

Monitoring Report CARBON OFFSET UNIT (CoU) PROJECT

Title: 7.5 MW Biomass based Power Project by SCPL, India

Version: 01 Date: 28/02/2025

CoU Issuance Period: 4 years, 00 months Monitoring Period under UCR: 01/01/2021 to 31/12/2024



Monitoring Report (MR) CARBON OFFSET UNIT (CoU) PROJECT

Monitoring Report					
Title of the project activity	7.5 MW Biomass based Power Project by SCPL, India				
UCR Project Registration Number	129				
Version	01				
Completion date of the MR	28/02/2025				
Monitoring period number and duration of this monitoring period	Monitoring Period Number: 01 Duration of this monitoring Period: (first and last days included (01/01/2021 to 31/12/2024)				
Project participants	Suryaa Chambal Power Limited				
Host Party	India				
Applied methodologies and standardized baselines	AMS I.D "Grid-connected Renewable electricity generation", Version 18.0 Standardized Methodology: Not Applicable.				
Sectoral scopes	01- Energy Industries (renewable/non- renewable sources)				
Estimated amount of GHG emission	2021: 41,588 CoUs (41,588 tCO2eq)				
reductions for this monitoring period in the registered PCN	2022: 38,526 CoUs (38,526 tCO2eq)				
	2023: 39,023 CoUs (39,023 tCO2eq)				
	2024: 27,113 CoUs (27,113 tCO2eq)				
Total:	146250 CoUs (146250 tCO2eq)				

SECTION A. Description of project activity

A.1. Purpose and general description of project activity >>

a) Purpose of the project activity and the measures taken for GHG emission reductions >>

The project activity is proposed under UCR with the title "7.5 MW biomass based Power Project by SCPL, India" is a biomass-based power project located in village Rangpur of Kota district in the state of Rajasthan (India). The project is an operational activity with continuous reduction of GHG, registered and verified under Clean Development Mechanism (CDM) of UNFCCC.

The proposed project activity is promoted by Suryaa Chamball Power Limited (herein after called as Project Proponent or PP) and is a public limited company. The proposed project activity is installation and operation of one steam turbine generator having capacity of 7500 kW where steam is fed from biomass fired boiler in village Rangpur of Kota district in the state of Rajasthan in India.

The project activity has already been commissioned on 31/03/2006.

The net generated electricity from the project activity is sold to transmission company of state electricity board i.e., Rajasthan Rajya Vidyut Prasaran Nigam Limited (RRVPNL), which is a transmission company of the Rajasthan State Electricity Board (RSEB) under the Power Purchase Agreement (PPA) signed between the PP and the utility. In pre-project scenario, electricity delivered to the grid by the project activity would have otherwise been generated by the operation of fossil fuel-based grid-connected power plants and by the addition of new fossil fuel-based generation sources in the grid. As the nature of the biomass project, no fossil fuel is involved for power generation in the project activity apart from emergency fuel. The electricity produced by the project is directly contributing to climate change mitigation by reducing the anthropogenic emissions of greenhouse gases into the atmosphere by displacing an equivalent amount of power at grid.

The purpose of the project activity is to utilize the surplus biomass available in the region for generation of electricity and supply to the Indian Grid System to meet the ever-increasing demand for energy in the region and country. Thus, the project activity results in the reduction of GHG emission associated with generation of equivalent amount of power in the fossil fuel dominant electricity grid.

The electricity generated from the current monitoring period from 01/01/2021 to 31/12/2024 is 176570.007 MWh. The total emission reduction achieved by project activity is 146250 tCO₂e.

b) Brief description of the installed technology and equipment>>

The project activity involves the installation of 7.5 MW fully condensing steam turbine and a steam generator of 35 tonnes per hour (TPH) capacity. The steam generator is designed to generate 35 tonnes per hour (TPH) steam at 67 kg/cm2 pressure and at $450\pm5^{\circ}$ C temperature at the superheater outlet considering feed water and temperature at economizer inlet as 170° C. The steam pressure and temperature at the inlet to the turbine shall be 64 kg/cm2 pressure and $445\pm5^{\circ}$ C. Project steam generator utilizes renewable biomass i.e., mustard husk and stalks, corn cobs, bagasse, and other available agricultural wastes as fuel.

The project is likely to export surplus power to RRVPNL after meeting the in-house auxiliary demand (of about 700 kW). In this regard, the power purchase agreement (PPA) for a 20-year period has been signed with the RRVPNL, which is still valid, for the sale of entire power generated by the project. The power plant is designed to generate 7.5 MW gross power with net exportable power of 6.8 MW at 33 KV voltage through a step-up transformer.

c) Relevant dates for the project activity (e.g. construction, commissioning, continued operation periods, etc.) >> UCR Project ID or Date of Authorization: 129 Start Date of Crediting Period: 01/01/2021 Project Commissioned: 31/03/2006 Monitoring Period: 01/01/2021 to 31/12/2024

d) Total GHG emission reductions achieved or net anthropogenic GHG removals by sinks achieved in this monitoring period>>

The total GHG emission reductions achieved in this monitoring period is as follows:

Summary of the Project Activity and ERs Generated for the Monitoring Period			
Start date of this Monitoring Period	01/01/2021		
Carbon credits claimed up to	31/12/2024		
Total ERs generated (tCO _{2eq})	146250 tCO ₂ e		
Leakage	0		

e) Baseline Scenario>>

The baseline scenario identified at the PCN stage of the project activity is that the electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources into the grid.

A.2. Location of project activity>>

Country: India District: Kota Village: Rangpur State: Rajasthan

Latitude: 25°16'36" N Longitude: 75°56'22" E The representative location map is included below:



(Image courtesy: Google maps & images) A.3. Parties and project participants >>

Party (Host)	Participants
India	M/s Suryaa Chambal Power Limited (Project Owner) 602, 'A' Wing, Prathmesh Tower Premises CHS Ltd., S.B. Marg, Lower Parel (W), Mumbai, Maharashtra 400 013, India

Other Parties:

Party (Host)	Participants
India	M/s. Creduce Technologies Private Limited (Aggregator) Contact person: Shailendra Singh Rao Mobile: +91 9016850742, 9601378723 Address: 2-O-13,14 Housing Board Colony, Banswara, Rajasthan -327001, India

A.4. References to methodologies and standardized baselines >>

SECTORAL SCOPE: 01- Energy Industries (renewable/non-renewable sources)

TYPE - I: Renewable energy project

CATEGORY:

AMS I.D.- Grid-connected renewable electricity generation, Version 18.0

The tools referenced in this methodology used for the proposed project includes:

- Guidance on the Assessment of Investment Analysis- Version 5¹
- Tool to calculate the emission factor for an electricity system- Version $2.2.0^2$
- General guidance on leakage in biomass project activities, version 3³.

Applicability of methodologies and standardized baselines >>

The scale of the activity is under the project Type-I and the project activity remained under the limit of 15 MW every year during the crediting period. Therefore, the GHG emission reductions that are claimed remains within the limit of its type as per the applied methodologies.

A.5. Crediting period of project activity >>

Length of the crediting period corresponding to this monitoring period: 4 years, 00 months. Date: 01/01/2021 to 31/12/2024 (inclusive of both dates).

A.6. Contact information of responsible persons/entities >>

Details	Information
Name of entity:	M/s. Creduce Technologies Private Limited (Aggregator)
Role:	Project Consultant (Authorized Representative of PP)
Contact:	Shailendra Singh Rao Mobile: +91 9016850742, 9601378723

¹ https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-27-v13.pdf/history_view

² http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v2.pdf

³ http://cdm.unfccc.int/Reference/Guidclarif/ssc/methSSC_guid04.pdf

SECTION B. Implementation of project activity

B.1. Description of implemented registered project activity >>

a) Provide information on the implementation status of the project activity during this monitoring period in accordance with UCR PCN>>

The project activity involves the installation of 7.5 MW fully condensing steam turbine and a steam generator of 35 tonnes per hour (TPH) capacity. The steam generator is designed to generate 35 tonnes per hour (TPH) steam at 67 kg/cm2 pressure and at $450\pm5^{\circ}$ C temperature at the super heater outlet considering feed water and temperature at economizer inlet as 170° C. The steam pressure and temperature at the inlet to the turbine shall be 64 kg/cm2 pressure and $445\pm5^{\circ}$ C.

Project steam generator utilizes renewable biomass i.e., mustard husk and stalks, corn cobs, bagasse, and other available agricultural wastes as fuel. The project is likely to export surplus power to RRVPNL after meeting the in-house auxiliary demand (of about 700 kW). In this regard, the power purchase agreement (PPA) for a 20-year period has been signed with the RRVPNL, which is still valid, for the sale of the entire power generated by the project. The power plant is designed to generate 7.5 MW gross power with net exportable power of 6.8 MW at 33 KV voltage through a step-up transformer

Fuels	%C	%H2	%O2	%N2	%S	%M	%Ash	GCV (kcal/kg)
Bagasse	22.5	3	23	-	-	50	1.5	2270
Mustard husk	39.88	4.17	39.37	0.67	0.6	9.1	6.7	3620
Corn cobs	30.33	4.35	-	-	-	30.64	1.55	3480

All design calculations are based on the fuel composition referred to table below.

Along with the 35 TPH boiler and the 7.5 MW Turbo-generator (TG), the other auxiliary units of the plant would include:

- 1. Fuel handling system with storage and processing arrangements
- 2. Ash handling system
- 3. Air pollution control device
- 4. Cooling water system and cooling tower
- 5. De-Mineralized (DM) water plant
- 6. Sire protection system
- 7. Air conditioning and ventilation
- 8. Complete electrical system for power plants and grid interconnection including power evacuation, instrumentation, and control system, etc.

The power would be generated at the biomass-based power plant, then evacuated from the 11/33 kV, high voltage switch yard and will be exported to the RRVPNL grid system.

Steam Generator	Make
35 TPH, 67 kg/cm ² , 450 ±5°C	WEG Indusrias S.A.
Turbine Details	Make
7.5 MW Fully Condensing	Triveni Engineering and Industries Ltd

The plant has been successfully commissioned on 31/03/2006. The plant has been in operation continuously since commissioning. However, during the current monitoring period i.e. 01/01/2021 to 31/12/2024.

In the absence of the project activity the equivalent amount of electricity would have otherwise been

generated by the operation of fossil fuel-based grid-connected power plants and fed into Indian grid system, hence baseline scenario of the project activity is the grid-based electricity system, which is also the pre-project scenario as discussed in the previous section.

B.2 Do no harm or Impact test of the project activity>>

There was no harm identified form the project and hence no mitigations measures are applicable.

Rational: as per the project owner has obtained a Commissioning certificate from the Pollution Control Board to install and operate boiler and adheres to the environmental compliance mentioned in CTO, hence project activity has no damage to environment.

Under Environment:

Environmental criteria may include a company's energy use, waste, pollution, natural resource conservation, and treatment of animals, etc. For the project proponent, the energy use pattern is now based on waste generation due to the project and it also contributes to GHG emission reduction and conservation of depleting energy sources associated with the project baseline. Also, the criteria can be further evaluated on the basis of any environmental risks that the company might face and how those risks are being managed by the company. Here, as the power generation will be based on waste generation, the risk of environmental concerns associated with non-renewable power generation and risk related to increasing cost of power, etc. are now mitigated. Hence, the project contributes to ESG credentials.

Under Social:

Social criteria reflect on the company's business relationships, qualitative employment, working conditions with regard to its employees' health and safety, interests of other stakeholders' etc. With respect to this project, the project proponent has robust policies in place to ensure equitable employment, health & safety measures, local jobs creation etc. Also, the organizational CSR activities directly support local stakeholders to ensure social sustainability. Thus, the project contributes to ESG credentials.

Under Governance:

Governance criteria relate to overall operational practices and accounting procedure of the organization. With respect to this project activity, the PP practices a good governance practice with transparency, accountability and adherence to local and national rules & regulations etc. This can be further referred from the company's annual report. The electricity generated from the project can be accurately monitored, recorded and further verified under the existing management practice of the company. Thus, the project and the proponent ensure good credentials under ESG.

B.3. Baseline Emissions>>

This section provides details of emission displacement rates/coefficients/factors established by the applicable methodology selected for the project.

As per para 19 of the approved consolidated methodology AMS-I.D. Version 18, if the project activity is the installation of a new grid-connected renewable power plant/unit, the baseline scenario is the following:

"The baseline scenario is that the electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources into the grid".

B.4. Debundling>>

This project activity is not a debundled component of a larger project activity.

However, this project actual implementation was considered only for 7.5 MW capacity which is the current project activity. Hence, there is no concern related to de-bundling from the project implementation aspect as well.

SECTION C. Application of methodologies and standardized baselines

C.1. References to methodologies and standardized baselines >>

SECTORAL SCOPE: 01- Energy Industries (renewable/non-renewable sources)

TYPE - I: Renewable energy project

CATEGORY: AMS I.D.- Grid connected renewable electricity generation, Version 18.0

C.2. Applicability of methodologies and standardized baselines >>

Applicability as per AMS-I. D version 18.0	Project Case
1. This methodology comprises renewable energy	The project activity is a renewable energy project
generation units, such as photovoltaic, hydro,	i.e., a biomass-based power project which falls
tidal/wave, wind, geothermal sand renewable	under applicability criteria option 1 b) The project
biomass:	owner has done a power purchase agreement with
a. Supplying electricity to a national or a regional	RVPN to supply the electricity generated by power
grid; or	plant.
b. Supplying electricity to an identified consumer	
facility via national/regional grid through a	
contractual arrangement such as wheeling.	
1. This methodology is applicable to project	The option (a) of applicability criteria is applicable
activities that:	as the project is a greenfield plant/unit. Hence the
a. Install a greenfield plant;	project activity meets the given applicability
b. Involve a capacity addition in (an) existing	criterion.
plant(s);	
c. Involve a retrofit of (an) existing plant(s);	
d. Involve a rehabilitation of (an) existing plant(s)/	
unit(s); or	
e. Involve a replacement of (an) existing plant(s).	
2. Hydro power plants with reservoirs that satisfy	The project activity involves the installation of 35
at least one of the following conditions are	TPH Thermal boiler having turbine capacity of 7.5
eligible to apply this methodology:	MW; hence, this criterion is not applicable.
a. The project activity is implemented in an	
existing reservoir with no change in the volume	
of reservoir;	
b. The project activity is implemented in an	
existing reservoir, where the volume of reservoir	
is increased and the power density of the project	
activity, as per definitions given in the project	
emissions section, is greater than 4 W/m2.	
c. The project activity results in new reservoirs and	
the power density of the power plant, as per	

definitions given in the project emissions	
section, is grated than 4 W/m^2	
3. If the new unit has both renewable and non-	The project activity involves the installation of 35
renewable components (e.g., a wind/diesel unit),	TPH Thermal boiler having turbine capacity of 7.5
the eligibility limit of 15 MW for a small-scale	MW; hence, this criterion is not applicable.
CDM project activity applies only to the	
renewable component. If the new unit co-fires	
fossil fuel, the capacity of the entire unit shall	
not exceed the limit of 15 MW.	
4. Combined heat and power (co-generation)	The project is not cogeneration system; hence this
systems are not eligible under this category.	criterion is not applicable.
5. In the case of project activities that involve the	There is no capacity addition, thus the criterion is
capacity addition of renewable energy	not applicable to this project activity
generation units at an existing renewable power	
generation facility, the added capacity of the	
units added by the project should be lower than	
15 MW and should be physically distinct from	
the existing units.	
6. In the case of retrofit or replacement, to qualify	The project activity involves the installation of 35
as a small-scale project, the total output of the	TPH Thermal boiler having turbine capacity of 7.5
retrofitted or replacement unit shall not exceed	MW; hence, this criterion is not applicable.
the limit of 15 MW.	
7. In the case of landfill gas, waste gas, wastewater	The project activity involves the installation of 35
treatment and agro-industries projects, recovered	TPH Thermal boiler having turbine capacity of 7.5
methane emissions are eligible under a relevant	MW; hence, this criterion is not applicable.
Type III category. If the recovered methane is	
used for electricity generation for supply to a	
grid, then the baseline for the electricity	
component shall be in accordance with	
procedure prescribed under this methodology. If	
the recovered methane is used for heat	
generation or cogeneration other applicable	
Type-I methodologies such as "AMS-I.C.:	
Thermal energy production with or without	
electricity" shall be explored.	
8. In case biomass is sourced from dedicate	The project activity does not involve biomass
plantations, the applicability criteria in the tool	sourced from dedicated plantations.
"Project emissions from cultivation of biomass"	
shall apply.	

C.3 Applicability of double counting emission reductions >>

There is no double accounting of emission reductions in the project activity due to the following reasons:

- The project is uniquely identifiable based on its location coordinates,
- The project has a dedicated commissioning certificate and connection point,
- The project is associated with energy meters which are dedicated to the generation/feeding point with the grid.
- Project is a CDM Registered activity, and carbon credits are verified and issued till 31 Dec 2020. More details and explanations provided under Section C.6 (Prior History)

C.4. Project boundary, sources and greenhouse gases (GHGs)>>

As per applicable methodology AMS I.D.- "Grid-connected Renewable electricity generation", Version 18.0 "The spatial extent of the project boundary encompasses the biomass feedstock collection and handling systems, the biomass combustion or conversion unit (e.g., boiler or gasifier), energy conversion equipment such as the steam turbine and generator, auxiliary systems, heat recovery units, power transmission and synchronization systems, steam flow piping, flue gas ducts, and other related infrastructure, as well as the end-user facilities where the generated electricity will be consumed." Thus, the project boundary includes the waste heat recovery power plant and the Indian grid system.

	Source	Gas	Included?	Justification/Explanation
		CO ₂	Yes	Main emission source
ine	Grid connected	CH ₄	No	Minor emission source
sel	electricity	N ₂ O	No	Minor emission source
Ba	generation	Other	No	No other GHG emissions were emitted from the
				project
<u>ц</u>	Greenfield	CO ₂	No	No CO ₂ emissions are emitted from the project
jeci	biomass-based	CH ₄	No	Project activity does not emit CH ₄
Jro	power generation	N ₂ O	No	Project activity does not emit N ₂ O
	project activity	Other	No	No other emissions are emitted from the project

C.5. Establishment and description of baseline scenario (UCR Protocol) >>

As per the approved consolidated methodology AMS I.D.- Grid connected renewable electricity generation, Version 18.0, if the project activity is the installation of biomass base energy generation project, the baseline scenario is the following:

"The baseline scenario is that the electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources into the grid."

The project activity involves setting up biomass-based energy generation project and to use for sell to grid. In the absence of the project activity, the equivalent amount of power would have been supplied by the Indian grid, which is fed mainly by fossil fuel-fired plants. Hence, the baseline for the project activity is the equivalent amount of power produced at the Indian grid.

The UCR recommends an emission factor of 0.9 tCO2/MWh for the 2021-2023 years as a fairly conservative estimate. Also, for the vintage 2024, the combined margin emission factor calculated from the CEA database in India results in lower emissions than the UCR recommended emission factor, hence 0.757 tCO₂/MWh Hence, the CEA recommended emission factor has been considered to calculate the emission reduction under a conservative approach.

• Net GHG Emission Reductions and Removals

Thus, ERy = BEy – PEy – LEy Where: ERy = Emission reductions in year y (tCO2e/y) BEy = Baseline Emissions in year y (tCO2e/y) PEy = Project emissions in year y (tCO2e/y) LEy = Leakage emissions in year y (tCO2e/y)

Baseline Emissions:

Baseline emissions include only CO2 emissions from electricity generation in power plants that are displaced due to the project activity. The methodology assumes that all project electricity generation above baseline levels would have been generated by existing grid-connected power plants and the addition of new grid-connected power plants. The baseline emissions are to be calculated as follows:

 $BE_{elec,y}$ = Baseline emissions due to displacement of electricity during the year y in tons of CO_2

 $EG_{i,j,y}$ = The quantity of electricity supplied to the recipient *j* by generator, that in the absence of the project activity would have been sourced from *i*th source (*i* can be either grid or identified existing source) during the year *y* in MWh.

 $EF_{Elec,i,j,y}$ = The CO₂ emission factor for the electricity source *i* (grid or identified existing source), displaced due to the project activity, during the year *y* in tons CO₂/MWh.

• Project Emissions

As per the UCR notification dated 04/10/2023 for the biomass-based grid power supply projects "For microscale and small-scale project activities, apply a default emission factor of 0.0142 tCO₂/tonne of biomass or biomass residue or biomass-based briquettes, to determine the final amount of emission reductions that can be claimed per vintage"

Hence for the period 2021-2024, UCR recommended emission factor of 0.0142 tCO₂/tonne of biomass has been applied in project emissions and subsequently emission reductions are calculated.

Leakage Emission

No leakage is applicable under this methodology.

Hence, LE = 0

The actual emission reduction achieved during the first CoU period shall be submitted as a part of the first monitoring and verification. However, for the purpose of an ex-ante estimation, the following calculation has been submitted:

Year	Biomass consumption (Tonnes)	Net Electricity supplied to the grid	Emission factor	Baseline Emissions	Project Emissions	Leakage Emissions	Emission Reductions
		EG _{BL,y}	tCO ₂ /MWh	tCO ₂	tCO ₂	tCO ₂	tCO ₂
		MWh		2		2	
2021	121566	60174		54156	1726.2372	0	54156
2022	114615	61057	0.9*	54951	1627.533	0	54951
2023	115875	55586		50027	1645.425	0	50027
2024	150550	67855	0.757***	51367	2137.81	0	51367
Total	1155989	566816	-	481103	7137.0052	0	146250

Notes:

*UCR recommended emission factor

**CEA recommended emission factor

Hence Net GHG emission reduction:

= Baseline Emission – Project Emission – Leakage Emission

= 481103-7137.00-0 = 146250 tCO₂e (i.e., 146250 CoUs)

C.6. Prior History>>

- a) The project activity was applied under Clean Development Mechanism (CDM) of UNFCCC to consider generation or issuance of carbon credits under the project ID and title "Project: 0347 Chambal Power Limited's (CPL) proposed 7.5 MW biomass-based power project at Rangpur, Kota District, Rajasthan, India" and got registered on 05 May 2007 with first crediting period of 7 years i.e., from 01st Mar 2006 to 28th Feb 2013. During this crediting period PP has taken carbon credits for entire period. After completion of first, PP had renewed the project for both second & third crediting periods of 7 years each, viz. from 01st Mar 2013 to 29th Feb 2020 and 1st Mar 2020 to 28th Feb 2027. During the 2nd crediting period, PP has taken carbon credits for entire period. Currently, project is operational under 3rd crediting period under CDM and carbon credits are verified and issued till 31st Dec 2020.
- b) The project was not applied under any other GHG mechanism apart from CDM; also, for the current period of COUs, the CDM verification has not been initiated. Hence project will not cause double accounting of carbon credits (i.e., CoUs).

C.7. Monitoring period number and duration>>

Number: First Monitoring Period under UCR Duration: 4 years, 00 months 01/01/2021 to 31/12/2024 (inclusive of both dates)

C.8. Changes to start date of crediting period >>

There is no change in the start date of crediting period; the project is applied under UCR with its first crediting period starting from 01/01/2021.

C.9. Permanent changes from PCN monitoring plan, applied methodology or applied standardized baseline >>

Not applicable.

C.10. Monitoring plan>>

Data and Parameters (ex-ante values):

Data / Parameter	UCR recommended emission factor
Data unit	tCO ₂ /MWh

Description	A "grid emission factor" refers to a CO ₂ emission factor (tCO ₂ /MWh) which will be associated with each unit of electricity provided by an electricity system. The UCR recommends an emission factor of 0.9 tCO ₂ /MWh for the 2014-2020 years as a conservative estimate for Indian projects not previously verified under any GHG program. Hence, the same emission factor has been considered to calculate the emission reduction under a conservative approach.
Source of data	UCRStandardAug2024updatedVer7_020824191534797526.pdf https://cea.nic.in/wp- content/uploads/2021/03/User_Guide_Version_20.0.pdf
Value applied	0.9 0.757
Measurement methods and procedures	
Monitoring frequency	Ex-ante fixed parameter
Purpose of Data	For the calculation of Emission Factor of the grid
Additional Comment	The combined margin emission factor as per CEA database (current version 20, Year 2024) results into higher emission factor. Hence for 2024 vintage CEA default emission factor remains conservative.

Data / Parameter	NCV _{k,y}
Data unit	GJ/mass or volume unit
Description	Net calorific value of biomass type k
Source of data	Laboratory record (Archived on paper)
Value applied	3,121.43
Measurement methods	IPCC Default Value is considered.
and procedures	OR
	Monitoring equipment – Bomb Calorimeter
	Accuracy class- 0.1
	Serial number- 3284
	Calibration frequency- Annual
	Date of last calibration-06/08/2018
	NCV = $2332 \square$ Temperature $\square 30.32$ / weight of the sample 2332
	= water equivalent weight
	30.32 = calorific value of Nicrom wire and calorific value of cotton
	thread.
	Water equivalent = $H \square M \square (CV_t + CV_w) / T$
	Where:
	H = Calorific value of Benzoic acid in cal/gm
	M = Mass of sample in gm
	CV_t = calorific value of thread (per cm = 2.1 cal)
	CV_w = calorific value of ignition wire (per cm = 2.331 cal)
	T = final rise in temperature

Purpose of Data	Calculation of baseline emission
Comments	The data will be archived electronically, and the archived data will be kept for 2 years beyond the Crediting Period

Data / Parameter	NCV _{i,y}
Data unit	MJ per unit volume or mass unit
Description	Net calorific value of fossil fuel type i
Source of data	The project proponent chooses default value option i.e., IPCC default values at the upper limit of the uncertainty at a 95% confidence interval as provided in Table 1.2 of Chapter 1 of Vol. 2 (Energy) of the 2006 IPCC Guidelines on National GHG Inventories and is fixed Ex-ante. This is in accordance to the "Tool to calculate project or leakage CO2 emissions from fossil fuel combustion", latest version applied.
Value applied	0.0433
Measurement methods and procedures	The net calorific value of diesel has been sourced from IPCC 2006 default value at the upper limit of the uncertainty at a 95% confidence interval and any future revision of the IPCC guidelines will be taken into account in determining the same.
Purpose of Data	Calculation of project emission
Comments	The data will be archived electronically, and the archived data will be kept for 2 years beyond the Crediting Period

Data / Parameter	EF _{CO2,i}
Data unit	tCO ₂ e/TJ
Description	CO2 emission factor of fossil fuel type i
Source of data	IPCC default value
Value applied	74.8
Measurement methods and procedures	The project proponent chooses default value option i.e., IPCC default values at the upper limit of the uncertainty at a 95% confidence interval as provided in Table 1.2 of Chapter 1 of Vol. 2 (Energy) of the 2006 IPCC Guidelines on National GHG Inventories and is fixed Ex-ante. This is in accordance to the "Tool to calculate project or leakage CO2 emissions from fossil fuel combustion", latest version applied.
Purpose of Data	Calculation of project emission
Comments	This parameter is fixed ex-ante for the entire crediting period.

Data and Parameters to be monitored (ex-post monitoring values):

Note: For the purpose of baseline ER accounting only one ex-post parameter is relevant, i.e. Net Electricity supplied to the Grid by the project activity (EG $_{BL,y}$). However, in line with the registered CDM monitoring plan, few other monitoring parameters are also included. Hence, at the time of baseline emission reduction calculation only the EG $_{BL,y}$ will be used; whereas other parameters may be considered only for reporting purposes.

A.	Main Monitoring Parameter for calculation:
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Data / Parameter	EG _{BL,y}
Data unit	MWh / year
Description	Net electricity supplied to the grid by the project activity
Source of data	Monthly Joint Meter Readings (JMRs)
Measurement	Monitoring equipment – Energy Meter
procedures (if any):	Accuracy class - 0.2
	Serial number - "RJB 89896" - Main Meter and "RJB 89897" - Check
	Meter
	Calibration frequency- Annual
	Date of last calibration $-02/07/2018$
	Measured readings of the energy meter installed at the SCPL plant
	switchyard outgoing feeder grid interconnection point. This will be
	the state electricity beard. This record will be erabited and stored
	the state electricity board. This record will be archived and stored.
	For example, the difference between the measured quantities of gross
	electricity supplied to grid and auxiliary consumption will be
	considered as net export:
	$EG_{BJ,y} = EG_{Gross} - EG_{aux}$
Measurement Frequency:	Monthly
Value applied:	44142.501 MWh/year
QA/QC procedures	Calibration of the Main meters will be carried out once in five (5) years
applied:	as per National Standards (as per the provision of CEA, India) and
	faulty meters will be duly replaced immediately as per the provision of
	power purchase agreement.
	Cross Checking:
	The meter reading is cross checked with the sales receipts of electricity.
	The meters installed are owned by the state utility and the meter is tri-
D (1)	vector type of meter which can measure both export and import.
Purpose of data:	The Data/Parameter is required to calculate the baseline emission.
Any comment:	All the data will be archived till a period of two years from the end of the crediting period.

B. Other Monitoring Parameters for reporting:

Data / Parameter	EG _{Gross}
Data unit	MWh / year
Description	Quantity of gross electricity supplied to the grid in year y
Source of data	Logbook record (manually and Electronically archived)
Measurement	Monitoring equipment – Energy Meter
procedures (if any):	Accuracy class - 0.5
	Serial number - 4223178
	Calibration frequency - Annual
	Date of last calibration $-02/07/2018$
	Measured readings of the energy meter installed at the SCPL plant
	switchyard outgoing feeder grid interconnection point. This will be
	recorded every month by representative officials of SCPL. This record
	will be archived and stored.
Measurement Frequency:	Monthly (but Data will be monitored continuously)
Value applied:	49012.716 MWh/year
QA/QC procedures	Calibration of the Main meters will be carried out once in five (5) years
applied:	as per National Standards (as per the provision of CEA, India) and
	faulty meters will be duly replaced immediately as per the provision of
	power purchase agreement.
	Cross Checking:
	The meter reading is cross checked with the sales receipts of electricity.
	The meters installed are owned by the state utility and the meter is tri-
-	vector type of meter which can measure both export and import.
Purpose of data:	The Data/Parameter is required to calculate the baseline emission.
Any comment:	All the data will be archived for a period of two years from the end of
	the crediting period.

QA/QC procedures applied:	Calibration of the Main meters will be carried out once in five (5) years as per National Standards (as per the provision of CEA, India) and faulty meters will be duly replaced immediately as per the provision of power purchase agreement.
	Cross Checking: The meter reading is cross checked with the sales receipts of electricity. The meters installed are owned by the state utility and the meter is tri- vector type of meter which can measure both export and import.
Purpose of data:	The Data/Parameter is required to calculate the baseline emission.
Any comment:	All the data will be archived till a period of two years from the end of the crediting period.

Data / Parameter	M _{biomass,y}
Data unit	tonnes/year
Description	Quantity of biomass consumed in year y
Source of data	Load cell available on belt conveyor (Archived on paper)
Measurement methods and procedures	Monitoring equipment – load cell available on belt conveyor Type - Electronic belt conveyor/ weigher Accuracy class - 5kg Calibration frequency - Once in 2 years All the biomass is weighed at the load cell available on belt conveyor installed at the factory. The load cell is used daily to measure the exact weight of biomass purchased. And the same reading is transferred to SCPL office for the regular data record
Frequency of monitoring/recording	Continuously and recorded monthly basis.
Value monitored	125652
Monitoring equipment	load cell available on belt conveyor
QA/QC procedures to be applied	Internal QA/QC procedure is available at the project site and the same is being followed for data monitoring and archiving.
Purpose of the data	Calculation of baseline emissions.
Comments	The data would be archived up to two years after the end of crediting period.

Data / Parameter	W _{biomass,y}
Data unit	%
Description	Moisture content of the biomass (wet basis)
Source of data	Laboratory analysis results
Measurement methods and procedures	The biomass residue will be tested internal SCPL laboratory by moisture testing procedure which is as follows: W1 (weight of empty dish) = x gm W2 (weight of dish + sample) = y gm The y gm sample taken in hot air oven at $110\pm50^{\circ}$ C for 25 to 30 minutes

	then it is cooled in desicator for 10 mins. W3 (weight of W2 sample after 10 minutes cooling) = z gm Therefore, Moisture (%) = (W2 - W3 \Box 100) / (W2 - W3)
Frequency of	Sample basis
monitoring/recording	
Value monitored	-
Monitoring equipment	Laboratory analysis
QA/QC procedures to be applied	The procedure is cross checked against bomb calorimeter at a regular interval to get calibrated by pre-determined standard test weight method.
Purpose of the data	Calculation of baseline emissions.
Commonto	The data would be archived up to two years ofter the and of graditing

C.1. Implementation of sampling plan

>> No sampling of data is required as all the parameters are being monitored individually.

SECTION D. Calculation of emission reductions or net anthropogenic removals

D.1. Calculation of baseline emissions or baseline net removals

>>The procedures and formulas used for estimation of the baseline emission factor and the assumptions made have been detailed below. The emission reduction of the small scale project activity is the net electricity exported to the grid (EG_{BL,y}) in MWh multiplied by the baseline emission factor (EFco_{2,grid,y}) in tCO₂/MWh.

$BEy = EG_{BL,y}$	X EFCO2,grid,y		Eq.	1
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Year	Biomass consumption (Tonnes)	Net Electricity supplied to the grid	Emission factor	Baseline Emissions	Project Emissions	Leakage Emissions	Emission Reductions
		EG _{BL,y} MWh	tCO ₂ /MWh	tCO ₂	tCO ₂	tCO ₂	tCO ₂
2021	121566	60174		54156	1726.2372	0	54156
2022	114615	61057	0.9	54951	1627.533	0	54951
2023	115875	55586		50027	1645.425	0	50027
2024	150550	67855	0.757	51367	2137.81	0	51367
Total	1155989	566816	-	481103	7137.0052	0	146250