PROJECT CONCEPT NOTE

CARBON OFFSET UNIT (CoU) PROJECT

Title: SBPIL Waste Heat to Power Project, Tilda, India

Version 1.0
Date of PCN: 03/11/2023
1st CoU Issuance Period: 01/04/2013-31/12/2022 (09 years 09 months)
1st Crediting Period: 01/04/2013-31/12/2022 (09 years 09 months)

Project Concept Note (PCN)
CARBON OFFSET UNIT (CoU) PROJECT

BASIC INFORMATION	
Title of the project activity	**SBPIL Waste Heat to Power Project, Tilda, India**
Scale of the project activity	Large Scale
Completion date of the PCN	03/11/2023
Project participants	**Project Proponent**: Shri Bajrang Power and Ispat Limited (SBPIL) **UCR Aggregator**: Carbon Equalizers, Katni **UCR ID** : 660687753
Host Party	India
Type	Type III (Energy Efficiency)
Applied methodologies and standardized baselines	**UNFCCC Methodology *ACM0012*** Waste energy recovery Version 6.0 UCR Protocol Standard Baseline
Sectoral scopes	01 Energy industries (Renewable/NonRenewable Sources) 04. Manufacturing industries
SDG Impacts:	SDG 7 Affordable and Clean energy SDG 8 Decent work and economic growth SDG 13 Climate Action
Estimated amount of total GHG emission reductions per year	**163968** CoUs/yr (**163968** tCO_{2eq}/yr)

SECTION A. Description of project activity

A.1. Purpose and general description of Carbon offset Unit (CoU) project activity >>

The project activity titled, **SBPIL Waste Heat to Power Project, Tilda, India** is located in Village: Tandawa and Kundru, Tehsil: Tilda, District: Raipur, State: Chhattisgarh, Country: India.

Purpose of the project activity:
GOEL GROUP of Industries is one of the leading business houses in the State of Chhattisgarh, India. The group has entered into the business of Iron & Steel with a Re-Rolling Mill in the name of M/s Shri Bajrang Alliance Ltd. (formerly known as M/s Shri Bajrang Alloys Ltd). M/s Shri Bajrang Power & Ispat Ltd belongs to this group has also entered in the business of TMT Bars, which is selling the product under the brand name Goel TMT.

The group has been further strengthened by establishing Shri Bajrang Power and Ispat Limited ("SBPIL") which has emerged as one of the leading integrated steel companies based out of central India and is one of the top 10 players in India in terms of capacity for iron ore pellets, iron ore beneficiation and sponge iron.

The project activity entails utilisation of waste heat of flue gases generated in Direct Reduced Iron (DRI) kilns of sponge iron plants of SBPIL (Project Proponent or PP hereafter) in power generation. DRI, is a type of kiln used in the production of sponge iron, where iron ore is reduced to sponge iron using coal & Iron ore through a rotary Kiln at high temperature (1000 ^{0}C). The reduction process yields carbon di-oxide and carbon monoxide. The power produced is used actively at the sponge iron interconnected plants of the PP within the project boundary.

Apart from the utilization of the power at the sponge iron plant, the surplus power generated by the Waste Heat Recovery Boilers (WHRB) plant is consumed by the adjoining steel plant owned by SBPIL which is within the same boundary as the WHRB plant.

Commissioning dates of WHRBs (dd/mm/yyyy)	
WHRB-1	31/03/2013
WHRB-2	25/06/2019
WHRB-3	11/10/2023

The start date of the project activity is the commissioning date of the initial WHRB which is **31/03/2013**.

Type of GHG emissions mitigation action	**Energy efficiency: Waste energy recovery in order to displace more-carbon intensive energy/technology.**

This power, from the WHRB plant, displaces equivalent amount of power from the Chhattisgarh State Electricity Board (CSEB) grid, which is part of Western Region (WR) grid in India and is primarily fossil fuel based. The project activity results in reduced carbon emissions by avoiding generation of this power in grid connected power stations. The grid emission factor for WR grid is as the recommended UCR conservative estimate for the years 2013-2022.

SBPIL has set up **03 nos. WHRBs of 63 TPH** each at its sponge iron production unit. The DRI gas,

as it comes out after burning chamber, contains sufficient quantity of heat energy that if not recovered would be wasted. An 600 TPD DRI Kiln for sponge iron production emits normally around 1,45,000 Nm^3 /hour of hot gas at a temperature of 950^0C -1000^0C.

This waste heat of flue gases is utilised in the generation of steam in (WHRB), which is further expanded in two turbines with total installed capacity **46 MW (16 MW+ 30 MW)** to generate power. Steam from 03 nos. WHRBs is taken to the turbines through a common header.

The project activity is the installation of WHRBs and turbine generators to generate electrical power from the waste heat gases produced during the manufacture of sponge iron. In the absence of the project activity, SBPIL would draw power from CSEB grid, which in turn generates power from fossil fuel power plants. The project activity thus displaces equivalent amount of power generation in WR grid connected power stations.

As per the approved UNFCCC CDM methodology, the useful energy generated from the utilization of waste energy carried in the project activity is for:

(a) Generation of electricity

The project activity is an approved positive activity as per the revised guidelines and updates of UCR, (source of update). Regulations do not require the PP to recover and/or utilize the waste energy prior to the implementation of the project activity.

The project activity is displacing an estimated annual net electricity generation i.e., **182188 MW_h** from the Indian grid system, which otherwise would have been generated by the operation of fossil fuel-based grid-connected power plant.

The estimated annual average CO_{2e} emission reductions by the project activity is expected to be **163968 tCO_{2e}**, whereas actual emission reduction achieved during the first CoU period shall be submitted as a part of the initial UCR monitoring and verification activity.

Project's Contribution to Sustainable Development

Steelmaking is a highly raw material and logistics intensive business, with one tonne of steel requiring the movement of four tonnes of raw materials. For a secondary steel producer, raw materials account for around 70.0% of the cost of steelmaking. Iron ore and coal are the two most critical steel making ingredients, and proximity to iron ore and coal mines give considerable competitive advantage to a steel player due to lower logistics costs for raw material procurement. As per Indian Minerals Yearbook 2019, Chhattisgarh recorded the second highest production of 34.94 MnT of iron ore, i.e., about 16.9% of the country's total production among all states in 2018-19.

Chhattisgarh being rich in minerals, steel players in the region have per tonne logistics costs 50.0% to 90.0% lower as compared to other steel plants in southern states. Chhattisgarh is also one of the few power surplus states in the country. Korba district in Chhattisgarh is known as the power capital of India. The state's huge coal reserves present a large opportunity for electricity generation. Steel companies having their own captive power plant in Chhattisgarh not only ensures more regular and uninterrupted power supply but also helps in reducing power and fuel cost providing competitive advantage.

The project activity is innovative in the steel manufacturing sector and has adopted the use of direct rolling process for manufacturing of re-rolled products. Direct rolling process is a technical evolution of hot charging, where continuous cast billet is directly pushed to the rolling mill, without the need of an intermediate process of re-heating. This process eliminates the need for re-heating the ingots/ billets and results in savings in fuel as well as reduction in emission of GHGs. (source).

The project activity is close to coal mines and coal can be easily procured for power generation. Char, a by-product from sponge iron kilns having good fuel properties and can also be used in power generation in the absence of the project activity. Despite such advantages, the PP chose to use WHRB for power generation, thus promoting sustainable development within the industry.

Thermal power plants are the major consumers of coal in India and yet the basic electricity needs of a large section of population are not being met. This results in excessive demands for electricity and places immense stress on the environment.

The Government of India has stipulated following indicators for sustainable development in the interim approval guidelines for such projects which are contributing to GHG mitigations. The Ministry of Environment, Forests & Climate Change, has stipulated economic, social, environment and technological well-being as the four indicators of sustainable development. It has been envisaged that the project shall contribute to sustainable development using the following ways:

Social well being:

- Social well being is assessed by contribution by the project activity towards improvement in living standards of the local community.
- The project activity has resulted in increased job opportunities for the local population on temporary and permanent basis.

Economic well being

- The project activity has created direct and indirect job opportunities to the local community. The project activity has a positive impact in terms of employment, infrastructure facilities and

enhancement of per capita income of the village.
 The investment for the project activity has increased the economic activity of the local area.
 The project activity also contributes in economic well being of the nation's economy by reducing import of fossil fuel for electricity generation in hard currency.

Environmental well being

 The project activity helps reducing GHG emission in power generation in the grid, which is primarily fossil fuel based.

Reduced emissions of NOx and SOx in power generation.

Green belts are all around the project boundary complex to reduce dust and smoke, assuring healthy environment.

Technological well being

 It provides the necessary impetus to other industries to come up with similar projects and become self-sustainable for their power needs

With many similar project activities coming up, technology suppliers/manufacturers will put in more efforts/ funds in further improvement of equipment/ machinery and help in removing existing technological barriers to implementation of such project activities.

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

The PP has an online environmental monitoring database and reporting facility related to fugitive emissions, water quality, groundwater use and other environmental factors that are monitored regularly and free to access (link).

All the Integrated steel plants are listed at S. No. 3(a) under Category "A" of the Schedule of EIA Notification 2006 and appraised at the Central level. An Environment Impact assessment study for the project activity and facility was done prior to operations commencement. The impact of project activity was considered on the environment. The Ministry of Environment and Forests has given the project activity an environmental clearance under the provisions of EIA Notification dated 14th September, 2006 (source).

Water is sourced from Shivnath River, so no groundwater is abstracted for the project activities hence, natural recharge of groundwater level is not affected through project activity. There will be no impact on groundwater as close circuit water circulation system has been designed so as to minimize make-up water requirement. All wastewater generated is recycled through thickener and residue water is treated in the effluent treatment plant and after treatment is utilized for green belt development and water spraying on raw material stacks / roads.

Archaeological/Historically Important Site	None within the 10 km radius of the project activity
Water bodies	Bhatapara canal (3.5 km from the project activity) Kirna Tank (1.0 km) Kulhan Nallah (7.2 km)
Forest Area	Bilari Reserve Forest (10 km from the project activity)
Sanctuaries / National Parks	None within the 10 km radius of the from the project activity

There is no reported negative impact on the groundwater table or adverse impacts on the surrounding villages of the project activity.

Name of Solid Waste	Source	Waste generated (TPA)	Utilization/Disposal
Dolochar	Sponge Iron (3 x 600 TPD DRI Kilns)	150,000 TPA	Used in Power Plant

Fly Ash	Waste Heat Recovery Based Power Plant	307,200 TPA	As raw material for fly ash bricks manufacturing
Tailing	Iron Ore Beneficiation Plant	240,000 TPA	For re-beneficiation, sold to cement plant, bricks plant, tiles manufacturing unit,
Ash	AFBC Based Power Plant (35 TPH Boiler)	542,160 TPA	For cement plant/ bricks plant
Mn Slag	Ferro Alloys Plant with AOD for Medium Carbon	32,400 TPA	As raw material in Silico Manganese/Bricks Plant/ Road Filling.

United Nations Sustainable Development Goals:

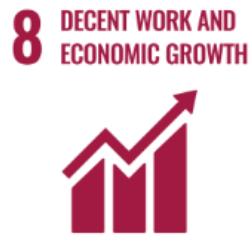
The project activity displaces CSEB grid power, part of WR grid, which is predominantly fossil fuel based.

In the absence of the project activity equivalent amount of power generation would have taken place through fossil fuel dominated power generating stations.

Positive contribution of the project to the following Sustainable Development Goals:

- SDG13: Climate Action
- SDG 7: Affordable and Clean Energy
- SDG 8: Decent Work and Economic Growth

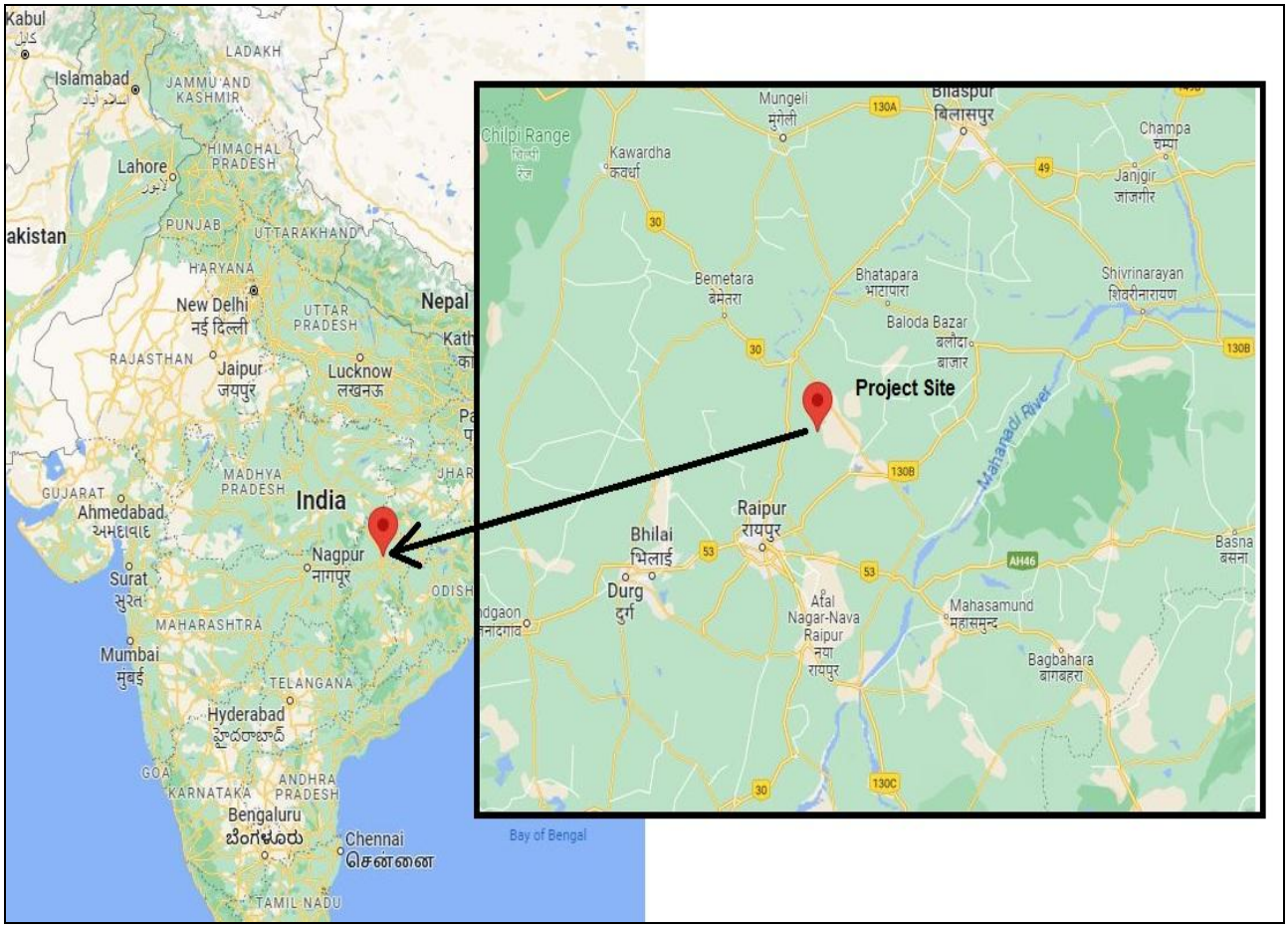
Development Goals	Targeted SDG	Target Indicator (SDG Indicator)
 SDG 13: Climate Action	13.2: Integrate climate change measures into national policies, strategies and planning	13.2.1: Number of countries that have communicated establishment or operationalization of an integrated policy/ strategy/ plan which increases their ability to adapt to the adverse impacts of climate change, and foster climate resilience and low greenhouse gas emissions development in a manner that does not threaten food production (including a national adaptation plan, nationally determined contribution, national communication, biennial update report or other)
 SDG 7: Affordable and Clean Energy	By 2030, increase substantially the share of non fossil energy in the global energy mix	The project activity helps reducing GHG emission in power generation in the grid, which is primarily fossil fuel based

 SDG 8: Decent Work and Economic Growth	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 Target: Training, O&M staff	8.5.1: Average hourly earnings of female and male employees, by occupation, age and persons with disabilities The project activity provides direct employment to over 2150 people. The employment involves tribal people also who are more than 40% in population and also are now well qualified as well as competent to take the employment in the steel industry

A.3. Location of project activity >>

Village: Tandawa and Kundru,
Tehsil: Tilda,
District: Raipur,
State: Chhattisgarh,
Country: India.

Latitude: **21°29'10.4"N**
Longitude: **81°46'11.5"E**



A.4. Technologies/measures >>

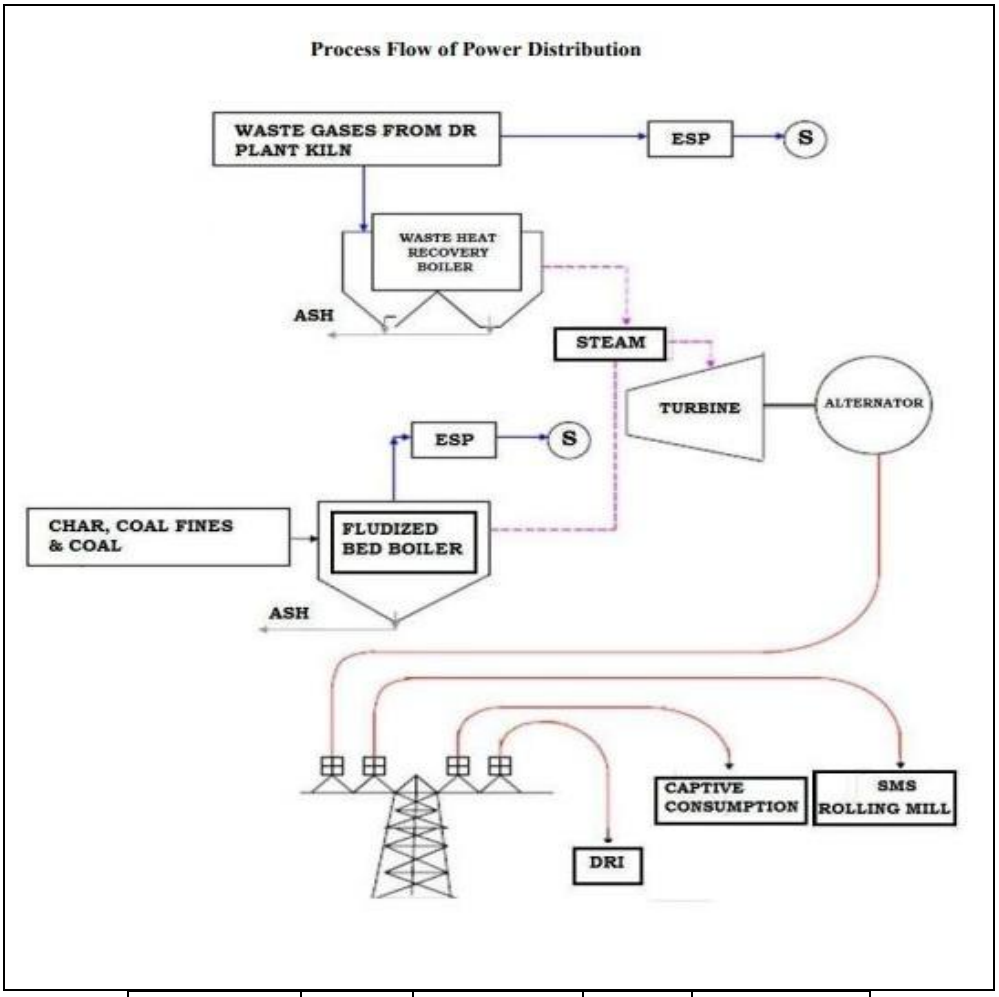
The project activity (also known as Unit III within the group of facilities operated and owned by the PP) comprises of iron ore beneficiation facility, pelletizing facility, sponge iron production facility, fly ash brick manufacturing facility and railway siding. Unit III has WHRB captive power generation facility utilizing the waste heat emanating from the kilns during the manufacturing process. Unit III converts low grade fines (Fe 55% and higher), into high grade green pellets (Fe 62% or higher), at its beneficiation facility which feeds into the pelletizing facility. The pelletizing facility utilizes a straight grate technology which decreases the time that is otherwise taken for the production of pellets and hence improves operational efficiencies.

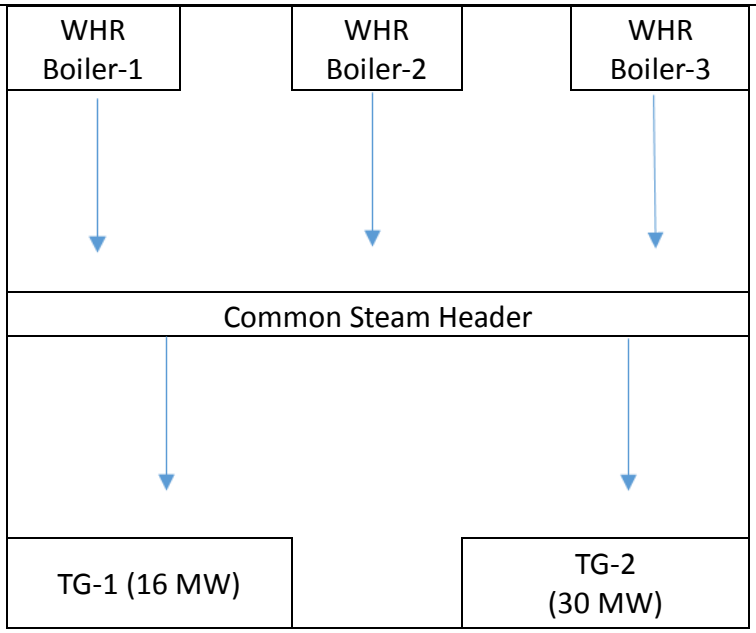
Flue gases temp and pressure: 950 ºC, -1 to -5 mmWC (Inlet)
Steam generated pressure and temp: **70 ATA, 490 ± 5 ºC**

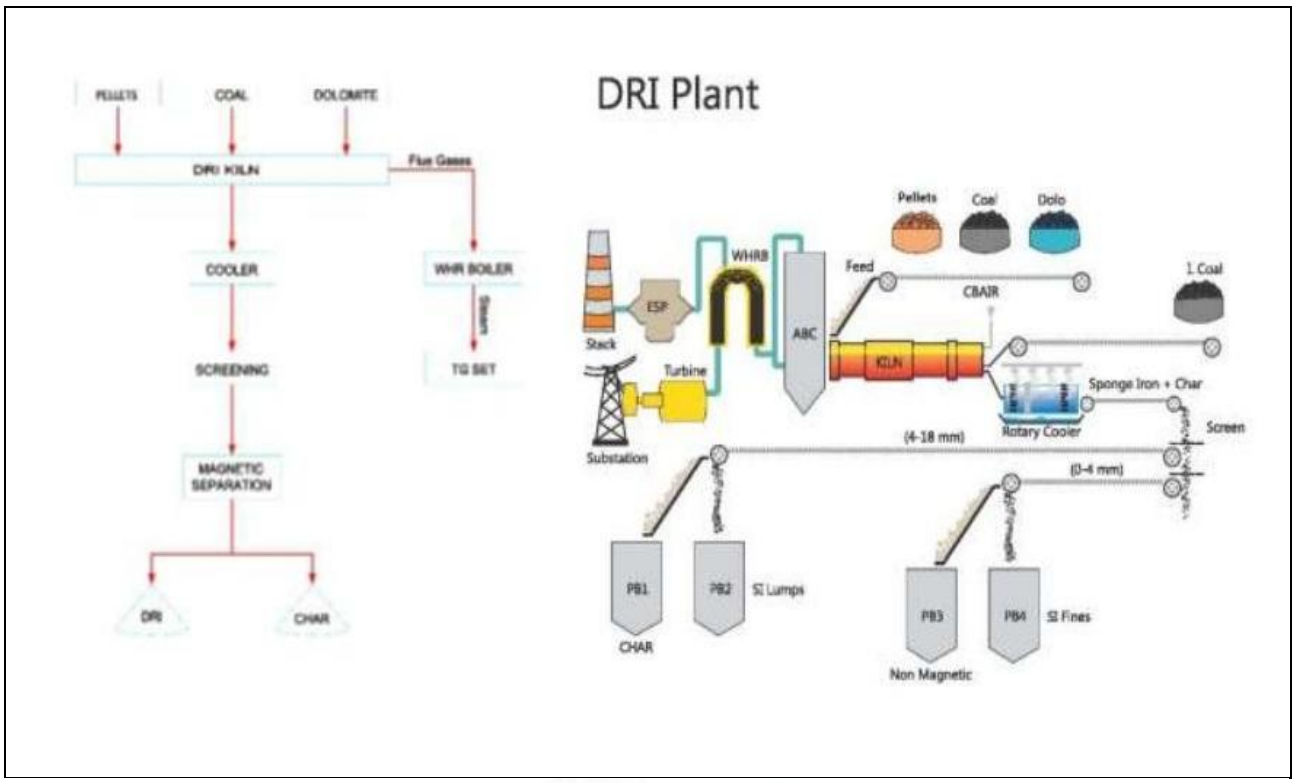
Unit III is also supported by a total 46 MW WHRB captive power generation facility utilizing the waste heat emanating from the kilns during the manufacturing process.

The total installed capacity of the project activity is 46 MW and the auxiliary consumption as per the requirement of the auxiliary equipment at the WHRB plant is a maximum of 10% which is 4.6 MW. The balance of electricity generated by the WHRB plant is captively consumed by the adjoining steel plant owned by the PP which is within the same premises as the WHRB Plant. SBPIL has installed 3X63 TPH Waste Heat Recovery Boilers (WHRBs) for utilising high temperature heat of flue gases from DRI kilns. DRI kilns, known as Direct Reduced Iron kilns by thermal systems, is a type of kiln used in the production of sponge iron wherein iron ore is reduced

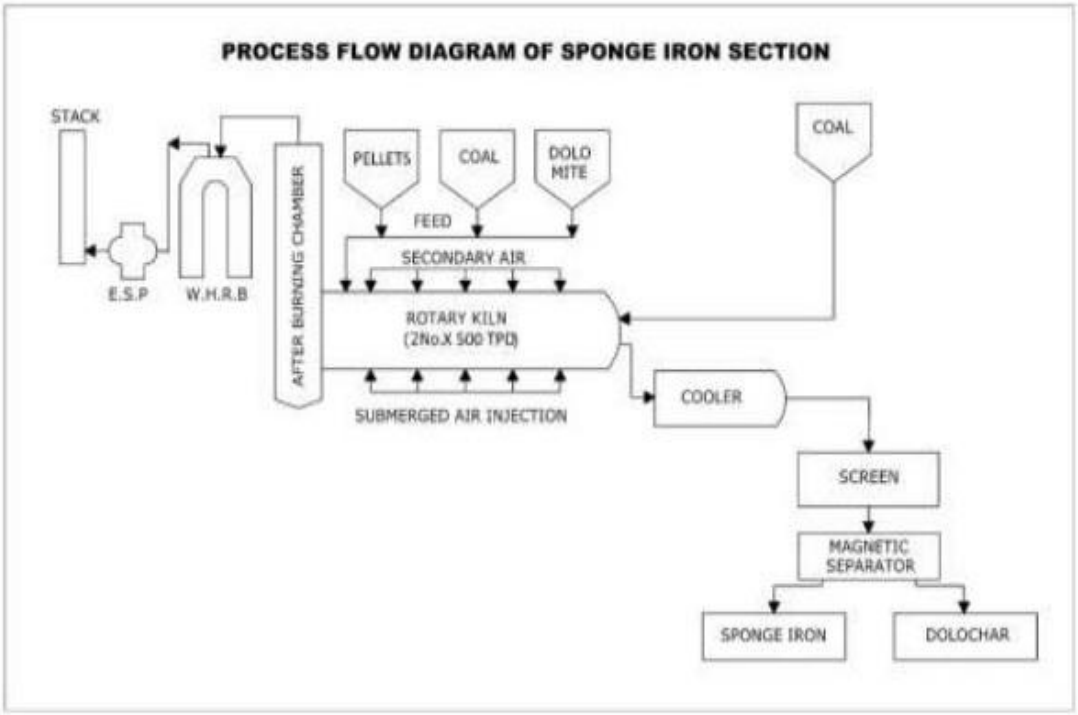
to iron through a rotary kiln at high temperatures (1000^{0}C). The reduction process yields carbon dioxide and carbon monoxide. These gases leaves the kiln at high temperature and utilize to generate power. Direct reduction refers to processes which reduce iron oxides to metallic iron at temperatures below the melting point of iron. The product of such solid-state processes is called direct reduced iron or sponge iron.







Process Flow of Sponge Iron Plant

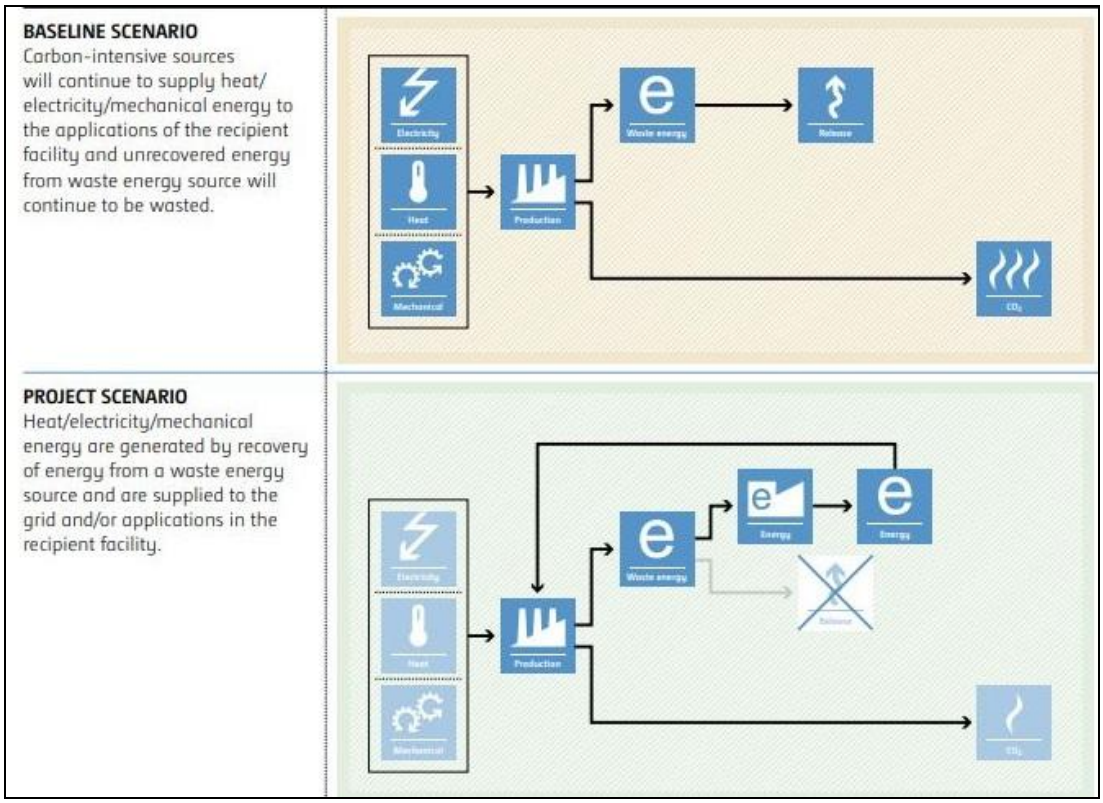


Heat that is extracted from the hot gas is utilized in the transforming water to high temperature to high pressure steam, to run conventional condensing type Steam Turbo Generator for generation of electricity as a part of forward and backward integration process.

A.5. Parties and project participants >>

Party (Host)	Participants
India	**Project Proponent**: Shri Bajrang Power and Ispat Limited (SBPIL) **Aggregator**: Carbon Equalizers, KATNI **UCR ID** : 660687753 **Contact:** Mr Vikas Chamadia **Email**: vikaschamadia@rediffmail.com

A.6. Baseline Emissions>>



UNFCCC CDM (CLEAN DEVELOPMENT MECHANISM) approved methodology ***ACM0012*** *Large-scale Consolidated Methodology* **Waste energy recovery** *Version 06.0*

Typical projects

Energy from waste heat, waste gas or waste pressure in an existing or new industrial facility is recovered and used for in-house consumption or for export, by installation of a new power and/or heat and/or mechanical energy generation equipment, by installation of a more-efficient useful energy generation equipment than already existing, or by upgrade of existing equipment but with better efficiency of recovery.

Type of GHG emissions mitigation action

Energy efficiency: Waste energy recovery in order to displace more-carbon intensive energy/technology.

In the absence of the project activity, the equivalent amount of electricity would have been imported from the regional grid (which is connected to the unified Indian Grid system). Hence, baseline scenario of the project activity is

"(a) the electricity obtained from the grid."

Baseline emissions from electricity ($BE_{Elec,y}$)

The baseline emissions corresponding to electricity supplied by the project activity to recipient facilities shall be estimated for each recipient facility in accordance with the case it belongs to as follows:

(a) Case 1a: recipients whose project level electricity consumption is less than or up to the maximum capacity of the existing pre-project equipment at the recipient facility to use Equation 4

$$BE_{EL,j,y} = \sum_{i} \left(EG_{i,j,y} \times EF_{Elec,i,j,y} \right) \qquad \text{Equation (4)}$$

Where:

$EG_{i,j,y}$	=	The power supplied by the project activity to the recipient facility *j*, which in the absence of the project activity would have been sourced from baseline source *i* (e.g. '*gr*' for the grid or '*is*' for an identified source) during the year *y* as per the identified baseline scenario for recipient facility *j* (MWh)
$EF_{Elec,i,j,y}$		The CO_2 emission factor for the baseline electricity source *i* (e.g. '*gr*' for the grid, and '*is*' for an identified source), corresponding to baseline scenario for the recipient facility *j*, during the year *y* (t CO_2/MWh)

A.7. Debundling>>

This project activity is not a debundled component of a larger carbon or GHG registered project activity.

SECTION B. Application of methodologies and standardized baselines

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

SECTORAL SCOPE - 01 Energy industries (Renewable/NonRenewable Sources)
04. Manufacturing industries

TYPE III – Energy Efficiency

CATEGORY- ***ACM0012*** Large-scale Consolidated Methodology
Waste energy recovery Version 06.0

The consolidated methodology is applicable to project activities implemented in an existing or Greenfield waste energy generation (WEG) facility converting waste energy carried in identified waste energy carrying medium (WECM) stream(s) into useful energy (i.e. power, mechanical or thermal) consumed in an existing or Greenfield recipient facility(ies) and/or supplied to the grid in the case of electricity generation. The WEG facility may be one of the recipient facilities.

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

This project is included under this methodology since it applies to project activities that generate electricity from waste heat or the combustion of waste gases in industrial facilities. It's also included within the UCR Standard Positive List of technologies (updated) and is within the large -scale CDM thresholds under the applied methodology
Project activity involves power generation with installed capacity of 46 MW. Regulations do not require the project activity to recover and/or utilize the waste energy prior to the implementation of the project activity; The methodology is applicable where waste pressure is used to generate electricity only and the electricity generated from waste pressure is measurable;
The proposed project activity is a power generation project from waste heat from DRI kilns in a sponge iron plant. The project activity displaces Chhattisgarh State Electricity Board (CSEB) grid power, part of WR grid, which is predominantly fossil fuel based.
The methodology allows for the recipient facility to be same as the waste energy generation facility. The project site is the waste energy generation facility and the facility itself receives useful energy generated using waste energy under the project activity.

B.3. Applicability of double counting emission reductions >>

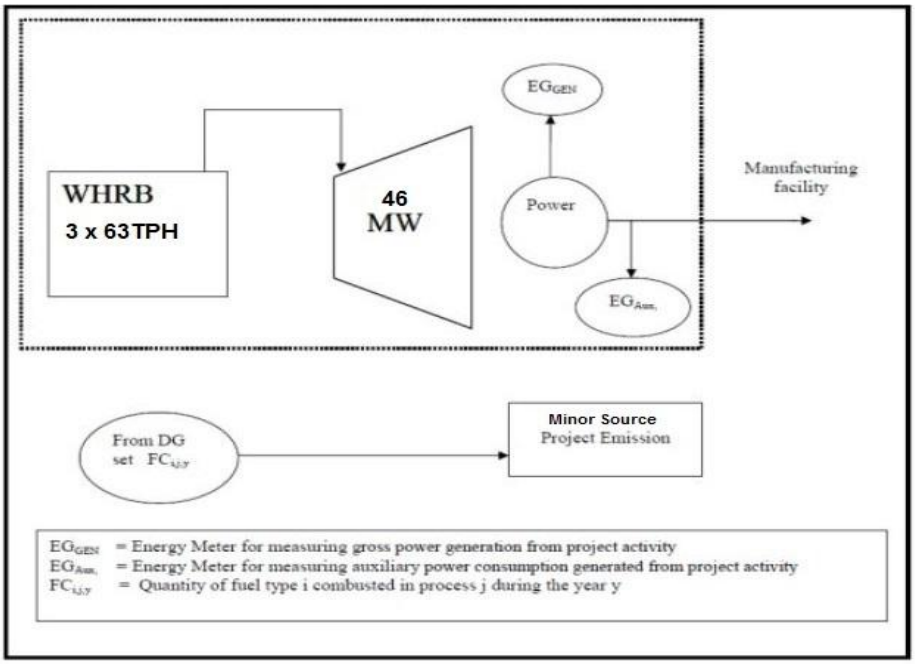
There is no double accounting of emission reductions in the project activity due to the following reasons:

- Project is uniquely identifiable based on its location coordinates,
- Project has dedicated commissioning certificate and connection point and plant operation data on power generation in project activity is taken from energy meters installed at project site
- Project is associated with distinct and unique energy meters which are dedicated to the consumption point for PP.

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

The spatial extent of the project boundary comprises the waste heat or gas sources, captive power generating equipment, any equipment used to provide auxiliary heat to the waste heat recovery process, and the power plants connected physically to the electricity grid that the proposed project activity will affect.

	Source	GHG	Included?	Justification/Explanation
Baseline	Grid-connected electricity	CO_2	**Included**	Major source of emission
		CH_4	Excluded	Excluded for simplification. This is conservative
		N_2O	Excluded	Excluded for simplification. This is conservative
Project Activity	On-site fossil fuel consumption due to project activity Combustion of waste gas for electricity generation	CO_2	Excluded	Project activity entails use of waste heat of the flue gases from DRI kilns for power generation. Project activity does not entail use of fossil fuels in the project activity. The emissions from on site diesel consumption negligible and are excluded for simplification. This is conservative
		CH_4	Excluded	Excluded for simplification. This is conservative
		N_2O	Excluded	Excluded for simplification. This is conservative



Net GHG Emission Reductions and Removals

Thus, ERy = BEy – PEy – LEy Where:

ERy = Emission reductions in year y (tCO2/y)

BEy = Baseline Emissions in year y (t CO2/y)

PEy = Project emissions in year y (tCO2/y)

LEy = Leakage emissions in year y (tCO2/y)

B.5. Establishment and description of baseline scenario (Adapted CDM Methodology using UCR Protocol) >>

Baseline emissions include only CO_2 emissions from electricity generation in power plants that are displaced due to the project activity. The case established for the power required by the project activity, since it requires 4~4.6 MW_h for its auxiliary use, is less than the installed capacity of the equipment as per the methodology and its associated emissions quantification formula to be selected. The baseline emissions corresponding to electricity supplied by the project activity to recipient facilities is estimated for each recipient facility in accordance with the case established as above and in the case of the project activity is as follows:

(a) *Case 1a: recipients whose project level electricity consumption is less than or up to the maximum capacity of the existing pre-project equipment at the recipient facility to use Equation (4)*

$$BE_{EL,j,y} = \sum_{i} \left(EG_{i,j,y} \times EF_{Elec,i,j,y} \right) \qquad \text{Equation (4)}$$

Where:

$EG_{i,j,y}$	=	The power supplied by the project activity to the recipient facility *j*, which in the absence of the project activity would have been sourced from baseline source *i* (e.g. '*gr*' for the grid or '*is*' for an identified source) during the year *y* as per the identified baseline scenario for recipient facility *j* (MWh)
$EF_{Elec,i,j,y}$		The CO_2 emission factor for the baseline electricity source *i* (e.g. '*gr*' for the grid, and '*is*' for an identified source), corresponding to baseline scenario for the recipient facility *j*, during the year *y* (t CO_2/MWh)

(b) If the electricity displaced by the project activity in the recipient facility is supplied by a connected grid system, the CO_2 emission factor of the electricity is modified from the UNFCCC CDM methodology and instead shall be determined following the guidance provided by the UCR CoU protocol for conservativeness.

Power Gen Cap Capacity	MW	46
Auxiliary Power Consumption	%	10%

Estimated Annual Baseline Emission Reductions: $BE_{EL,j,y} = EG_{BL,y} \times EF_{,CO2,GRID,y}$

$BE_{EL,j,y}$ = Baseline emission reductions in a year y at project site/recipient plant (j).

where:

$EG_{BL,y}$ is calculated based on daily gross power generation and auxiliary power consumption in the power generation plant (recipient plant)

$EG_{BL,y} = EG_{GEN,y} - EG_{AUX,y}$.
where,
$EG_{BL,y}$ = Net power generation from turbine in year y (MWh/yr)
$EG_{GEN,y}$= Gross power generation from turbine in year y (MWh/yr)
$EG_{AUX,y}$= Auxiliary power consumption in power generation plant in year y (MWh/yr)

$EF_{Grid,CO2,y}$ = CO_2 emission factor of the grid in year y (t CO_2/MWh) as determined by the UCR Standard for the 2013-2022 period.

A "grid emission factor" refers to a CO_2 emission factor (tCO2/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/MW_h for the 2013-2020 years as a fairly conservative estimate for Indian projects not previously verified under any GHG program. Also, for the vintage 2021-22, the combined margin emission factor calculated from CEA database in India results into same emission factors as that of the default value. Hence, the same emission factor has been considered to calculate the emission reduction.

No leakage is applicable under this methodology, hence, LEy= 0

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

Estimated annual Emission Reductions (ER_y) = **163968** CoUs/yr (163968 tCO_{2eq}/yr)

B.6. Prior History>>

The project activity has **never been** registered as a voluntary carbon or CDM project activity in the past, nor has been issued carbon offsets for the 2013-2022 period.

The project activity is seeking CoUs under the UCR CoU Standard for the period **01/04/2013-31/12/2022** and hence there is no double counting issue of carbon credits for the said vintage period.

B.7. Changes to start date of crediting period >>

There is no change in the start date of crediting period. The start date of crediting under UCR is considered as 01/04/2013.

B.8. Permanent changes from PCN monitoring plan, applied methodology or applied standardized baseline >>

There are no permanent changes from registered PCN monitoring plan and applied methodology

B.9. UCR Monitoring period number and duration>>

UCR Monitored Period: 01
1st UCR Monitoring Period: 01/04/2013-31/12/2022 (09 years 09 months)
1st UCR Crediting Period: 01/04/2013-31/12/2022 (09 years 09 months)

B.10. Monitoring plan>>

Various departments at SBPIL are headed by respective HOD (Head of Department) supported by shift- in-charges & support staff. Departments are mainly divided into projects, mechanical, electrical & instrumentation, production, QC and administration. Mechanical & electrical department are responsible for the overall upkeep of plant, plant machinery and instruments.

To ensure that the data is reliable and transparent, the PP has established Quality Assurance and Quality Control (QA&QC) measures to effectively control and manage data reading, recording, auditing as well as archiving data and all relevant documents. The data is monitored on a daily basis and is submitted to PPs on a daily basis.

Key Data Monitored: • Net power supplied to manufacturing facility due to waste heat recovery

1. **Monitoring Plan Objective and Organization**

PP is the project implementers and monitors the electricity generated from the turbines within the project activity. The data is already archived electronically and is stored since 2013.

Director is responsible for the overall functioning of the sponge iron plant. SBPIL has adopted the following procedures to assure the completeness and correctness of the data needed to be monitored for the UCR project activity.

On a monthly basis, the monitoring reports are checked and discussed by the senior project activity team members. In case of any irregularity observed by any of the team members, it is informed to the concerned person for necessary actions. Further these reports are then forwarded to the management on a monthly basis.
• Unit Head: Overall responsibility of compliance with the project activity monitoring plan.
• Power plant In-charge: Responsibility for completeness of data, reliability of data (calibration of meters), and monthly report generation
• Shift In-charge: Responsibility of data monitoring & recording day to day data collection and record keeping:

Plant data collected on operation under the supervision of the respective Shift-in-charge and records are kept in daily logs.

Reliability of data collected
The reliability of the meters is checked by testing the meters on yearly basis. Documents pertaining to testing of meters are maintained. PPs have implemented QA&QC measures to calibrate and ensure the accuracy of metering and safety aspects of the project operation. The metering devices are calibrated and inspected properly and periodically, according to state electricity board's specifications and requirements to ensure accuracy in the readings.

Calibration of instruments: SBPIL procedures defined for the calibration of instruments. A log of calibration records is maintained. Electrical & Instrumentation department in the company is responsible for the upkeep of instruments in the plant. Maintenance of instruments and equipment's used in data monitoring: The process department is responsible for the proper functioning of the equipment's/ instruments and informs the concerned department for corrective action if found not operating as required. Corrective action is taken by the concerned department and a report on corrective action taken is maintained as done time to time along with the details of problems

rectified.

Emergency preparedness

The project activity does not lead to any unintentional emissions. So, there is no need for any emergency preparedness in project activity.

2 Data and Parameters to be monitored

Data / Parameter:	***EGy***
Data unit:	MWh
Description:	Net power supplied to manufacturing facility due to waste heat recovery
Source of data:	Calculated
Measurement procedures (if any):	Plant operation data on power generation in project activity
Monitoring frequency:	Recording frequency: Monthly Calculated based on daily gross power generation and auxiliary power consumption in the power generation plant.
QA/QC procedures:	As per B.10
Purpose of Data	-Calculation of baseline emissions

Data / Parameter:	***EG GEN,y***
Data unit:	MWh
Description:	Gross power generation from project activity
Source of data:	Measured
Measurement procedures (if any):	Gross power generation is measured directly using energy meter installed at the site.
Monitoring frequency:	Frequency of measurement - Continuous
QA/QC procedures:	Energy meter is calibrated as per schedule
Purpose of Data	-Calculation of baseline emissions

Data / Parameter:	***EG AUX,y***
Data unit:	MWh
Description:	Auxiliary power consumption in project activity
Source of data:	Auxiliary power consumption in the project activity is measured directly.
Measurement procedures (if any):	Plant operation data on power generation in project activity
Monitoring frequency:	Frequency of measurement - Continuous
QA/QC procedures:	Energy meter is calibrated as per schedule.
Purpose of Data	-Calculation of baseline emissions

Data/Parameter	***EF CO2, GRID, y***
Data unit	tCO_2 /MWh
Description	Fixed Ex-Ante
of data Value(s) applied	UCR Standard Protocol As per Standard
Measurement methods and procedures	Fixed
Monitoring frequency	NA
Purpose of data	To estimate baseline emissions