



**Monitoring report form for CDM project activity**  
(Version 08.0)

**MONITORING REPORT**

<b>Title of the project activity</b>	9 MW Biomass Power Project at Yedlapur Village in Raichur District, Karnataka, India		
<b>UNFCCC reference number of the project activity</b>	9430 <sup>1</sup>		
<b>Version number of the PDD applicable to this monitoring report</b>	4		
<b>Version number of this monitoring report</b>	01		
<b>Completion date of this monitoring report</b>	17/08/2021		
<b>Monitoring period number</b>	01		
<b>Duration of this monitoring period</b>	01/02/2016 to 31/12/2020 (first and last dates included)		
<b>Monitoring report number for this monitoring period</b>	NA		
<b>Project participants</b>	M/s Raichur Bioenergies Private Limited		
<b>Host Party</b>	India		
<b>Applied methodologies and standardized baselines</b>	AMS-I.D. - Grid connected renewable electricity generation, Version 17.0 <sup>2</sup> Standardized baselines : Not Applicable		
<b>Sectoral scopes</b>	Sectoral scope 01: Energy Industries (renewable/non-renewable sources)		
<b>Amount of GHG emission reductions or net anthropogenic GHG removals achieved by the project activity in this monitoring period</b>	Amount achieved before 1 January 2013	Amount achieved from 1 January 2013 until 31 December 2020	Amount achieved from 1 January 2021
	0	174,804 tCO <sub>2</sub> e	0
<b>Amount of GHG emission reductions or net anthropogenic GHG removals estimated ex ante for this monitoring period in the PDD</b>	199,479 tCO <sub>2</sub> e		

<sup>1</sup> <https://cdm.unfccc.int/Projects/DB/TUEV-RHEIN1356866955.46/view>

<sup>2</sup> <https://cdm.unfccc.int/UserManagement/FileStorage/V9LRSXKP24Q7YT6HZDUBO3C0ING8AJ>

## SECTION A. Description of project activity

### A.1. General description of project activity

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The project activity is a 9 MW Biomass Power Project located near Yedlapur Village in Raichur District of Karnataka, India are implemented by M/s Raichur Bioenergies Private Limited (RBPL).

The project of biomass based power generation mainly consists of burning available biomass like Rice husk obtained from rice mills in the region effectively for generation of electricity. The electricity thus generated is sold to southern grid for revenue generation, sustainable economic growth, conservation of environment through use of green fuels (rice husk in this instance) and Green House Gas (GHG) emission reduction.

Raichur has over 100 rice mills producing large quantity of paddy-husk as by-product. Husk from rice mill for power generation offers a number of advantages both to the users and to the country. Apart from helping in bridging the gap between the demand and supply in the power sector, the “Husk Power” offers an environmentally friendly solution for additional power generation that helps in saving the fossil fuels and improves the financial position of the industry.

The project is fully commissioned on 01/02/2016. Since this project activity utilizes renewable energy source, it is positively contributed towards the reduction in demand and use of finite natural resource like coal/gas/oil, minimizing depletion or else increasing its availability to other important processes.

### A.2. Location of project activity

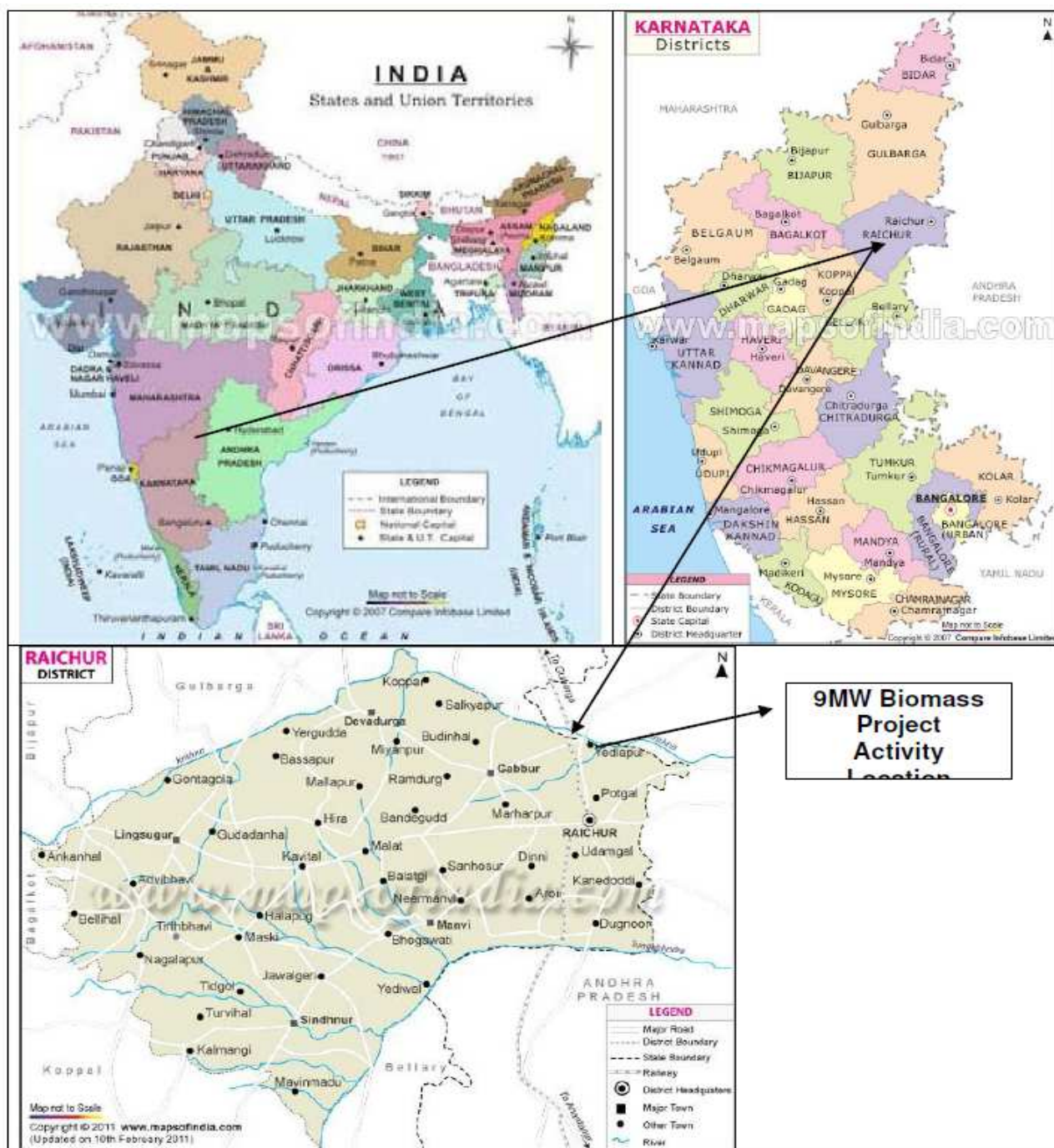
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**Host Party** : India  
**State** : Karnataka  
**City/town/community** : Nearest Town: Raichur, Taluk: Yermarus  
 Village (Community): Yedlapur Village

Raichur District is situated on the North –Eastern part of Karnataka and has an area of 14,017 sq.km. The project developer has acquired 27 acres of land at approximately 15km from Raichur Town at Survey Numbers 136-140 in Yedlapur Village, Yermarus Taluk” with the following geo-coordinates.

Village	Latitude	Longitude
Yedlapur Village	16°21'58.03" N 16.21N	77°19'47.21" E 77.19E

The location of each of the project activities is provided in the following Figure



### A.3. Parties and project participants

Parties involved	Project participants	Indicate if the Party involved wishes to be considered as project participant (Yes/No)
India (host Party)	Private Entity: M/s Raichur Bioenergies Private Limited	No

### A.4. References to applied methodologies and standardized baselines

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Title of the approved baseline and monitoring methodology: AMS-I.D “Grid Connected Renewable Electricity Generation” (Version 17, EB 61)<sup>3</sup>

“Tool to calculate the emission factor for an electricity system” (Version 02.2.1, EB 63, Annex 19)<sup>4</sup>

<sup>3</sup> <https://cdm.unfccc.int/UserManagement/FileStorage/V9LRSXKP24Q7YT6HZDUBO3C0ING8AJ>

**A.5. Crediting period type and duration**

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Type of crediting period : Renewable  
 Crediting period : 01/02/2016 – 31/01/2023

**SECTION B. Implementation of project activity****B.1. Description of implemented project activity**

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The biomass power plant envisages the installation of one condensing turbo-generator of 9.0 MW nominal capacity, a Fluidized Bed Combustion (FBC) boiler operating with the steam inlet of 40 TPH @ 67 Ata and 480°C. The turbo- generator are installed with entire necessary auxiliary for the efficient operation of plant. The gross power generation in the power plant are 9.0 MW with about 9% of the power generated being made available for auxiliary consumption. The mechanical equipments for the power plant consist of the condensing-type turbo generator, cooling water system for oil cooling. DG set and Electrical Equipment's consisting of distributing panels etc.

**Boiler Specifications**

Description		Unit	
<b>A</b>		Boiler	
1	Type	-	Fluidized Bed Combustion Boiler
2	Nos. of Unit	Nos.	1
3	Capacity	TPH	40
4	Main Steam Pressure	Kg/cm <sup>2</sup> (a)	67
5	Main Steam Temperature	°C	480±5(Considering 0% Chlorine in the Fuel)
6	Main Steam Temperature Control Range	% BMCR	80%to100%
7	Startup Vent Capacity	% BMCR	30%
8	Feed Water Temperature to Economiser	°C	130
9	Feed Water Temperature at Deaerator Outlet	°C	130
10	Guarantee Performance Fuel	-	100%husk
11	Secondary Fuel	-	•stock/wood
<b>B</b>		FD Fan	
1	Nos. per unit	%BMCR	1x100%
2	Suction Side Isolation Damper		Not Applicable
3	Air Control Through		IGV
4	Type of Lubrication		Grease
5	Voltage	V	415
<b>C</b>		SA Fan	
1	Nos. per unit	%BMCR	1x100%
2	Air Control Through		IGV
3	Type of Lubrication		Grease
4	Voltage	V	415 V
<b>D</b>		ID Fan	
1	Nos. per unit	%BMCR	1x100%
2	Air Control Through		Pneumatically operated Inlet Multi-louver Damper
3	Type of Lubrication		Grease
4	Voltage	V	415

<sup>4</sup> <https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v2.2.1.pdf>

**Turbo Generator Parameters:**

No	Description	Specifications
1	Turbine Type	Condensing Type
2	Inlet Steam Parameters	
	Pressure (Kg/cm <sup>2</sup> )	67
	Temperature (°C)	480
	Flow (TPH)	36
3	Exhaust Steam Pressure (Kg/cm <sup>2</sup> )	0.8
4	Generator Capacity, MW	9.0
5	The economic steam rate requires at percentage load (%)	80-100
6	Power Factor (lagging)	0.8
7	Generation Voltage (V)	11kV+/- 10%
8	Ambient temperature for Electrical Equipment design (°C)	45
9	Parallel Operation with Grid	GESCOM
10	Duty Requirements	8000 hrs/year
11	Atmospheric Conditions	Dusty
12	The maximum noise pressure level at 1.0 m distance for any equipment for equipment surface shall be equal or less than (dB(A))	85
13	System Frequency(Hz)	50+/-5%

**Relevant dates for the project activity:**

Plant is in operation since being commissioned on 01/02/2016. The installation details of the equipments at the project site are remained the same during this monitoring period and there are no exchange of equipments. Also, there are no events / situations leading to changes in project activity that occurred during the monitoring period.

**B.2. Post-registration changes****B.2.1. Temporary deviations from the registered monitoring plan, applied methodologies, standardized baselines or other methodological regulatory documents**

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The project activity is not applied for a temporary deviations from registered monitoring plan or applied methodology during this monitoring period.

**B.2.2. Corrections**

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There are no corrections to project information or parameters fixed at the registration or renewal of crediting period of the project activity.

**B.2.3. Changes to the start date of the crediting period**

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The start date of crediting period was changed and the revised crediting period is now 01/02/2016 to 31/01/2023<sup>5</sup>.

**B.2.4. Inclusion of monitoring plan**

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Not Applicable for the present Monitoring period.

<sup>5</sup> <https://cdm.unfccc.int/Projects/DB/TUEV-RHEIN1356866955.46/view>

### **B.2.5. Permanent changes to the registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines, or other methodological regulatory documents**

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Yes, there has changes to the registered monitoring plan. The post registration changes has been approved on dated 02/05/2021<sup>6</sup>

### **B.2.6. Changes to project design**

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There are no changes to the project design of the project activity. Hence, Not Applicable.

### **B.2.7. Changes specific to afforestation or reforestation project activity**

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Not Applicable for the project activity.

## **SECTION C. Description of monitoring system**

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The purpose of the monitoring plan is to ensure that the required data is accurately monitored and recorded to enable the calculation of the emission reductions achieved by the project activity.

As per AMSID, Ver. 17, EB 61, Paragraph 13, Monitoring are consist of monitoring the following parameters:

- Net electricity exported to grid
- Quantity of biomass received in project activity
- Quantity of coal received in the project activity
- Net calorific value of biomass utilized in the project activity
- Net calorific value of coal utilized in the project activity
- Default CO<sub>2</sub> emission factor for coal
- Round-trip travel distance between rice mill from where rice husk is sourced and the project activity

### **Operational and Management Structure**

RBPL have a monitoring team with the responsibility of overseeing the collection, recording and storage of the data required to calculate and monitor the greenhouse gas emission reductions from the project activity.

RBPL, the Project Proponent, shall have a team consist of the following:

- **Technical Director:** Overall responsibility of compliance with the CDM monitoring plan who is the common person in charge of each of the project activities
- **Project Manager:** Quality assurance of the data/report generated by Project Engineer.
- **Project Engineer:** Responsibility of log preparation, data recording, Checks for completeness and reliability of data, data analysis, initiating calibration activities and preparing of reports.
- **Shift Operator:** Responsibility for weigh-bridge measurements

An outline of responsibilities and reporting function of each of these key positions are contained in below Table. The specific monitoring provisions are described in more detail in the following table:

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<sup>6</sup> <https://cdm.unfccc.int/PRCContainer/DB/prcp38090975/view>

**CDM Monitoring Team for the RBPL Project**

<b>Position</b>	<b>Outline of Responsibilities</b>	<b>Reporting</b>
Technical Director	<ul style="list-style-type: none"> <li>Overall responsibility of compliance with CDM Monitoring Plan</li> </ul>	Managing Director
Project Manager	<ul style="list-style-type: none"> <li>Undertakes regular internal audits of the project.</li> <li>Ensures compliance with RBPL's QC procedures.</li> <li>Oversees the collection, recording and storage of data.</li> <li>Reviews and approves all reports;</li> <li>Investigation of irregularities to ensure compliance with the CDM monitoring plan.</li> </ul>	Technical Director
Project Engineer	<ul style="list-style-type: none"> <li>Supervises meter calibration requirements;</li> <li>Initiates third-party calibration activities as required;</li> <li>Responsible for the completeness and reliability of the data.</li> <li>Responsible for monitoring measurements;</li> <li>Preparation of reports</li> </ul>	Reports to Project Manager
Shift Operator	<ul style="list-style-type: none"> <li>Responsible for conducting biomass measurements, fossil fuel consumption measurements and continuous electricity measurements</li> </ul>	Reports to Project Engineer

All the responsibilities of the CDM monitoring team are in addition to the responsibilities carried out by the team members as laid out in the company's guidelines for similar positions.

**Monitoring Provisions****Training**

The members of the CDM Monitoring Team are suitably qualified and trained in the operation and maintenance of the power plant. The team members are also receiving appropriate training in the CDM monitoring requirements, which include an overview of the CDM and all elements of the monitoring plan in detail. A copy of the project monitoring plan is distributed to all of the members of the cell during the training, and an additional copy are easily accessible at appropriate locations on site.

**Specific Data Monitoring Procedures****Installation of the Meters:**

The Gross Generation of electricity are monitored by the Project Proponent by installing a state-of-the-art sealed and tested meters at the point of generation. The auxiliary consumption of electricity is monitored by the project proponent by installing a state-of-the-art meter that records the auxiliary consumption of the project activity. The metering system at the KPTCL substation comprises a main meter that records the net electricity exported by the project activity to the grid and a back-up meter. The accuracy class of electricity meters are 0.2.

**Calibration of Meters:**

The Project Engineer ensures that a manufacturer's test certificate accompanies all purchased meters. A report summarising meter calibration requirements are prepared by the Project Engineer on project commissioning, and updated with each recalibration. The meters are calibrated at the time of installation and recalibrated every year thereafter. The calibration of the meters at the KPTCL sub-station are as per the PPA requirements.

**Metered Net Electricity Export Data:**

Metered net electricity export data are measured continuously. A monthly report of metered net electricity export data is generated by the Project Engineer, and saved in electronic and paper form. The monthly report is reviewed and approved by the Project Manager, to ensure that the data is reported consistently and can be compared to previous months. Any irregularities are investigated as described below in "Review of Reports and Treatment of Uncertainty". The auxiliary loads and losses (gross metered electricity generation minus net generated electricity) are

recorded in the monthly report, to be used in the event of meter failure, as described below in "Emergency Preparedness".

**Emission Reductions Calculations:**

Emission reductions are calculated on an annual basis using the project and baseline emission data. Emission reductions occurring as a result of the project activity are summarized in an Annual Report that are prepared by the Project Engineer. The Report are reviewed and approved by the Project Manager, to ensure that the data is reported consistently and can be compared to previous reports.

**Measurement of Biomass Consumption**

The record of quantity of biomass residue procured are maintained at the factory gate and later transferred on daily basis to central record maintenance system of the CDM cell. Records Receipts maintained at the main gate are include the type of biomass, name of collection centre, net weight of biomass, date and time of receipt of consignment etc. This are form basis for monitoring the number of truck trips and the average distance travelled to determine the project emissions.

**Measurement of Coal Consumption**

The record of quantity of coal procured are maintained at the factory gate and later transferred on daily basis to central record maintenance system of the CDM Cell. Records Receipts maintained at the main gate are include name of collection centre, net weight of coal, date and time of receipt of consignment etc. This are form basis for monitoring the number of truck trips and the average distance travelled to determine the project emissions.

**Measurement of Net Calorific Values of Biomass**

The measurement of the Net Calorific Value of the biomass utilized for the project activity are performed in third-party laboratories according to relevant national / international standards. The fuel analysis tests are carried out quarterly, taking at least three samples for each measurement during the first year of the crediting period. The average value are used for the rest of the crediting period.

**Measurement of Net Calorific Value of Coal**

Since values are not provided by fuel supplier in Invoices, IPCC default values at the upper limit of the uncertainty at a 95% confidence interval as provide in Table 1.2 of Chapter 1 of Vol. 2 (Energy) of the 2006 IPCC Guidelines on National GHG Inventories

**Estimate Energy Balance:**

Based on the data obtained above, including gross energy generation, biomass and fossil fuel consumption and Net Calorific Values, the Project Engineer are estimate the Energy Balance on a quarterly basis and determine the efficiency of plant operation. The estimation of energy balance are summarized in the Annual Report that are prepared by the Project Engineer. The report are reviewed and approved by the Project Manager, to ensure that the data is reported consistently and are compared to previous reports.

**Emergency Preparedness:**

The project has the necessary provisions for emergency preparedness to deal with any unforeseen events such as fire or an electrical blackout. These provisions include installed firefighting systems, and standby features for critical items. In the situation where an emergency causes unintended emissions, these emissions are quantified and recorded on a daily basis by the Project Engineer and summarized in a discrete section of the Emission Reductions Report.

In the event that the main meter, which is used to record the net electricity exported by the project, is found to be faulty it is repaired or replaced and the data from the backup meter are used in its place. In the unlikely event that the backup meter fails it is also be repaired or replaced and the net electricity are taken as the average over the most recent six months, using the values recorded in the Metered Net Electricity Generation monthly reports, described above. In the event of meter

failure, the details are recorded by the Project Engineer and summarized in a discrete section of the Emission Reductions Report.

### Reporting

Summary of Monitoring Reports: A summary of the monitoring reports is contained in below table

Report	Responsibility	Frequency
Meter Calibration Report	Project Engineer	At project commissioning and updated with each recalibration.
Weigh-Bridge Calibration Report	Project Engineer	At project commissioning and updated with each recalibration.
Calibration Report from Third-Party Agencies	Project Engineer	At the time of submission of respective report by the third-party agency
Third-Part Test Reports for NCV of Biomass and Coal	Project Engineer	Determine once in the first year of the crediting period for Biomass and Annual for Coal
Metered Net Electricity Export Data	Project Engineer	Monthly
Emission Reductions	Project Engineer	Annually
Energy Balance Estimates	Project Engineer	Annually
Emergency Report: Unintended Emissions	Project Engineer	Daily (as required)
Emergency Report: Meter Failure	Project Engineer	Daily (as required)
Internal Audit Report	Project Engineer	Half-Yearly

### Review of Reports and Treatment of Uncertainty

All reports are reviewed and approved by the Project Manager Engineer. When reviewing the Metered Net Electricity Export Data, Emission Reductions report and Energy Balance estimates, the Project Manager examine the report for data anomalies and compare the report with previous reports for consistency. If any discrepancies are found they are investigated and corrected. The discrepancies and corrective actions are recorded in an appendix to the relevant report. If the corrective actions result in any adjustments to monitoring data, then the relevant report are revised after carrying out the necessary adjustments.

Project Manager undertake an internal audit of the project every half-yearly to ensure the operational and maintenance regime of the project and data collection and recording practices are compliant with the content of this Project Design Document. The results of the audit are summarised in a report, which are sent to the Technical Director for review. The report are also list any corrective actions required to ensure project compliance.

### Record Storage

A paper copy of all documentation is stored in a secure area within the site head office. All reports are signed and date stamped after review by the Project Manager, prior to being filed in storage. All electronic reports are backed-up on a monthly basis and sent to RBPL's Head Office. All archived data are kept until two years after the last issuance of CERs for this project.

The documents that are stored include:

- Manufacturer's test certificate accompanies and meter calibration reports;
- B-Form issued by KPTCL;
- Monthly report of metered net electricity export data;
- Quarterly Report on Emission Reductions;
- Quarterly Report on Energy Balance Estimates;
- Internal audit reports

**SECTION D. Data and parameters****D.1. Data and parameters fixed ex ante**

<b>Data/Parameter</b>	<b>EF<sub>OM,y</sub></b>
Unit	tCO <sub>2</sub> /MWh
Description	Operating Margin emission factor for Southern Grid
Source of data	Referred from CO <sub>2</sub> Baseline Database for the Indian Power Sector prepared by Central Electricity Authority, Version 7.0.
Value(s) applied	0.95
Choice of data or measurement methods and procedures	Calculated as an average 3 years vintage data and option of ex-ante calculation based on Simple OM Method. Computed once during PDD finalization for each crediting period.
Purpose of data/parameter	To calculate the emissions reductions achieved from the project activity
Additional comments	The data are archived for two years beyond the crediting period

<b>Data/Parameter</b>	<b>EF<sub>BM,y</sub></b>
Unit	tCO <sub>2</sub> /MWh
Description	Build Margin emission factor for Southern Grid
Source of data	Referred from CO <sub>2</sub> Baseline Database for the Indian Power Sector prepared by Central Electricity Authority, Version 7.0.
Value(s) applied	0.73
Choice of data or measurement methods and procedures	Calculated for the most recent data and option of ex-ante calculation based on "20% of total generation approach". Computed once during PDD finalization (ex-ante).
Purpose of data/parameter	To calculate the emissions reductions achieved from the project activity
Additional comments	The data are archived for two years beyond the crediting period

<b>Data/Parameter</b>	<b>EF<sub>y</sub></b>
Unit	tCO <sub>2</sub> /MWh
Description	Combined Margin CO <sub>2</sub> emission factor for Southern Grid
Source of data	Estimated figure based on 50% of OM and 50% of BM values, referred from CO <sub>2</sub> Baseline Database for the Indian Power Sector prepared by Central Electricity Authority, Version 7.0
Value(s) applied	0.84
Choice of data or measurement methods and procedures	Calculated ex-ante based on 50% of OM and 50% of BM values approach". Computed once during PDD finalization (ex-ante).
Purpose of data/parameter	To calculate the emissions reductions achieved from the project activity
Additional comments	The data are archived for two years beyond the crediting period

In addition, as per Applicable Methodology, AMS ID, Version 17, para 19 "the quantities and types of biomass and the biomass to fossil fuel ratio (in case of co-fired system) to be used during the crediting period should be explained and documented transparently in the CDM-PDD. For the selection of the baseline scenario, an ex-ante estimation of these quantities should be provided.

The Quantities and Types of Biomass used during the crediting period is as follows:

<b>Data/Parameter</b>	<b>SFC (Rice Husk)</b>
Unit	Kg/kWh
Description	Specific Fuel Consumption of Rick Husk utilized in the project activity
Source of data	Biomass Assessment Report
Value(s) applied	1.3 Kg/kWh
Choice of data or measurement methods	The detailed calculations are provided in the Biomass Assessment Report prepared by a third-party agency. Computed once during PDD finalization

and procedures	(ex-ante)
Purpose of data/parameter	The data is used to estimate the quantity of the rice husk required for the project activity.
Additional comments	The SFC for Rice Husk used in the project activity are monitored on a monthly basis and are compared with the values used at the time of submission of PDD. The variance in the values (if any) are reported in the Monitoring Report. Records are archived for two years beyond the crediting period.

<b>Data/Parameter</b>	<b>q water</b>
Unit	Percentage
Description	Percentage of moisture in biomass residue (wet basis)
Source of data	Laboratory test reports
Value(s) applied	10% (generic industry value)
Choice of data or measurement methods and procedures	Measured through in-house laboratory tests. As per methodology, The moisture content of biomass of homogeneous quality are determined ex-ante. The weighted average are calculated and used in the calculations
Purpose of data/parameter	The data are monitored to determine the operational consistency
Additional comments	All data are kept for a minimum of 2 years in soft copies following issuance of CERs or the end of the crediting period, whichever is later.

Further, as per EB 63, Annex 10, Methodological Tool for “Project and Leakage emissions from road transportation of freight” the default emission factors are used for the crediting period for transportation of biomass:

<b>Data/Parameter</b>	<b>EF<sub>CO2</sub></b>
Unit	g CO <sub>2</sub> / t km
Description	Default CO <sub>2</sub> emission factor for freight transportation activity
Source of data	EB 63, Annex 10, Page 4 “Tool to Calculate Project or Leakage Emissions from road transportation of freight”
Value(s) applied	129 g CO <sub>2</sub> / t km
Choice of data or measurement methods and procedures	As suggested in the Tool for heavy vehicles (ex-ante)
Purpose of data/parameter	The data is used to estimate the project emissions resulting from transportation of rice husk from rice mills to the project activity site. This factor is applicable only when transportation distance (to and fro) is more than 200 Km
Additional comments	All transportation activities are done using heavy vehicles.

## D.2. Data and parameters monitored

<b>Data/Parameter</b>	<b>EG<sub>BL, y</sub></b>
Unit	MWh
Description	Quantity of Net Electricity supplied to the grid by the project during the year y
Measured/calculated/default	Measured
Source of data	B-From issued by the Karnataka Power Transmission Corporation Limited
Value(s) of monitored parameter	208,101.08
Monitoring equipment	Tri-vector meters
Measuring/reading/recording frequency	Monthly or as specified in the Agreement between PP and KPTCL
Calculation method (if applicable)	Quantity of Net Electricity supplied to the grid is calculated using the following:

	$EG_{BL, y} = EG_{(Export), y} - EG_{(Import), y}$
QA/QC procedures	The meters are Tri-vector meters of 0.2S accuracy class. Quantity of Net Electricity supplied to the grid are checked for consistency by comparing the readings obtained from the calculations with that of the electricity measured as $EG_{(Gross), y}$ and deducting the auxiliary consumption of electricity at the project site. This are crosschecked with the records for the sold electricity.  Calibration Frequency: Once in a year
Purpose of data/parameter	Data are used to calculate the emission reductions achieved from the project activity
Additional comments	All data are kept for a minimum of 2 years in soft copies following issuance of CERs or the end of the crediting period, whichever is later.

<b>Data/Parameter</b>	<b>BF<sub>I, y</sub></b>
Unit	Tonnes / year
Description	Quantity of biomass residue 'i' received in the project activity each year
Measured/calculated/default	Measured
Source of data	Plant records and log books
Value(s) of monitored parameter	179,326.58
Monitoring equipment	Weigh bridge
Measuring/reading/recording frequency	Daily (as received). The data are collated daily and monthly basis for the biomass utilized in the project activity.
Calculation method (if applicable)	-
QA/QC procedures	Calibration of the weigh bridge are performed as per the recommendation of the manufacturer. The weigh-bridge records are cross-checked using the following formula: $BF_{I, y} = \text{Opening Stock} + \text{Receipts} - \text{Closing Stock}$ Calibration Frequency: Once in a year
Purpose of data/parameter	The data are monitored for all the biomass residues used in the project activity scenario and estimate annual energy balance and efficiency of energy generation. However, the data is not utilized in the determination of emission reductions.
Additional comments	All data are kept for a minimum of 2 years in soft copies following issuance of CERs or the end of the crediting period, whichever is later.

<b>Data/Parameter</b>	<b>FC<sub>y</sub></b>
Unit	Tonnes / year
Description	Quantity of coal used in the project activity each year
Measured/calculated/default	Measured
Source of data	Plant records and log books
Value(s) of monitored parameter	0 (No coal is used during the current monitoring period)
Monitoring equipment	Weigh bridge
Measuring/reading/recording frequency	Daily (as received). The data are collated daily and monthly basis.
Calculation method (if applicable)	-
QA/QC procedures	Calibration of the weigh bridge are performed as per the recommendation of the manufacturer. The weigh-bridge records are cross-checked using the following formula: $BF_{I, y} = \text{Opening Stock} + \text{Receipts} - \text{Closing Stock}$

	Calibration Frequency: Once in a year
Purpose of data/parameter	The data are used to estimate annual energy balance and efficiency of energy generation. And, the ex-post values are used to determine project emissions.
Additional comments	All data are kept for a minimum of 2 years in soft copies following issuance of CERs or the end of the crediting period, whichever is later.

<b>Data/Parameter</b>	<b>NCV<sub>l, y</sub></b>
Unit	kCal/kg
Description	Net Calorific Value of Rice Husk used in project plant for power generation
Measured/calculated/default	Measured
Source of data	Periodic test reports from a third-party laboratory
Value(s) of monitored parameter	3200
Monitoring equipment	-
Measuring/reading/recording frequency	Determine once in the first year of the crediting period
Calculation method (if applicable)	Measurement performed in third-party laboratories according to relevant national / international standards. The fuel analysis tests are carried out quarterly, taking at least three samples for each measurement during the first year of the crediting period. The average value are used for the rest of the crediting period.
QA/QC procedures	Third-party laboratories are required to provide calibration test results as per national standards for such measurements. Calibration Frequency: Once in a year
Purpose of data/parameter	The data are monitored for all the biomass residues used in the project activity scenario. However, the data is not utilized in the determination of emission reductions.
Additional comments	All data are kept for a minimum of 2 years in soft copies following issuance of CERs or the end of the crediting period, whichever is later.

<b>Data/Parameter</b>	<b>NCV<sub>(Coal), y</sub></b>
Unit	TJ/Gg
Description	Net Calorific Value of Coal used in project plant.
Measured/calculated/default	Default
Source of data	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
Value(s) of monitored parameter	32.2 TJ/Gg
Monitoring equipment	-
Measuring/reading/recording frequency	Any future revision of the IPCC Guidelines are taken into account
Calculation method (if applicable)	Since values are not provided by fuel supplier in Invoices, IPCC default values are used.
QA/QC procedures	Not Applicable as IPCC default values are used.
Purpose of data/parameter	The data are monitored for all the coal used in the project activity scenario. And, the data are utilized ex-post to determine project emissions.
Additional comments	All data are kept for a minimum of 2 years in soft copies following issuance of CERs or the end of the crediting period, whichever is later.

Data/Parameter	Df,m
Unit	Km
Description	Return-trip road distance between origin of rice husk biomass and the project site during the monitoring period
Measured/calculated/default	Measured
Source of data	Records by PP
Value(s) of monitored parameter	100 km
Monitoring equipment	-
Measuring/reading/recording frequency	To be updated when rice mill source changes
Calculation method (if applicable)	Determined once during the monitoring period from each of the rice mills supplying rice husk to the project activity
QA/QC procedures	Odometer reading to be verified once annually for each rice mill
Purpose of data/parameter	The data are monitored to determine the project emissions. This parameter is applicable only when transportation distance (to and fro) is more than 200 Km.
Additional comments	All data are kept for a minimum of 2 years in soft copies following issuance of CERs or the end of the crediting period, whichever is later.

Data/Parameter	FR f,m
Unit	Tonnes / year
Description	Quantity of biomass residue 'i' received in the project activity each year
Measured/calculated/default	Measured
Source of data	Plant records and log books
Value(s) of monitored parameter	179,326.58
Monitoring equipment	Weigh bridge
Measuring/reading/recording frequency	Daily (as received). The data are collated daily and monthly basis for the biomass utilized in the project activity.
Calculation method (if applicable)	-
QA/QC procedures	Calibration of the weigh bridge are performed as per the recommendation of the manufacturer. The weigh-bridge records are cross-checked using the following formula: $BF_{i,y} = \text{Opening Stock} + \text{Receipts} - \text{Closing Stock}$ Calibration Frequency: Once in a year
Purpose of data/parameter	The data are monitored for all the biomass residues used in the project activity scenario and estimate the project emissions. This parameter is applicable only when transportation distance (to and fro) is more than 200 Km.
Additional comments	Records are archived for two years beyond the crediting period

Data/Parameter	EF <sub>CO2</sub>
Unit	Kg/TJ
Description	Default CO <sub>2</sub> emission factor for coal
Measured/calculated/default	Default
Source of data	IPCC default values at the upper limit of the uncertainty at a 95% confidence interval as provided in Table 1.4 , Chapter 1, 2006 Guidelines for National Greenhouse Gas Inventories

Value(s) of monitored parameter	101,000 Kg/TJ or the value in the most recent version of the data source mentioned above for the monitoring period.
Monitoring equipment	-
Measuring/reading/recording frequency	As required
Calculation method (if applicable)	As suggested in EB 41, Annex 11 "Tool to calculate project or leakage CO <sub>2</sub> emissions from fossil fuel consumption" Version 02
QA/QC procedures	It is ensured that the most recent version of the data source are utilized for the monitoring period.
Purpose of data/parameter	The data is used to estimate the project emissions resulting from use of coal for operating the project.
Additional comments	Records are archived for two years beyond the crediting period

### D.3. Implementation of sampling plan

>>

Not Applicable

## SECTION E. Calculation of emission reductions or net anthropogenic removals

### E.1. Calculation of baseline emissions or baseline net removals

>>

The baseline emissions have been calculated using the following equation:

$$BE_y = EG_{BL,y} * EF_{CO_2}$$

Where

$BE_y$  : Baseline Emissions

$EG_{BL,y}$  : Net Generation from the Project in year y

$EF_{CO_2}$  : Combined Margin Baseline Emission Factor for Southern Grid

$$BE_y = 208,101.08 \text{ MWh} \times 0.84 \text{ tCO}_2 / \text{MWh}$$

$$BE_y = 174,804 \text{ tCO}_2 \text{ (round down to nearest integer)}$$

### E.2. Calculation of project emissions or actual net removals

>>

As per methodological tool "Project and leakage emissions from biomass" version 4, para 33 "Small scale project activities may, unless otherwise required by the methodology, neglect this source of emissions if the transportation distance is less than 200 km".

As transportation distance (to and fro) is less than 200 km hence project emissions are considered as zero.

### E.3. Calculation of leakage emissions

>>

As per para 20 of AMS ID (Version 17, EB 61), leakage is to be considered only if the energy generating equipment is transferred from another project activity. In this case, the project activity is a green-field project activity and does not involve transfer of equipment from another project activity.

$$LE_y = 0$$

**E.4. Calculation of emission reductions or net anthropogenic removals**

	Baseline GHG emissions or baseline net GHG removals (t CO <sub>2</sub> e)	Project GHG emissions or actual net GHG removals (t CO <sub>2</sub> e)	Leakage GHG emissions (t CO <sub>2</sub> e)	GHG emission reductions or net anthropogenic GHG removals (t CO <sub>2</sub> e)			
				Before 01/01/2013	From 01/01/2013 until 31/12/2020	From 01/01/2021	Total amount
<b>Total</b>	174,804	0	0	0	174,804	0	174,804

**E.5. Comparison of emission reductions or net anthropogenic removals achieved with estimates in the registered PDD**

Amount achieved during this monitoring period (t CO <sub>2</sub> e)	Amount estimated ex ante for this monitoring period in the PDD (t CO <sub>2</sub> e)
174,804	199,479

**E.5.1. Explanation of calculation of “amount estimated ex ante for this monitoring period in the PDD”**

&gt;&gt;

Estimated Emission Reduction according to PDD = 40,540 tCO<sub>2</sub>e per annum  
 Total number of days in this monitoring period = 1796 days

The ex-ante estimated ER for the current monitoring period are calculated by factorizing the annualized projected ER value for the equivalent days of the current monitoring period.  
 $= (40,540 * 1796) / 365 = 199,479 \text{ tCO}_2\text{e}$

**E.6. Remarks on increase in achieved emission reductions**

&gt;&gt;

During the present monitoring period, actual emission reductions achieved are 174,804 tCO<sub>2</sub>e whereas estimated emission reductions was 199,479 tCO<sub>2</sub>e.

The actual emission reduction achieved is 12.37% less than the estimated in the registered PDD. This is due to lower PLF achieved during the current monitoring period as compared to the estimated PLF in the registered PDD.

**E.7. Remarks on scale of small-scale project activity**

&gt;&gt;

The installed capacity of the plant is still 9 MW which is less than 15 MW. The project activity is still a small-scale project activity.

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**Document information**

<i>Version</i>	<i>Date</i>	<i>Description</i>
08.0	6 April 2021	Revision to: <ul style="list-style-type: none"> <li>• Reflect the “Clarification: Regulatory requirements under temporary measures for post-2020 cases” (CDM-EB109-A01-CLAR).</li> </ul>
07.0	31 May 2019	Revision to: <ul style="list-style-type: none"> <li>• Ensure consistency with version 02.0 of the “CDM project standard for project activities” (CDM-EB93-A04-STAN);</li> <li>• Add a section on remarks on the observance of the scale limit of small-scale project activity during the crediting period;</li> <li>• Add "changes specific to afforestation or reforestation project activity" as a possible post-registration changes;</li> <li>• Clarify the reporting of net anthropogenic GHG removals for A/R project activities between two commitment periods;</li> <li>• Make editorial improvements.</li> </ul>
06.0	7 June 2017	Revision to: <ul style="list-style-type: none"> <li>• Ensure consistency with version 01.0 of the “CDM project standard for project activities” (CDM-EB93-A04-STAN);</li> <li>• Make editorial improvements.</li> </ul>
05.1	4 May 2015	Editorial revision to correct version numbering.
05.0	1 April 2015	Revisions to: <ul style="list-style-type: none"> <li>• Include provisions related to delayed submission of a monitoring plan;</li> <li>• Provisions related to the Host Party;</li> <li>• Remove reference to programme of activities;</li> <li>• Overall editorial improvement.</li> </ul>
04.0	25 June 2014	Revisions to: <ul style="list-style-type: none"> <li>• Include the Attachment: Instructions for filling out the monitoring report form (these instructions supersede the "Guideline: Completing the monitoring report form" (Version 04.0));</li> <li>• Include provisions related to standardized baselines;</li> <li>• Add contact information on a responsible person(s)/ entity(ies) for completing the CDM-MR-FORM in A.6 and Appendix 1;</li> <li>• Change the reference number from <i>F-CDM-MR</i> to <i>CDM-MR-FORM</i>;</li> <li>• Editorial improvement.</li> </ul>
03.2	5 November 2013	Editorial revision to correct table in page 1.
03.1	2 January 2013	Editorial revision to correct table in section E.5.

<i>Version</i>	<i>Date</i>	<i>Description</i>
03.0	3 December 2012	Revision required to introduce a provision on reporting actual emission reductions or net GHG removals by sinks for the period up to 31 December 2012 and the period from 1 January 2013 onwards (EB 70, Annex 11).
02.0	13 March 2012	Revision required to ensure consistency with the "Guidelines for completing the monitoring report form" (EB 66, Annex 20).
01.0	28 May 2010	EB 54, Annex 34. Initial adoption.
Decision Class: Regulatory Document Type: Form Business Function: Issuance Keywords: monitoring report		