



PROJECT CONCEPT NOTE

CARBON OFFSET UNIT (CoU) PROJECT



Title: KIL Waste Heat to Power project, India

Version 1.0

Date of PCN: 23/07/2023

1st CoU Issuance Period: 01/01/2018-31/12/2022 (05 years 00 months)

1st Crediting Period: 01/01/2018-31/12/2022 (05 years 00 months)

8 DECENT WORK AND
ECONOMIC GROWTH



13 CLIMATE
ACTION



7 AFFORDABLE AND
CLEAN ENERGY





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

BASIC INFORMATION	
Title of the project activity	KIL Waste Heat to Power project, India
Scale of the project activity	Large Scale
Completion date of the PCN	23/07/2023
Project participants	Project Proponent: M/s Kamachi Industries Ltd (KIL) UCR Aggregator: M/s. Global Green Energy LLC
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	44582 CoUs/yr (44582 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, **KIL Waste Heat to Power project, India** is located Plot No- 86, 116-119 & 123-125, in Village: Pappankuppam, Taluk: Gummudipundi, District: Tiruvallur, State: Tamil Nadu, Country: India.

Purpose of the project activity:

The project activity entails utilisation of waste heat of flue gases generated in DRI kilns of sponge iron plant of Kamachi Industries Ltd (KIL, formerly Kamachi Sponge & Power Corporation Limited, Project Proponent or PP hereafter) in power generation. The power produced is used actively at the sponge iron plant of KIL. 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 KIL which is within the same premises as the WHRB plant. The project activity started commercial production from **29/12/2007**.

Type of GHG emissions mitigation action	Energy efficiency: Waste energy recovery in order to displace more-carbon intensive energy/technology.
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This power, from the WHRB plant, displaces equivalent amount of power from the Tamil Nadu Electricity Board (TNEB) grid, which is part of Southern Region (SR) 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 SR grid is as the recommended UCR conservative estimate for the years 2018-2022.

KIL has set up 04 nos. DRI kilns of 100 TPD each at its sponge iron production unit. Annual sponge iron production is ~120000 TPA. Each of the kilns generates ~25000 Nm³ /hr of high temperature flue gases. The temperature of flue gases from the kiln leaving After Burner Chamber (ABC) is at ~950-1000 °C. This waste heat of flue gases is utilised in the generation of steam in (WHRB), which is further expanded in a single bleed-condensing turbine of 10MW to generate power. Steam from 04 nos. WHRB is taken to the turbine through a common header.

In the absence of the project activity, KIL would draw power from TNEB grid, which in turn generates power from fossil fuel power plants. The project activity thus displaces equivalent amount of power generation in SR grid connected power stations. 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., **51840 MWh** 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 **44582 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

Indian economy is highly dependent on “Coal” as fuel to generate energy and for production processes. The project activity is close to Singreni Colliery in Andhra Pradesh and coal can be easily imported as Chennai port is only 60 km from project boundary. Coal could also be procured for power generation. Char, a byproduct 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 NO_x and SO_x 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.

With regards to ESG credentials:

At present specific ESG credentials have not been evaluated, however, the project activity has implemented the Charter on Corporate Responsibility for Environment Protection (CREP) for the Steel Plants in India.

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

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](#)).

The existing project activity along with the facility was accorded environmental clearance vide file No. J11011/419/2008-IA-II (I) dated 19.10.2009. Consent to Operate was accorded by Tamil Nadu State pollution Control Board vide Ir. No. TI/TNPCB/F.0040 TLR/RL/TLR/A/2017 & TI/TNPCB/F.0040 TLR/RL/TLR/W/2017 dated 30.08.2017. The total area of the facility is 35.82 hectares (88.5 Acres). The entire land area of 35.82 ha is owned by the PP. No forest land involved. Out of the total area 12.14 ha (33.89%) land is used for green belt development. The Pulicat Lake Bird Sanctuary is located at a distance of 10 KM from the project site. No national parks, biosphere reserve, tiger reserve, elephant reserve etc. are reported to be located in the core and buffer zone of the project activity ([source](#)).


United Nations Sustainable Development Goals:



The project activity displaces Tamil Nadu Electricity Board (TNEB) power, part of SR 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 Target: 44582 tCO ₂ per annum	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)

<p>7 AFFORDABLE AND CLEAN ENERGY</p>  <p>SDG 7: Affordable and Clean Energy</p>	<p>By 2030, increase substantially the share of non fossil energy in the global energy mix</p> <p>Target: 51840 MWh supplied per annum</p>	<p>The project activity helps reducing GHG emission in power generation in the grid, which is primarily fossil fuel based</p>
<p>8 DECENT WORK AND ECONOMIC GROWTH</p>  <p>SDG 8: Decent Work and Economic Growth</p>	<p>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</p> <p>Target: Training, O&M staff</p>	<p>8.5.1: Average hourly earnings of female and male employees, by occupation, age and persons with disabilities</p>

A.3. Location of project activity >>

Plot No- 86, 116-119 & 123-125

Village: Pappankuppam

Taluk: Gummudipundi

District: Tiruvallur

State: Tamil Nadu,

Country : India

Longitude: 79.57 E

Latitude: 13.09 N.



A.4. Technologies/measures >>

The total installed capacity of the project activity is 10 MW and the auxiliary consumption as per the requirement of the auxiliary equipment at the WHRB plant is a maximum of 10% which is 1 MW. The balance of 7~8 MW of electricity generated by the WHRB plant is consumed by the adjoining steel plant owned by the PP which is within the same premises as the WHRB Plant. KIL has installed 4X10 TPH Waste Heat Recovery Boilers (WHRBs) for utilising high temperature heat of flue gases from 4X100 TPD 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

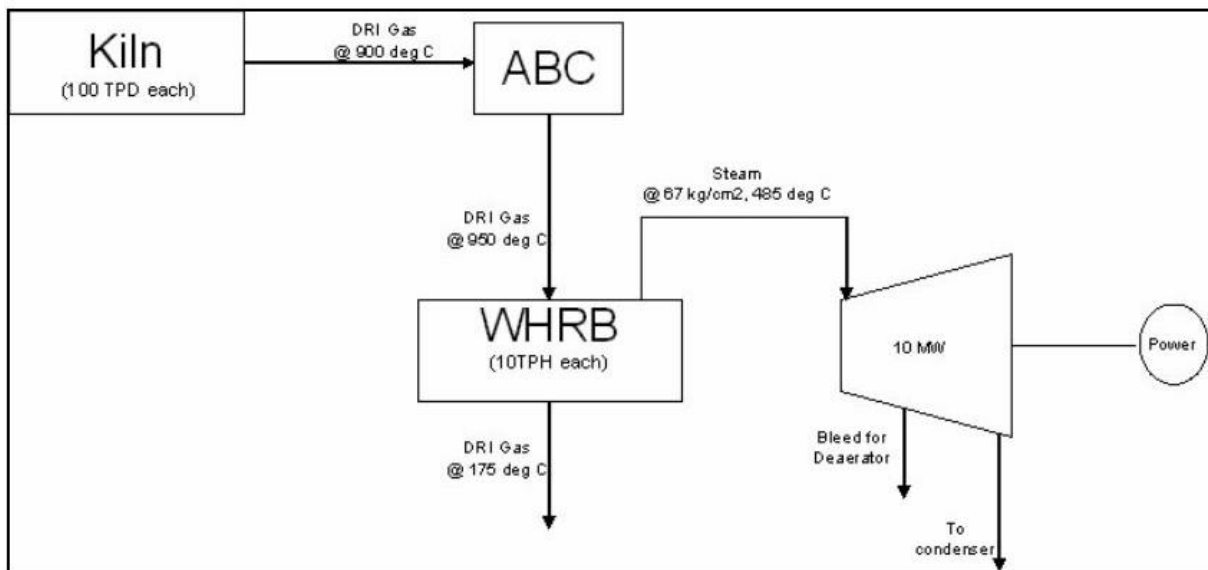
to iron in a reactor vessel, using reducing gases like hydrogen or carbon monoxide. The temperature of flue gases after ‘After Burning Chamber’ (ABC) is at 950-1000 °C. Steam is generated at 67 kg/cm² and 485 °C and expanded in one single bleed-condensing turbine of 10MW to generate power. Each of the 04 kilns generates ~25000 Nm³ /hr of high temperature flue gases. The temperature of flue gases from the kiln leaving After Burner Chamber (ABC) is at ~950-1000 °C. This waste heat of flue gases is utilised in generation of steam in (WHRB), which is further expanded in a single bleed-condensing turbine of 10MW to generate power. Steam from 04 nos. WHRB is taken to the turbine through a common header

Waste heat recovery boiler

Capacity	10 TPH
Steam Pressure	67 kg/cm ²
Steam Temperature	485 +/- 5 deg C
Nos.	04 Nos.
Flue gas inlet temp.	950 deg C
Flue gas inlet to ESP	175 deg C

Turbine

Rated Capacity	10 MW
Steam Inlet Pressure	64 ata
Steam Inlet Temperature	480 deg C
Nos.	1 nos.
Bleed pressure for deaerator	4 ATA



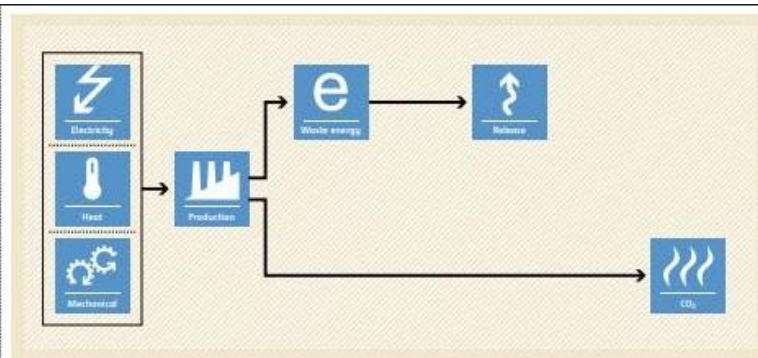
A.5. Parties and project participants >>

Party (Host)	Participants
India	<p>Project Proponent: M/ Kamachi Industries Ltd (KIL)</p> <p>Aggregator: M/s. Global Green Energy LLC</p>

A.6. Baseline Emissions>>

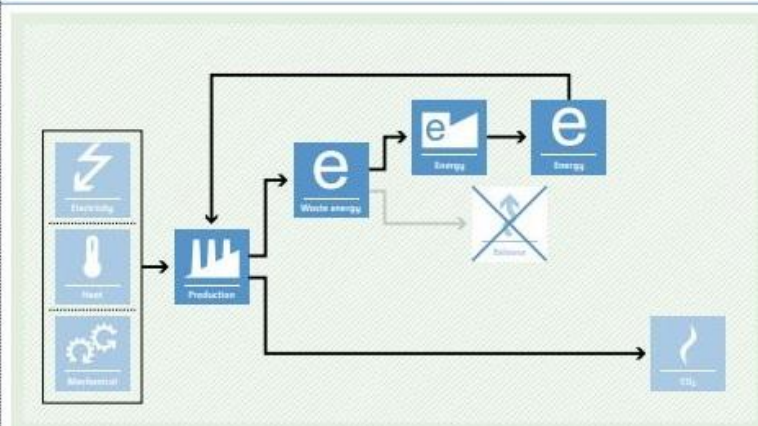
BASELINE SCENARIO

Carbon-intensive sources will continue to supply heat/electricity/mechanical energy to the applications of the recipient facility and unrecovered energy from waste energy source will continue to be wasted.



PROJECT SCENARIO

Heat/electricity/mechanical energy are generated by recovery of energy from a waste energy source and are supplied to the grid and/or applications in the recipient facility.



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 inhouse 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

$$BE_{EL,j,y} = \sum_i (EG_{i,j,y} \times EF_{Elec,i,j,y}) \quad \text{Equation (4)}$$

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 CO₂ 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 CO₂/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 10 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 Tamil Nadu Electricity Board (TNEB) power, part of SR 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 >>

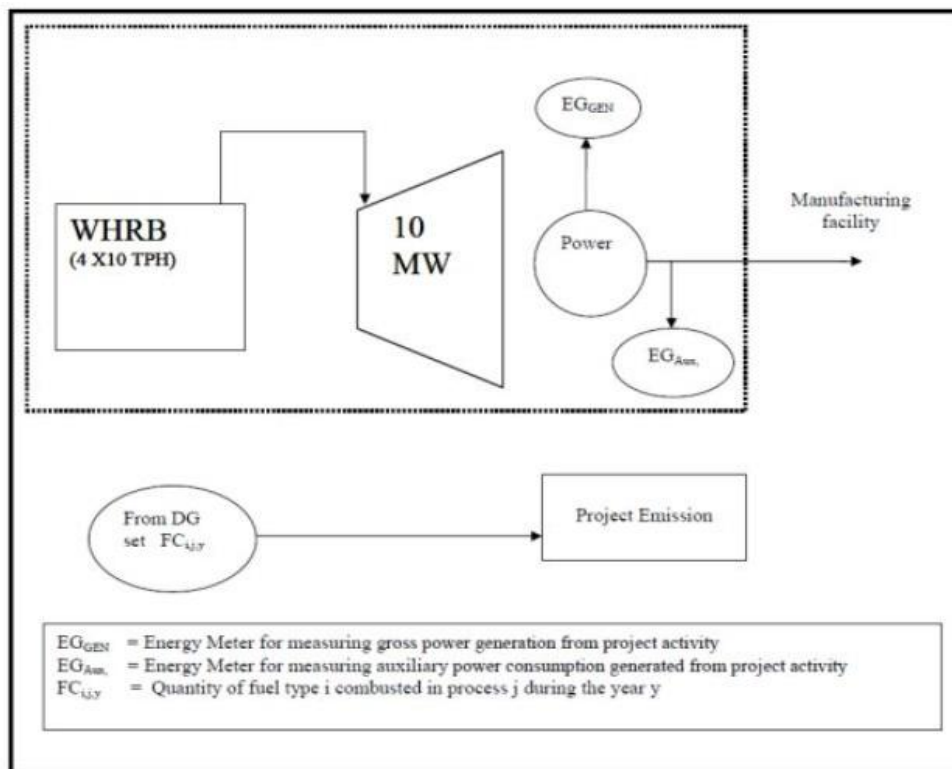
There is no double accounting of emission reductions in the project activity due to the following reasons:

- 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 ₂ O	Excluded	Excluded for simplification. This is conservative
Project Activity	On-site fossil fuel consumption due to project activity	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
	Combustion of waste gas for electricity generation	CH ₄	Excluded	Excluded for simplification. This is conservative
		N ₂ O	Excluded	Excluded for simplification. This is conservative



Net GHG Emission Reductions and Removals

Thus, $ER_y = BE_y - PE_y - LE_y$ Where:

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

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

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

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

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

Baseline emissions include only CO₂ 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 1~2 MW_h for its captive 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)*

$$BE_{EL,j,y} = \sum_i (EG_{i,j,y} \times EF_{Elec,i,j,y}) \quad \text{Equation (4)}$$

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 CO₂ 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 CO₂/MWh)

- (b) If the electricity displaced by the project activity in the recipient facility is supplied by a connected grid system, the CO₂ 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	10
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)

$EF_{Grid,CO_2,y}$ = CO₂ emission factor of the grid in year y (t CO₂/MWh) as determined by the UCR Standard for the 2018-2022 period.

A "grid emission factor" refers to a CO₂ 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 tCO₂/MWh for the 2018-2020 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, LE_y = 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 calculation has been submitted:

Estimated annual Emission Reductions (ER_y) = 44582 CoUs/yr (44582 tCO_{2eq}/yr)

B.6. Prior History>>

The project activity has been registered as a CDM project activity as follows:

UNFCCC CDM Title	KSPCL Waste Heat to Power project, India	
CDM ID	1151	
Host Parties	M/s Kamachi Sponge & Power Corporation Limited (KSPCL)	
Sectoral Scopes	1 : Energy industries (renewable - / non-renewable sources)	
METHODOLOGY	ACM0004 ver. 2- Consolidated methodology for waste gas and/or heat for power generation	
Other Details	CDM Registration Date	03/10/2007
	Crediting Period	31/12/2007 – 30/12/2017 (Fixed)
Prior Issuance of CDM credits	Monitoring Period: 31/12/2007-31/03/2008 CERs Issued: 3506	
	Monitoring Period: 01/04/2008-31/03/2009 CERs Issued: 16545	
	Monitoring Period: 01/04/2009-31/03/2010 CERs Issued: 22905	
	Monitoring Period: 01/04/2010-31/08/2011 CERs Issued: 31705	
	Monitoring Period: 01/09/2011-31/12/2012 Awaiting CERs Issuance	
	Monitoring Period: 01/01/2013-30/09/2016 CERs Issued: 153762	
	Monitoring Period: 01/10/2016-30/12/2017 Awaiting CERs Issuance	

The project activity is seeking CoUs under the UCR program for the period **01/01/2018-31/12/2022** 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 01/01/2018 as **GHG emission reductions have been claimed till 30/12/2017 under the CDM program.**

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: 01/01/2018-31/12/2022 (05 years 00 months)

1st UCR Crediting Period: 01/01/2018-31/12/2022 (05 years 00 months)

B.10. Monitoring plan>>

Various departments at KIL 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 delivered to the electricity grid by the project activity. The data is already archived electronically and is stored since 2007.

Managing Director is responsible for the overall functioning of the sponge iron plant. KIL 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: KIL 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:	<i>EG_y</i>
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.10.1
Purpose of Data	-Calculation of baseline emissions

Data / Parameter:	<i>EG_{GEN,y}</i>
Data unit:	MWh
Description:	Gross power generation from project activity
Source of data:	Calculated
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:	<i>EG_{AUX,y}</i>
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	<i>EF_{CO2, GRID, y}</i>
Data unit	tCO ₂ /MWh
Description	Fixed Ex-Ante
of data	UCR Standard Protocol
Value(s) applied	As per Standard
Measurement methods and procedures	Fixed
Monitoring frequency	NA
Purpose of data	To estimate baseline emissions

