



Project design document form
(Version 11.0)

BASIC INFORMATION	
Title of the project activity	300 MW Wind Power Project by SITAC Kabini in Gujarat
Scale of the project activity	☒ Large-scale ☐ Small-scale
Version number of the PDD	01
Completion date of the PDD	18/01/2020
Project participants	Sitac Kabini Renewables Pvt. Ltd.
Host Party	India
Applied methodologies and standardized baselines	ACM0002: Grid-connected electricity generation from renewable sources --- Version 20.0
Sectoral scopes	Sectoral Scope 1: Energy industries (renewable - / non-renewable sources)
Estimated amount of annual average GHG emission reductions	7,71,779 tCO _{2e} per annum

SECTION A. Description of project activity

A.1. Purpose and general description of project activity

The project activity is developed by M/s Sitac Kabini Renewables Pvt. Ltd. (SKRPL). SKRPL a joint venture between EDF Renewables and Sitac Group.

The main purpose of this project activity is to generate clean form of electricity through renewable Wind energy source for sale of electricity to the grid.

The project activity involves installation of 112 WTGs of 2.7 MW capacity, totalling to 302.4 MW capacity Wind power project in multiple Villages in Taluk Lakhpat, District of Kutch, State Gujarat.

The project will replace anthropogenic emissions of greenhouse gases (GHG's) estimated to be approximately 7,71,779 tCO_{2e} per annum, thereon displacing average 8,23,846 MWh/year amount of electricity from the generation-mix of power plants connected to the Indian electricity grid, which is mainly dominated by thermal/ fossil fuel-based power plant.

In the absence of the project activity, the accordant amount of electricity would have been delivered through the grid connected power plants, which to a large extent is fed by fossil sources, leading to carbon dioxide emissions.

Sector- wise installed capacity (MW) given under the latest CEA¹ database version 14.

India							
Thermal				Other Source			
Coal	Gas	Diesel	Total	Nuclear	Hydro	RES	Total
197171.50	24897.46	837.63	222906.59	6780.00	45293.42	69022.39	344002.39

It is evident from above "Table-1" that the installed capacity is predominantly coal based and therefore, is a major source of carbon dioxide emissions in India. Hence, there exists scope for reducing the CO₂ emissions in the country by way of fuel substitution, increased use of **renewable energy sources**, and also by improving the thermal efficiency of power generation.

a) Scenario existing prior to the implementation of the project activity are as follows:

As the project activity is the installation of a new grid-connected renewable power plant/unit. The scenario existing prior to the implementation of project activity is 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, as reflected in the combined margin (CM) calculations described in the "Tool to calculate the emission factor for an electricity system" (Version 07.0, EB 100 Annex 4).

b) Baseline Scenario:

Baseline scenario and Scenario existing prior to the implementation of the project activity both are same.

¹ http://www.cea.nic.in/reports/others/thermal/tpece/cdm_co2/user_guide_ver14.pdf

c) Sustainable Development:

- **Sustainable development indicators:**

The National CDM Authority (NCDMA), which is the Designated National Authority (DNA) for the Government of India (GOI) under the Ministry of Environment, Forest and Climate Change (MoEFCC), has mentioned four indicators for the sustainable development in the interim approval guidelines for Clean Development Mechanism (CDM) projects from India². Thus the project's contribution towards sustainable development has been addressed based on the following sustainable development aspects:

- **Social well-being:**

The project activity will provide job opportunity to local people during erection, commissioning and maintenance of the Wind power project. Frequency of visiting to villages and nearby areas by skilled, technical and industrialist has increased due to installation /site visit/operation and maintenance work related to the project at plant site. This directly and indirectly positively effects the economy of nearby populace.

Business opportunities will be enhanced as a result of the project activity for manufacturers, contractors, suppliers etc. The project activity will also improve local infrastructure like connectivity of the area through the construction of roads to the site which will benefit the villagers located on and nearby these roads.

- **Environmental well-being:**

Wind power is one of the cleanest renewable energy powers and does not involve any fossil fuel. There are no GHG emissions associated with the Wind project.

The impact on land, water, air and soil is negligible. Thus, the project activity contributes to environmental well-being without causing any negative impact on the surrounding environment.

- **Economic well-being:**

The project activity would help in alleviation of poverty in the area as it creates employment opportunities to the local people both temporary and permanent during the construction of the project as well as in operation.

The project activity will contribute significantly to the economic development of the region through land leases, permanent/temporary employment generation.

- **Technological well-being:**

The successful implementation of the project activity will result in encouraging the use of cleaner technology. This will lead to replacement of the non-eco-friendly sources of power generation like thermal energy which are the major sources of power in the country.

This will also give rise to increased interest in wind energy in the country. This in turn would push the investment into research into creating better technology.

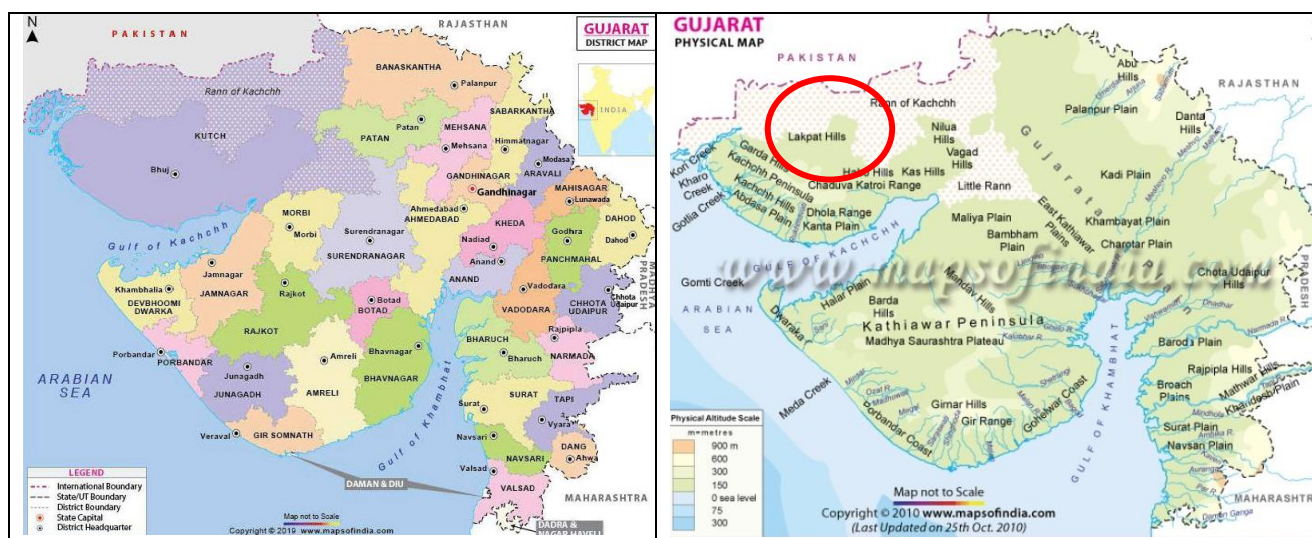
A.2. Location of project activity

The Proposed 302.4 MW Grid Connected Wind Project is planned in Village Guneri, Umrasar, Akari, Sayara.bhaiyava, Malda, Mudhan and Khengarpar in Taluk Lakhpat, District of Kutch, State Gujarat, Country India.

The Locations is not yet finalised so latitude & longitude is not available. PP will update the exact geographical location post commissioning of the project.

²http://ncdmaindia.gov.in/approval_process.aspx

Map-1 Showing the district map of Gujarat State in India and showing Lakhpat Taluk



A.3. Technologies/measures

The proposed technology employed, converts Wind energy in to electrical energy with the help of wind turbine generators. In wind power generation, energy of wind is converted into mechanical energy and subsequently into electrical energy. The technology is an environment friendly technology since there are no GHG emissions associated with the electricity generation. There is no transfer of technology involved in the project activity.

The proposed project activity will be comprising of following proposed technology:

WTG SPECIFICATION

Manufacturer: GE India Industrial Private Limited
Proposed Model / Make: GE2.7 132RD/HH 130make

The proposed wind project activity will have a useful life of 25 years from the date of commissioning.

For monitoring equipment, their location and technical specifications, refer Section B.7.3.

A.4. Parties and project participants

Parties involved	Project participants	Indicate if the Party involved wishes to be considered as project participant (Yes/No)
India (Host Party)	Sitac Kabini Renewables Pvt. Ltd.	No

A.5. Public funding of project activity

There is no public funding from Annex 1 countries and no diversion of Official Development Assistance (ODA) involved in the project activity.

A.6. History of project activity

1. The PP hereby Confirms that:
 - (a) The proposed CDM project activity is neither registered as a CDM project activity nor included as a component project activity (CPA) in a registered CDM programme of activities (PoA); and
 - (b) The proposed CDM project activity is not a project activity that has been deregistered.
2. The PP would like to Declare that:
 - (a) The proposed CDM project activity was not a CPA that has been excluded from a registered CDM PoA;
 - (b) The project is not "A registered CDM project activity or a CPA under a registered CDM PoA whose crediting period has or has not expired (hereinafter referred to as former project) exists in the same geographical location as the proposed CDM project activity".
3. Since the declaration on 2(a) or 2(b) above is negative thus no further demonstration required.

A.7. Debundling

Not Applicable.

SECTION B. Application of methodologies and standardized baselines

B.1. References to methodologies and standardized baselines

Title: Grid-connected electricity generation from renewable sources

References: Approved Large-Scale Consolidated Methodology: ACM0002 “Grid-connected electricity generation from renewable sources” (Version 20.0, EB 105)³

ACM0002 draws upon the following tools which have been used in the PDD:

- Methodological Tool: Tool to calculate the emission factor for an electricity system - Version 07.0, EB 100 Annex 4⁴.
- Methodological Tool: Tool for the demonstration and assessment of additionality - Version 07.0.0, EB 70 Annex 8⁵.

B.2. Applicability of methodologies and standardized baselines

As per para 2 of ACM0002 (Version 20.0, EB 105, Annex 3), “*This methodology applies to project activities that include retrofitting, rehabilitation (or refurbishment), replacement or capacity addition of an existing power plant or construction and operation of a Greenfield power plant*”.

The project activity meets the applicability conditions of the approved consolidated baseline and monitoring methodology ACM0002, Version 20.0, Sectoral Scope 1, EB 105 for Greenfield projects as described below:

Applicability	Project activity vis-à-vis applicability Conditions
This methodology is applicable to grid-connected renewable energy power generation project activities that: (a) Install a Greenfield power plant; (b) Involve a capacity addition to (an) existing plant(s); (c) Involve a retrofit of (an) existing operating plants/units; (d) Involve a rehabilitation of (an) existing plant(s)/unit(s); or (e) Involve a replacement of (an) existing plant(s)/unit(s).	The project activity is installation of a new grid connected Wind power plant/ unit at a site where no renewable power plant was operated prior to the implementation of the project activity (Greenfield plant) and hence this criterion is applicable.
The methodology is applicable under the following conditions: (a) The project activity may include renewable energy power plant/unit of one of the following types: hydro power plant/unit with or without reservoir, Solar power plant/unit, geothermal power plant/unit, solar power plant/unit, wave power plant/unit or tidal power plant/unit; (b) In the case of capacity additions, retrofits, rehabilitations or replacements (except for Solar, solar, wave or tidal power capacity addition projects the existing plant/unit started commercial operation prior to the start of a minimum historical reference	The proposed project activity is an installation of a new grid connected Wind power plant/ unit which is renewable energy power plant. Hence criterion under point (a) is met. The project does not involve any capacity additions, retrofits or replacements and therefore this

³<https://cdm.unfccc.int/methodologies/DB/VJ19AX539D9MLOPXN2AY9UR1N4IYGD>

⁴<https://cdm.unfccc.int/methodologies/PAMethodologies/tools/am-tool-07-v7.0.pdf>

⁵<http://cdm.unfccc.int/methodologies/PAMethodologies/tools/am-tool-01-v7.0.0.pdf>

period of five years, used for the calculation of baseline emissions and defined in the baseline emission section, and no capacity expansion, retrofit, or rehabilitation of the plant/unit has been undertaken between the start of this minimum historical reference period and the implementation of the project activity.	criterion under point (b) is not applicable.
In case of hydro power plants, one of the following conditions shall apply: (a) The project activity is implemented in existing single or multiple reservoirs, with no change in the volume of any of the reservoirs; or (b) The project activity is implemented in existing single or multiple reservoirs, where the volume of the reservoir(s) is increased and the power density calculated using equation (3), is greater than 4 W/m² ; or (c) The project activity results in new single or multiple reservoirs and the power density, calculated using equation (3), is greater than 4 W/m² ; or (d) The project activity is an integrated hydro power project involving multiple reservoirs, where the power density for any of the reservoirs, calculated using equation (3), is lower than or equal to 4 W/m² , all of the following conditions shall apply: (i) The power density calculated using the total installed capacity of the integrated project, as per equation (4), is greater than 4 W/m² ; (ii) Water flow between reservoirs is not used by any other hydropower unit which is not a part of the project activity; (iii) Installed capacity of the power plant(s) with power density lower than or equal to 4 W/m² shall be: a. Lower than or equal to 15 MW; and b. Less than 10 per cent of the total installed capacity of integrated hydro power project.	The proposed project activity is an installation of a new grid connected Wind power plant/ unit and not Hydro power plant; therefore, this criterion is not applicable for this project activity.
In the case of integrated hydro power projects, project proponent shall: • Demonstrate that water flow from upstream power plants/units spill directly to the downstream reservoir and that collectively constitute to the generation capacity of the integrated hydro power project; or • Provide an analysis of the water balance covering the water fed to power units, with all possible combinations of reservoirs and without the construction of reservoirs. The purpose of water balance is to demonstrate the requirement of specific combination of reservoirs constructed under CDM project activity for the optimization of power output. This demonstration has to be carried out in the specific scenario of water availability in different seasons to optimize the water flow at the inlet of power units. Therefore, this water balance will take into account	The proposed project activity is an installation of a new grid connected Wind power plant/ unit and not Hydro power plant; therefore this criterion is not applicable for this project activity.

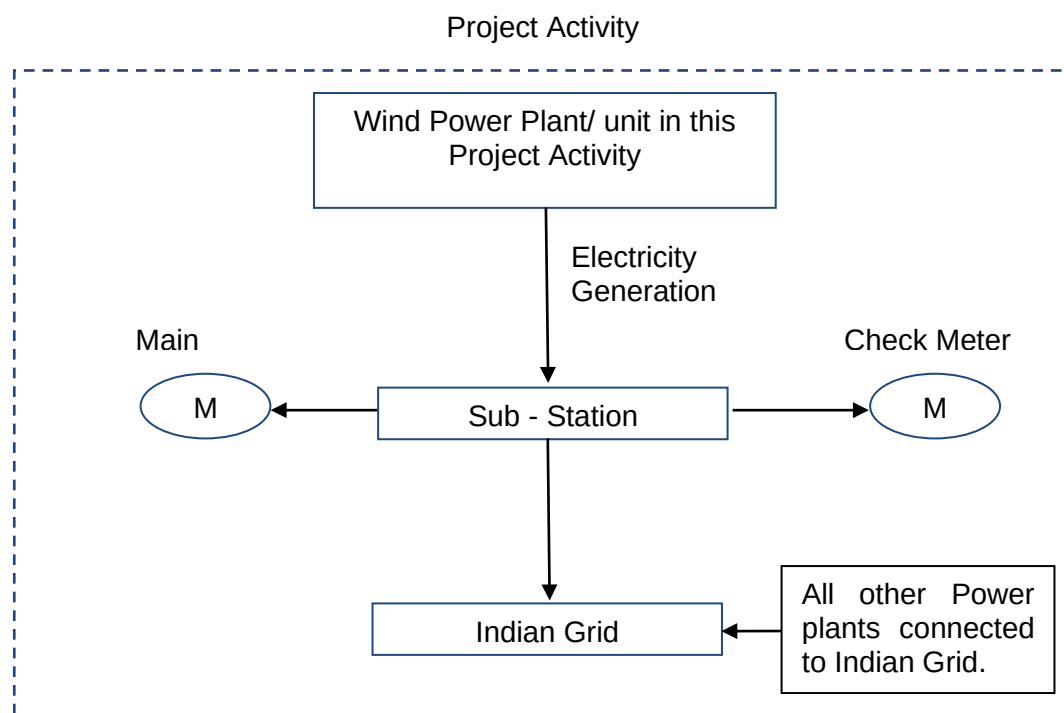
seasonal flows from river, tributaries (if any), and rainfall for minimum five years prior to implementation of CDM project activity.	
The methodology is not applicable to: (a) Project activities that involve switching from fossil fuels to renewable energy sources at the site of the project activity, since in this case the baseline may be the continued use of fossil fuels at the site; (b) Biomass fired power plants/units.	The project activity is installation of a new grid connected Wind power project/ unit and does not involve switching from fossil fuel to renewable energy, therefore criterion described in point (a) is not relevant to the project activity. This is a Wind power plant/ unit and not a biomass fired plant, therefore criterion described in point (b) is not applicable to the project activity.
In the case of retrofits, rehabilitations, replacements, or capacity additions, this methodology is only applicable if the most plausible baseline scenario, as a result of the identification of baseline scenario, is "the continuation of the current situation, that is to use the power generation equipment that was already in use prior to the implementation of the project activity and undertaking business as usual maintenance".	The project activity is a new grid connected Wind power plant/ unit and not a retrofits, replacement or capacity additions and therefore this criterion is not applicable to the project activity.
Applicability conditions of "Tool to calculate the emission factor for an electricity system", - Version 07.0	
This tool may be applied to estimate the OM, BM and/or CM when calculating baseline emissions for a project activity that substitutes grid electricity that is where a project activity supplies electricity to a grid or a project activity that results in savings of electricity that would have been provided by the grid (e.g. demand-side energy efficiency projects).	This condition is applicable. OM, BM and CM are estimated using the tool under section B.6.1 for calculating baseline emissions.
Under this tool, the emission factor for the project electricity system can be calculated either for grid power plants only or, as an option, can include off-grid power plants. In the latter case, two sub-options under the step 2 of the tool are available to the project participants, i.e. option IIa and option IIb. If option IIa is chosen, the conditions specified in "Appendix 1: Procedures related to off-grid power generation" should be met. Namely, the total capacity of off-grid Procedures related to off-grid power generation" should power plants (in MW) should be at least 10 per cent of the total capacity of grid power plants in the electricity system; or the total electricity generation by off-grid power plants (in MWh) should be at least 10 per cent of the total electricity generation by grid power plants in the electricity system; and that factors which negatively affect the reliability and stability of the grid are primarily due to constraints in generation and not to other aspects such as transmission capacity.	Since the project activity is grid connected, this condition is applicable and the emission factor has been calculated accordingly.
In case of CDM projects the tool is not applicable if the project electricity system is located partially or totally in an Annex I country.	The project activity is located in India, a non-Annex I country. Therefore, this criterion is not applicable for the project activity.

Under this tool, the value applied to the CO ₂ emission factor of biofuels is zero.	The project activity is a grid connected Wind power project/unit and does not involve emission from biofuels. Therefore, this criterion is not applicable for the project activity.
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B.3. Project boundary, sources and greenhouse gases (GHGs)

Project boundary has ascertained using para 20 of ACM0002 (Version 20.0, EB 105, Annex 3) – “The spatial extent of the project boundary includes the project power plant/unit and all power plants/units connected physically to the electricity system that the CDM project power plant is connected to.”

The proposed project would be feeding the electricity in the Indian grid. Thus, all the power generation facilities connected to this grid form the project boundary for the purpose of baseline estimation.



Source		GHG	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
Project activity	Greenfield Wind Power Project Activity	CO ₂	No	No CO ₂ emissions are emitted from the project activity
		CH ₄	No	No, Project Activity does not emit CH ₄
		N ₂ O	No	No, Project Activity does not emit N ₂ O

B.4. Establishment and description of baseline scenario

As per the approved consolidated Methodology ACM0002 (Version 20.0, EB 105, Annex 3) para 22:

“If the project activity is the installation of a Greenfield power plant, the baseline scenario is 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, as reflected in the combined margin (CM) calculations described in the “Tool to calculate the emission factor for an electricity system”, Version 07.0, EB 100 Annex 4.

The project activity involves setting up of 302.4 MW Wind power plant to harness the Wind energy for power generation and supply to the regional grid which is the part of Indian grid. 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.

As per applicable methodology the baseline emissions are the product of electrical energy baseline $EG_{BL,y}$ expressed in MWh of electricity produced by the renewable generating unit multiplied by the grid emission factor.

The combined margin ($EF_{grid,CM,y}$) is the result of a weighted average of two emission factor pertaining to the electricity system: the operating margin (OM) and build margin (BM), in accordance with the Tool to calculate the emission factor for an electricity system - Version 07.0, (EB 100 Annex 4). Calculations for this combined margin must be based on data from an official source⁶ (where available) and made publically available. In India, Central Electricity Authority (CEA), Government of India provides this data, and accordingly the same has been used.

The combined margin of the Indian grid used for the project activity is as follows:

Parameter	Value	Nomenclature	Source
$EF_{grid,CM,y}$	0.9368 tCO ₂ /MWh	Combined margin CO ₂ emission factor for the project electricity system in year y	Calculated ⁷ as the weighted average of the operating margin (0.75) & build margin (0.25) values, sourced from Baseline CO ₂ Emission Database, Version 14 published by Central Electricity Authority (CEA), Government of India.
$EF_{grid,OM,y}$	0.9610 tCO ₂ /MWh	Operating margin CO ₂ emission factor for the project electricity system in year y	Calculated as the last 3-year (2015-16, 2016-17 and 2017-18) generation-weighted average, sourced from Baseline CO ₂ Emission Database, Version 14, published by Central Electricity Authority (CEA), Government of India.
$EF_{grid,BM,y}$	0.8644 tCO ₂ /MWh	Build margin CO ₂ emission factor for the project electricity system in year y	Baseline CO ₂ Emission Database, Version 14, published by Central Electricity Authority (CEA), Government of India.

⁶http://www.cea.nic.in/reports/others/thermal/tpece/cdm_co2/user_guide_ver14.pdf

⁷http://www.cea.nic.in/reports/others/thermal/tpece/cdm_co2/user_guide_ver14.pdf

B.5. Demonstration of additionality

The proposed CDM project generates power using Wind energy which is a renewable, zero emission source of energy. Baseline considerations for the project are based on approved consolidated baseline methodology ACM0002 (Version 20.0).

Thus, the project follows section 5.3.2 which requires the project proponent to determine the additionality based on “Tool for the demonstration and assessment of additionality”, Version 07.0.0. The step-wise approach to establish additionality of the project activity has been followed, details of which are provided in the following paragraphs:

Step 0: Demonstration whether the proposed project activity is the first-of-its-kind

The proposed project activity is a Wind project; hence not the first of its kind. Hence, this step is not applicable.

Step 1: Identification of alternatives to the project activity consistent with current laws and regulations

As per the applied methodology ACM0002 version 20.0; Para 22, *“If the project activity is the installation of a Greenfield power plant, the baseline scenario is electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid connected power plant and by the addition of new generation sources”*. As the baseline scenario is prescribed by applied methodology, hence no further analysis is carried out to identify alternatives.

Step 2: Investment Analysis

As per para 29 of “Tool for the demonstration and assessment of additionality” v7.0.0, it is determined that the proposed project activity is not an economically or financially feasible option.

To conduct the investment analysis, Methodological tool 27⁸: Investment analysis, version 10.0 has been referred.

Sub-step 2a: Determine appropriate analysis method

As per “Tool for the demonstration and assessment of additionality” (version 07.0.0), for financial analysis of the project, the following three options are available:

- Option I: Simple Cost Analysis
- Option II: Investment Comparison Analysis
- Option III: Benchmark Analysis

The project will generate revenues from sale of electricity, therefore Option I is not applicable. Option II also does not apply since there is no comparable investment alternative available to the project participant in line with para 32 of the Methodological tool: “Tool for the demonstration and assessment of additionality” (version 07.0.0).

The most appropriate financial analysis method is therefore option III: the benchmark analysis, where the returns on investment in the project activity are compared to benchmark returns that are available to any investors in the country.

⁸ <https://cdm.unfccc.int/methodologies/PAMethodologies/tools/am-tool-27-v10.0.pdf>

Sub-step 2b: Option III. Apply benchmark analysis

Project proponents have considered Post-Tax Equity IRR for investment analysis at the time of decision-making. As Project proponents is only interested in the returns project is generating on the portion of investment costs, which is financed by them in the form of equity.

As per Para 15 of EB105, Annex 6 states that “Required/expected returns on equity are appropriate benchmarks for equity IRR.” Therefore, the Expected return on equity is considered appropriate benchmark.

Accordingly, the post-tax Equity IRR has been considered as the relevant financial indicator for Investment Analysis.

Default Value Benchmark:

The cost of equity is determined by selecting the values provided in the Appendix, i.e. Default values for cost of equity (expected return on equity) in the ‘Methodological tool: Investment analysis’.

The Required return on equity (benchmark) was computed in the following manner:

$$\text{Nominal Benchmark}^9 = \{(1 + \text{Real Benchmark}) * (1 + \text{Inflation rate})\} - 1$$

Where:

- Default value for Real Benchmark
- Inflation Rate forecast by IMF for India

Benchmark estimation:

The Cost of Equity has been considered using the “Methodological tool: Investment analysis” the latest available value.

Table under Appendix specifies default value of expected return on equity in real terms for Energy Industries (Group 1) in India = 10.24%

Inflation Forecast for India as per IMF website¹⁰ and corresponding benchmark values:

Project Name	Promoters'	Inflation Forecast (5 Years)	Benchmark
SKRPL		3.97%	14.62%

As a conservative approach, benchmark of 14.62% has been selected for this project activity.

Sub-step 2c: Calculation and comparison of financial indicators (only applicable to Options II and III):

Kindly refer the financial spread sheets for the key assumptions (web links & sources of input parameters) supporting the financial projections.

Considering the input values, Equity IRR is given below:

⁹As per Pg. 320 of Corporate Finance, Second Edition of Aswath Damodaran

¹⁰<https://www.imf.org/external/pubs/ft/weo/2019/02/weodata/weoselser.aspx?c=534&t=1>

Project Promoters' Name	Equity IRR without CDM	Benchmark (Equity IRR)
PSHPL	5.37%	14.62%

The project activity cannot be considered as financially attractive as the equity IRR for the project activity is less than the Benchmark.

Sub-step 2d: Sensitivity Analysis

Addressing Guidance 27 & 28 of EB105, Annex 6, following factors has been subjected to sensitivity analysis:

1. Generation
2. O&M Cost
3. Project Cost
4. Tariff

The rationale of sensitivity is, *"The ultimate objective of the sensitivity analysis is to determine the likelihood of the occurrence of a scenario other than the scenario presented, in order to provide a cross-check on the suitability of the assumptions used in the development of the investment analysis."*

The results of sensitivity analysis show that even with a variation of +10% & -10% in project cost, O&M cost, PLF and Tariff Rate, Equity IRR is significantly lower than the benchmark. And it is evident from the results given above; the project remains additional even under the most favourable conditions.

	Probability to breach the benchmark
PLF	PLF considered in financials is as per "Guidelines for the reporting and validation of Plant load factors" stated in EB48 Annex11 ¹¹ . Variation in PLF by more than 10% is unlikely to happen, as the PLF has been reported as per the Third-Party Report which is based on long term data.
O&M	The sensitivity analysis reveals that O&M will breach the benchmark at negative values and is hypothetical case. Since the O&M cost is subject to escalation and also subject to inflationary pressure, any reduction in the O&M costs is highly unlikely. Hence, the reduction in the O&M cost is highly unlikely.
Project Cost	Estimated Project Cost for financial analysis is considered as available at the time of decision making. However, we have conducted sensitivity analysis for project cost being 10% less than that considered during decision making. Still, the IRR does not breach the Benchmark.
Tariff Rate	The tariff is determined by PPA which is fixed for 25 years mentioned. Hence, there is no probability to get variation for the same.

Outcome of Step 2:

This substantiates that the investment is not financially attractive (Equity IRR for the project activity is less than the Benchmark Equity IRR). Thus, it can be easily concluded that project activity is additional & is not business as usual scenario.

Step 3: Barrier analysis

Barrier analysis has not been used.

¹¹ http://cdm.unfccc.int/EB/048/eb48_repan11.pdf

Step 4: Common practice analysis

Stepwise approach for common practice analysis has been carried out as per Methodological tool “Common Practice”, version 03.1 EB84, Annex 7:

Step (1): Calculate applicable capacity or output range as +/-50% of the total design capacity or output of the proposed project activity.

Range	Capacity	Unit
+50%	453.60	MW
Capacity of the proposed project activity	302.40	MW
-50%	151.20	MW

Step (2): Identify similar projects (both CDM and non-CDM) which fulfil all of the following conditions:

- The projects are located in the applicable geographical area;
- The projects apply the same measure as the proposed project activity;
- The projects use the same energy source/fuel and feedstock as the proposed project activity, if a technology switch measure is implemented by the proposed project activity;
- The plants in which the projects are implemented produce goods or services with comparable quality, properties and applications areas (e.g. clinker) as the proposed project plant;
- The capacity or output of the projects is within the applicable capacity or output range calculated in Step 1;
- The projects started commercial operation before the project design document (CDM-PDD) is published for global stakeholder consultation or before the start date of proposed project activity, whichever is earlier for the proposed project activity.

Identification of the similar projects (CDM and non-CDM) is carried out as per sub-steps of Step (2) as follows:

- As the projects are located in Gujarat state of India, therefore, projects in the geographical area of Gujarat have been chosen for analysis.
- The project activity is a green-field wind power project and uses measure (b) “Switch of technology with or without change of energy source including energy efficiency improvement as well as use of renewable energies”. Therefore, projects applying same measure (b) are candidates for similar projects.
- The energy source used by the project activity is Wind. Hence, only wind energy projects have been considered for analysis.
- The project activity produces electricity; therefore, all power plants that produce electricity are candidates for similar projects.
- The capacity range of the projects is within the applicable capacity range from 151.20 MW to 453.60 MW.
- The start date of the project activity is 18-Oct-2019. Therefore projects, which have started commercial operation before 18-Oct-2019, have been considered for analysis.
- The start date of the project activity is 18-Oct-2019. As Kyoto Protocol was ratified by India on 26-Aug-2002¹², therefore projects which had started commercial operation between 26-Aug-2002 to 18-Oct-2019, have been identified.

Numbers of Similar projects identified (as per data published by Wind Directory 2018), which fulfil above-mentioned conditions are

¹²http://unfccc.int/kyoto_protocol/status_of_ratification/items/2613.php

$$N_{\text{wind}} = 36$$

Step (3): within the projects identified in Step 2, identify those that are neither registered CDM project activities, project activities submitted for registration, nor project activities undergoing validation. Note their number N_{all} .

CDM project activities, which have got registered or are under validation have been excluded in this step. The list of the power plants identified is provided to the DOE. After excluding the registered and under validation projects the total number of projects, $N_{\text{all}} = 5$

Step (4): within similar projects identified in Step 3, identify those that apply technologies that are different to the technology applied in the proposed project activity. Note their number N_{diff} .

From the projects identified above, those projects which employ “**different technologies**” have been excluded and the number of such projects has been identified as N_{diff} .

Since the project activity is located in Gujarat and has signed Power Purchase Agreement (PPA) with SECI (Solar Energy Corporation of India Limited) which is Nodal Agency developed by the Government of India. So, projects in Gujarat that have not signed Power Purchase Agreement (PPA) with SECI been can be assumed that such projects are governed by different investment climate. Therefore, these projects come under different investment climate and have been considered under N_{diff} .

Therefore, these projects come under different investment climate and have been considered under N_{diff} .

$$N_{\text{diff}} = 5$$

Step (5): calculate factor $F=1-N_{\text{diff}}/N_{\text{all}}$ representing the share of similar projects (penetration rate of the measure/technology) using a measure/technology similar to the measure/technology used in the proposed project activity that deliver the same output or capacity as the proposed project activity.

$$\begin{aligned} \text{Calculate } F &= 1 - N_{\text{diff}}/N_{\text{all}} = 1 - (5/5) = 0 \\ N_{\text{all}} - N_{\text{diff}} &= 5 - 5 = 0 \end{aligned}$$

Outcome of Step 5:

As,

- i. $F = 0$; is less than 0.2, and
- ii. $N_{\text{all}} - N_{\text{diff}} = 0$; is less than 3, thus:

The proposed project activity is not a “common practice” within a sector in the applicable geographical area.

Demonstration of serious CDM consideration

CDM Project Standard for project activities Version 02.0, para 41 states that “For a proposed CDM project activity with a start date on or after 2 August 2008, the project participants shall notify the designated national authority (DNA) of the host Party of the project activity, if such DNA exists, and the UNFCCC secretariat (hereinafter referred to as the secretariat), in writing of the commencement of the project activity and their intention to seek the CDM status for the project activity, or, through a DOE, publish the PDD for global stakeholder consultation, within 180 days of the start date in accordance with the “CDM project cycle procedure for project activities”.

In line with the above guidance, the project investor had intimated the UNFCCC and host party DNA i.e. National CDM Authority (NCDMA) of its intention to seek CDM for the proposed project activity in a defined F-CDM form within 180 days (refer table below). Hence, it can be clearly established that CDM was seriously considered in the decision to proceed with the proposed project activity.

Project Promoters' Name	Start Date	F-CDM Date
SKRPL	18-Oct-2019	15-Jan-2020

B.6. Estimation of emission reductions

B.6.1. Explanation of methodological choices

Project Emissions:

As per the approved consolidated Methodology ACM0002 (Version 20.0, EB 105, Annex 3) para 34:

“For most renewable energy power generation project activities, $PE_y = 0$. However, some project activities may involve project emissions that can be significant. These emissions shall be accounted for as project emissions by using the following equation:

$$PE_y = PE_{FF,y} + PE_{GP,y} + PE_{HP,y}$$

Where:

PE_y = Project emissions in year y (t CO_{2e}/yr)
 $PE_{FF,y}$ = Project emissions from fossil fuel consumption in year y (t CO_{2e}/yr)
 $PE_{GP,y}$ = Project emissions from the operation of dry, flash steam or binary geothermal power plants in year y (t CO_{2e}/yr)
 $PE_{HP,y}$ = Project emissions from water reservoirs of hydro power plants in year y (t CO_{2e}/yr)

As the project activity is the installation of a new grid-connected Wind power plant/ unit and does not involve any project emissions from fossil fuel, operation of dry, flash steam or binary geothermal power plants, and from water reservoirs of hydro power plants. Therefore $PE_{FF,y}$, $PE_{GP,y}$, $PE_{HP,y}$ are equal to zero and thus, $PE_y = 0$.

Baseline Emissions:

As per the approved consolidated Methodology ACM0002 (Version 20.0, EB 105, Annex 3) para 42:

Baseline emissions include only CO₂ emissions from electricity generation in fossil fuel fired 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:

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

Where:

BE_y = Baseline emissions in year y (t CO₂/yr)

- $EG_{PJ,y}$ = 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/yr)
- $EF_{grid,CM,y}$ = Combined margin CO₂ emission factor for grid connected power generation in year y calculated using the latest version of the “Tool to calculate the emission factor for an electricity system” (t CO₂/MWh)

The methodology provides following approaches for emission factor calculations:

(a) *Combined margin (CM), consisting of the combination of operating margin (OM) and build margin (BM) according to the procedures prescribed in the approved methodology “Tool to calculate the emission factor for an electricity system”.*

OR

(b) *The weighted average emissions (in t CO₂/MWh) of the current generation mix. The data of the year in which project generation occurs must be used.*

Option (a) has been considered to calculate the grid emission factor as per the ‘Tool to calculate the emission factor for an electricity system’ (Version 07.0, EB 100 Annex 4) since data is available from an official source.

CO₂ Baseline Database for the Indian Power Sector, Version 14¹³, published by Central Electricity Authority (CEA), Government of India has been used for the calculation of emission reduction.

As per *Methodological tool: Tool to calculate the emission factor for an electricity system* (Version 07.0, EB 100, Annex 4), following six steps have been followed:

- (a) **Step 1:** Identify the relevant electricity systems;
- (b) **Step 2:** Choose whether to include off-grid power plants in the project electricity system (optional);
- (c) **Step 3:** Select a method to determine the operating margin (OM);
- (d) **Step 4:** Calculate the operating margin emission factor according to the selected method;
- (e) **Step 5:** Calculate the build margin (BM) emission factor;
- (f) **Step 6:** Calculate the combined margin (CM) emission factor.

Step 1: Identify the relevant electricity systems

As described in tool “*For determining the electricity emission factors, identify the relevant project electricity system. Similarly, identify any connected electricity systems*”. It also states that “*If the DNA of the host country has published a delineation of the project electricity system and connected electricity systems, these delineations should be used.*”

Keeping this into consideration, the Central Electricity Authority (CEA), Government of India has divided the Indian Power Sector into five regional grids viz. Northern, Eastern, Western, North-eastern and Southern. However, all the 5 zones have been synchronized and called as Indian Grid.

Step 2: Choose whether to include off-grid power plants in the project electricity system (optional)

Project participants may choose between the following two options to calculate the operating margin and build margin emission factor:

Option I:

Only grid power plants are included in the calculation.

Option II:

¹³http://www.cea.nic.in/reports/others/thermal/tpece/cdm_co2/user_guide_ver14.pdf

Both grid power plants and off-grid power plants are included in the calculation.

The Project Participant has chosen only grid power plants in the calculation.

Step 3: Select a method to determine the operating margin (OM)

The calculation of the operating margin emission factor ($EF_{grid,OM,y}$) is based on one of the following methods, which are described under Step 4:

- (a) Simple OM; or
- (b) Simple adjusted OM; or
- (c) Dispatch data analysis OM; or
- (d) Average OM.

The data required to calculate Simple adjusted OM and Dispatch data analysis OM is not possible due to lack of availability of data to project developers.

The choice of other two options for calculating operating margin emission factor depends on generation of electricity from low-cost/ must-run sources. In the context of the methodology low cost/must run resources typically include hydro, geothermal, Solar, low cost biomass, nuclear and solar generation.

Share of Must-Run (Hydro/Nuclear) (% of Net Generation)

	2013-14	2014-15	2015-16	2016-17	2017-18
India	18.6%	16.8%	15.1%	14.6%	14.3%

Data Source: Central Electricity Authority (CEA) database Version 14, Dec'2018

The above data clearly shows that the percentage of total grid generation by low-cost/ must-run plants (on the basis of average of five most recent years) for the Indian grid is less than 50 % of the total generation.

Thus, the Average OM method cannot be applied, as low cost/must run resources constitute less than 50% of total grid generation.

The simple OM emission factor is calculated as the generation-weighted average CO₂ emissions per unit net electricity generation (t CO₂/MWh) of all generating power plants serving the system, not including low-cost/must-run power plants/units.

For the simple OM, the simple adjusted OM and the average OM, the emissions factor can be calculated using either of the two following data vintages:

(a) **Ex ante option:** if the ex-ante option is chosen, the emission factor is determined once at the validation stage, thus no monitoring and recalculation of the emissions factor during the crediting period is required.

OR

(b) **Ex post option:** if the ex post option is chosen, the emission factor is determined for the year in which the project activity displaces grid electricity, requiring the emissions factor to be updated annually during monitoring.

PP has chosen ex-ante option for calculation of Simple OM emission factor using a 3-year generation-weighted average, based on the most recent data available at the time of submission of the CDM-PDD to the DOE for validation.

OM determined at validation stage will be the same throughout the crediting period. There will be no requirement to monitor & recalculate the emission factor during the crediting period.

Step 4: Calculate the operating margin emission factor ($EF_{grid,OMSimple,y}$) according to the selected method

The operating margin emission factor has been calculated using a 3 year data vintage:

Net Generation in Operating Margin (MWh) (incl. Imports)			
	2015-16	2016-17	2017-18
Indian Grid	871,753	916,278	960,693

Simple Operating Margin (tCO ₂ /MWh) (incl. Imports)			
	2015-16	2016-17	2017-18
Indian Grid	0.9655	0.9636	0.9543

Weighted Generation Operating Margin	
Indian Grid	0.9610

Step 5: Calculate the build margin (BM) emission factor ($EF_{grid,BM,y}$)

As per Methodological tool: "Tool to calculate the emission factor for an electricity system" (Version 07.0, EB 100, Annex 4) para 72:

In terms of vintage of data, project participants can choose between one of the following two options:

(a) **Option 1** - for the first crediting period, calculate the build margin emission factor ex ante based on the most recent information available on units already built for sample group *m* at the time of CDM-PDD submission to the DOE for validation. For the second crediting period, the build margin emission factor should be updated based on the most recent information available on units already built at the time of submission of the request for renewal of the crediting period to the DOE. For the third crediting period, the build margin emission factor calculated for the second crediting period should be used. This option does not require monitoring the emission factor during the crediting period.

(b) **Option 2** - For the first crediting period, the build margin emission factor shall be updated annually, ex post, including those units built up to the year of registration of the project activity or, if information up to the year of registration is not yet available, including those units built up to the latest year for which information is available. For the second crediting period, the build margin emissions factor shall be calculated ex ante, as described in Option 1 above. For the third crediting period, the build margin emission factor calculated for the second crediting period should be used.

Option 1 as described above is chosen to calculate the build margin emission factor for the project activity. BM is calculated ex-ante based on the most recent information available at the time of submission of PDD and is fixed for the entire crediting period.

Build Margin (tCO ₂ /MWh) (not adjusted for imports)	
	2017-18
Indian Grid	0.8644

Step 6: Calculate the combined margin (CM) emission factor ($EF_{grid,CM,y}$)

As per Methodological tool: "Tool to calculate the emission factor for an electricity system" (Version 07.0, EB 100, Annex 4) para 81:

The calculation of the combined margin (CM) emission factor ($EF_{grid,CM,y}$) is based on one of the following methods:

(a) *Weighted average CM; or*

(b) Simplified CM.

PP has chosen option (a) i.e weighted average CM to calculate the combined margin emission factor for the project activity.

The combined margin emissions factor is calculated as follows:

$$EF_{\text{grid,CM},y} = EF_{\text{grid,OM},y} * w_{\text{OM}} + EF_{\text{grid,BM},y} * w_{\text{BM}}$$

Where:

$EF_{\text{grid,BM},y}$	=	Build margin CO ₂ emission factor in year y (t CO ₂ /MWh)
$EF_{\text{grid,OM},y}$	=	Operating margin CO ₂ emission factor in year y (t CO ₂ /MWh)
w_{OM}	=	Weighting of operating margin emissions factor (per cent)
w_{BM}	=	Weighting of build margin emissions factor (per cent)

The following default values should be used for w_{OM} and w_{BM} :

(a) Wind and Wind power generation project activities: $w_{\text{OM}} = 0.75$ and $w_{\text{BM}} = 0.25$ (owing to their intermittent and non-dispatchable nature) for the first crediting period and for subsequent crediting periods

$$\begin{aligned} \text{Therefore, } EF_{\text{grid,CM},y} &= 0.9610 * 0.75 + 0.8644 * 0.25 \\ &= 0.9368 \text{ t CO}_2/\text{MWh} \end{aligned}$$

Baseline emission factor (EF_y):

The baseline emission factor is calculated using the combined margin approach as described in Step 6 above:

Therefore, $EF_y = EF_{\text{grid,CM},y} = 0.9368 \text{ t CO}_2/\text{MWh}$.

Leakage Emissions:

No other leakage emissions are considered. The emissions potentially arising due to activities such as power plant construction and upstream emissions from fossil fuel use (e.g. extraction, processing, transport etc.) are neglected.

Emission reductions:

Emission reductions are calculated as follows:

$$ER_y = BE_y - PE_y$$

Where:

ER_y	=	Emission reductions in year y (t CO ₂ e/yr)
BE_y	=	Baseline emissions in year y (t CO ₂ /yr)
PE_y	=	Project emissions in year y (t CO ₂ e/yr)

B.6.2. Data and parameters fixed ex ante

Data/Parameter	EF _{grid,OM,y}
Data unit	tCO ₂ /MWh
Description	Operating Margin CO ₂ emission factor in year y
Source of data	Calculated from CEA database, Version 14 ¹⁴
Value(s) applied	0.9610 (Indian Grid)
Choice of data or measurement methods and procedures	Calculated as per “Tool to calculate the emission factor for an electricity system, version 07.0.0” as 3-year generation weighted average using data for the years 2015-16, 2016-17 & 2017-18. The data are obtained from “CO ₂ Baseline Database for Indian Power Sector” version 14.0, published by the Central Electricity Authority, Ministry of Power, Government of India.
Purpose of data	For the calculation of the Baseline Emission
Additional comment	This parameter is fixed ex-ante for the entire crediting period.

Data/Parameter	EF _{grid,BM,y}
Data unit	tCO ₂ /MWh
Description	Build Margin CO ₂ emission factor in year y
Source of data	Calculated from CEA database, Version 14 ¹⁵
Value(s) applied	0.8644 (Indian Grid)
Choice of data or measurement methods and procedures	Calculated as per “Tool to calculate the emission factor for an electricity system, version 07.0.0” as 3-year generation weighted average using data for the years 2017-18. The data are obtained from “CO ₂ Baseline Database for Indian Power Sector” version 14.0, published by the Central Electricity Authority, Ministry of Power, Government of India.
Purpose of data	For the calculation of the Baseline Emission
Additional comment	This parameter is fixed ex-ante for the entire crediting period.

Data/Parameter	EF _{grid,CM,y}
Data unit	tCO ₂ /MWh
Description	Combined Margin CO ₂ emission factor in year y
Source of data	Calculated from CEA database, Version 14
Value(s) applied	0.9368 (Indian Grid)
Choice of data or measurement methods and procedures	The combined margin emissions factor is calculated as follows: $EF_{grid,CM,y} = EF_{grid,OM,y} * W_{OM} + EF_{grid,BM,y} * W_{BM}$ Where: EF_{grid,BM,y} = Build margin CO₂ emission factor in year y (tCO₂/MWh) EF_{grid,OM,y} = Operating margin CO₂ emission factor in year y (tCO₂/MWh) W_{OM} = Weighting of operating margin emissions factor (%) = 75% W_{BM} = Weighting of build margin emissions factor (%) = 25%
Purpose of data	For the calculation of the Baseline Emission
Additional comment	This parameter is fixed ex-ante for the entire crediting period.

B.6.3. Ex ante calculation of emission reductions

¹⁴http://www.cea.nic.in/reports/others/thermal/tpece/cdm_co2/user_guide_ver14.pdf

¹⁵http://www.cea.nic.in/reports/others/thermal/tpece/cdm_co2/user_guide_ver14.pdf

Formula used to calculate the net emission reduction for the project activity is:

$$ER_y = BE_y - PE_y$$

Where:

ER_y	=	Emission reductions in year y (t CO ₂ e/yr)
BE_y	=	Baseline emissions in year y (t CO ₂ /yr)
PE_y	=	Project emissions in year y (t CO ₂ e/yr)

Baseline Emissions:

The baseline emissions are the product of electrical energy baseline $EG_{PJ,y}$ expressed in MWh of electricity produced by the renewable generating unit multiplied by an emission factor.

$$BE_y = EG_{PJ,y} * EF_{grid,CM,y}$$

Where,

$EG_{PJ,y}$	=	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/yr)
$EF_{grid,CM,y}$	=	Combined margin CO ₂ emission factor for grid connected power generation in year y calculated using the latest version of the "Tool to calculate the emission factor for an electricity system" (t CO ₂ /MWh) .

Further, as the project activity is the installation of a Greenfield power plant, then:

$$EG_{PJ,y} = EG_{facility,y}$$

Where,

$EG_{facility,y}$	=	Quantity of net electricity generation supplied by the project plant/unit to the grid in year y (MWh/yr)
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$$BE_y = 8,23,846 * 0.9368 \text{ t CO}_2/\text{ year.}$$

$$= 7,71,779 \text{ t CO}_2/\text{ year}$$

$$PE_y = 0$$

$$\text{Therefore, } ER_y = BE_y = 7,71,779 \text{ t CO}_2/\text{ year.}$$

B.6.4. Summary of ex ante estimates of emission reductions

Year	Baseline emissions (t CO ₂ e)	Project emissions (t CO ₂ e)	Leakage (t CO ₂ e)	Emission reductions (t CO ₂ e)
Year 1	771,779	0	0	771,779
Year 2	771,779	0	0	771,779
Year 3	771,779	0	0	771,779
Year 4	771,779	0	0	771,779
Year 5	771,779	0	0	771,779
Year 6	771,779	0	0	771,779
Year 7	771,779	0	0	771,779

Total	5,402,453	0	0	5,402,453
Total number of crediting years	7 Years (Renewable)			
Annual average over the crediting period	771,779	0	0	771,779

B.7. Monitoring plan

B.7.1. Data and parameters to be monitored

Data/Parameter	$EG_{\text{facility},y}$
Data unit	MWh
Description	Quantity of net electricity generation supplied by the project plant/unit to the grid in year y (MWh)
Source of data	Monthly Meter Reading Reports
Value(s) applied	823,846 (Average Estimated Value)
Measurement methods and procedures	Data Type: Measured Monitoring equipment: Energy Meters of accuracy class 0.2s Recording Frequency: Continuous monitoring and Monthly recording from Energy Meters, Summarized Annually. Archiving Policy: Paper &/or Electronic Calibration frequency: Once in 5 years as per CEA guidelines¹⁶ Electricity exported/imported to the grid is in kWh. However, for the calculation purpose electricity exported is converted in MWh. The Net electricity supplied to the grid by the project activity will be calculated as a difference of electricity exported to the grid, electricity imported from the grid obtained from Monthly Meter reading reports provided by SEB as per below equation: $EG_{\text{facility},y} = EG_{\text{Export}} - EG_{\text{Import}}$ Cross Checking: Quantity of net electricity supplied to the grid will be cross checked from the Invoices/ Monthly Bill raised by the Project Participant to the SECI.
Monitoring frequency	Monthly
QA/QC procedures	Calibration of all the meters will be undertaken once in 5 years as per CEA guidelines and faulty meters will be duly replaced immediately. The meters will be of accuracy class 0.2.
Purpose of data	The Data/Parameter is required to calculate the baseline emission
Additional comment	Data will be archived electronically for a period of 2 years beyond the end of crediting period.

¹⁶http://www.aegcl.co.in/Metering_Regulations_Of_CEA_17_03_2006.pdf , page 12

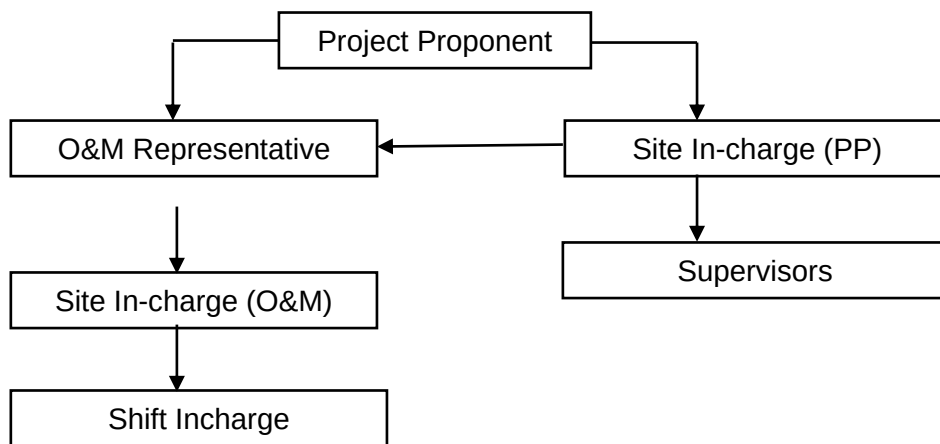
B.7.2. Sampling plan

Sampling is not required for the given project activity.

B.7.3. Other elements of monitoring plan

The monitoring plan is developed in accordance with the modalities and procedures for CDM project activities and is proposed for grid-connected Wind power projects being implemented in Rajasthan, India. The monitoring plan, describes about the monitoring organisation, parameters to be monitored, monitoring practices, quality assurance, quality control procedures, data storage and archiving.

The authority and responsibility for registration, monitoring, measurement, reporting and reviewing of the data rests with the project participants. The following structure is proposed for data monitoring, collection, data archiving and calibration of equipment for this project activity. The team comprises of the following members:



Responsibilities of Site Incharge (PP): Overall functioning and maintenance of the project activity, the Site incharge shall coordinate with the O&M operator as well as the site supervisors.

Responsibilities of O&M Representative: Co-ordination between Site incharge of the O&M operator as well as the project participant and further report to PP head office.

Responsibilities of Site In-charge (O&M Operator): Responsibility for maintaining the data records, ensures completeness of data, and reliability of data (calibration of equipment) as well as data recording for all the parameters.

Responsibilities of Site In-charge (O&M Operator): Responsibility for maintaining the data records, ensures completeness of data, and reliability of data (calibration of equipment) as well as data recording for all the parameters.

Responsibilities of Shift In-charge: Responsibility for day to day data collection and maintains day to day monitored data.

Data Measurement

The export and import energy will be measured continuously using above mentioned Main & Check meters. Export & Import readings of Main & Check meters shall be taken on monthly basis by authorized officer of Nodal agency (as per PPA) in the presence of PP or representative of PP. The meter reading will be taken jointly and signed by the representatives of the Nodal Agency and project investors. Based on the readings, invoices

will be raised by project investors. These invoices can be used for cross checking the meter readings taken for the project activity. It is to be noted though PP or PP representative is available during meter reading, the calculations of net electricity supplied to grid is completely under purview of SECI officer and PP do not have any control on it. Also, accuracy class of meters and calibration frequency is under purview of SECI officer and PP do not have any control on it. PP got the monthly credit report from where net electricity supplied to grid is obtained and used for emission reduction calculations.

Data collection and archiving

Export & Import readings from main & check meter will be collected under the supervision of the O & M Team or authorized representatives of PP. The net electricity supplied to grid would be calculated based on export & import readings. Export and Import data would be recorded and stored in electronic&/or Paper. The records are checked periodically by the Head (Operations) and discussed thoroughly with the O & M Team. The period of storage of the monitored data will be 2 years after the end of crediting period or till the last issuance of CERs for the project activity whichever occurs later.

Mismatch in Monitoring Period and the Billing Period

In case the dates of a particular monitoring period do not match with the dates of the billing period, the net electricity exported to the grid would be calculated from:

$$D = (A/B)*C$$

A = Difference of number of days which are not matching of billing period and monitoring period.

B = Number of days of the billing period/ month which was not matched with the monitoring period.

C = Net Electricity supplied to the grid for that given billing period/ month.

The calculated value after apportioning would be used for calculation of emission reductions during that period.

Emergency preparedness

The project activity will not result in any unidentified activity that can result in substantial emissions from the project activity. No need for emergency preparedness in data monitoring is visualized.

In the unlikely event of failure of both Main meter & Check meter installed at sub-station, where both the faulty meters are required to repair or replaced simultaneously, the export & import readings from Main & Check Meter installed at the inter-connection point at the project site will be used for monitoring of net electricity exported to the grid.

Personnel training

In order to ensure a proper functioning of the project activity and a properly monitoring of emission reductions, the staff will be trained. The plant helpers will be trained in equipment operation, data recording, reports writing, operation and maintenance and emergency procedures in compliance with the monitoring plan.

Personnel training

In order to ensure a proper functioning of the project activity and a properly monitoring of emission reductions, the staff will be trained. The plant staff will be trained in equipment operation, data recording, reports writing, operation and maintenance and emergency procedures in compliance with the monitoring plan.

SECTION C. Start date, crediting period type and duration**C.1. Start date of project activity**

18/10/2019

C.2. Expected operational lifetime of project activity

25 years and 00 months

C.3. Crediting period of project activity**C.3.1. Type of crediting period**

Renewable crediting period of 7 years 00 Months have been opted for the project activity. This is the first crediting period of the project activity.

C.3.2. Start date of crediting period

30/04/2020 or Date of submission of complete request for registration by the DOE whichever is later.

C.3.3. Duration of crediting period

07 Years 00 Months for first crediting period. The total length of crediting period is 21 years.

SECTION D. Environmental impacts**D.1. Analysis of environmental impacts**

Proposed project activity is using renewable energy generation technology which is free from any kind of anthropogenic emission. Project activity is not having any negative environmental impact. Only small amounts of oily and solid wastes associated with the installation of the Wind Turbine Generators can be ignored when compared to Emission reductions.

D.2. Environmental impact assessment

As per the Ministry of Environment & Forest (MoEF), Government of India, Environmental Impact Assessment (EIA) studies of the wind power generation plant is not an essential requirement as it is not covered under the eleven categories as described in EIA Notification of 1994, or the Amended Notifications of 2006 and 2010.

As the project activity does not cause any negative impact on the environment, no EIA study was conducted.

SECTION E. Local stakeholder consultation**E.1. Modalities for local stakeholder consultation**

The Local Stakeholder Meetings were organized for taking the local concerns into consideration while implementing the wind power project in line with the CDM requirements. The following are the stakeholders for the project activity:

- Local community
- Local village administration
- Technology suppliers
- Local vendors

All the stakeholders have been invited through invitation letters and/ or public notice on 23-Sep-2019 to attend the stakeholders meeting held on 10-Oct-2019.

In the introductory speech, the representatives of PP welcomed the gathering and given a brief about the CDM project activity. Subsequent to the introductory speech, stakeholders were explained about the electricity generation from Wind power project/ unit is an environmental friendly power generation technology contributing to reduction in GHG emissions. They were also explained about the benefits of the Wind power project/ unit like, increasing energy availability and improving quality of power and its assistance to the local population by providing employment opportunities to both skilled & unskilled labours.

The Minutes of LSH meeting along with List of Attendees and other supporting's shall be submitted to the DOE.

E.2. Summary of comments received

Meeting started with opening speech by representative of project participant. He introduced all guests on dais. The representative of project participant explained Technical aspects of project to stakeholders. He also explained about social, environmental & economic benefits of the project. He also elaborated about CDM & its requirement for the current project.

Local stakeholders welcomed and expressed their support to the project. The meeting was concluded by vote of thanks to all the participants.

E.3. Consideration of comments received

The queries/ comments raised by local populace in the meeting were satisfactorily resolved/ clarified by the representative of PP & EPC Contractor.

At the end of meeting, Local stakeholders welcomed and expressed their support to the project. The meeting was concluded by vote of thanks to all the participants.

SECTION F. Approval and authorization

The proposed project activity is in process of applying for MoEF approval. The same will be provided to DOE once received.

Appendix 1. Contact information of project participants

Organization name	Sitac Kabini Renewables Pvt. Ltd.
Country	India
Address	507-508, Ashok estate, 24 Barakhamba Road, New Delhi - 110001
Telephone	+ 91 8447677111
Fax	-
E-mail	shweta.singh@sitacre.com
Website	http://www.sitacld.com/
Contact person	Shweta Singh

Appendix 2. Affirmation regarding public funding

The details regarding public funding for the project activity is provided in section A.5

Appendix 3. Applicability of methodologies and standardized baselines

The details regarding applicability of selected methodology are provided in Section B.2

Appendix 4. Further background information on ex ante calculation of emission reductions

The background information on the ex-ante calculation of emission reductions is detailed in section B.6.3.

Source:

1. Detailed Project Report
2. CO₂ Baseline Database for the Indian Power Sector version 14.0 published by Central Electricity Authority.

Link: http://www.cea.nic.in/reports/planning/cdm_co2/cdm_co2.htm
http://www.cea.nic.in/reports/others/thermal/tpece/cdm_co2/user_guide_ver14.pdf

Appendix 5. Further background information on monitoring plan

The detailed monitoring plan is as provided in Section B.7.

Appendix 6. Summary report of comments received from local stakeholders

The detailed monitoring plan is as provided in Section E.3.

Appendix 7. Summary of post-registration changes

Not Applicable

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Document information

<i>Version</i>	<i>Date</i>	<i>Description</i>
11.0	31 May 2019	Revision to: • Ensure consistency with version 02.0 of the “CDM project standard for project activities” (CDM-EB93-A04-STAN); • Make editorial improvements.
10.1	28 June 2017	Revision to make editorial improvement.
10.0	7 June 2017	Revision to: • Improve consistency with the “CDM project standard for project activities” and with the PoA-DD and CPA-DD forms; • Make editorial improvement.
09.0	24 May 2017	Revision to: • Ensure consistency with the “CDM project standard for project activities” (CDM-EB93-A04-STAN) (version 01.0); • Incorporate the “Project design document form for small-scale CDM project activities” (CDM-SSC-PDD-FORM); • Make editorial improvement.
08.0	22 July 2016	EB 90, Annex 1 Revision to include provisions related to automatically additional project activities.
07.0	15 April 2016	Revision to ensure consistency with the “Standard: Applicability of sectoral scopes” (CDM-EB88-A04-STAN) (version 01.0).
06.0	9 March 2015	Revision to: • Include provisions related to statement on erroneous inclusion of a CPA; • Include provisions related to delayed submission of a monitoring plan; • Provisions related to local stakeholder consultation; • Provisions related to the Host Party; • Make editorial improvement.
05.0	25 June 2014	Revision to: • Include the Attachment: Instructions for filling out the project design document form for CDM project activities (these instructions supersede the "Guidelines for completing the project design document form" (Version 01.0)); • Include provisions related to standardized baselines; • Add contact information on a responsible person(s)/ entity(ies) for the application of the methodology (ies) to the project activity in B.7.4 and Appendix 1; • Change the reference number from F-CDM-PDD to CDM-PDD-FORM; • Make editorial improvement.

<i>Version</i>	<i>Date</i>	<i>Description</i>
04.1	11 April 2012	Editorial revision to change version 02 line in history box from Annex 06 to Annex 06b.
04.0	13 March 2012	Revision required to ensure consistency with the “Guidelines for completing the project design document form for CDM project activities” (EB 66, Annex 8).
03.0	26 July 2006	EB 25, Annex 15
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