



Monitoring Report

CARBON OFFSET UNIT (CoU) PROJECT



Title: 8.6 MW Windmill Power Project of Bellary Iron Ores Private Limited by Energy Advisory Services.

Version 1.0

Date: 24/02/2024

First CoU Issuance Period: 09years, 03 months

Monitoring Period: 01/01/2013 to 31/03/2022



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

Monitoring Report	
Title of the project activity	8.6 MW Windmill Power Project of Bellary Iron Ores Private Limited by Energy Advisory Services.
UCR Project Registration Number	300
Version	1.0
Completion date of the MR	24/02/2024
Monitoring period number and duration of this monitoring period	Monitoring Period Number: 01 Duration of this monitoring Period: (first and last days included (01/01/2013 to 31/03/2022)
Project participants	M/S Bellary Iron Ores Private Limited
Host Party	India
Applied methodologies and standardized baselines	CDM UNFCCC Methodology AMS-1D.: Grid connected renewable electricity generation version-18 & UCR Standard for Emission Factor
Sectoral scopes	01 Energy industries (Renewable/Non-Renewable Sources)
Estimated amount of GHG emission reductions for this monitoring period in the registered PCN	2013: 14019 CoUs (14019 tCO _{2eq})
	2014: 12312 CoUs (12312tCO _{2eq})
	2015: 11384 CoUs (11384 CO _{2eq})
	2016: 12904 CoUs (12904 CO _{2eq})
	2017: 13096 CoUs (13096 CO _{2eq})
	2018: 11850 CoUs (11850 CO _{2eq})
	2019: 12938 CoUs (12938 CO _{2eq})
	2020: 10844 CoUs (10844 CO _{2eq})
	2021: 10069 CoUs (10069 CO _{2eq})
	2022: 1453 CoUs (1453 CO _{2eq})
Total:	110869 CoUs (110869 tCO_{2eq})

SECTION A. Description of project activity

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

The Project Titled “8.6 MW Windmill Power Project By Bellary Iron Ores Private Limited” is a Wind based Power Project successfully commissioned by Karnataka Power Transmission Corporation Limited (KPTCL) in Chitradurga and Davangere district in Karnataka state in four villages at 6 different locations and operational since 31/03/2005 which is the earliest commissioning date. The Project is owned by “M/S Bellary Iron Ores Private Limited (BIOP)” (hereby to be called as Project Proponent, PP).

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

The purpose of the project activity is to utilize renewable wind energy for generation of electricity. The project activity replaces anthropogenic emissions of greenhouse gases (GHG's) into the atmosphere, by displacing the equivalent amount of electricity generation through the operation of existing fuel fossil fuel- based power plants and future capacity expansions connected to the grid. In the absence of the project activity the equivalent amount of electricity would have been generated from the fossil fuel-based power plant. Whereas the electricity generation from operation of Wind Energy Convertors (WEC) is emission free.

The project will generate approximately 123207 MWh of during the entire monitoring period. The net generated electricity from the project activity is for selling it to KPTCL by the project proponent. A Power Purchase Agreement is signed between PP and KPTCL. The project activity has been helping in greenhouse gas (GHG) emission reduction by using renewable resources (wind energy) for generating power which otherwise would have been generated using grid mix power plants, which is dominated by fossil fuel based thermal power plants. The total CO₂e emission reduction by the project activity is expected to be 110869 t/CO₂, during the entire monitoring period.

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

The project activity is the installation of 6 small scale wind power turbines at different locations in Karnataka, India.

The details of the wind turbines installed at 6 different locations is given in the table below:

Project	Project Proponent	Capacity	Location	Net Generation	Emission Reduction rounddown	Commissioned Date
2.3 MW Wind Project in Basavapatna, Davangere - Phase I	M/S Bellary Iron Ores Private Limited	2.3 MW (3 x 600 KW) + (1 x 500 KW)	Davangere district, Karnataka, India	28192.71 MWh	25373 tCO ₂ e/yr	3 x 600 KW = 31/03/2006 1 x 500 KW = 31/03/2005
1.2 MW Wind Project in Basavapatna, Davangere - Phase II	M/S Bellary Iron Ores Private Limited	1.2 MW (2 x 600 KW)	Davangere district, Karnataka, India	14287.27 MWh	12858 tCO ₂ e/yr	31/03/2006
1.2 MW Wind Project in Basavapatna, Davangere - Phase III	M/S Bellary Iron Ores Private Limited	1.2 MW (2 x 600 KW)	Davangere district, Karnataka, India	14241.75 MWh	12817 tCO ₂ e/yr	31/03/2006
2.0 MW Wind Project in Bettadanaganahalli, Chitradurga	M/S Bellary Iron Ores Private Limited	2.0 MW (4 x 500 KW)	Chitradurga district, Karnataka, India	39416.91 MWh	35475 tCO ₂ e/yr	31/03/2005
0.95 MW Wind Project in Gonur, Chitradurga	M/S Bellary Iron Ores Private Limited	0.95 MW (1 x 950 KW)	Chitradurga district, Karnataka, India	14171.02 MWh	12753 tCO ₂ e/yr	09/06/2005
0.95 MW Wind Project in Chikkapanahalli, Chitradurga	M/S Bellary Iron Ores Private Limited	0.95 MW (1 x 950 KW)	Chitradurga district, Karnataka, India	12897.68 MWh	11607 tCO ₂ e/yr	31/03/2005

The bundled project activity consists of multiple Wind turbines of 500 KW, 600 KW and 950 KW respectively manufactured and supplied by Vestas RRB and Vestas NEG Micon India Limited.

Commissioning dates of the Wind Turbine Generator installed are shown in the table below:

Sr. No.	Make	No. & Capacity	Commissioning Date
1	VESTAS RRB	5 X 500 KW	31/03/2005
2	VESTAS RRB	3 X 600 KW 2 X 600 KW 2 X 600 KW	31/03/2006 31/03/2006 31/03/2006
3	VESTAS NEG Micon	1 X 950 KW 1 X 950 KW	31/03/2005 09/06/2005

Main component of the windmill is explained below:

Main Tower

This is a very tall structure with a door and inside ladder at the bottom. The door is used to enter into the tower for operation and maintenance.

Blades

The wind mills are provided with three blades. The blades are self-supporting in nature made up of Fibre Reinforced Polyester. The blades are mounted on the hub.

Nacelle

The Nacelle is the one which contains all the major parts of a wind mill. The nacelle is made up of thick rugged steel and mounted on a heavy slewing ring. Under normal operating conditions, the nacelle would be facing the upstream wind direction.

Hub

The Hub is an intermediate assembly between the wing and the main shaft of the wind turbine. Inside the hub, a system to actuate the aerodynamic brake is fitted. The hub is covered with nose cone.

Main Shaft

The shaft is to connect the gear box and the hub. Solid high carbon steel bars or cylinders are used as main shaft. The shaft is supported by two bearings.

Parameter	Vestas RRB		NEG Micon
Operating Data	Rated Power	600 KW / 500 KW	950 KW
	Cut-In Wind Speed	4.0 m/s	3.5 m/s
	Rated Wind Speed	14.0 m/s	16.0 m/s
	Cut-Out Wind Speed	25.0 m/s	25.0 m/s
Rotor	Rotor Diameter	52.2 m	47.0 m
	Swept Area	2,140.0 m ²	1,735.0 m ²
Generator	Speed, max	1,511.0 U/min	1,511.0 U/min
	Type	Asynchronous	Asynchronous
Tower	Hub Height	74 m	74 m
	Type	Steel Tube	Steel Tube

c) Relevant dates for the project activity (e.g. construction, commissioning, continued operation periods, etc.)>>

The duration of the crediting period corresponding to the monitoring period is covered in this monitoring report.

UCR Project ID : 300
Start Date of Crediting Period : 01/01/2013 to 31/03/2022
Project Commissioned :

Project	Commissioned Date
2.3 MW Wind Project in Basavpatna, Davangere - Phase I	3 x 600 KW = 31/03/2006 1 x 500 KW = 31/03/2005
1.2 MW Wind Project in Basavpatna, Davangere - Phase II	31/03/2006
1.2 MW Wind Project in Basavpatna, Davangere - Phase III	31/03/2006
2.0 MW Wind Project in Bettadanaganahalli, Chitradurga	31/03/2005
0.95 MW Wind Project in Gonur, Chitradurga	09/06/2005

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

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

Summary of the Project Activity and ERs Generated for the Monitoring Period	
Start date of this Monitoring Period	01/01/2013
Carbon credits claimed up to	31/03/2022
Total ERs generated (tCO _{2eq})	110869 tCO _{2eq}
Leakage	00

e) Baseline Scenario>>

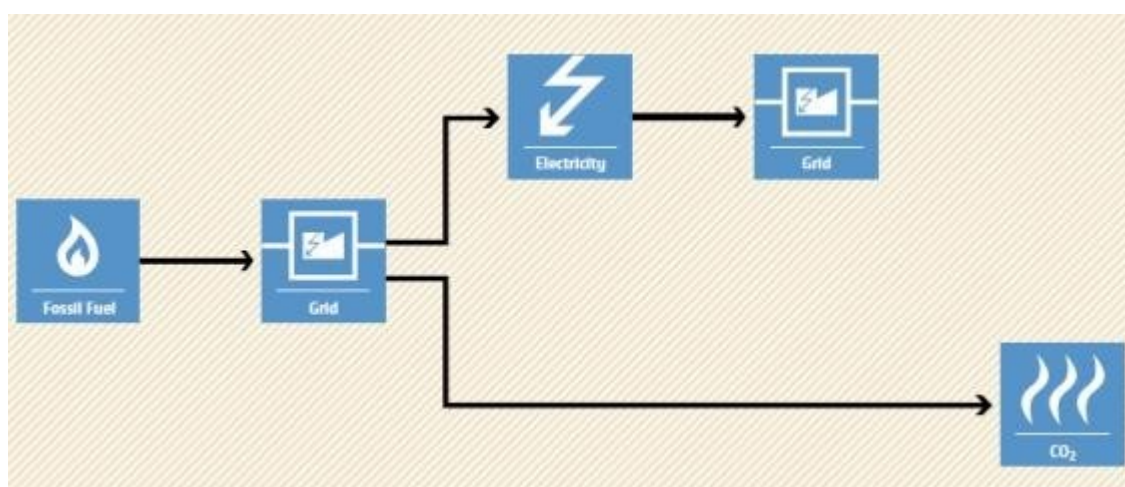
The baseline scenario identified at the PCN stage of the project activity is:

Grid

In the absence of the project activity, the equivalent amount of electricity would have been generated from fossil fuel-based power plants and exported to the southern regional grid (which is connected to the unified Indian Grid system) as national grid is predominantly sourcing from fossil fuel-based power plants. Hence, baseline scenario of the project activity is the grid-based electricity system, which is also the pre-project scenario

Schematic diagram showing the baseline scenario:

Baseline Scenario:



A.2. Location of project activity>>

As the windmills are installed at different locations of Karnataka state, the locations are mentioned in tabular form.

Country	India	India	India	India
Village	Chikkapanahalli	Bettadanagenahalli	Gonur	Basavapatna
District	Chitradurga	Chitradurga	Chitradurga	Davangere

State	Karnataka	Karnataka	Karnataka	Karnataka
Pin Code	577502	577355	577502	577551

The project is located at Bettadanagenahalli, Gonur & Chikkapanahalli village in Chitradurga district and at Basavapatna village in Davangere district of Karnataka state, India. In Bettadanagenahalli windmills of capacity 4 x 500 MW are installed. In Chikkapanahalli & Gonur windmill of capacity 1 x 950 MW each is installed. In Basavapatna (Kundur Site) windmills of capacity 1 X 500 MW & 3 x 600 MW are installed in phase I, 2 x 600 MW each are installed in phase II & III respectively.

The following table shows the WEG numbers for all the wind turbines:

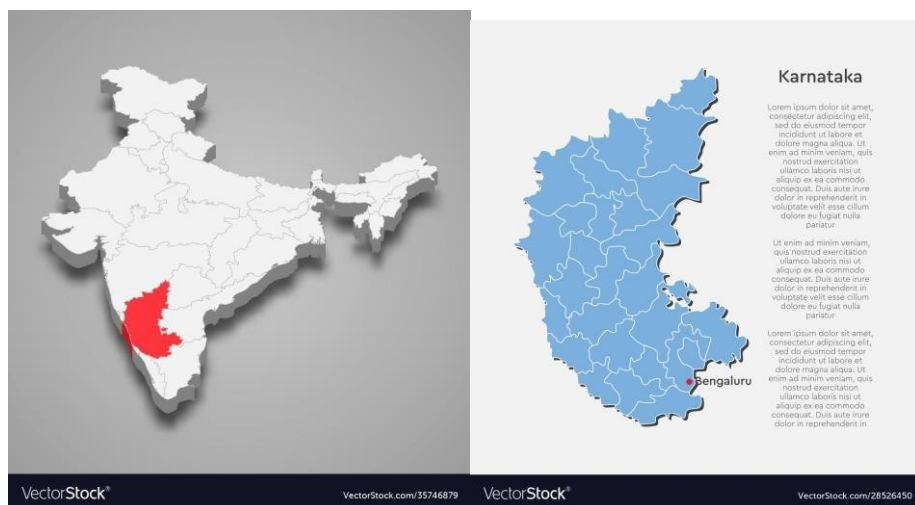
Loc No	Site Name	WEG No	EB Connected RR No	Wind turbine capacity	Capacity in KW
4	Bettadanagenahalli site	325	PDR-02	500 KW	2000
5	Bettadanagenahalli site	327		500 KW	
6	Bettadanagenahalli site	321		500 KW	
7	Bettadanagenahalli site	320		500 KW	
1	Kundur site	319	BVP-02	500 KW	2300
2	Kundur site	PS35		600 KW	
3	Kundur site	PS34		600 KW	
4	Kundur site	PS33		600 KW	
9	Kundur site	PS16	BVP-05	600 KW	1200
10	Kundur site	PS18		600 KW	
26	Kundur site	PS56	BVP-12	600 KW	1200
28	Kundur site	PS36		600 KW	
BIOPL 01	Chikkapanahalli site	13179	GRHP-17	950 KW	950
BIOPL 02	Gonur site	13179-A	GRHP-24	950 KW	950
					8.6 MW

Latitudes and longitudes of each site are mentioned in table below:

Project Name	Site Name	Loc Name	Latitude	Longitude
2.0 MW Wind Project in Bettadanaganahalli, Chitradurga	Bettadanagenahalli	Loc 04	14°10'11,53" N	76°16'23,40" E
	Bettadanagenahalli	Loc 05	14°10'15,56" N	76°16'20,20" E
	Bettadanagenahalli	Loc 06	14°10'19,08" N	76°16'16,95" E
	Bettadanagenahalli	Loc 07	14°10'21,13" N	76°16'15,52" E
0.95 MW Wind Project in Chikkapanahalli, Chitradurga	Chikkapanahalli	BIOP 1	14°19'8.72" N	76°22'38.04" E

0.95 MW Wind Project in Gonur, Chitradurga	Gonur	BIOP 2	14°16'31.86" N	76°25'46.24" E
2.3 MW Wind Project in Basavpatna, Davangere - Phase I	Kundur	Loc 01	14°15'56,52" N	75°46'07,89" E
	Kundur	Loc 02	14°15'50,07" N	75°46'11,07" E
	Kundur	Loc 04	14°15'38,42" N	75°46'13,39" E
	Kundur	Loc 03	14°15'43,92" N	75°46'11,95" E
1.2 MW Wind Project in Basavpatna, Davangere - Phase II	Kundur	Loc 09	14°15'15,68" N	75°46'27,59" E
	Kundur	Loc 10	14°15'09,89" N	75°46'30,11" E
1.2 MW Wind Project in Basavpatna, Davangere - Phase III	Kundur	Loc 26	14°13'52,20" N	75°47'18,33" E
	Kundur	Loc 28	14°15'45,60" N	75°47'11,63" E

The location of the site is shown in the following maps.



Physical location address of the project:

M/S Bellary Iron Ores Private Limited

Site locations are mentioned in table below:

Country	India			
District	Chitradurga			Davangere
Village	Chikkapanahalli	Bettadanagenahalli	Gonur	Basavapatna (Kundur)
State	Karnataka			
Pin Code	577502	577355	577502	577551

The project activity is installed on 6 different locations. Hence, the UCR format of project location is described in above table.

A.3. Parties and project participants >>

Party (Host)	Participants
India	<p>Name of Project Owner M/S Bellary Iron Ores Private Limited 60/356-A, Modi Bhavan, Hospet Road, Allipura, Bellary - 583105</p> <p>Project Aggregator Energy Advisory Services Pvt. Ltd.</p>

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

SECTORAL SCOPE - 01 Energy industries (Renewable/Non-renewable source)

TYPE I - **Renewable Energy Projects**

CATEGORY - AMS. I.D. (Title: “Grid connected renewable electricity generation”, version 18)

A.5. Crediting period of project activity >>

Length of the crediting period corresponding to this monitoring period: 9 years , 03 months
01/01/2013 to 31/03/2022

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

UCR ID – 300
Energy Advisory Services Private Limited
Name:Nikhil Vedprakash
Email ID – nikhil@easpl.co.in

SECTION B. Implementation of project activity

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

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

The technical details of the project activity can be found out in **section A1. (b)** Of the document.

b) For the description of the installed technology(ies), technical process and equipment, include diagrams, where appropriate>>

The technical details of the project activity can be found out in **section A1. (b)** Of the document.

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

There are social, environmental, economic and technological benefits which contribute to sustainable development.

- **Social benefits:**

- The project activity will lead to the development of supporting infrastructure such as road network etc., in the wind park location, the access to which is also provided to the local population.
- The project activity will lead to alleviation of poverty by establishing direct and indirect benefits through employment generation and improved economic activities by strengthening of local grid of the state electricity utility.
- Use of a renewable source of energy reduces the dependence on imported fossil fuels and associated price variation thereby leading to increased energy security.

- **Environmental benefits:**

- The project activity employs renewable energy source for electricity generation instead of fossil fuel-based electricity generation which would have emitted gaseous, liquid and/or solid effluents/wastes.
- Being a renewable resource, using wind energy to generate electricity contributes to resource conservation. Thus, the project causes no negative impact on the surrounding environment and contributes to environmental well-being.

- **Economic benefits:**

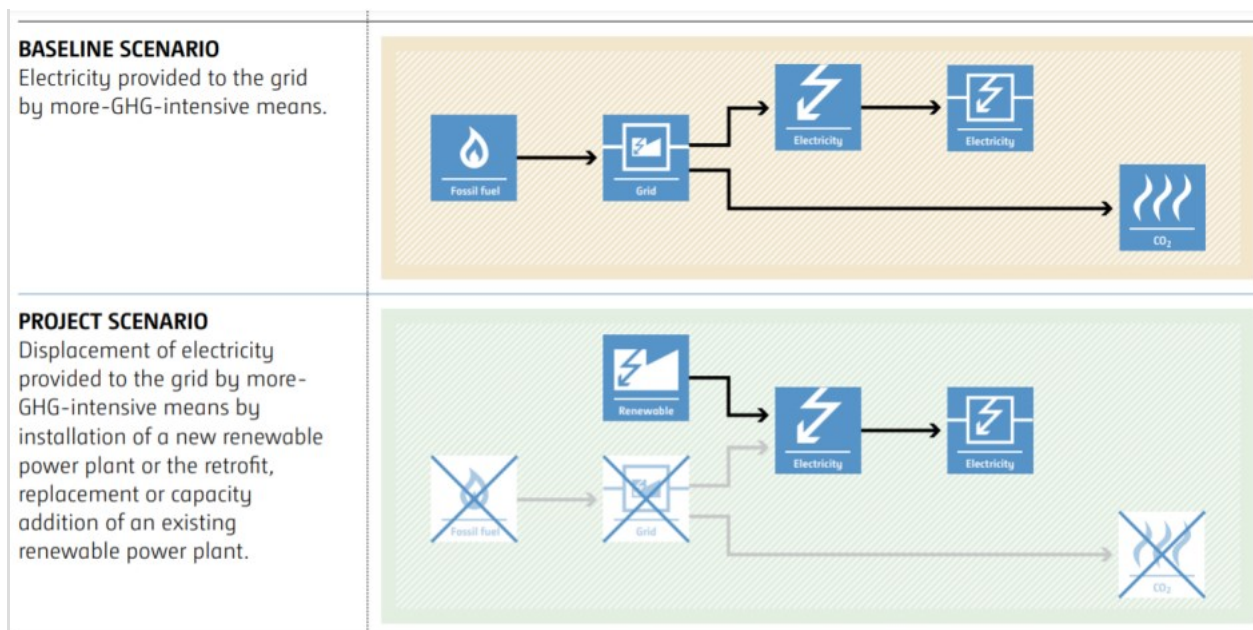
- The project activity requires temporary and permanent, skilled and semi-skilled manpower at the wind park; this will create additional employment opportunities in the region.
- The generated electricity will be fed into the NEWNE regional grid through local grid, thereby improving the grid frequency and availability of electricity to the local consumers (villagers & sub-urban habitants) which will provide new opportunities for industries and economic activities to be setup in the area thereby resulting in greater local employment, ultimately leading to overall development.

- **Technical benefits:**

- Increased interest in wind energy projects will further push R&D efforts by technology providers to develop more efficient and better machinery in future.

B.3. Baseline Emissions>>

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), which is carbon intensive due to predominantly sourced from fossil fuel-based power plants. Hence, baseline scenario of the project activity is the grid-based electricity system, which is also the pre project scenario.



B.4. Debundling>>

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

SECTION C. Application of methodologies and standardized baselines

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

SECTORAL SCOPE – 01, Energy industries (Renewable/Non-renewable sources)

TYPE I - Renewable Energy Projects

CATEGORY - AMS. I.D. (Title: “Grid connected renewable electricity generation”, version 18)

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

The project activity involves generation of grid connected electricity from the construction and operation of a new wind power-based power project for selling it to grid. The project activity has installed capacity of 8.6 MW which will qualify for a small-scale project activity under Type-I of the Small-Scale methodology. The project status is corresponding to the methodology AMS-I.D., version 18 and applicability of methodology is discussed below.

Applicability Criterion	Project Case
1. This methodology comprises renewable energy generation units, such as photovoltaic, hydro, tidal/wave, wind, geothermal and renewable biomass: a) Supplying electricity to a national or a regional grid; or b) Supplying electricity to an identified consumer facility via national/regional grid through a contractual arrangement such as wheeling.	The project activity is a Renewable Energy Project i.e., wind power project which sell its energy to the grid and falls under applicability criteria option 1 point (a). Thus, this project activity fulfills this criterion.
2. This methodology is applicable to project activities that: a) Install a Greenfield plant; b) Involve a capacity addition in (an) existing plant(s); c) Involve a retrofit of (an) existing plant(s); d) Involve a rehabilitation of (an) existing plant(s)/unit(s); or e) Involve a replacement of (an) existing plant(s).	The option (a) of applicability criteria 2 is applicable as project is a Greenfield plant. Hence the project activity meets the given applicability criterion.
3. Hydro power plants with reservoirs that satisfy at least one of the following conditions are eligible to apply this methodology: a) The project activity is implemented in existing reservoir, with no change in the volume of the reservoir; or b) The project activity is implemented in	The project activity involves installation of Wind Turbine Generators (WTG); hence, this criterion is not applicable.

<p>existing reservoir, where the volume of the reservoir(s) is increased and the power density as per definitions given in the project emissions section, is greater than 4 W/m².</p> <p>c) The project activity results in new reservoirs and the power density of the power plant, as per definitions given in the project emissions section, is greater than 4 W/m²</p>	
<p>4. If the new unit has both renewable and non renewable components (e.g., a wind/diesel unit), the eligibility limit of 15 MW for a small-scale CDM project activity applies only to the renewable component. If the new unit co-fires fossil fuel, the capacity of the entire unit shall not exceed the limit of 15 MW.</p>	<p>The proposed project is 8.6 MW Wind power project, i.e., only component is renewable power project below 15MW, thus the criteria is not applicable to this project activity.</p>
<p>5. Combined heat and power (co-generation) systems are not eligible under this category</p>	<p>The project activity is wind power project thus the criterion is not applicable to this project activity.</p>
<p>6. In the case of project activities that involve the capacity addition of renewable energy generation units at an existing renewable power generation facility, the added capacity of the units added by the project should be lower than 15 MW and should be physically distinct¹ from the existing units.</p>	<p>The proposed project is a greenfield 8.6 MW wind power project. As no capacity addition is taking place thus the criterion is not applicable to this project activity.</p>
<p>7. In the case of retrofit, rehabilitation or replacement, to qualify as a small-scale project, the total output of the retrofitted, rehabilitated or replacement power plant/unit shall not exceed the limit of 15 MW.</p>	<p>The proposed project is a greenfield 8.6 MW wind power project. As this does not involve retrofit, rehabilitation or replacement, thus the criterion is not applicable to this project activity.</p>
<p>8. In the case of landfill gas, waste gas, wastewater treatment and agro-industries projects, recovered methane emissions are eligible under a relevant Type III category. If the recovered methane is used for electricity generation for supply to a grid, then the baseline for the electricity component shall be in accordance with procedure prescribed under this methodology. If the recovered methane is used for heat generation or cogeneration other applicable Type-I methodologies such as “AMS□I.C.: Thermal energy production with or without electricity” shall be explored.</p>	<p>The proposed project is a greenfield 8.6 MW wind power project; hence, this criterion is not applicable to this project activity.</p>
<p>9. In case biomass is sourced from dedicated plantations, the applicability criteria in the tool “Project emissions from cultivation of biomass” shall apply.</p>	<p>No biomass is involved, the project is only a wind power project and thus the criterion is not applicable to this project activity.</p>

C.3 Applicability of double counting emission reductions >>

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

- Project is uniquely identifiable based on its location coordinates,
- Project has dedicated commissioning certificate and connection point,
- Project is associated with energy meters which are dedicated to the consumption point for project developer.

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

As per applicable methodology AMS-I.D., Version 18.0, “The spatial extent of the project boundary includes the project power plant and all power plants connected physically to the electricity system that the project power plant is connected to.”

Thus, the project boundary includes the Wind Turbine Generator (WTG) and the Indian grid system.

Source		Gas	Included?	Justification/Explanation
Baseline	Grid connected electricity generation	CO ₂	Yes	Main Emission Source
		CH ₄	No	Minor Emission Source
		N ₂ O	No	Minor Emission Source
		Other	No	No other GHG emissions were emitted from the project
Project	Greenfield Wind Power Project Activity	CO ₂	Yes	No CO ₂ emissions are emitted from the project
		CH ₄	No	Project activity does not emit CH ₄
		N ₂ O	No	Project activity does not emit N ₂ O
		Other	No	No other emissions are emitted from the project

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

As per the approved consolidated methodology AMS-I.D. Version 18, if the project activity is the installation of a new grid-connected renewable power plant/unit, the baseline scenario is the following: **“The baseline scenario is that the electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources into the grid”.**

The project activity involves setting up of a new wind power plant to harness the green power from wind energy and sell it to the grid by signing a PPA. In the absence of the project activity, the equivalent amount of power would have been supplied by the Indian grid, which is fed mainly by fossil fuel fired plants. The power produced at grid from the other conventional sources which are predominantly fossil fuel based. Hence, the baseline for the project activity is the equivalent amount of power produced at the Indian grid. 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 2013-2020 years as a fairly conservative estimate for Indian

projects not previously verified under any GHG program. Also, for the vintage 2021, the combined margin emission factor calculated from CEA database in India results into higher emission than the default value. Hence, the same emission factor has been considered to calculate the emission reduction under conservative approach.

- ❖ Emission reductions are calculated as follows:

$$ER_y = BE_y - PE_y - LE_y \quad \text{(Eq. 1)}$$

Where,

ER_y = Emissions reductions in year y (t CO₂)

BE_y = Baseline emissions in year y (t CO₂)

PE_y = Project emissions in year y (t CO₂)

LE_y = Leakage emissions in year y (t CO₂)

Baseline Emissions

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

- ❖ The Baseline emissions in year y can be calculated as follows:

$$BE_y = EG_{PJ,y} \times EF_{Grid,y} \quad (\text{Eq. 2})$$

Where,

BE_y = Baseline emissions in year y (t CO₂)

$EG_{PJ,y}$ = Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CDM project activity in year y (MWh)

$EF_{Grid,y}$ = Grid emission factor in year y (t CO₂/MWh)

Project Emissions

As per paragraph 39 of AMS-I.D. version-18, only emission associated with the fossil fuel combustion. Since the project activity is a wind power project, project emission for renewable energy plant is nil

Thus,

$$PE_y = 0 \quad (\text{Eq. 3})$$

Leakage Emissions

In the project activity, there is no transfer of energy generating equipment and therefore the leakage from the project activity is considered as zero which is accordingly to paragraph 42 of AMS-I.D. version-18.

Thus,

$$LE_y = 0 \quad (\text{Eq. 4})$$

The actual emission reduction achieved during the first CoU period as a part of first monitoring period are submitted below:

2.3 MW Wind Power Project in Basavpatna, Davangere, Phase - I

Estimated annual baseline emission reductions (BE_y)

$$= 28192.71 \text{ MWh/year} \times 0.9 \text{ tCO}_2/\text{MWh}$$

$$= 25373.44 \text{ tCO}_2/\text{year (i.e., 25,373.44 CoUs/year)}$$

$$= 25373 \text{ tCO}_2/\text{year (i.e., 25,373 CoUs/year)}$$

1.2 MW Wind Power Project in Basavpatna, Davangere, Phase - II

Estimated annual baseline emission reductions (BE_y)

$$= 14287.27 \text{ MWh/year} \times 0.9 \text{ tCO}_2/\text{MWh}$$

$$= 12858.54 \text{ tCO}_2/\text{year (i.e., 12858.54 CoUs/year)}$$

$$= 12858 \text{ tCO}_2/\text{year (i.e., 12858 CoUs/year)}$$

1.2 MW Wind Power Project in Basavpatna, Davangere, Phase - III

Estimated annual baseline emission reductions (BE_y)

$$= 14241.75 \text{ MWh/year} \times 0.9 \text{ tCO}_2/\text{MWh}$$

$$= 12817.58 \text{ tCO}_2/\text{year (i.e., 12817.58 CoUs/year)}$$

$$= 12817 \text{ tCO}_2/\text{year (i.e., 12817 CoUs/year)}$$

2.0 MW Wind Power Project in Bettadanaganahalli, Chitradurga

Estimated annual baseline emission reductions (BE_y)

= 39416.91 MWh/year × 0.9 tCO₂/MWh

= 35475.22 tCO₂/year (i.e., 35475.22 CoUs/year)

= 35475 tCO₂/year (i.e., 35475 CoUs/year)

0.95 MW Wind Power Project in Gonur, Chitradurga

Estimated annual baseline emission reductions (BE_y)

= 14171.02 MWh/year × 0.9 tCO₂/MWh

= 12753.92 tCO₂/year (i.e., 12753.92 CoUs/year)

= 12753 tCO₂/year (i.e., 12753 CoUs/year)

0.95 MW Wind Power Project in Chikkapanahalli, Chitradurga

Estimated annual baseline emission reductions (BE_y)

= 12897.68 MWh/year × 0.9 tCO₂/MWh

= 11607.92 tCO₂/year (i.e., 11607.92 CoUs/year)

= 11607 tCO₂/year (i.e., 11607 CoUs/year)

Project	Net Generation (MWh/year)	Emission Factor (tCO ₂ /MWh)	Emission Reduction (tCO ₂ /year) rounddown
2.3 MW Wind Power Project in Basavpatna, Davangere, Phase – I	28192.71	0.9	25373
1.2 MW Wind Power Project in Basavpatna, Davangere, Phase – II	14287.27	0.9	12858
1.2 MW Wind Power Project in Basavpatna, Davangere, Phase – III	14241.75	0.9	12817
2.0 MW Wind Power Project in Bettadanaganahalli, Chitradurga	39416.91	0.9	35475
0.95 MW Wind Power Project in Gonur, Chitradurga	14171.02	0.9	12753
0.95 MW Wind Power Project in Chikkapanahalli, Chitradurga	12897.68	0.9	11607
Total	123207.34 Rounded to 123207		

C.6. Prior History>>

The project was uploaded by E & Y for CDM prior consideration however, the project did not go ahead and was not considered even for the validation. The PP i. e. BIOP has confirmed the same with the consultant i .e. E & Y about the same. Hence, as of now, the project is not under validation or is not registered with CDM.

C.7. Monitoring period number and duration>>

First Issuance Period: 9 years, 03 months – 01/01/2013 – 31/03/2022

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

There is no change in the start date of the crediting period.
Crediting period start date is 01/01/2013.

C.9. 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.

C.10. Monitoring plan>>

Data and Parameters to be monitored

Data / Parameter	EFGrid,y
Data unit	tCO ₂ /MWh
Description	A "grid emission factor" refers to a CO ₂ emission factor (tCO ₂ /MWh) which will be associated with each unit of electricity provided by an electricity system. The UCR recommends an emission factor of 0.9 tCO ₂ /MWh for the 2013 - 2020 years as a fairly conservative estimate for Indian projects not previously verified under any GHG program. Hence, the same emission factor has been considered to calculate the emission reduction under conservative approach.
Source of data	https://a23e347601d72166dcd6-16da518ed3035d35cf0439f1cdf449c9.ssl.cf2.rackcdn.com//Documents/UCRStandardAug2022updatedVer5_030822005728911983.pdf
Value applied	0.9
Measurement methods and procedures	-
Monitoring frequency	Ex-ante fixed parameter
Purpose of Data	For the calculation of Emission Factor of the grid
Additional Comment	The combined margin emission factor as per CEA database (current version 16, Year 2021) results into higher emission factor. Hence for 2021 vintage UCR default emission factor remains conservative.

Data / Parameter	EGPJ,facility, y
Data unit	MWh
Description	Net electricity supplied to the NEWNE grid facility by the project activity
Source of data	Joint Meter Reading Report

Value applied	123207 MWh
Measurement procedures (if any):	<p>Data Type: Measured</p> <p>Monitoring equipment: Energy Meters are used for monitoring Archiving Policy: Electronic</p> <p>Calibration frequency: Once in 5 years (considered as per provision of CEA India).</p> <p>The net electricity generated by the project activity will be calculated from net electricity supplied to grid from the share certificate issued by state utility on monthly basis for respective wind mill.</p> <p>The amount of energy supplied by the wind mill are continuously monitored and recorded once a month. The same can be cross-checked from the State utility website which is publicly available.</p>
Measurement Frequency:	Monthly
QA/QC procedures applied:	Continuous monitoring, hourly measurement monthly recording. Tri-vector (TVM)/ABT energy meters with accuracy class 0.2s
Purpose of data:	The Data/Parameter is required to calculate the baseline emission.
Measurement Frequency:	Monthly
Value applied:	To be applied as per actual data
QA/QC procedures applied:	<p>Calibration of the Main meters will be carried out once in five (5) years as per National Standards (as per the provision of CEA, India) and faulty meters will be duly replaced immediately as per the provision of power purchase agreement.</p> <p>Cross Checking: Quantity of net electricity supplied to the grid will be cross checked from the invoices raised by the project participant to the grid.</p>
Purpose of data:	The Data/Parameter is required to calculate the baseline emission.
Any comment:	All the data will be archived till a period of two years from the end of the crediting period.

United Nations Sustainable Development Goals:

The project activity generates electrical power using wind energy which is generated from windmills, thereby displacing non-renewable fossil resources resulting in sustainable, economic and environmental development. In the absence of the project activity, an equivalent amount of power generation would have taken place through fossil fuel dominated power generating stations. Thus, the renewable energy generation from project activity will result in reduction of greenhouse gas emissions.

Positive contribution of the project to the following Sustainable Development Goals

1. **SDG13: Climate Action:** The project would lead to reduction of approx. 110869 tCO₂ per annum due to implementation of project activity.
2. **SDG 7: Affordable and Clean Energy:** The project is generating approx. 123207 MWh of clean energy per annum.

3. **SDG 8: Decent Work and Economic Growth:** The project is providing direct employment to around 05 persons. The project leads to Trainings & workshops which are conducted for the O&M staff of the PP.

Sustainable Development Goals (SDG) outcomes

Development Goals Targeted	SDG Target	Indicator (SDG Indicator)
SDG 7: Affordable and Clean Energy	7.2: By 2030, increase substantially the share of renewable energy in the global energy mix Target: 123207 MWh per annum	7.2.1: Renewable energy share in the total final energy consumption
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: 1 no. annually Employment of 05 staff	8.5.1: Average hourly earnings of female and male employees, by occupation, age and persons with disabilities
SDG 13: Climate Action	13.2: Integrate climate change measures into national policies, strategies and planning Target: 110869 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)
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