Monitoring Report

CARBON OFFSET UNIT (CoU) PROJECT

Title: 800 kW Small Scale Wind Power Project by M/s Empire Silk Weaving Industries.

Version 1.0

Date 03/11/2022

First CoU Issuance Period: 09 Years

Monitoring Period: 01/01/2013 to 31/12/2021

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

Monitoring Report	
Title of the project activity	800 kW Small Scale Wind Power Project By M/s Empire Silk Weaving Industries.
UCR Project Registration Number	236
Version	1.0
Completion date of the MR	03/11/2022
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 31/12/2021)
Project participants	Creduce Technologies Private Limited (Representator) M/s Empire Silk Weaving Industries. (Project Proponent)
Host Party	India
Applied methodologies and standardized baselines	Applied Baseline Methodology: AMS-I. D: "Grid connected renewable electricity generation", version 18
Sectoral scopes	01 Energy industries (Renewable/Non-Renewable Sources)
Estimated amount of GHG emission reductions for this monitoring period in the registered PCN	2013: 1,237 CoUs (1,237 tCO_2e)
	2014: 1.178 CoUs (1,178 tCO_2e)
	2015: 1,394 CoUs (1,394 tCO_2e)
	2016: 1,301 CoUs (1,301 tCO_2e)
	2017: 1,270 CoUs (1,270 tCO_2e)
	2018: 1,116 CoUs (1,116 tCO_2e)
	2019: 1,386 CoUs (1,386 tCO_2e)
	2020: 1,018 CoUs (1,018 tCO_2e)
	2021: 1,121 CoUs (1,121 tCO_2e)
Total:	11,021 CoUs (11,021 tCO_2e)

SECTION A. Description of project activity

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

The proposed project activity with title under UCR "800 kW Small Scale Wind Power Project by M/s Empire Silk Weaving Industries". in Gujarat is a grid connected renewable power generation activity which incorporates installation and operation of one Wind Turbine Generator (WTG) having capacity 800 kW manufactured and supplied by Enercon India ltd in the district Jamnagar of the state of Gujarat in India. The project is an operational activity with continuous reduction of GHG, currently being applied under "Universal Carbon Registry" (UCR).

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

The project activity aims to harness kinetic energy of wind (renewable source) to generate electricity. The net generated electricity from the project activity is used for captive consumption. A wheeling agreement is signed between M/s Empire Silk Weaving Industries and Dakshin Gujarat Vij Company Limited (DGVCL) i.e., state utility. In pre-project scenario the PP was importing the required electricity from the state utility i.e., GETCO (is a part of regional grid, earlier known as NEWNE grid) to meet its captive requirement of electrical energy. Currently, NEWNE grid is connected to large numbers of fossil fuel-based power plants. Hence, project activity is displacing the gross electricity generation i.e., 12,251 MWh from the NEWNE grid, which otherwise would have been imported from the NEWNE grid.
The project activity doesn't involve any GHG emission sources. The annual and the total CO_2e emission reduction by the project activity over the defined monitoring period is as per **Annexure I.**

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

The project activity involves 1 Wind Turbine Generator (WTG) having capacity of 800 kW manufactured and supplied by Enercon India ltd. The average life time of the generator is around 20 years as per the equipment supplier specification. The other salient features of the technology are:
Wind is used to produce electricity using the kinetic energy created by air in motion. This is transformed into electrical energy using wind turbines or wind energy conversion systems. Wind first hits a turbine's blades, causing them to rotate and turn the turbine connected to them. That changes the kinetic energy to rotational energy, by moving a shaft which is connected to a generator, and thereby producing electrical energy through electromagnetism.
Below is the description of different components of a Wind Turbine Generator.

1. **Main Tower:** The main support tower is made of steel, finished in a number of layers of protective paint to shield it against the elements. The tower is tall enough to ensure the rotor blade does not interfere with normal day-to-day operations at ground level.

2. **Rotor Blades:** The rotor blades are the three (usually three) long thin blades that attach to the hub of the nacelle. These blades are designed to capture the kinetic energy in the wind as it passes, and convert it into rotational energy.

3. **Nacelle:** The nacelle is the 'head' of the wind turbine, and it is mounted on top of the support tower. The rotor blade assembly is attached to the front of the nacelle. It contains all the major parts of the WEG.

4. **Hub:** The hub of the wind turbine is the component that connects the blades to the main shaft and ultimately to the rest of the tower. The hub transmits and withstand all the loads generated by the blades.

5. **Main Shaft:** It is a piece of metal in the form of a tube which constitutes the most important spinning constituent since it conveys the energy from the wind turbine blades to the other parts of the wind turbine.

6. **Gear Box:** A gearbox is often used in a wind turbine to increase the rotational speed from a low-speed main shaft to a high-speed shaft connecting with an electrical generator. Gears in wind turbine gearbox are subjected to severe cyclic loading due to variable wind loads that are stochastic in nature.

7. **Brake:** A wind turbine rotor brake is a brake placed next to the gearbox that reduces the rotational speed of the blade assembly, fixes the blade so that it does not rotate in the case of power transmission maintenance or power generator rest, and in an emergency.

8. **Turbine generator:** The turbine generator is the component that turns the rotational energy in the high-speed output shaft from the gearbox into an electrical current. The electrical principle of electromagnetic induction shows that while a magnet is moving past a coil of wire, an electric current is created (or "induced") in the wire.

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	:	236
Start Date of Crediting Period	:	01/01/2013
Project Commissioned	:	06/08/2007

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	31/12/2021
Total ERs generated (tCO2e)	11,021 tCO_2e
Project emission	0
Leakage	0

e) Baseline Scenario>>

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".

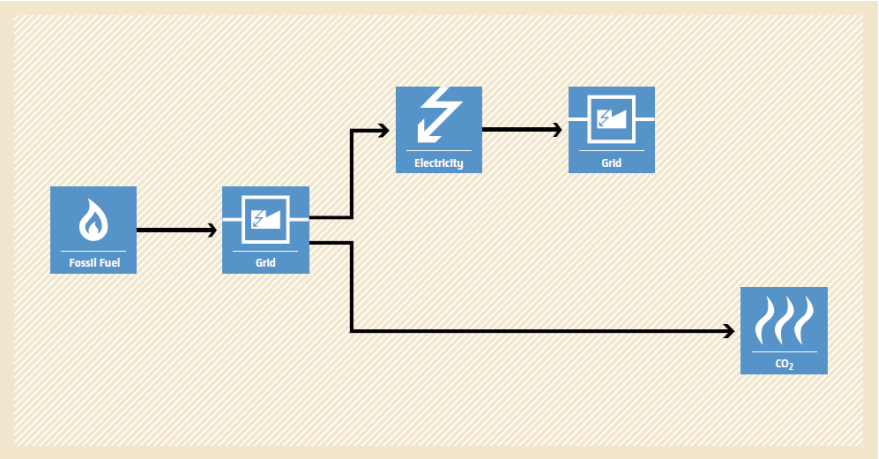


Figure 1 Baseline Scenario

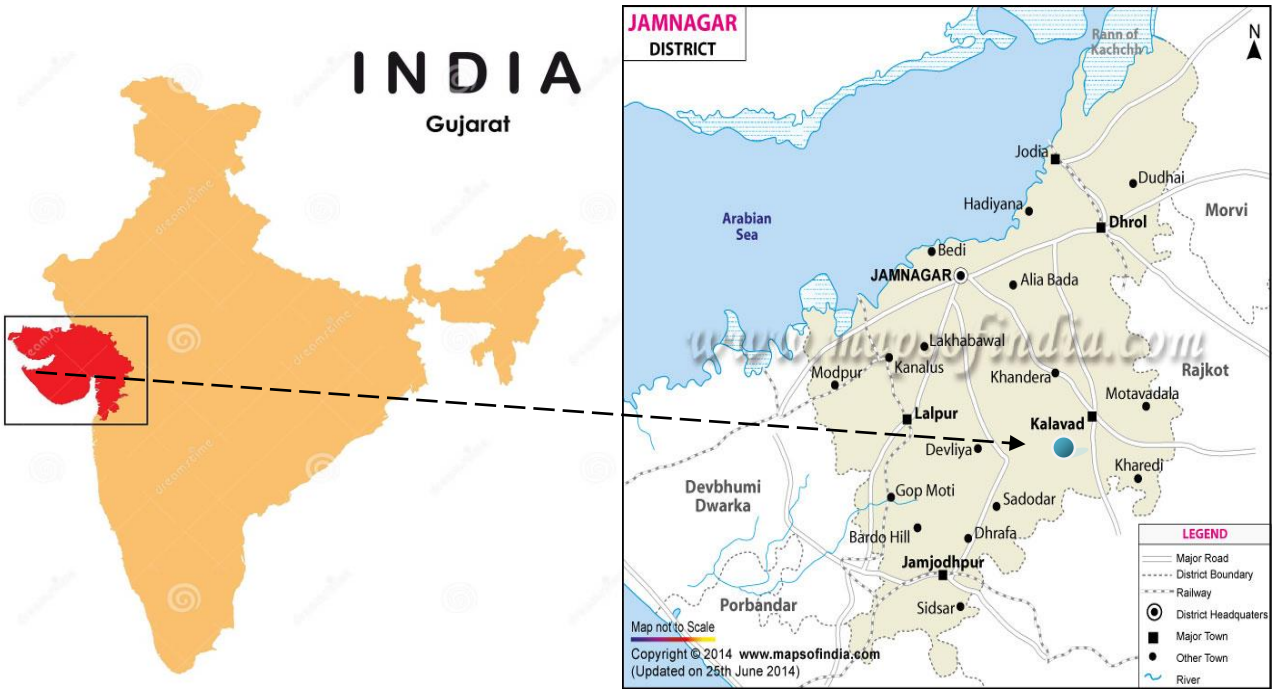
A.2. Location of project activity>>

Country	:	India
State	:	Gujarat
District	:	Jamnagar
Taluka	:	Kalavad
Village	:	Moti Vavdi

The project location is situated near village Moti Vavdi of Jamnagar district in the state of Gujarat. The nearest airport is in Jamnagar. The project site is well connected by district and village roads to the nearest town Kalavad. The geographic co-ordinates of the project locations have been provided below.

The geographic co-ordinate of the project locations is 22°06'00.1"N and 70°17'33.5"E.

The representative location map is included below:



Project Location

A.3. Parties and project participants >>

Party (Host)	Participants
India	**Creduce Technologies Private Limited (Representator)** Contact person: Shailendra Singh Rao Mobile: +91 9016850742, 9601378723 Address: 2-O-13,14 Housing Board Colony, Banswara, Rajasthan - 327001, India. **M/s Empire Silk Weaving Industries. (Developer)** Address: 3rd Floor, Kailash Silk Mills Compound, Andheri kurla Road, Sakinaka, Andheri(E), Mumbai-400072 India.

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

SECTORAL SCOPE - 01 Energy industries (Renewable/Non-Renewable Sources)

TYPE - Renewable Energy Projects

CATEGORY - AMS-I. D: “Grid connected renewable electricity generation”, Version 18

A.5. Crediting period of project activity >>

Start date : 01/01/2013
Length of the crediting period corresponding to this monitoring period : 09 Years
01/01/2013 to 31/12/2021 (Both the dates are included).

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

Name : Shailendra Singh Rao
Contact No : +91 9016850742, 9601378723
E-Mail : shailendra@creduce.tech

SECTION B. Implementation of project activity

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

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

The project consists of 1 WTG with capacity of 800 kW which was implemented in a single phase and commissioned by Gujarat Energy Development Agency (GEDA), Government of Gujarat on 06/08/2007 at Moti Vavdi village of District Jamnagar, Gujarat. M/s Empire Silk Weaving Industries. is the PP of this project. The project generates clean energy by utilizing the kinetic energy of flowing wind.

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

The project activity involves 1 Wind Turbine Generator which is manufactured and supplied by Enercon India ltd with an aggregate installed capacity of 800 kW. The connectivity of all the WTGs is to a central Monitoring Station (CMS) through high-speed WLAN modem or fiber optic cable which helps in providing real time status of the turbine at CMS with easy GUI (Graphical User Interface) and ability to monitor the functioning of the turbine from CMS. The life time of the WTG is 20 years as per manufacturer specifications.
Technical details for the machine installed at Jamnagar with a capacity of 800 kW Machine manufactured by Enercon India ltd are as follows:

Turbine model	Enercon (E- 48)
Rated power	800 kW
Rotor diameter	53 m
Hub height	74.85 m (Concrete)
Turbine Type	Gearless horizontal axis wind turbine with variable rotor speed
Power regulation	Independent electromechanical pitch system for each blade
Cut in wind speed	3.0 m/s
Rated wind speed	12 m/s
Cut-out Wind speed	28-34 m/s
Extreme Wind Speed	59.5 m/s
Rated rotational speed	31.5 rpm
Operating range rot. Speed	16-31.5 rpm
Orientation	Upwind
Gear Box type	Gear Less
Generator Type	Synchronous generator
Breaking	Aerodynamic
No of Blades	3
Yaw System	Active yawing with 4 electric yaw drives with brake motor
Blade Material	Fiber Glass Epoxy reinforced
Tower	74 m (concrete)
Output Voltage	400 V

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

Indian economy is highly dependent on "Coal" as fuel to generate energy and for production processes. 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.
Changing coal consumption patterns will require a multi-pronged strategy focusing on demand, reducing wastage of energy and the optimum use of renewable energy (RE) sources. This project is a greenfield activity where grid power is the baseline. The renewable power generation is gradually contributing to the share of clean & green power in the grid; however, grid emission factor is still on higher side which defines grid as distinct baseline.
The Government of India has stipulated following indicators for sustainable development in the interim approval guide lines 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: The project would help in generating direct and indirect employment benefits accruing out of ancillary units for manufacturing towers for erection of the Wind Turbine Generator and for maintenance during operation of the project activity. It will lead to development of infrastructure around the project area in terms of improved road network etc. and will also directly contribute to the development of renewable infrastructure in the region.

Environmental well-being: The project utilizes Wind energy for generating electricity which is a clean source of energy. The project activity will not generate any air pollution, wind pollution or solid waste to the environment which otherwise would have been generated through fossil fuels. Also, it will contribute to reduction GHG emissions. Thus, the project causes no negative impact on the surrounding environment contributing to environmental well-being.

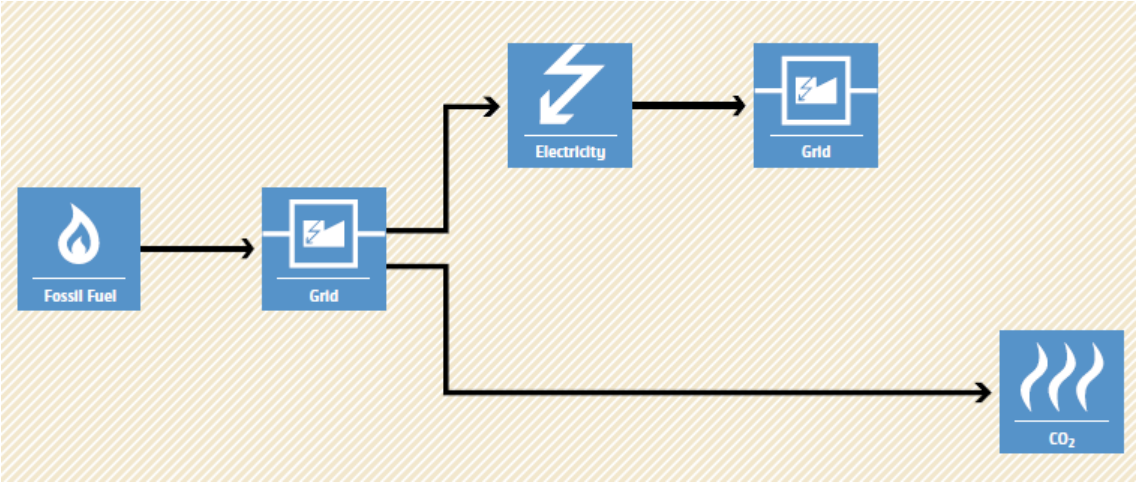
Economic well-being: Being a renewable resource, using Wind energy to generate electricity contributes to conservation precious natural resources. The project contributes to the economic sustainability through promotion of decentralization of economic power, leading to diversification of the national energy supply, which is dominated by conventional fuel based generating units. Locally, improvement in infrastructure will provide new opportunities for industries and economic activities to be setup in the area. Apart from getting better employment opportunities, the local people will get better prices for their land, thereby resulting in overall economic development.

Technological well-being: The project activity leads to the promotion of 800 kW Wind Turbine Generators into the region and will promote practice for small scale industries to reduce the dependence on carbon intensive grid supply to meet the captive requirement of electrical energy and also increasing energy availability and improving quality of power under the service area. Hence, the project leads to technological well-being.

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 (NEWNE Grid)), which is carbon intensive due to predominantly sourced from fossil fuel-based power plants.

Baseline Scenario:



Thus, this project activity was a voluntary investment which replaced equivalent amount of electricity from the Indian grid. The project proponent was not bound to incur this investment as it was not mandatory by national and sectoral policies. Thus, the continued operation of the project activity would continue to replace fossil fuel-based power plants and fight against the impacts of climate change. The Project Proponent hopes that carbon revenues from 2013-2021 accumulated as a result of carbon credits generated will help repay the loans and help in the continued maintenance of this project activity.

B.4. Debundling>>

This project activity is not a de-bundled component of a larger 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

Applied Baseline Methodology: AMS-I.D.: "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 project for captive consumption. A wheeling agreement is signed between M/s Empire Silk Weaving Industries and Dakshin Gujarat Vij Company Limited (DGVCL) i.e., state utility.
The project activity has installed capacity of 800 kW 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 falls under applicability criteria option 1 (b) i.e., "Supplying electricity to a national or a regional grid" Hence the project activity meets the given applicability criterion as well as satisfies the applicability illustration mentioned in Appendix of AMS-ID Table 1 – Scope of AMS-I.D. version 18.
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 /Unit. 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 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/m^2. (c) (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	The project activity involves installation of Wind Turbine Generators (WTGs); hence, this criterion is not applicable.
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.	The proposed project is 800 kW Wind power project, i.e., only component is renewable power project below 15MW, thus the criterion is not applicable to this project activity.
5. Combined heat and power (co-generation) systems are not eligible under this category	The project is wind power project and thus, the criterion is not applicable to this project activity.
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.	The proposed project is a greenfield 800 kW wind power project, i.e., only component is renewable power project below 15 MW, thus the criterion is not applicable to this project activity.
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.	The proposed project is a greenfield 800 kW wind power project, i.e., only component is renewable power project below 15 MW, thus the criterion is not applicable to this project activity.
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.	The proposed project is a greenfield 800 kW wind power project; hence, this criterion is not applicable to this project activity.

9. In case biomass is sourced from dedicated plantations, the applicability criteria in the tool "Project emissions from cultivation of biomass" shall apply.	No biomass is involved, the project is only a wind power project and thus the criterion is not applicable to this project activity.

C.3 Applicability of double counting emission reductions >>

The project was not applied under any other GHG mechanism. Hence project will not cause double accounting of carbon credits (i.e., CoUs).

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

As per applicable methodology AMS-I.D. Version 18, "The spatial extent of the project boundary includes the project power plant and all power plants connected physically to the electricity system." Thus, the project boundary includes the Wind Turbine Generators and the Indian grid system.

Source		Gas	Included?	Justification/Explanation
Baseline	Grid connected electricity generation	**CO_2**	**Yes**	**CO_2 emissions from electricity generation in fossil fuel fired power plants**
		CH_4	No	Minor emission source
		N_2O	No	Minor emission source
		Other	No	No other GHG emissions were emitted from the project
Project	Greenfield Wind Power Project Activity	CO_2	No	No CO_2 emissions are emitted from the project
		CH_4	No	Project activity does not emit CH_4
		N_2O	No	Project activity does not emit N_2O
		Other	No	No other emissions are emitted from the project

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

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

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

The project activity involves setting up of a new Wind Turbine Generator to harness the green power from Wind energy and to use for sale to national grid i.e., India grid system through PPA arrangement. In the absence of the project activity, the equivalent amount of power would have been generated by the operation of grid-connected fossil fuel-based power plants and by the addition of new fossil fuel-based generation sources into the grid. 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 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. Also, for the vintage 2021, 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.

Net GHG Emission Reductions and Removals

$ERy = BEy – PEy – LEy$

Where:

ER_y= Emission reductions in year y (tCO_2/y)

BE_y= Baseline Emissions in year y ($t\ CO_2/y$)

PE_y= Project emissions in year y (tCO_2/y)

LE_y= Leakage emissions in year y (tCO_2/y)

Baseline Emissions

Baseline emissions include only CO_2 emissions from electricity generation in power plants that are displaced due to the project activity. The methodology assumes that all project electricity generation above baseline levels would have been generated by existing grid-connected power plants and the addition of new grid-connected power plants.

The baseline emissions are to be calculated as follows:

$BE_y = EG_{PJ,y} \times EF_{grid,y}$

Where:

BE_y = Baseline emissions in year y ($t\ CO_2$)

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

$EF_{grid,y}$ = UCR recommended emission factor of 0.9 tCO_2/MWh has been considered, this is conservative as compared to the combined margin grid emission factor which can be derived from Database of Central Electricity Authority (CEA), India. (Reference: General Project Eligibility Criteria and Guidance, UCR Standard, page 4)

Hence,

Baseline Emissions Calculation				
Sr.No	Year	EGpy (MWh)	EFgrid,y	BEy
1	2013	1374.80	0.9	1237
2	2014	1309.00	0.9	1178
3	2015	1549.66	0.9	1394
4	2016	1446.32	0.9	1301
5	2017	1411.77	0.9	1270
6	2018	1240.64	0.9	1116
7	2019	1541.07	0.9	1386
8	2020	1131.86	0.9	1018
9	2021	1245.85	0.9	1121
10	BE (tCO_2e) for the period of 2013 to 2021			11021

Project Emissions

As per paragraph 39 of AMS-I.D. (version 18, dated 28/11/2014), for most renewable energy project activities emission is zero.

Hence,
PE = 0

Leakage Emissions

As per paragraph 42 of AMS-I.D. version-18, all projects other than Biomass projects have zero leakage.

Hence,
LE = 0

Total Emission reduction by the project for the current monitoring period is calculated as below:

Hence,

ER = 11,021 – 0 – 0 = 11,021 CoUs

C.6. Prior History>>

The project was not applied under any other GHG mechanism. Hence project will not cause double accounting of carbon credits (i.e., C0Us).

C.7. Monitoring period number and duration>>

First Monitoring Period: 09 Years 01/01/2013 to
31/12/2021 (inclusive of both dates)

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

There is no change in Start date of 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 the registered PCN monitoring plan and applied methodology

C.10. Monitoring plan>>

The project activity essentially involves the generation of electricity from wind, the employed Wind Turbine Generator can only convert Wind energy into electrical energy and cannot use any other input fuel for electricity generation, thus no special ways and means are required to monitor leakage from the project activity. The recording of the electricity fed to the state utility grid is carried out jointly at the incoming feeder of the state power utility (GETCO).

Parameter	$EG_{PJ,y}$
Data unit	MWh
Description	Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of this project activity in year y.
Source of data Value(s) applied	SLDC Certificate
Procedures	The Net electricity generation by the WTG is recorded at the sub-station. At the end of every month SLDC Certificate is generated based on the total monthly electricity exported to the grid.
Monitoring frequency	Monthly
Purpose of data	To Calculate Baseline Emission

Data / Parameter	UCR recommended emission factor
Data unit	tCO_2 /MWh
Description	A "grid emission factor" refers to a CO_2 emission factor (tCO_2/MWh) which will be associated with unit of electricity provided by an electricity system. The UCR recommends an emission factor of 0.9 tCO_2/MWh for the 2013 - 2021 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_03082200572891198 3.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.

ANNEXURE I (Emission Reduction Calculation)

800 kW Small Scale Wind Power Project by M/s Empire Silk Weaving Industries

Month - Wise Energy Delivered to Grid (in kWh)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2013	1,33,976	1,04,959	1,11,725	1,19,213	1,77,595	1,09,172	1,34,830	95,651	1,17,233	48,378	1,05,648	1,16,418
2014	1,39,548	80,838	94,370	92,993	1,38,235	2,26,395	1,68,728	96,737	49,863	34,374	48,885	1,38,035
2015	1,46,505	94,100	1,03,413	1,23,369	1,52,749	1,41,682	2,65,844	1,24,061	63,623	69,359	1,12,293	1,52,662
2016	72,786	1,05,391	94,891	1,11,549	1,97,249	2,12,655	1,74,915	1,57,778	97,495	44,861	68,637	1,08,113
2017	1,42,044	1,08,575	1,07,584	1,43,021	1,65,849	1,42,321	2,04,976	98,690	44,021	58,885	78,344	1,17,464
2018	74,562	62,242	92,951	79,011	1,21,761	2,05,287	1,62,824	1,45,284	70,806	36,626	65,277	1,24,007
2019	1,41,644	1,26,205	1,02,774	1,43,021	1,25,115	1,46,390	2,18,115	1,38,866	55,311	75,943	99,490	1,68,195
2020	1,12,406	1,06,584	1,03,934	97,704	1,54,745	61,195	53,697	1,12,116	33,332	52,240	1,20,758	1,23,150
2021	1,33,885	72,073	67,470	69,469	1,68,630	1,21,753	1,90,779	91,702	55,842	41,960	1,02,007	1,30,284

Year-Wise Emission reduction calculation for the project activity

Year	Total No. of Electricity delivered in kWh	Recommended emission factor tCO2/MWh	Total CoUs generated
2013	1374798	0.9	1,237
2014	1309001	0.9	1,178
2015	1549660	0.9	1,394
2016	1446320	0.9	1,301
2017	1411774	0.9	1,270
2018	1240638	0.9	1,116
2019	1541069	0.9	1,386
2020	1131861	0.9	1,018
2021	1245854	0.9	1,121
Total CoUs to be issued for the first monitoring period (Year: 2013 to 2021)			11,021