
	Avoidance of forced eviction and/or partial physical or economic displacement of IPLCs *(Human rights)* *(CW13)*	-	-	-	-	-	-	-	-	-	-
	Provisions of resettlement and human settlement displacement *(Human rights)* *(CW14)*	-	-	-	-	-	-	-	-	-	-

	Add more rows if required	-	-	-	-	-	-	-	-	-	-
Net Score:	**+9**										
Project Owner's Conclusion in PSF:	The Project Owner confirms that the Project Activity will not cause any net harm to society.										
GCC Project Verifier's Opinion:	-										

Section F. United Nations Sustainable Development Goals (SDG)

UN-level SDGs	**UN-level Target**	**Declared Country-level SDG**	**Defining Project-level SDGs**				**GCC Project Verifier's Conclusion** (To be included in Project Verification Report only)	
			Project-level SDGs	**Project-level Targets/Actions**	**Contribution of Project-level Actions to SDG Targets**	**Monitoring**	**Verification Process**	**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 or creating a new indicator(s). Refer to previous column for guidance.*	*Define project-level targets/actions in line with nee project level indicators chosen. Define the target date by which the project Activity is expected to achieve the project-level SDG target(s).*	*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*	*Describe the monitoring approach and the monitoring parameters to be applied for each project-level SDG indicator and its correspondi*	*Describe how the GCC Verifier has verified the claims 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)*

						project-level SDG targets	*ng target, frequency of monitoring and data source*		
Goal 1: End poverty in all its forms everywhere									
Goal 2: End hunger, achieve food security and improved nutrition and promote sustainable agriculture									
Goal 3. Ensure healthy lives and promote well-being for all at all ages									
Goal 4. Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all									
Goal 5. Achieve gender equality and empower all women and girls	Achieve gender equality and empower all women and girls by 2030.	Yes See also: Voluntary national review of the republic of India on the implementation of the 2030 agenda for sustainable development	Equal pay for work of equal value" for both men and women and shall hire at least 1 women employee at the site.	No discrimination against women.	No of women employees at site	Contribute to achieve equal rights for men & women	Employment register, complain register & pay slip	Number of women employed directly due to the project activity. As per company policy of Project implementer men & women have equal rights and no discrimination will be tolerated	Yes

		https://sustainabledevelopment.un.org/content/documents/26279VNR_2020_India_Report.pdf						against women.	
Goal 6. Ensure availability and sustainable management of water and sanitation for all									
Goal 7. Ensure access to affordable, reliable, sustainable, and modern energy for all	SDG target 7.2 "By 2030, Increase substantially the share of renewable energy in the global energy mix" Indicator 7.2.1 Renewable energy share in the total final energy consumption	Yes See also: Voluntary national review of the republic of India on the implementation of the 2030 agenda for sustainable development https://sustainabledevelopment.un.org/content/documents/26279VNR_2020_India_Report.pdf	The project activity has an installed a biomass-based cogeneration unit with boiler of 16 TPH and turbine of 0.173 MW capacity. The project will deliver up to 306.4 TJ thermal energy anually	From the start of operation onwards the project activity will deliver 306.4 TJ/year thermal energy and around 32,094 tCO_2 emission reduction annually.	The thermal and electrical energy generated by the biomass briquette fired cogeneration unit will be used as project level indicator. 7.2.1 Renewable energy share in the total final energy consumption	The biomass project contributes directly to achieve the SDG target, because the project activity delivers renewable energy, which would otherwise generate by fossil fuels	The thermal energy generated by the biomass briquette fired boiler is continuously monitored.	The project activity complies with targeted SDGs so far contributing in usage of clean energy for tehrmal energy generation.	Yes
Goal 8. Promote sustained, inclusive, and sustainable economic growth, full and productive employment and decent work for all	SDG Target 8.2 "Achieve higher levels of economic productivity through diversificatio	Yes, Same as described under goal 7.	Employment created by the project activity	As per actual	The number Of permanent created jobs, will be used as project-level	The project activity creates jobs, which diversify and upgrades the commonly	Records maintained for employment	Number of people employed directly due to the project activity	Yes

	n, technological upgrading and innovation, including through a focus on high value added and labor intensive sectors". Indicator 8.2.1: Annual growth rate of real GDP per employee.				indicator	used technology in the energy sector of India, creating employment from project activity.			
Goal 9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation	9.4 Upgrade all industries and infrastructure for sustainability	No	Reductions in Emissions (TCO2e) per unit of product due to project.	Achieve annual emission reductions over the crediting period.	Project is already in operation and complies with the SDG targets.	Achieve annual emission reductions of 23,127 TCO2e over the crediting period for the project	Measurement of monthly steam generation from the project Calculation of amount of actual emission reductions achieved by the project.	-	-
Goal 10. Reduce inequality within and among countries	-	-	-	-	-	-	-	-	-
Goal 11. Make cities and human settlements inclusive, safe, resilient, and sustainable	-	-	-	-	-	-	-	-	-
Goal 12. Ensure sustainable consumption and production patterns	-	-	-	-	-	-	-	-	-

Goal 13. Take urgent action to combat climate change and its impacts	Integrate climate change measures into national policies, strategies and planning. Indicator13. 2.2: Total greenhouse gas emissions per year.	Yes	The project activity will avoid around 23,127 tCO_2 annually compared to the other used power sources (mainly fossil fuels).	The project activity will deliver thermal energy without greenhouse gas emissions	The reduced greenhouse gas emissions per year will be used as proper project-level indicator SDG.	The biomass power plant contributes directly to achieve the SDG target, because the project activity delivers renewable energy, which would otherwise generated by fossil fuel units. Emission reductions achieved per year will be monitored	Thermal energy produced by the biomass fired boiler multiplied with the default CO_2 emission factor of the baseline fuel (as described by the UNFCCC CDM methodology AMS.I.C. Version 22.0Will give the reduced greenhouse gas emissions	The project activity complies with targeted SDGs and will reduce Green house gases.	Yes
Goal 14. Conserve and sustainably use the oceans, seas, and marine resources for sustainable development	-	-	-	-	-	-	-	-	-
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	-	-	-	-	-	-	-	-	-
Goal 16. Promote peaceful and inclusive societies for sustainable development, provide access to 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	-	-	-	-	-	-	-	-	-

SUMMARY	Targeted	Likely to be Achieved
Total Number of SDGs	**5**	**5**
Certification label (Bronze, Silver, Gold, Platinum, or Diamond) for the ACCs as defined in the PSF	**Platinum**	

Section G. Local stakeholder consultation

G.1. MODALITIES FOR LOCAL STAKEHOLDER CONSULTATION

The local stakeholders were identified and informed about the proposed project activity by circulating pamphlets in nearby local areas and by sending individual letters briefing the scope, nature and description of the project.

A local stakeholder meeting was organized on 11/03/2019 and 20/08/2018 at the project site. The minutes of meeting shall be made available to the GCC verifier during the project verification process.

Group of stakeholders identified for this project includes following

- Employees at the site
- Transport vendors
- Labours from Fuel Aggregators

The impacts of these projects were discussed and explained highlighting the employment opportunities both long term and short term, increased income and thereby leading to improvement in living standard of the people.

Total 14 and 9 stakeholders including local villagers were present during the meeting. The list of stakeholders have been provided below.

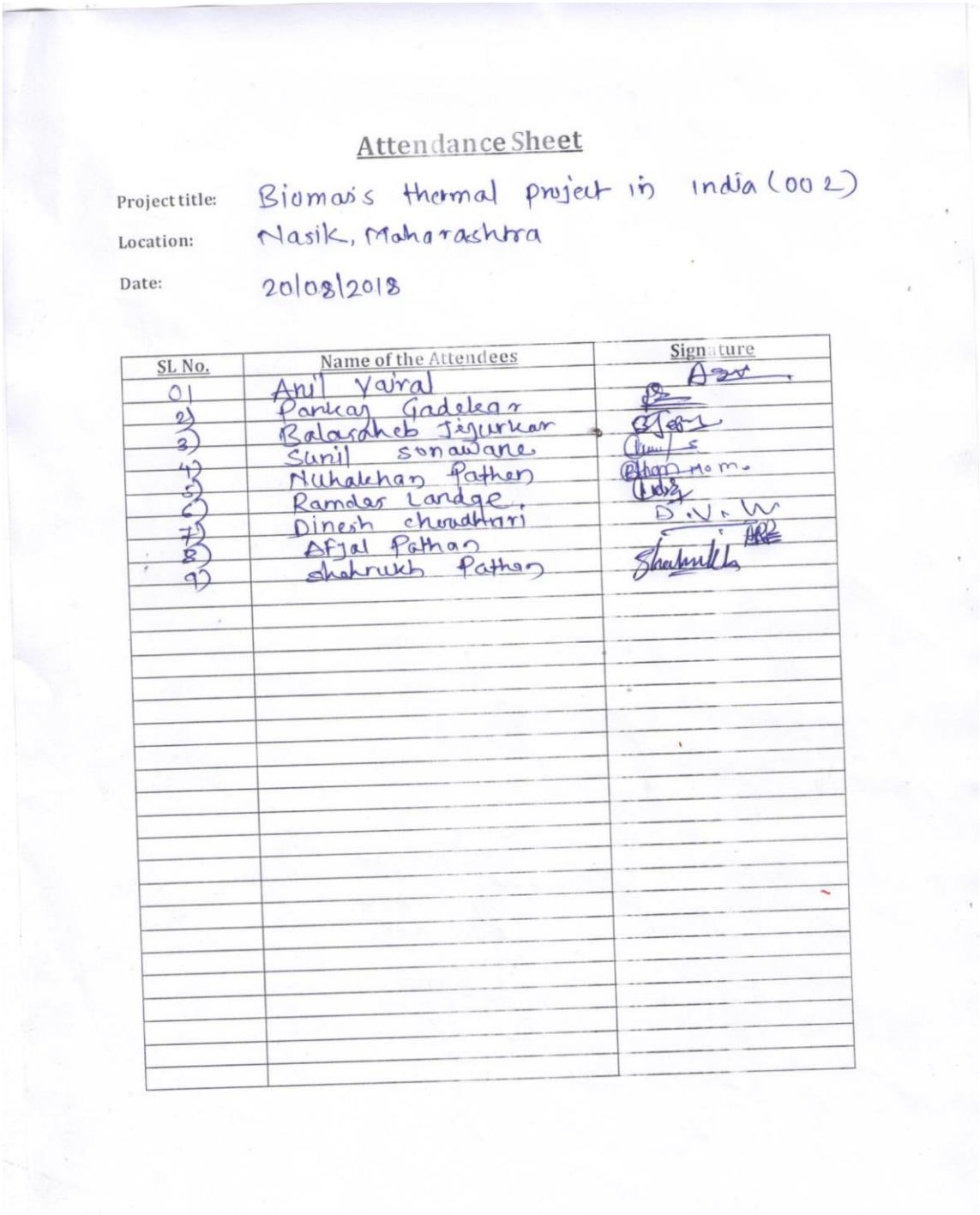
Attendance Sheet

Project title: Bio Mass thermal Project in India (002)

Location: Bharuch / Panali, Gujarat

Date: 11/03/2019

Sl. No.	Name of the Attendees	Signature
01.	Ganesh B. Pawar	
02.	Jaydeep R. Patel	
03.	Vipul vasava	
04.	Kamlesh Patel	
05.	Amrut vasava	
06.	Digvijay Kapletia	
07.	Sanjay vasava	
08.	Rahul vasava	
09.	Ajay vasava	
10.	Sunny vasava	
11.	Bhavin vasava	
12.	Rakesh vasava	
13)	Saurabh Vyas	
14)	Rajendra Singh	



Attendance Sheet

Project title: Biomass thermal project in India (0012)

Location: Nasik, Maharashtra

Date: 20/08/2018

SL No.	Name of the Attendees	Signature
01	Anil Vaival	
2)	Pankaj Gadekar	
3)	Balasaheb Jigurkar	
4)	Sunil Sonawane	
5)	Nihalehan Pathan	
6)	Ramdas Landge	
7)	Dinesh Chaudhari	
8)	Afjal Pathan	
9)	Shahrukh Pathan	

G.2. SUMMARY OF COMMENTS RECEIVED

There were no adverse comments received during stakeholders meeting. Persons attending stakeholder meeting have expressed happiness as this may lead to employment generation and improvement in environment.

G.3. CONSIDERATION OF COMMENTS RECEIVED

Since no adverse comments have been received, no action is required to be taken.

Section H. Approval and authorization

>> Not Applicable

APPENDIX 1. CONTACT INFORMATION OF PROJECT OWNERS

Project Owner name (as per LON/LOA)	Thermax Onsite Energy Solutions Limited
Country	India
Address	Thermax House, 14 Mumbai-Pune Road, Wakadewadi, Pune 411 003, Maharashtra, India
Telephone	+91- 9811348505
Fax	NA
E-mail	Mallika.Bose@thermaxglobal.com
Website	https://www.thermaxglobal.com/
Contact person	Mallika Bose (Primary Contact)

APPENDIX 2. AFFIRMATION REGARDING PUBLIC FUNDING

>> Thermax Onsite Energy Solutions Limited declares that there 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

>> Refer to section G.

APPENDIX 7. SUMMARY OF DE-REGISTERED CDM PROJECT OR PROJECTS FROM OTHER GHG / NON-GHG PROGRAMS (TYPE B)

>> Not Applicable as project category is A2.

Appendix 8. FURTHER INFORMATION ON DETERMINATION OF BUNDLE IN PROJECT ACTIVITY.

>> Not Applicable

Appendix 9. PUBLIC DECLARATION FOR A2 (Sub Type 2 and 3), B1 & B2 PROJECTS ON NON CONTINUATION FROM CDM/GHG/NON-GHG PROGRAMS.

>> Not Applicable

DOCUMENT HISTORY

Version	Date	Comment
V 4.0	27/09/2022	▪ Revised version released on approval by Steering Committee as per GCC Program Process. ▪ Revised version contains following changes: ○ Introduced A3 type projects A2 project sub-types. ○ Included revised Declaration by the 'Authorized Project Owner and focal point' on GCC requirements. ○ Included modified format for E+/S+/ SDG assessment. ○ Revised instructions for filling in the PSF. ○ Editorial changes to the document.
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 ○ Revised Table in section B.7.2 on Monitoring-program of risk management actions ○ Revised Table in section E.1 on Environmental Safeguards ○ Revised Table in section E.1 on Social Safeguards ○ 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: ○ Change of name from Global Carbon Trust (GCT) to Global Carbon Council (GCC). ○ 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). ○ Feedback from Technical Advisory Board (TAB) of ICAO on GCC submission for approval under CORSIA[29];

[29]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

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

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