



**Project design document form**  
(Version 11.0)

BASIC INFORMATION	
<b>Title of the project activity</b>	Wind Power Project by Mangalam Fashions Limited & Group in Andhra Pradesh
<b>Scale of the project activity</b>	<input type="checkbox"/> Large-scale <input checked="" type="checkbox"/> Small-scale
<b>Version number of the PDD</b>	02
<b>Completion date of the PDD</b>	05/11/2020
<b>Project participants</b>	Mangalam Fashions Limited
<b>Host Party</b>	India
<b>Applied methodologies and standardized baselines</b>	Methodology: - AMS-I.D "Grid connected renewable electricity generation" (EB 81, Version 18) Standardized Baseline: Not Applicable
<b>Sectoral scopes</b>	Sectoral Scope 1: Energy Industries (renewable - /non-renewable sources)
<b>Estimated amount of annual average GHG emission reductions</b>	14,980 tCO <sub>2e</sub> / annum

## SECTION A. Description of project activity

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

The main purpose of this project activity is to generate clean form of electricity through renewable wind energy source. Mangalam Fashions Limited, RSM Estates Limited, Daulat Financial Services Pvt. Limited and HC Commercial Limited are the investors of the proposed project activity. Each investor having 2 MW of Wind Capacity totalling an overall capacity of 8 MW of Wind power in the state of Andhra Pradesh. The project will replace anthropogenic emissions of greenhouse gases (GHG's) estimated to be approximately 14,980 tCO<sub>2</sub>e per year, thereon displacing 15,520 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.

The details of Project capacity and location details for all the bundle partners are as follows:

Project Name	Investors'	Village	Tehsil	District	State
Mangalam Fashions Limited		Tallimadugula	Kanaganapalli	Ananthapuramu	Andhra Pradesh
RSM Estates Limited		Tallimadugula	Kanaganapalli	Ananthapuramu	Andhra Pradesh
Daulat Financial Services Pvt. Limited		Tallimadugula	Kanaganapalli	Ananthapuramu	Andhra Pradesh
HC Commercial Limited		Muthvakuntla	Kanaganapalli	Ananthapuramu	Andhra Pradesh

The project falls under:

**Sectoral Scope** : 01 - Energy industries (renewable / non-renewable sources)

**Project Type** : I - Renewable Energy Projects

**Project Category** : I.D. - Grid connected renewable electricity generation (Version 18, EB 81, Annex 24<sup>1</sup>)

Reference has been taken from indicative simplified baseline and monitoring methodologies for selected small scale (CDM projects less than 15 MW) project activity categories.

#### Tools referred with above methodology are:

Tool to calculate the emission factor for an electricity system, Version 07.0 EB 100, Annex 4<sup>2</sup>.

Methodological Tool for the demonstration of additionality of small- scale project activities<sup>3</sup> - Version 13.1 (EB 105, Annex 04)

Methodological Tool - Investment Analysis<sup>4</sup> - Version 10.0 (EB 105, Annex 06)

The approved methodology also refers to latest approved versions of following tools: Tool to calculate the emission factor for an electricity system<sup>5</sup> - Version 07.0 (EB 100, Annex 4).

<sup>1</sup> <http://cdm.unfccc.int/methodologies/DB/W3TINZ7KKWCK7L8WTXFQQOFQQH4SBK>

<sup>2</sup> <https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v7.0.pdf>

<sup>3</sup> <https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-21-v13.1.pdf>

<sup>4</sup> <https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-27-v10.0.pdf>

<sup>5</sup> <https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v7.0.pdf>

**Scenario existing prior to the implementation of project activity:**

The scenario existing prior to the implementation of the project activity, is electricity delivered to the grid by the project activity that 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”.

**Baseline Scenario:**

As per the applicable methodology, a Greenfield power plant is defined as “*a new renewable energy power plant that is constructed and operated at a site where no renewable energy power plant was operated prior to the implementation of the project activity*”.

As the project activity falls under the definition of a Greenfield power plant, the baseline scenario as per applied methodology 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.*

Hence, pre-project scenario and baseline scenario are the same.

**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 and Forests (MoEF), has mentioned four indicators for the sustainable development in the interim approval guidelines for Clean Development Mechanism (CDM) projects from India<sup>6</sup>. Thus the project’s contribution towards sustainable development has been addressed based on the following sustainable development aspects:

**Social well being**

The project activity provided / provides job opportunity to local people during erection, commissioning and maintenance of the wind machines. Frequency of visiting villages and nearby areas by skilled, technical and industrialist increase due to installation /site visit/operation and maintenance work related to project activity. This directly and indirectly positively effects the economy of villages and nearby area.

**Environmental well being**

The project activity is one of the cleanest renewable energy powers and does not involve any fossil fuel. There are no GHG emissions. 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**


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<sup>6</sup>[http://www.cdmindia.gov.in/approval\\_process.php](http://www.cdmindia.gov.in/approval_process.php)

The CDM project activity generates permanent and temporary employment opportunity within the vicinity of the project. The electricity supply in the nearby area improves which directly and indirectly improves the economy and life style of the area.

### **Technological well being**

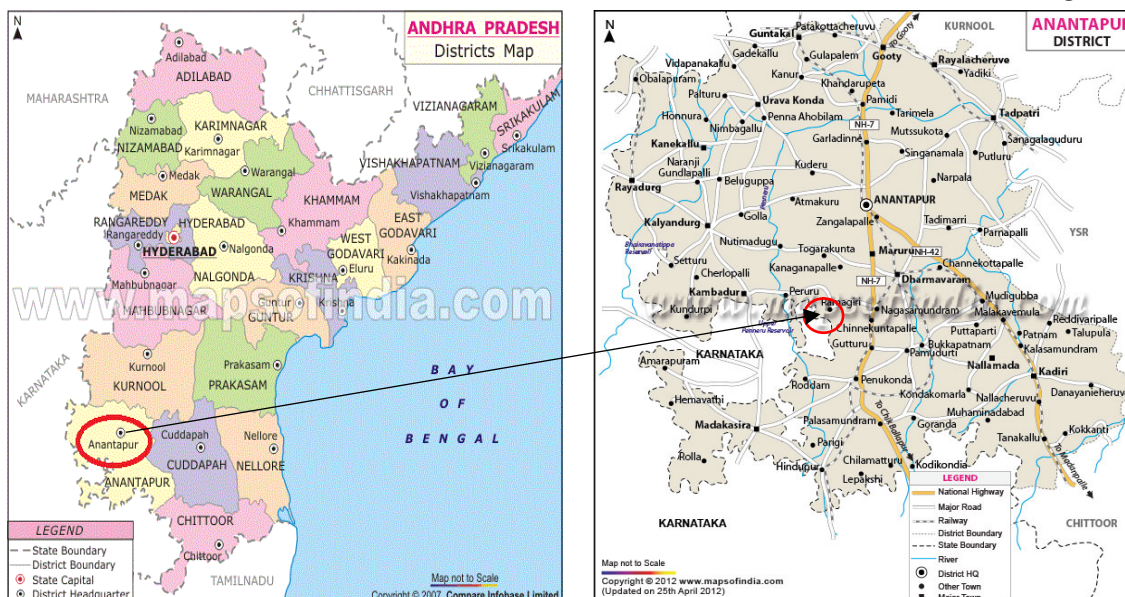
The project activity is step forward in harnessing the untapped wind potential and further diffusion of the wind technology in the region. The project activity leads to the promotion and demonstrates the success of wind projects in the region which further motivate more investors to invest in such power projects. Hence, the project activity leads to technological well-being.

The Project has obtained Host County Approval by Indian DNA. The same is submitted to DOE for validation purpose.

### **A.2. Location of project activity**

<b>Project Investors' Name</b>	<b>Capacity</b>	<b>Village</b>	<b>Tehsil</b>	<b>District</b>	<b>State</b>
Mangalam Fashions Limited	2 MW	Tallimadugula	Kanaganapalli	Ananthapuramu	Andhra Pradesh
RSM Estates Limited	2 MW	Tallimadugula	Kanaganapalli	Ananthapuramu	Andhra Pradesh
Daulat Financial Services Pvt. Limited	2 MW	Tallimadugula	Kanaganapalli	Ananthapuramu	Andhra Pradesh
HC Commercial Limited	2 MW	Muthvakuntla	Kanaganapalli	Ananthapuramu	Andhra Pradesh

<b>Project Investors' Name</b>	<b>Capacity</b>	<b>WTG Location No.</b>	<b>Latitude (N)</b>	<b>Longitude (E)</b>	<b>Date of Commissioning</b>
Mangalam Fashions Limited	2 MW	T-04	14°22'35.6"N	77°31'36.2"E	31/03/2017
RSM Estates Limited	2 MW	T-05	14°22'41.3"N	77°31'50.0"E	31/03/2017
Daulat Financial Services Pvt. Limited	2 MW	T-02	14°22'38.4"N	77°31'52.2"E	31/03/2017
HC Commercial Limited	2 MW	T-03	14°18'18.8"N	77°30'15.3"E	31/03/2017



### A.3. Technologies/measures

Sectoral Scope : 01 - Energy industries (renewable / non-renewable sources)  
 Project Type : I - Renewable Energy Projects  
 Project Category : I.D. - Grid connected renewable electricity generation (Version 18, EB 81, Annex 24<sup>7</sup>)

**Wind power technology details** – The technology employed, converts wind energy to electrical energy. In wind power generation, energy of wind is converted into mechanical energy and subsequently into electrical energy. The project activity is the installation of an environmentally safe and sound technology since there are no GHG emissions associated with the electricity generation. The design lifetime of all the WTGs in the project activity is 25 years, as per the specifications of the technology supplier.

There is no transfer of technology involved in the project activity. The project activity consists of 4 WTGs of Inox make model no. DF-2000 of 2000kW capacities. The technical specification of WTGs is tabulated below:

INOX WIND - MODEL WT 2000 DF	
OPERATING DATA	
Rated power	2000 kW
Cut-in wind speed	3 m/s
Rated wind speed	≤11.5m/s
Cut-out wind speed	20 m/s
Survival Wind Speed	52.5 m/sec
Hub height	80 Meters
Type Class	TC IIIB
Rotor Speed	15.9 RPM
Operational mode	Variable speed
Design Standards	Germanischer Lloyd
ROTOR	

<sup>7</sup><http://cdm.unfccc.int/methodologies/DB/W3TINZ7KKWCK7L8WTFQQOFQQH4SBK>

Pitch system	Pitch Control- Electrical; Variable Speed Inverters; Power back up with Ultra Capacitor
Diameter	93.3 Meters
Swept area	6785 Sq Meters
Blade material type	Epoxy Glass Fibre
<b>GENERATOR</b>	
Type Class	Double fed Induction Generator
Rated power	2000 kW
Rated voltage	690 V AC, 3 Phase
Frequency	50 Hz
Cooling system	Water Cooled
Insulation	Class H
<b>BRAKING SYSTEM</b>	
Aerodynamic brake	Full span independent blade Pitching
Mechanical brake	Disc Brakes
<b>DRIVE TRAIN</b>	
Drive Train	Patented integral drive train with rotor shaft and drive train as single unit
Rated Drive Torque	1280 kNm
Maximum Static Torque	2235 kNm
Type of Gearing	Two Planetary and One Parallel shaft gear
Transmission Ratio	1 $\approx$ 114.7
Gear Lubrication	Forced Lubrication
Connection gear / generator	Flexible Coupling
<b>YAW SYSTEM</b>	
Type	Driven by 4 gear Motors
Bearings	Slide Bearings
<b>TOWER</b>	
Type	Conical Tubular Steel Tower
Tower Height	78 Meters
Corrosion protection	Protective Paint

For monitoring equipment, their location and technical specifications, refer Section B.7.3.  
For Plant Load Factor, please refer Section B.6.3.

The Net electricity generated from the project activity is 15,520 MWh/year. The annual GHG emission reduction through this project activity is estimated to be 14,980 tCO<sub>2</sub>e whereas the GHG emission reductions for the chosen crediting period of seven years are 104,860 tCO<sub>2</sub>e.

#### **Baseline Scenario:**

As the project activity is the installation of a Greenfield power plant, the baseline scenario is the following as per applied methodology:

*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.*

Hence, pre-project scenario and baseline scenario are the same.

**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)	Mangalam Fashions Limited (Private entity)	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**

The project activity has neither applied before for registration as a CDM project activity nor included as a component project activity (CPA) in a registered CDM programme of activities (PoA);

**A.7. Debundling**

As per the provisions prescribed in “Clean development mechanism project standard” and further referring to “Methodological Tool- “Assessment of debundling for small scale Project Activities” EB 83, Annex 13, Para 5<sup>8</sup>, “A small project activity shall be deemed to be a de-bundled component of large scale project activity, if there is a registered small scale CDM project activity or an application to register another small scale CDM project activity.

- With the same project participants
- In the same project category and technology
- Registered within the previous two years; and
- Whose project boundary is within 1 km of the project boundary of the proposed small scale activity”

The project participant hereby confirms that they have not registered any small scale CDM activity or applied to register another small scale CDM project activity within 1 km of the project boundary, in the same project category and technology/measure in previous 2 years.

This means that the project activity does not fall under the de-bundled category and qualifies for small scale CDM Project.

**SECTION B. Application of methodologies and standardized baselines****B.1. References to methodologies and standardized baselines**

**Title:** Grid connected renewable electricity generation<sup>9</sup>

**Reference:** The project activity meets the eligibility criteria to use the simplified modalities and procedure for small-scale CDM project activities as set out in paragraph 6 (c) of decision 17/CP.7. Details of methodology for baseline calculations for CDM projects of capacity less than 15 MW are available in the “Appendix B of the simplified modalities and procedure for small scale CDM project activities”.

**Methodology :** AMS-I.D Grid Connected Renewable Electricity Generation (Version 18)<sup>10</sup>

<sup>8</sup> <https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-20-v1.pdf>

<sup>9</sup> <http://cdm.unfccc.int/methodologies/SSCmethodologies/approved.html>



**Type I** : Renewable Energy Project (Small Scale)  
**Category** : I. "D", Grid Connected Renewable Electricity Generation

Reference has been taken from indicative simplified baseline and monitoring methodologies for selected small scale (CDM projects less than 15 MW) project activity categories.

**Tools referred with above methodology are:**

Tool to calculate the emission factor for an electricity system, Version 07.0 EB 100, Annex 4<sup>11</sup>.

Guidelines on the Methodological Tool for the demonstration of additionality of small- scale project activities<sup>12</sup> - Version 11.0.0 (EB 94, Annex 11)

Methodological Tool for the demonstration of additionality of small- scale project activities<sup>13</sup> - Version 13.1 (EB 105, Annex 04)

Methodological Tool for Investment Analysis<sup>14</sup> - Version 10.0 (EB 105, Annex 06)

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

The project activity involves generation of grid connected electricity from renewable wind energy. The project activity has an installed capacity of 8 MW which will remain within the maximum qualifying capacity of 15 MW for a small scale CDM project activity under Type-I of the small scale methodologies. The installed capacity will not increase throughout and even after the crediting period therefore the project activity will remain within the limit of small scale in each year of the crediting period. The project status is corresponding to the methodology AMS-I.D and applicability of methodology AMS-I.D are 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. (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(a) i.e., "Supplying electricity to a national or a regional grid". Hence the project activity meets the given applicability criterion.
2. Illustration of respective situations under which each of the methodology (i.e. AMS-I.D, AMS-I.F and AMS-I.A) applies is included below:					The 1 <sup>st</sup> option of Table of AMS I.D. Version 18, EB 81 is applicable.
	Project type	AMS-I.A	AMS-I.D	AMS-I.F	
1	Project supplies electricity to a national/regional grid		√		
2	Project displaces grid electricity consumption (e.g. grid import) and/or			√	

<sup>10</sup> <https://cdm.unfccc.int/methodologies/DB/W3TINZ7KKWCK7L8WTXFQQOFQQH4SBK>

<sup>11</sup> <https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v7.0.pdf>

<sup>12</sup> <https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-21-v11.0.pdf>

<sup>13</sup> <https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-21-v13.1.pdf>

<sup>14</sup> <https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-27-v10.0.pdf>



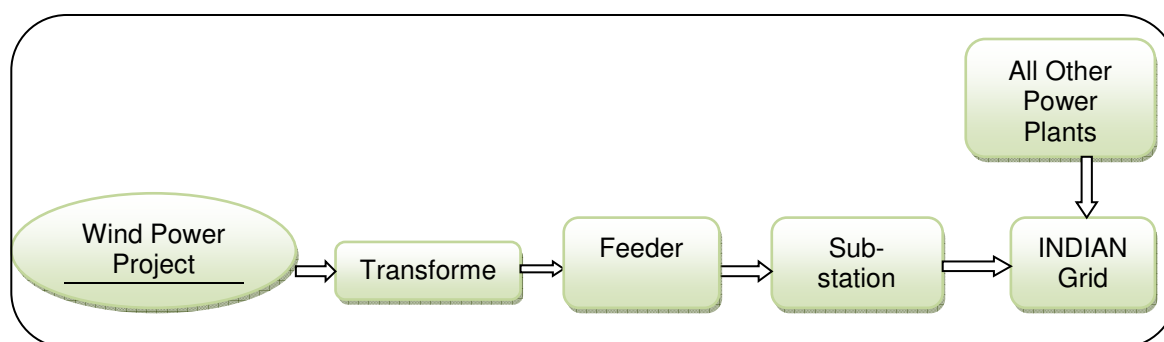
	captive fossil fuel electricity generation at the user end (excess electricity may be supplied to a grid)				
3	Project supplies electricity to an identified consumer facility via national/regional grid (through a contractual arrangement such as wheeling)		√		
4	Project supplies electricity to a mini grid system where in the baseline all generators use exclusively fuel oil and/or diesel fuel			√	
5	Project supplies electricity to household users (included in the project boundary) located in off grid areas	√			
3. This methodology is applicable to project activities that (a) install a Greenfield plant; (b) involve a capacity addition; (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 project is installation of new wind based electricity generation plants (not addition to existing system). Option (a) is applicable.
4. Hydro power plants with reservoirs that satisfy at least one of the following conditions are eligible to apply this methodology: <ul style="list-style-type: none"> <li>The project activity is implemented in an existing reservoir with no change in the volume of reservoir;</li> <li>The project activity is implemented in an existing reservoir, where the volume of reservoir is increased and the power density of the project activity, as per definitions given in the Project Emissions section, is greater than 4 W/m<sup>2</sup>;</li> <li>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/m<sup>2</sup>.</li> </ul>					The project is wind power project and thus the criterion is not applicable to this project activity.
5. 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 project activity is 8 MW wind electricity generation. Unit does not co-fire fossil fuels. Hence the criterion is not applicable to the project activity.
6. Combined heat and power (co-generation) systems are not eligible under this category.					The Project activity is a renewable wind energy project and is not a combined heat and power system. Hence the criteria is not applicable to the project activity
7. In the case of project activities that involve the					The project activity is Greenfield and

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 distinct from the existing units.	there is no existing power generation facility at the site. Hence the criteria is not applicable to the project activity
8. In the case of retrofit or replacement, to qualify as a small-scale project, the total output of the retrofitted or replacement unit shall not exceed the limit of 15 MW.	Not applicable, the wind project is a Green field project activity and this project is not the enhancement or up gradation project.
9. 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 Project activity is a renewable wind power project and is not a landfill gas, waste gas, waste water treatment and agro-industries projects or recovered methane emissions project. Hence the criteria is not applicable to the project activity
10. In case biomass is sourced from dedicated plantations, the applicability criteria in the tool "Project emissions from cultivation of biomass" shall apply.	The Project activity is a renewable wind power project and is not a biomass project. Hence the criteria is not applicable to the project activity.

### B.3. Project boundary, sources and greenhouse gases (GHGs)

As per AMS-I.D Version 18, EB 81 - "The spatial extent of the project boundary includes the project power plant and all power plants connected physically to the electricity system that the CDM project power plant is connected to".

The project boundary includes the wind turbine generator, sub-station, grid and all power plants connected to grid. The proposed project activity will evacuate power to the INDIAN grid. Therefore the entire INDIAN grid and all connected power plants have been considered in the project boundary for the proposed CDM project activity.



Source		GHG	Included?	Justification/Explanation
Baseline	Grid-connected electricity generation	CO <sub>2</sub>	Yes	Major emission sources.
		CH <sub>4</sub>	No	Excluded for simplification. This is conservative
		N <sub>2</sub> O	No	Excluded for simplification. This is conservative
Project activity	Greenfield wind energy generation system	CO <sub>2</sub>	No	The project activity does not emit any emissions.
		CH <sub>4</sub>	No	No methane generation is expected to be emitted.
		N <sub>2</sub> O	No	No nitrous oxide generation is expected to be emitted.

#### B.4. Establishment and description of baseline scenario

As the project activity is the installation of a Greenfield power plant, the baseline scenario is the following as per applied methodology:

*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 involved setting up of a wind plant to harness the power of wind to produce electricity and supply to the grid. In the absence of the project activity, the equivalent amount of power would have been supplied by the state grid (part of Indian grid), which is fed mainly by fossil fuel fired plants.

In the absence of the project activity, the equivalent amount of power would have been drawn from the state grid. Hence, the baseline for the project activity is the equivalent amount of power from the INDIAN grid.

The combined margin ( $EF_{grid,y}$ ) is the result of a weighted average of two emission factor pertaining to the electricity system: the operating margin (OM) and build margin (BM). Calculations for this combined margin is based upon CEA Database for Indian Power System, Version 12.0, dated May 2017<sup>15</sup>. This data base is the latest available data at the time of PDD submission to DOE for validation purpose.

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

Parameter	Value	Nomenclature	Source
$EF_{grid,y}$	0.9653 tCO <sub>2</sub> /MWh	Combined margin CO <sub>2</sub> emission factor for the project electricity system in year y	Calculated as the weighted average of the operating margin (0.75) & build margin (0.25) values, sourced from Baseline CO <sub>2</sub> Emission Database, Version 12.0 Dated May 2017 published by Central Electricity Authority (CEA), Government of India

<sup>15</sup> [http://www.cea.nic.in/reports/others/thermal/tpece/cdm\\_co2/user\\_guide\\_ver12.pdf](http://www.cea.nic.in/reports/others/thermal/tpece/cdm_co2/user_guide_ver12.pdf)

EF <sub>grid,OM,y</sub>	0.9843 tCO <sub>2</sub> /MWh	Operating margin CO <sub>2</sub> emission factor for the project electricity system in year y	Calculated as the last 3 year (2013-14, 2014-15 and 2015-16) generation-weighted average, sourced from Baseline CO <sub>2</sub> Emission Database, Version 12.0, Dated May 2017 <sup>16</sup> published by Central Electricity Authority (CEA), Government of India
EF <sub>grid,BM,y</sub>	0.9083 tCO <sub>2</sub> /MWh	Build margin CO <sub>2</sub> emission factor for the project electricity system in year y	Calculated from latest year (2015-16) sourced from Baseline CO <sub>2</sub> Emission Database, Version 12.0, Dated May 2017 <sup>17</sup> published by Central Electricity Authority (CEA), Government of India

### B.5. Demonstration of additionality

As per Methodological Tool for the demonstration of Additionality of Small-scale Project Activities (Version 13.1, EB 105, Annex 04<sup>18</sup>), to establish the project additionality, it has to be shown that the project activity would not have occurred anyway due to at least one of the following barriers:

- **Investment barrier:** a financially more viable alternative to the project activity would have led to higher emissions;
- **Technological barrier:** a less technologically advanced alternative to the project activity involves lower risks due to the performance uncertainty or low market share of the new technology adopted for the project activity and so would have led to higher emissions;
- **Barrier due to prevailing practice:** prevailing practice or existing regulatory or policy requirements would have led to implementation of a technology with higher emissions;
- **Other barriers:** without the project activity, for another specific reason identified by the project participant, such as institutional barriers or limited information, managerial resources, organizational capacity, financial resources, or capacity to absorb new technologies, emissions would have been higher.

The project investor has selected Investment barrier to demonstrate in a conservative and transparent manner that the proposed CDM project activity is financially unattractive. In line with the guidelines stipulated under Annex 34 of EB 35<sup>19</sup> ("Non-binding best practice examples to demonstrate additionality for SSC project activities"), a benchmark analysis is used in the project case under investment barrier.

Specify the methodology, tool, standardized baseline or specific renewable technologies/measures conferring automatic additional microscale CDM project activities proposed by DNAs and approved by the Board, that establish automatic additionality for the proposed project activity (including the version number and the specific paragraph, if applicable).	Not applicable, as the project is not an auto additional project.
Describe how the proposed project activity meets the criteria for automatic additionality in the relevant	Not applicable.

<sup>16</sup> [http://www.cea.nic.in/reports/others/thermal/tpece/cdm\\_co2/user\\_guide\\_ver12.pdf](http://www.cea.nic.in/reports/others/thermal/tpece/cdm_co2/user_guide_ver12.pdf)

<sup>17</sup> [http://www.cea.nic.in/reports/others/thermal/tpece/cdm\\_co2/user\\_guide\\_ver12.pdf](http://www.cea.nic.in/reports/others/thermal/tpece/cdm_co2/user_guide_ver12.pdf)

<sup>18</sup> <https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-21-v13.1.pdf>

<sup>19</sup> [https://cdm.unfccc.int/Reference/Guidclarif/ssc/methSSC\\_guid15\\_v01.pdf](https://cdm.unfccc.int/Reference/Guidclarif/ssc/methSSC_guid15_v01.pdf)

methodology, tool, standardized baselines or specific renewable technologies/measures conferring automatic additional microscale CDM project activities proposed by a DNA and approved by the Board.	
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### **Selection of Financial Indicator for 4 x 2.00 MW WTG:**

According to the TOOL 27 Methodological Tool for Investment Analysis<sup>20</sup> - Version 10.0 (EB 105, Annex 06) and as per "Tool for demonstration and assessment of Additionality (EB 70, Annex 8)<sup>21</sup>", *the financial indicator can be based either on (1) project IRR or (2) equity IRR. There is no general preference between the approaches (1) or (2). The benchmark chosen for analysis shall be fully consistent with the choice of approach.* Therefore in accordance with the guidance, the relevant financial indicator for project activity has been chosen as post tax equity IRR.

### ***Determine appropriate analysis method***

As per Sub-step 2a, Paragraph (1), as the project activity is selling the generated electricity or using it for captive purposes & getting financial benefits other than CDM benefits hence, Option- I (Apply simple cost analysis) is not applicable under this situation. Also as per EB-92, Annex 5, clause no.19 "If the alternative to the project activity is the supply of electricity from a grid this is not to be considered an investment and a benchmark approach is considered appropriate". Hence Option-II (Apply investment comparison analysis) is also not applicable under this situation. So the project investor has chosen Option- III or benchmark analysis as an appropriate analysis method to demonstrate the investment barrier.

### **Choice of Benchmark:**

As per Investment Analysis tool, Required/expected returns on equity are appropriate benchmarks for an equity IRR. The Equity IRR is considered as the financial indicator and the benchmarks used is cost of equity. Hence the benchmarks used are applicable to the project activity and the type of IRR calculation presented.

At the time of decision made of project activity, Version 07 of methodological tool "Investment Analysis" (version 7 & 8) were the latest available tools to the PP at the time of decision making. However, the request for registration for Version 7 could be submitted till 31/10/2017 and for version 8 the registration request could be submitted till 28/11/2018 and for version 9.0, the request for registration can be submitted till 24/07/2020. Hence, PP has used Methodological Tool for Investment Analysis version 10 (EB 105, Annex 6). Upon comparison of the detail of version 07.0, 08.0 and version 09.0 of the methodological tools it was observed that, there is no major difference in the versions except for the change of default value for benchmark calculation. The default value as mentioned in version 07 was 11.06% for the group 1 projects in India, in the version 08 it was 10.73% for group 1 project in India and Value as mentioned in version 09 is 9.79% and Value as mentioned in version 10 is 10.24% for group 1 project in India which is clearly more conservative than version 07 & 08 & 09 values. Hence, version 10 is used which is appropriate and more conservative for benchmark calculation and project developer has considered the same tool for default value of return on equity for the project activity. The default value of Return on Equity for Group-1 projects in India is 10.24% as per EB 105, Annex 6.

<sup>20</sup> <https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-27-v10.0.pdf>

<sup>21</sup> <http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-01-v7.0.0.pdf>

## **Appropriateness of using benchmark analysis for additionality demonstration and its conformity to guidance 16 of Annex 6, EB 105<sup>22</sup> -**

Considering the fact that the alternative to the project is the supply of electricity from the grid & the choice of the developer is to invest or not to invest, benchmark analysis has been considered appropriate to circumstances where the baseline does not require investment or is outside the direct control of the project developer, i.e. cases where the choice of the developer is to invest or not to invest. Benchmark analysis has been considered appropriate for demonstration of additionality, which is in conformity with guidance 16 of Annex 6 EB 105.

### **Benchmark Calculation for 4 x 2.00 MW WTG**

As per the guidelines of Methodological Tool- Investment Analysis, para 16, “The applied benchmark shall be appropriate to the type of IRR calculated. Local commercial lending rates or weighted average costs of capital (WACC) are appropriate benchmarks for a project IRR. Required/expected returns on equity are appropriate benchmarks for an equity IRR. Benchmarks supplied by relevant national authorities are also appropriate”. Since in this project activity, equity IRR has been considered as financial indicator, hence as per guidance 16, Required/expected returns on equity are considered as appropriate benchmarks and benchmark supplied by relevant national authorities has been used.

Since the choice of benchmark is based upon parameters that are standard in the market, hence as per Guidance 21 of EB 105 Annex 7, “the cost of equity should be determined either by: (a) selecting the values provided in the Appendix; or by (b) calculating the cost of equity using CAPM”. Hence as per option (a), the default value for India is being considered as per the value provided in Appendix of EB 105 Annex 7<sup>23</sup>. The benchmark thus selected complies as per the relevant guidelines on Investment Analysis.

Further as per guidance 16 of EB 105 Annex 6, “In situations where an investment analysis is carried out in nominal terms and the available IRR benchmarks are in real terms, project participants shall convert the real term values of benchmarks to nominal values by adding the inflation rate. The inflation rate shall be obtained from the inflation forecast of the central bank of the host country for the duration of the crediting period”. Following the above guidance, the default value is being converted to nominal values by adding inflation rate for 10 years<sup>24</sup>, as per the inflation forecast rate provided by Reserve Bank of India.

### **Benchmark Calculation**

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) are presented below:

Appendix A in EB 105, Annex 6 specifies default value of expected return on equity in real terms for Energy Industries (Group 1) in India = 10.24%

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

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

Where:

- Default value for Real Benchmark = 10.24 %

<sup>22</sup> <https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-27-v10.0.pdf>

<sup>23</sup> <https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-27-v10.0.pdf>

<sup>24</sup> Since RBI provides inflation forecast only for 5 years and 10 years, hence inflation forecast for 10 years is being considered keeping in view length of crediting period to be 7 years.

- Inflation Rate forecast for by Reserve Bank of India (RBI) (i.e. Central Bank of India) for IndiaThe benchmark has been considered in accordance with Guidance 16 of EB 105 Annex 6, "The values in the table in Appendix A may also be used, as a simple default option".

**Default Value Benchmark for all the project activity investors are as follows:**

Benchmark Calculations	Value	Sources Link	Document Date
Default Value for India as per UNFCCC guidelines	10.24%	<a href="#">As per page 14, Annex 6,EB 105</a>	Nov 28, 2019
Inflation forecast (WPI Mean) as per RBI for 10yrs	3.98%	<a href="https://www.rbi.org.in/Scripts/PublicationsView.aspx?id=17390">https://www.rbi.org.in/Scripts/PublicationsView.aspx?id=17390</a>	4-Oct-16
Benchmark (with 10yrs Forecast)	14.63%	Calculated	

Key assumptions used for calculating post-tax Equity IRR applicable at the time of investment decision, which is in line with are set out below in separate excel sheets.

**Input Values for 2 MW Wind Project by Mangalam Fashions Limited (at the time of Investment Making Decision)**

Investor Name	<b>Mangalam Fashions Limited</b>
Project Location	Tallimadugula Site, Kanaganapalli Village, Ananthapuramu District
Machine Details (MW)	2
Expected Date of Commissioning	31-Mar-2017
Life of Plant in years	25

**Offer Letter**

**28-Nov-16**

in INR MN

Items	Cost	Tax	Cost + Tax
<b>Supply of 2 MW, Inox make DF 2000 Wind turbine Generator (WTG) comprising of:</b>			
1. Nacelle and Hub	64.00	-	64.00
2. Set of 3 Rotor Blades	15.00	-	15.00
3. Tubulat Tower	19.00		19.00
4. 2300 KVA Transformer	1.60		1.60
<b>Civil Work, Erection, Installation and Commissioning of Inox make DF-2000 2000 KW WTG</b>			
1. Civil Foundation Work and other allied work for WTG including transformer platform, Tublar tower and other equipments	8.00		8.00
Supply of Electrical Items (Switch/DP Yard, meter and metering equipments)	1.60		1.60
Installation and Erection of Switch Yard			



	0.70		0.70
Supply of Electrical Items (Transmission Line)	7.00		7.00
Erection of 33 KV transmission line	2.80		2.80
Erection and Installation of WTG	3.30		3.30
Final Testing and Commissioning Charges	0.20		0.20
Installation of Power Evacuation System and shared service for evacuating Power	2.40		2.40
Land (2 Hectares)	0.40		0.40
Total Cost of Project	126.00	-	126.00
O&M Expenses	2.30	0.36	2.66
	Free for 1 Yr		
	5% Escalation, starting from 3rd Yr.		

**Assumptions and Values considered for Financial Analysis are as follows:**

Investor Name - Mangalam Fashions Limited		Equity IRR without CDM	Benchmark (Equity IRR)
		7.86%	14.63%
Assumption and financial of the project			
Details of the project		Source	Link
State where the project is situated	Andhra Pradesh	As Per Offer Letter	
No. of machines	1	As Per Offer Letter	
Capacity /machine (MW)	2.00	As Per Offer Letter	
Total Capacity (MW)	2.00	Calculated Value	
Expected Date of Commissioning	31-Mar-17	Assumption	
Life of the plant (Yrs.)	25	As per APERC Tariff Order No 3 dated 31-03-2016	<a href="http://aperc.gov.in/admin/upload/151357798913059820235a375e05b7933.pdf">http://aperc.gov.in/admin/upload/151357798913059820235a375e05b7933.pdf</a>
Generation of electricity			
PLF (%)	22.15%	Third Party Report As per Annex 11 EB 48	-
Annual generation (kWh)	3,880,680	Calculated Value	
Operation and maintenance cost and			
Tariff Rate	4.83	As per APERC Tariff Order No 3 dated 31-03-2016	<a href="http://aperc.gov.in/admin/upload/151357798913059820235a375e05b7933.pdf">http://aperc.gov.in/admin/upload/151357798913059820235a375e05b7933.pdf</a>
O & M Expenses (INR Mn.)		As Per	

	2.66	Offer Letter	
Escalation in the operational expenses (%)	5.00%	As Per Offer Letter	
O & M free for (Yr.)	1	As Per Offer Letter	
Insurance (INR Mn.)	1.26	As per CERC Order	<a href="http://www.cercind.gov.in/2012/orders/RE_35_2012.pdf">http://www.cercind.gov.in/2012/orders/RE_35_2012.pdf</a>
<b>Financial parameters</b>			
TOTAL COST (INR Mn.)	126.00	As Per Offer Letter	
Loan Amount (INR Mn.)	-	Not Applicable	
Equity Investment (INR Mn.)	126.00		
<b>Book Depreciation (SLM Method)</b>			
Gross Depreciable Value (INR Mn.)	126.00	Calculated Value	
Salvage Value (%)	10.00%	Page 15 of CERC (Terms and Conditions for Tariff determination from Renewable Energy Sources) Regulations, 2012	<a href="http://www.cercind.gov.in/2012/regulation/CERC_RE-Tariff-Regualtions_6_2_2012.pdf">http://www.cercind.gov.in/2012/regulation/CERC_RE-Tariff-Regualtions_6_2_2012.pdf</a>
Salvage value (INR Mn.)	12.60	Calculated Value	
Net Depreciable Value (INR Mn.)	113.40	Calculated Value	
Residual Value (INR Mn.)	12.60	Calculated Value	-
<b>IT Depreciation</b>			
IT Depreciation (SLM Method) (%)	12.73%	As per companies act 2013	<a href="http://taxadda.com/companies-act-2013/depreciation-rates-as-per-companies-act-2013/">http://taxadda.com/companies-act-2013/depreciation-rates-as-per-companies-act-2013/</a>
<b>Income Tax</b>			
Financial Year	FY 2016-17		
Income tax rate (%)	30.00%	As Per Income Tax Rule	<a href="https://taxguru.in/income-tax/income-tax-slab-financial-year-201516.html">https://taxguru.in/income-tax/income-tax-slab-financial-year-201516.html</a>
MAT (%)	18.50%	As Per IT rule	<a href="https://taxguru.in/income-tax/income-tax-slab-financial-year-201516.html">https://taxguru.in/income-tax/income-tax-slab-financial-year-201516.html</a>
Service Tax (%)	15.00%	As Per Income Tax Rule	<a href="https://taxguru.in/income-tax/income-tax-slab-financial-year-201516.html">https://taxguru.in/income-tax/income-tax-slab-financial-year-201516.html</a>
Surcharge (%)	7.00%	As Per Income Tax Rule	<a href="https://taxguru.in/income-tax/income-tax-slab-financial-year-201516.html">https://taxguru.in/income-tax/income-tax-slab-financial-year-201516.html</a>
Education cess (%)	3.00%	As Per Income Tax Rule	<a href="https://taxguru.in/income-tax/income-tax-slab-financial-year-201516.html">https://taxguru.in/income-tax/income-tax-slab-financial-year-201516.html</a>
<b>Final Tax rates</b>			
Income tax rate (%)	33.06%	Calculated	

		Value	
<b>MAT (%)</b>	<b>20.39%</b>	<b>Calculated Value</b>	
<b>Service Tax (%)</b>	<b>15.45%</b>	<b>Calculated Value</b>	

**Analysis has been performed for Mangalam Fashions Limited and the result of the analysis are as follows:**

<b>Project Site</b>	<b>Equity IRR without CDM</b>	<b>Default Value Benchmark</b>
Mangalam Fashions Limited (2.00 MW)	7.86%	14.63%

**Input Values for 2 MW Wind Project by RSM Estates (at the time of Investment Making Decision)**

Investor Name	<b>RSM Estates Limited</b>
Project Location	Tallimadugula Site, Kanaganapalli Village, Ananthapuramu District
Machine Details (MW)	2
Expected Date of Commissioning	31-Mar-2017
Life of Plant in years	25
	<b>Offer Letter</b>
	<b>28-Nov-16</b>

in INR MN

Items	Cost	Tax	Cost + Tax
<b>Supply of 2 MW, Inox make DF 2000 Wind turbine Generator (WTG) comprising of:</b>			
1. Nacelle and Hub	64.00	-	64.00
2. Set of 3 Rotor Blades	15.00	-	15.00
3. Tubulat Tower	19.00		19.00
4. 2300 KVA Transformer	1.60		1.60
<b>Civil Work, Erection, Installation and Commissioning of Inox make DF-2000 2000 KW WTG</b>			
1. Civil Foundation Work and other allied work for WTG including transformer platform, Tublar tower and other equipments	8.00		8.00
Supply of Electrical Items (Switch/DP Yard, meter and metering equipments)	1.60		1.60
Installation and Erection of Switch Yard	0.70		0.70
Supply of Electrical Items (Transmission Line)	7.00		7.00
Erection of 33 KV transmission line	2.80		2.80
Erection and Installation of WTG	3.30		3.30
Final Testing and Commissioning Charges	0.20		0.20
Installation of Power Evacuation System and shared			

service for evacuating Power	2.40		2.40
Land (2 Hectares)	0.40		0.40
Total Cost of Project	126.00	-	126.00
O&M Expenses	2.30	0.36	2.66
	Free for 1 Yr		
	5% Escalation, starting from 3rd Yr.		

**Assumptions and Values considered for Financial Analysis are as follows:**

Assumption and financial of the project			
Details of the project		Source	Link
State where the project is situated	Andhra Pradesh	As Per Offer Letter	
No. of machines	1	As Per Offer Letter	
Capacity /machine (MW)	2.00	As Per Offer Letter	
Total Capacity (MW)	2.00	Calculated Value	
Expected Date of Commissioning	31-Mar-17	Assumption	
Life of the plant (Yrs.)	25	As per APERC Tariff Order No 3 dated 31-03-2016	<a href="http://aperc.gov.in/admin/upload/151357798913059820235a375e05b7933.pdf">http://aperc.gov.in/admin/upload/151357798913059820235a375e05b7933.pdf</a>
Generation of electricity			
PLF (%)	22.15%	Third Party Report As per Annex 11 EB 48	-
Annual generation (kWh)	3,880,680	Calculated Value	
Operation and maintenance cost and			
Tariff Rate	4.83	As per APERC Tariff Order No 3 dated 31-03-2016	<a href="http://aperc.gov.in/admin/upload/151357798913059820235a375e05b7933.pdf">http://aperc.gov.in/admin/upload/151357798913059820235a375e05b7933.pdf</a>
O & M Expenses (INR Mn.)	2.66	As Per Offer Letter	
Escalation in the operational expenses (%)	5.00%	As Per Offer Letter	
O & M free for (Yr.)	1	As Per Offer Letter	
Insurance (INR Mn.)	1.26	As per CERC Order	<a href="http://www.cercind.gov.in/2012/orders/RE_35_2012.pdf">http://www.cercind.gov.in/2012/orders/RE_35_2012.pdf</a>
Financial parameters			
TOTAL COST (INR Mn.)	126.00	As Per Offer Letter	
Loan Amount (INR Mn.)	-	Not Applicable	
Equity Investment (INR			

Mn.)	126.00		
<b>Book Depreciation (SLM Method)</b>			
Gross Depreciable Value (INR Mn.)	126.00	Calculated Value	
Salvage Value (%)	10.00%	Page 15 of CERC (Terms and Conditions for Tariff determination from Renewable Energy Sources) Regulations, 2012	<a href="http://www.cercind.gov.in/2012/regulation/CE RC RE-Tariff-Regualtions 6 2 2012.pdf">http://www.cercind.gov.in/2012/regulation/CE RC RE-Tariff-Regualtions 6 2 2012.pdf</a>
Salvage value (INR Mn.)	12.60	Calculated Value	
Net Depreciable Value (INR Mn.)	113.40	Calculated Value	
Residual Value (INR Mn.)	12.60	Calculated Value	-
<b>IT Depreciation</b>			
IT Depreciation (SLM Method) (%)	12.73%	As per companies act 2013	<a href="http://taxadda.com/companies-act-2013/depreciation-rates-as-per-companies-act-2013/">http://taxadda.com/companies-act-2013/depreciation-rates-as-per-companies-act-2013/</a>
<b>Income Tax</b>			
Financial Year	FY 2016-17		
Income tax rate (%)	30.00%	As Per Income Tax Rule	<a href="https://taxguru.in/income-tax/income-tax-slab-financial-year-201516.html">https://taxguru.in/income-tax/income-tax-slab-financial-year-201516.html</a>
MAT (%)	18.50%	As Per IT rule	<a href="https://taxguru.in/income-tax/income-tax-slab-financial-year-201516.html">https://taxguru.in/income-tax/income-tax-slab-financial-year-201516.html</a>
Service Tax (%)	15.00%	As Per Income Tax Rule	<a href="https://taxguru.in/income-tax/income-tax-slab-financial-year-201516.html">https://taxguru.in/income-tax/income-tax-slab-financial-year-201516.html</a>
Surcharge (%)	7.00%	As Per Income Tax Rule	<a href="https://taxguru.in/income-tax/income-tax-slab-financial-year-201516.html">https://taxguru.in/income-tax/income-tax-slab-financial-year-201516.html</a>
Education cess (%)	3.00%	As Per Income Tax Rule	<a href="https://taxguru.in/income-tax/income-tax-slab-financial-year-201516.html">https://taxguru.in/income-tax/income-tax-slab-financial-year-201516.html</a>
<b>Final Tax rates</b>			
Income tax rate (%)	33.06%	Calculated Value	
MAT (%)	20.39%	Calculated Value	
Service Tax (%)	15.45%	Calculated Value	

**The result of the analysis for RSM Estates Limited are as follows:**

Project Site	Equity IRR without CDM	Default Value Benchmark
RSM Estates Limited (2.00 MW)	7.86%	14.63%

**Input Values for 2 MW Wind Project by Daulat Financial Services Pvt. Ltd (at the time of Investment Making Decision)**

Investor Name	Daulat Financial Services Pvt. Limited
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Project Location	Tallimadugula Site, Kanaganapalli Village, Ananthapuramu District
Machine Details (MW)	2
Expected Date of Commissioning	31-Mar-2017
Life of Plant in years	25
<b>Offer Letter</b>	
<b>1-Dec-2016</b>	

in INR MN

Items	Cost	Tax	Cost + Tax
<b>Supply of 2 MW, Inox make DF 2000 Wind turbine Generator (WTG) comprising of:</b>			
1. Nacelle and Hub	64.00	-	64.00
2. Set of 3 Rotor Blades	15.00	-	15.00
3. Tubulat Tower	19.00		19.00
4. 2300 KVA Transformer	1.60		1.60
<b>Civil Work, Erection, Installation and Commissioning of Inox make DF-2000 2000 KW WTG</b>			
1. Civil Foundation Work and other allied work for WTG including transformer platform, Tublar tower and other equipments	8.00		8.00
Supply of Electrical Items (Switch/DP Yard, meter and metering equipments)	1.60		1.60
Installation and Erection of Switch Yard	0.70		0.70
Supply of Electrical Items (Transmission Line)	7.00		7.00
Erection of 33 KV transmission line	2.80		2.80
Erection and Installation of WTG	3.30		3.30
Final Testing and Commissioning Charges	0.20		0.20
Installation of Power Evacuation System and shared service for evacuating Power	2.40		2.40
Land (2 Hectares)	0.40		0.40
Total Cost of Project	126.00	-	126.00
O&M Expenses	2.30	0.36	2.66
Free for 1 Yr			
5% Escalation, starting from 3rd Yr.			

**Assumptions and Values considered for Financial Analysis are as follows:**

Investor Name - Daulat Financial Services Pvt. Limited	Equity IRR without	Benchmark (Equity IRR)
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		<b>CDM</b>	
		<b>7.86%</b>	<b>14.63%</b>
<b>Assumption and financial of the project</b>			
<b>Details of the project</b>		<b>Source</b>	<b>Link</b>
State where the project is situated	Andhra Pradesh	As Per Offer Letter	
No. of machines	1	As Per Offer Letter	
Capacity /machine (MW)	2.00	As Per Offer Letter	
Total Capacity (MW)	2.00	Calculated Value	
Expected Date of Commissioning	31-Mar-17	Assumption	
Life of the plant (Yrs.)	25	As per APERC Tariff Order No 3 dated 31-03-2016	<a href="http://aperc.gov.in/admin/upload/151357798913059820235a375e05b7933.pdf">http://aperc.gov.in/admin/upload/151357798913059820235a375e05b7933.pdf</a>
<b>Generation of electricity</b>			
PLF (%)	22.15%	Third Party Report As per Annex 11 EB 48	-
Annual generation (kWh)	3,880,680	Calculated Value	
<b>Operation and maintenance cost and Insurance</b>			
Tariff Rate	4.83	As per APERC Tariff Order No 3 dated 31-03-2016	<a href="http://aperc.gov.in/admin/upload/151357798913059820235a375e05b7933.pdf">http://aperc.gov.in/admin/upload/151357798913059820235a375e05b7933.pdf</a>
O & M Expenses (INR Mn.)	2.66	As Per Offer Letter	
Escalation in the operational expenses (%)	5.00%	As Per Offer Letter	
O & M free for (Yr.)	1	As Per Offer Letter	
Insurance (INR Mn.)	1.26	As per CERC Order	<a href="http://www.cercind.gov.in/2012/orders/RE_35_2012.pdf">http://www.cercind.gov.in/2012/orders/RE_35_2012.pdf</a>
<b>Financial parameters</b>			
TOTAL COST (INR Mn.)	126.00	As Per Offer Letter	
Loan Amount (INR Mn.)	-	Not Applicable	
Equity Investment (INR Mn.)	126.00		
<b>Book Depreciation (SLM Method)</b>			
Gross Depreciable Value (INR Mn.)	126.00	Calculated Value	
Salvage Value (%)	10.00%	Page 15 of CERC (Terms and Conditions for Tariff determination from	<a href="http://www.cercind.gov.in/2012/regulation/CERC_RE-Tariff-Regualtions_6_2_2012.pdf">http://www.cercind.gov.in/2012/regulation/CERC_RE-Tariff-Regualtions_6_2_2012.pdf</a>



		Renewable Energy Sources) Regulations , 2012	
Salvage value (INR Mn.)	12.60	Calculated Value	
Net Depreciable Value (INR Mn.)	113.40	Calculated Value	
Residual Value (INR Mn.)	12.60	Calculated Value	-
<b>IT Depreciation</b>			
IT Depreciation (SLM Method) (%)	12.73%	As per companies act 2013	<a href="http://taxadda.com/companies-act-2013/depreciation-rates-as-per-companies-act-2013/">http://taxadda.com/companies-act-2013/depreciation-rates-as-per-companies-act-2013/</a>
<b>Income Tax</b>			
<b>Financial Year</b>	<b>FY 2016-17</b>		
Income tax rate (%)	30.00%	As Per Income Tax Rule	<a href="https://taxguru.in/income-tax/income-tax-slab-financial-year-201516.html">https://taxguru.in/income-tax/income-tax-slab-financial-year-201516.html</a>
MAT (%)	18.50%	As Per IT rule	<a href="https://taxguru.in/income-tax/income-tax-slab-financial-year-201516.html">https://taxguru.in/income-tax/income-tax-slab-financial-year-201516.html</a>
Service Tax (%)	15.00%	As Per Income Tax Rule	<a href="https://taxguru.in/income-tax/income-tax-slab-financial-year-201516.html">https://taxguru.in/income-tax/income-tax-slab-financial-year-201516.html</a>
Surcharge (%)	7.00%	As Per Income Tax Rule	<a href="https://taxguru.in/income-tax/income-tax-slab-financial-year-201516.html">https://taxguru.in/income-tax/income-tax-slab-financial-year-201516.html</a>
Education cess (%)	3.00%	As Per Income Tax Rule	<a href="https://taxguru.in/income-tax/income-tax-slab-financial-year-201516.html">https://taxguru.in/income-tax/income-tax-slab-financial-year-201516.html</a>
<b>Final Tax rates</b>			
Income tax rate (%)	33.06%	Calculated Value	
MAT (%)	20.39%	Calculated Value	
Service Tax (%)	15.45%	Calculated Value	

**The result of the analysis for Daulat Financial Services Pvt. Limited are as follows:**

<b>Project Site</b>	<b>Equity IRR without CDM</b>	<b>Default Value Benchmark</b>
Daulat Financial Services Pvt. Limited (2.00 MW)	7.86%	14.63%

**Input Values for 2 MW Wind Project by HC Commercial Services Pvt. Ltd (at the time of Investment Making Decision)**

Investor Name	<b>HC Commercial Limited</b>
Project Location	Muthvakuntla Site, Kanaganapalli Village, Ananthapuramu District
Machine Details (MW)	2
Expected Date of Commissioning	31-Mar-2017

Life of Plant in years	25		
	<b>Offer Letter</b>		
	<b>1-Dec-16</b>		
	in INR MN		
Items	Cost	Tax	Cost + Tax
<b>Supply of 2 MW, Inox make DF 2000 Wind turbine Generator (WTG) comprising of:</b>			
1. Nacelle and Hub	66.50	-	66.50
2. Set of 3 Rotor Blades	15.00	-	15.00
3. Tubulat Tower	19.00		19.00
4. 2300 KVA Transformer	1.60		1.60
<b>Civil Work, Erection, Installation and Commissioning of Inox make DF-2000 2000 KW WTG</b>			
1. Civil Foundation Work and other allied work for WTG including transformer platform, Tublar tower and other equipments	8.00		8.00
Supply of Electrical Items (Switch/DP Yard, meter and metering equipments)	1.60		1.60
Installation and Erection of Switch Yard	0.70		0.70
Supply of Electrical Items (Transmission Line)	7.00		7.00
Erection of 33 KV transmission line	2.80		2.80
Erection and Installation of WTG	3.30		3.30
Final Testing and Commissioning Charges	0.20		0.20
Installation of Power Evacuation System and shared service for evacuating Power	2.40		2.40
Land (2 Hectares)	0.40		0.40
<b>Total Cost of Project</b>	<b>128.50</b>	<b>-</b>	<b>128.50</b>
O&M Expenses	2.30	0.36	2.66
	Free for 1 Yr		
	5% Escalation, starting from 3rd Yr.		

**Assumptions and Values considered for Financial Analysis are as follows:**

Details of the project		Source	Link
State where the project is situated	Andhra Pradesh	As Per Offer Letter	
No. of machines	1	As Per Offer Letter	
Capacity /machine (MW)	2.00	As Per Offer Letter	
Total Capacity (MW)	2.00	Calculated Value	
Expected Date of Commissioning	31-Mar-17	Assumption	

Life of the plant (Yrs.)	25	As per APERC Tariff Order No 3 dated 31-03-2016	<a href="http://aperc.gov.in/admin/upload/151357798913059820235a375e05b7933.pdf">http://aperc.gov.in/admin/upload/151357798913059820235a375e05b7933.pdf</a>
<b>Generation of electricity</b>			
PLF (%)	22.15%	Third Party Report As per Annex 11 EB 48	-
Annual generation (kWh)	3,880,680	Calculated Value	
<b>Operation and maintenance cost and</b>			
Tariff Rate	4.83	As per APERC Tariff Order No 3 dated 31-03-2016	<a href="http://aperc.gov.in/admin/upload/151357798913059820235a375e05b7933.pdf">http://aperc.gov.in/admin/upload/151357798913059820235a375e05b7933.pdf</a>
O & M Expenses (INR Mn.)	2.66	As Per Offer Letter	
Escalation in the operational expenses (%)	5.00%	As Per Offer Letter	
O & M free for (Yr.)	1	As Per Offer Letter	
Insurance (INR Mn.)	1.29	As per CERC Order	<a href="http://www.cercind.gov.in/2012/orders/RE_35_2012.pdf">http://www.cercind.gov.in/2012/orders/RE_35_2012.pdf</a>
<b>Financial parameters</b>			
TOTAL COST (INR Mn.)	128.50	As Per Offer Letter	
Loan Amount (INR Mn.)	-	Not Applicable	
Equity Investment (INR Mn.)	128.50		
<b>Book Depreciation (SLM Method)</b>			
Gross Depreciable Value (INR Mn.)	128.50	Calculated Value	
Salvage Value (%)	10.00%	Page 15 of CERC (Terms and Conditions for Tariff determinati on from Renewable Energy Sources) Regulations , 2012	<a href="http://www.cercind.gov.in/2012/regulation/CE RC_RE-Tariff-Regualtions_6_2_2012.pdf">http://www.cercind.gov.in/2012/regulation/CE RC_RE-Tariff-Regualtions_6_2_2012.pdf</a>
Salvage value (INR Mn.)	12.85	Calculated Value	
Net Depreciable Value (INR Mn.)	115.65	Calculated Value	
Residual Value (INR Mn.)	12.85	Calculated Value	-
<b>IT Depreciation</b>			

IT Depreciation (SLM Method) (%)	12.73%	As per companies act 2013	<a href="http://taxadda.com/companies-act-2013/depreciation-rates-as-per-companies-act-2013/">http://taxadda.com/companies-act-2013/depreciation-rates-as-per-companies-act-2013/</a>
<b>Income Tax</b>			
<b>Financial Year</b>	<b>FY 2016-17</b>		
Income tax rate (%)	30.00%	As Per Income Tax Rule	<a href="https://taxguru.in/income-tax/income-tax-slab-financial-year-201516.html">https://taxguru.in/income-tax/income-tax-slab-financial-year-201516.html</a>
MAT (%)	18.50%	As Per IT rule	<a href="https://taxguru.in/income-tax/income-tax-slab-financial-year-201516.html">https://taxguru.in/income-tax/income-tax-slab-financial-year-201516.html</a>
Service Tax (%)	15.00%	As Per Income Tax Rule	<a href="https://taxguru.in/income-tax/income-tax-slab-financial-year-201516.html">https://taxguru.in/income-tax/income-tax-slab-financial-year-201516.html</a>
Surcharge (%)	7.00%	As Per Income Tax Rule	<a href="https://taxguru.in/income-tax/income-tax-slab-financial-year-201516.html">https://taxguru.in/income-tax/income-tax-slab-financial-year-201516.html</a>
Education cess (%)	3.00%	As Per Income Tax Rule	<a href="https://taxguru.in/income-tax/income-tax-slab-financial-year-201516.html">https://taxguru.in/income-tax/income-tax-slab-financial-year-201516.html</a>
<b>Final Tax rates</b>			
Income tax rate (%)	33.06%	Calculated Value	
MAT (%)	20.39%	Calculated Value	
Service Tax (%)	15.45%	Calculated Value	

**The result of the analysis for HC Commercial Limited are as follows:**

<b>Project Site</b>	<b>Equity IRR without CDM</b>	<b>Default Value Benchmark</b>
HC Commercial Limited (2.00 MW)	7.60%	14.63%

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

Addressing Guidance 27 & 28 of EB 105, Annex 6, Sensitivity Analysis has been carried out. 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."*

<b>Variable</b>	<b>Probability to breach the benchmark</b>
PLF <sup>25</sup>	PLF has been considered from Third party report dated 27/11/2016 and was available at the time of investment making decision <sup>26</sup> . This also fulfils the requirement of Guidelines for Reporting and Validation of

<sup>26</sup>In the project activity, PLF is being sourced from the third party report available at the time of investment making decision. Further this also fulfils the requirement to comply as per the guidelines of EB 48 annex 11, option 3 (b) the project investor obtained the PLF provided by an independent third party.

	Plant Load Factors” EB 48 Annex 11 option 3(b) <sup>27</sup> . Hence, variation in PLF of more than 10% is unlikely to happen.
O&M Cost <sup>28</sup>	With the country experiencing 7.13% inflation on an average <sup>29</sup> , the question of O&M coming down is ruled out. The Project owner has also provided for sensitivity on O&M cost for the variation in the range of +/- 10%. However, the IRR does not reach the benchmark.
Project Cost	The Purchase Order cost for all WTGs is within 10% of the Offer letter cost which was considered during decision making. However, we have conducted sensitivity analysis for project cost being 10% less and 10% more than that considered during decision making. Even at this level, the IRR does not breach the Benchmark. Hence, there is no any probability of the Benchmark being breached.
Tariff Rate	Tariff Rate has been determined as per the State Electricity Board Tariff Order dated 31 <sup>st</sup> March 2016 which will be fixed for the entire lifetime of the project activity. Hence, there is no probability of any variation for the same.

### **Sensitivity Analysis**

As per Guidance 27 and 28 of Annex 6 of EB 105<sup>30</sup>, only variables, including the initial investment cost, that constitute more than 20% of either total project costs or total project revenues should be subjected to reasonable variation and the results of this variation should be presented in the PDD and be reproducible in the associated spreadsheets. Guidance also states, “All parameters varied need not necessarily be subjected to both negative and positive variations of the same magnitude”. The Annex also states, as a general point of departure, variations in the sensitivity analysis should at least cover a range of +10% and –10%, unless this is not deemed appropriate in the context of the specific project circumstances.

Since the project cost is not firmed up at the time of investment making decision, the cost is variable. The tariff is determined by state electricity board tariff order which is fixed for years mentioned as per the State Electricity Board’s tariff order and hence it need not be subjected to variation. All other expenses are much less than 20% of the total cost. Hence, only PLF needs to be subjected to reasonable variation. Nevertheless, following factors have been subjected to sensitivity analysis:

1. PLF
2. O&M Cost
3. Project Cost
4. Tariff Rate

The results of sensitivity analysis are as follows:

<b>Equity IRR</b>	<b>Mangalam Fashions Limited</b>
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<sup>27</sup> [https://cdm.unfccc.int/EB/048/eb48\\_repan11.pdf](https://cdm.unfccc.int/EB/048/eb48_repan11.pdf)

<sup>28</sup> PP has considered the O&M cost from offer letter which was available to PP at the time of investment decision. To justify the robustness of IRR calculations, the sensitivity analysis has been made and it is observed that even with exclusion of O&M cost (i.e zero O&M cost), there is no any adverse impact on additionality.

Also as per ANDHRA PRADESH ELECTRICITY REGULATORY COMMISSION, “Retail Supply Tariff Order for FY 2016-17” <http://aperc.gov.in/admin/upload/151357798913059820235a375e05b7933.pdf> the variations of input parameters has been crosschecked.

<sup>29</sup> <http://www.tradingeconomics.com/india/inflation-cpi>

<sup>30</sup> <https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-27-v10.0.pdf>

Variation %	-10%	Normal	10%	Breaching Value
PLF	6.12%	7.86%	9.49%	44.64%
O&M	8.19%	7.86%	7.53%	-265.95%
Project Cost	9.31%	7.86%	6.64%	-35.07%
Tariff Rate	6.12%	7.86%	9.49%	44.64%

Equity IRR	HC Commercial Limited			
Variation %	-10%	Normal	10%	Breaching Value
PLF	5.89%	7.60%	9.22%	47.18%
O&M	7.93%	7.60%	7.27%	-281.23%
Project Cost	9.03%	7.60%	6.40%	-36.34%
Tariff Rate	5.89%	7.60%	9.22%	47.18%

Equity IRR	Daulat Financial Limited			
Variation %	-10%	Normal	10%	Breaching Value
PLF	6.12%	7.86%	9.49%	44.64%
O&M	8.19%	7.86%	7.53%	-265.95%
Project Cost	9.31%	7.86%	6.64%	-35.07%
Tariff Rate	6.12%	7.86%	9.49%	44.64%

Equity IRR	RSM Estates Ltd			
Variation %	-10%	Normal	10%	Breaching Value
PLF	6.12%	7.86%	9.49%	44.64%
O&M	8.19%	7.86%	7.53%	-265.95%
Project Cost	9.31%	7.86%	6.64%	-35.07%
Tariff Rate	6.12%	7.86%	9.49%	44.64%

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.

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

### Demonstration of Parallel and continuing actions

CDM Project Standard Version 09.0, Section 6.5 states that “For a proposed CDM project activity with a start date on or after 2 August 2008, project participants shall inform the host Party’s designated national authority (DNA) and the secretariat of their intention to seek CDM status in accordance with the Project cycle procedure”.

In line with the above guidance, all the project investors have 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.

WTG Owner	Capacity	Offer Letter by WTG	PLF Report submitted	Board Resolution Date	Purchase Order Date	Date of Notification to
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		Supplier	by 3 <sup>rd</sup> Party			CDM EB & NCDMA
Mangalam Fashions Limited	1 x 2 MW	28-Nov-2016	27-Nov-2016	06-Dec-2016	16-Dec-2016	25-Jan-2017
RSM Estates Limited	1 x 2 MW	01-Dec-2016			26-Dec-2016	
Daulat Financial Services	1 x 2 MW					
HC Commercial Limited	1 x 2 MW					

## B.6. Estimation of emission reductions

### B.6.1. Explanation of methodological choices

**Applied Methodology:** AMS - I.D, version 18, EB 81

#### Baseline emissions:

The baseline emission calculation for the project activity is attributable to the CO<sub>2</sub> Emission that could have been produced by the fossil fuel based power plants in absence of the proposed project activity. Therefore the amount electricity supplied to the INDIAN grid will be multiplied by the grid emission factor to calculate the baseline emissions reduced by the proposed project activity.

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

Where,

<b>BE<sub>y</sub></b>	=	Baseline emissions in year y (t CO <sub>2</sub> )
<b>EG<sub>PJ,y</sub></b>	=	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)
<b>EF<sub>grid,y</sub></b>	=	Combined margin CO <sub>2</sub> 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 <sub>2</sub> /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 CO<sub>2</sub>/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<sup>31</sup>' since data is available from an official source.

<sup>31</sup> <https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v7.0.pdf>



CO<sub>2</sub> Baseline Database for the Indian Power Sector, Version 12.0, May 2017<sup>15</sup>, published by Central Electricity Authority (CEA), Government of India has been used for the calculation of emission reduction.

**As per the "Tool to calculate the emission factor for an electricity system" Version 07.0, EB 100, Annex 4<sup>32</sup>, the following steps have been followed.**

STEP 1: Identify the relevant electricity systems;

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

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

STEP 4: Calculate the operating margin emission factor according to the selected method;

STEP 5: Calculate the build margin (BM) emission factor;

STEP 6: Calculate the combined margin (CM) emission factor.

### **STEP 1: Identify the relevant electricity power systems**

The tool defines that “for determining the electricity emission factors, identify the relevant 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 since August 2006, all regional grids except the Southern Grid had been integrated and were operating in synchronous mode, i.e. at same frequency. Consequently, the Northern, Eastern, Western and North-Eastern grids were treated as a single grid named as NEWNE grid from FY 2007-08 onwards for the purpose of this CO<sub>2</sub> Baseline Database. As of 31 December 2013, the Southern grid has also been synchronised with the NEWNE grid, hence forming one unified Indian Grid. Since the project supplies electricity to the Indian grid, emissions generated due to the electricity generated by the Indian grid as per CM calculations will serve as the baseline for this project.

**Table: Geographical Scope of Indian Electricity Grid**

Northern	Eastern	Western	North-Eastern	Southern
Chandigarh	Bihar	Chhattisgarh	Arunachal Pradesh	<b>Andhra Pradesh</b>
Delhi	Jharkhand	Gujarat	Assam	Karnataka
Haryana	Orissa	Daman & Diu	Manipur	Kerala
Himachal Pradesh	West Bengal	Dadar & Nagar Haveli	Meghalaya	Tamilnadu
Jammu & Kashmir	Sikkim	Madhya Pradesh	Mizoram	Puducherry
Punjab	Andaman & Nicobar	Maharashtra	Nagaland	Lakshadweep
Rajasthan		Goa	Tripura	
Uttar Pradesh				
Uttarakhand				

<sup>32</sup> <https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v7.0.pdf>

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

Project participants have the option of choosing 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:** 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) method**

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 or Dispatch data analysis is not possible due to lack of availability of this activity data to the project developers. The choice of other two options for calculating the operating margin emission factor depends on the generation of electricity from low cost/must run sources. In the context of the methodology low cost/must run resources typically include hydro, geothermal, wind, low cost biomass, nuclear and wind and solar generation.

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

	2011-12	2012-13	2013-14	2014-15	2015-16
India	19.6%	16.9%	18.6%	16.8%	15.1%

*Data Source: Central Electricity Authority (CEA) database Version 12, May 2017*

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 emission rate method cannot be applied, as low cost/must run resources constitute less than 50% of total grid generation.

The "Simple operating margin" has been calculated as per the weighted average emissions (in  $tCO_2/MWh$ ) of all generating sources serving the system, excluding hydro, geo-thermal, wind, low-cost biomass, nuclear and wind and solar generation;

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:

- **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**

- **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 the calculation of OM with 3 years generation weighted average of the most recent years available at the time of submission of 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 according to the selected method**

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

<b>Net Generation in Operating Margin (GWh) (incl. Imports)</b>			
	2013-14	2014-15	2015-16
INDIAN Grid	725,037	810,011	871,740

<b>Simple Operating Margin (tCO<sub>2</sub>/MWh) (incl. Imports)</b>			
	2013-14	2014-15	2015-16
INDIAN Grid	1.00	0.99	0.96

<b>Weighted Generation Operating Margin</b>	
INDIAN Grid	<b>0.9843</b>

#### **STEP 5: Calculate the build margin emission factor (EF<sub>BM,y</sub>)**

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.

<b>Build Margin (tCO<sub>2</sub>/MWh) (not adjusted for imports)</b>	
	2015-16
INDIAN Grid	<b>0.9083</b>

(With sample group constituting most recent capacity additions to the grid comprising 20% of the system generation)

#### **STEP 6: Calculate the combined margin (CM) emissions factor**

**Combined Margin** – The combined margin is the weighted average of the simple operating Margin and the build margin. In particular, for intermittent and non- dispatchable generation types such as wind and solar photovoltaic, the Tool to calculate the emission factor for an electricity system<sup>33</sup>, Version 07.0.0, EB 100, allows to weigh the operating margin and Build margin at 75% and 25%, respectively.

<sup>33</sup> <https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v7.0.pdf>

The baseline emission factor is calculated using the combined margin approach as described in the following steps:

#### Calculation of Baseline Emission Factor $EF_y$

The baseline emission factor  $EF_y$  is calculated as the weighted average of the Operating Margin emission factor ( $EF_{OM,y}$ ) and the Build Margin emission factor ( $EF_{BM,y}$ ):

$$EF_y = W_{OM} * EF_{OM,y} + W_{BM} * EF_{BM,y}$$

Where,

$W_{OM}$	75% weight of operating margin emissions factor (%)
$W_{BM}$	25% weight of build margin emissions factor (%)
$EF_{OM,y}$	calculated as described in Steps 3&4 above (tCO <sub>2</sub> /MWh)
$EF_{BM,y}$	calculated as described in Steps 5 above (tCO <sub>2</sub> /MWh)

$$\begin{aligned} \text{Baseline Emission factor (INDIAN Grid)} &= 0.75 * 0.9843 + 0.25 * 0.9083 \\ &= 0.9653 \text{ tCO}_2/\text{MWh} \end{aligned}$$

**Project Emissions:** For most renewable power generation projects activities  $PE_y = 0$ . As per applied methodology only emission associated with the fossil fuel combustion, emission from operation of geo-thermal power plants due to release of non-condensable gases, emission from water reservoir of Hydro should be accounted for the project emission. Since the project activity is a wind power project,

Hence  $PE_y = 0$

**Leakage Emissions:** No Leakage emissions are considered. The main emission potentially giving rise to leakage in the context of electrical sector projects is emission arising due to activities arising such as power plant construction and upstream emission from fossil fuel use (e.g. extraction, processing, and transport). These emission sources are neglected.

Hence,  $LE_y = 0$

**Emission reduction ( $ER_y$ ):** The project activity mainly reduces carbon dioxide through substitution of grid electricity generation with fossil fuel fired power plant by renewable electricity. The emission reduction  $ER_y$  by the project activity during a given year  $y$  is the difference between Baseline emission and Project emission & Leakage emission.

$$ER_y = BE_y - PE_y - LE_y$$

Where,

$ER_y$  = Emission Reduction in tCO<sub>2</sub>/year  
 $BE_y$  = Baseline emission in tCO<sub>2</sub>/year  
 $PE_y$  = Project emissions in tCO<sub>2</sub>/year  
 $LE_y$  = Leakage Emissions in tCO<sub>2</sub>/year

**B.6.2. Data and parameters fixed ex ante**

<b>Data/Parameter</b>	EF <sub>grid,OM,y</sub>
Data unit	tCO <sub>2</sub> /MWh
Description	Operating Margin CO <sub>2</sub> emission factor in year y
Source of data	Calculated from CEA database, Version 12, May 2017 <sup>15</sup>
Value(s) applied	0.9843
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 2013-2014, 2014-2015 & 2015-2016. The data are obtained from “CO <sub>2</sub> Baseline Database for Indian Power Sector” version 12.0, 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.

<b>Data/Parameter</b>	EF <sub>grid,BM,y</sub>
Data unit	tCO <sub>2</sub> /MWh
Description	Build Margin CO <sub>2</sub> emission factor in year y
Source of data	Calculated from CEA database, Version 12, May 2017 <sup>15</sup>
Value(s) applied	0.9083
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” for the year 2015-2016. The data are obtained from “CO <sub>2</sub> Baseline Database for Indian Power Sector” version 12.0, 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.

<b>Data / Parameter</b>	EF <sub>grid,y</sub>
Unit	tCO <sub>2</sub> /MWh
Description	Combined Margin CO <sub>2</sub> emission factor in year y
Source of data	Calculated from CEA database, Version 12, May 2017 <sup>15</sup>
Value(s) applied	0.9653
Choice of data or Measurement methods and procedures	<p>The combined margin emissions factor is calculated as follows:</p> $EF_{grid,CM,y} = EF_{grid,OM,y} * W_{OM} + EF_{grid,BM,y} * W_{BM}$ <p>Where:</p> <p>EF<sub>grid,BM,y</sub>= Build margin CO<sub>2</sub> emission factor in year y (tCO<sub>2</sub>/MWh)</p> <p>EF<sub>grid,OM,y</sub>= Operating margin CO<sub>2</sub> emission factor in year y (tCO<sub>2</sub>/MWh)</p> <p>W<sub>OM</sub> = Weighting of operating margin emissions factor (%) = 75%</p> <p>W<sub>BM</sub>= Weighting of build margin emissions factor (%) = 25%</p>
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**

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

$$ER_y = BE_y - PE_y - LE_y$$

Where,

ER<sub>y</sub> = Emission Reduction in tCO<sub>2</sub>/year

$BE_y$  = Baseline emission in tCO<sub>2</sub>/year  
 $PE_y$  = Project emissions in tCO<sub>2</sub>/year  
 $LE_y$  = Leakage Emissions in tCO<sub>2</sub>/year

### **Baseline Emission ( $BE_y$ )**

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.

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

Where,

$EG_{PJ,y}$  = Total quantity of net electricity delivered to the INDIAN grid

Project Sites' Name	PLF (%)	Grid	Generated Power (MWh) p.a	Baseline Emission Factor (tCO <sub>2</sub> /MWh)	Baseline emissions (tCO <sub>2</sub> / year)
Mangalam Fashions Limited	22.15%	INDIAN	3,880	0.9653	3,745
RSM Estates Limited	22.15%	INDIAN	3,880	0.9653	3,745
Daulat Financial Services Pvt. Limited	22.15%	INDIAN	3,880	0.9653	3,745
HC Commercial Limited	22.15%	INDIAN	3,880	0.9653	3,745
<b>Total</b>			<b>15,520</b>		<b>14,980</b>

$EF_{grid,y}$  = Baseline emission factor  
 = 0.9653 tCO<sub>2</sub>/MWh

$BE_y$  = 15,520 \* 0.9653  
 = 14,980 tCO<sub>2</sub>e/ year

As per Section B.6.1:

$PE_y = LE_y = 0$

Thus,

$ER_y = BE_y - PE_y - LE_y$

$ER_y = BE_y - 0 - 0$

$ER_y = BE_y$

Therefore,

$ER_y = BE_y = 14,980$  tCO<sub>2</sub>e/ year

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

Year	Baseline emissions (t CO <sub>2</sub> e)	Project emissions (t CO <sub>2</sub> e)	Leakage (t CO <sub>2</sub> e)	Emission reductions (t CO <sub>2</sub> e)
Year 1	14,980	0	0	14,980
Year 2	14,980	0	0	14,980
Year 3	14,980	0	0	14,980
Year 4	14,980	0	0	14,980
Year 5	14,980	0	0	14,980
Year 6	14,980	0	0	14,980

Year 7	14,980	0	0	14,980
<b>Total</b>	<b>104,860</b>	<b>0</b>	<b>0</b>	<b>104,860</b>
<b>Total number of crediting years</b>	07			
<b>Annual average over the crediting period</b>	14,980	0	0	14,980

## B.7. Monitoring plan

### B.7.1. Data and parameters to be monitored

<b>Data/Parameter</b>	$EG_{PJ,y}$
<b>Data unit</b>	MWh
<b>Description</b>	Quantity of net electricity supplied to the grid as a result of the implementation of the CDM project activity in year y (MWh)
<b>Source of data</b>	Monthly Joint Energy Meter Reading Report
<b>Value(s) applied</b>	15,520 (estimated)
<b>Measurement methods and procedures</b>	<p>Data Type: Measured  Monitoring equipment: Energy Meters of accuracy class 0.2 are used for monitoring  Recording Frequency: Continuous monitoring and Monthly recording from Energy Meters, Summarized Annually  Archiving Policy: Paper &amp; Electronic  Calibration frequency: Once in 5 years<sup>34</sup>  Electricity exported/imported to the grid is in kWh. However for the calculation purpose electricity exported is converted in MWh.</p> <p>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 Joint Energy Meter Reading Report provided by APSPDCL as per below equation:</p> $EG_{PJ,y} = EG_{Export} - EG_{Import}$ <p>Cross Checking:  Quantity of net electricity supplied to the grid will be cross checked from the invoices raised by the Project Owner to the State Electricity Board.</p>
<b>Monitoring frequency</b>	Monthly
<b>QA/QC procedures</b>	The energy meters used are trivector meters which are of accuracy class 0.2. The meters are monitored continuously & cumulative readings are taken at the end of the month by joint meter reading procedure. These are sealed by APSPDCL to avoid malfunctioning with meter readings. The officials frequently check the meters for tampering and malfunctioning with the meters. Meter is calibrated once in 5 years <sup>35</sup> by the authority in the presence of O&M Contractor / investors representatives and APSPDCL officials to ensure the working of meter within permissible limits. The calculation of net electricity supplied to grid is under purview of state electricity board and Project owner do not have control on it. The available parameter to Project owner is net electricity supplied to grid and same is mentioned as monitoring parameter.
<b>Purpose of data</b>	The Data/ Parameter is required to calculate the baseline emission
<b>Additional comment</b>	Data will be archived electronically for a period of 2 years beyond the end of crediting period.

<sup>34</sup> [http://www.aegcl.co.in/Metering\\_Regulations\\_Of\\_CEA\\_17\\_03\\_2006.pdf](http://www.aegcl.co.in/Metering_Regulations_Of_CEA_17_03_2006.pdf), page 12

<sup>35</sup> [http://www.aegcl.co.in/Metering\\_Regulations\\_Of\\_CEA\\_17\\_03\\_2006.pdf](http://www.aegcl.co.in/Metering_Regulations_Of_CEA_17_03_2006.pdf), page 12



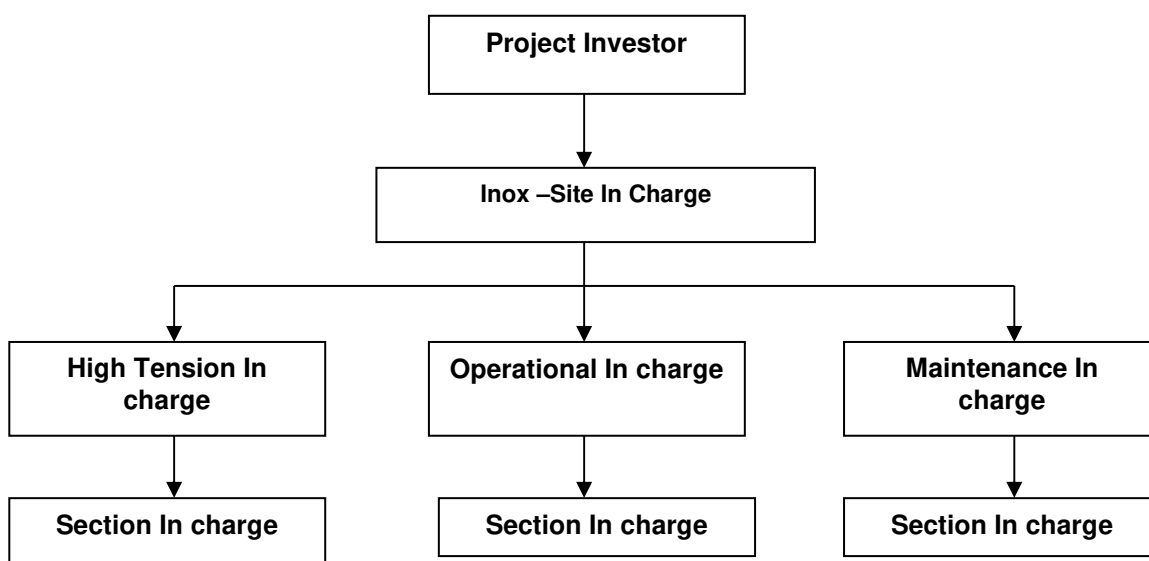
### B.7.2. Sampling plan

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 project being implemented in Andhra Pradesh, India. The monitoring plan, which will be implemented by the project owner 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 owner. Project owner proposed the following structure for data monitoring, collection, data archiving and calibration of equipment's for this project activity. The team comprises of the following members:



Project owner has assigned the responsibility of operation and maintenance of WTGs to Inox Wind Ltd. The Plant In-charge and Shift In-Charge would be deployed by Inox Wind Ltd.

### Monitoring Requirements

The monitoring plan includes monitoring of energy parameters such as net energy export to the regional grid. Emission reductions resulted from the project activity will be calculated based on the net energy exported to the grid. Sales records will be used and kept for checking the consistency of the recorded data.

Project owner will calibrate the meter at-least once in 5 year<sup>36</sup>. For the WTGs in project activity, the monthly reading is taken from the meter at substation by state utility and representative of Project owner. This reading gives the net electricity exported to the grid by all WTGs connected to the substation. The WTGs of other owners are also connected to the substation. Apportioning is not under the control of Project owner and generation report forms the basis of emission reductions calculations.

<sup>36</sup> [http://www.aegcl.co.in/Metering\\_Regulations\\_Of\\_CEA\\_17\\_03\\_2006.pdf](http://www.aegcl.co.in/Metering_Regulations_Of_CEA_17_03_2006.pdf)

The baseline emission factor is fixed ex-ante for all the years of the crediting period using the official data published by the Central Electricity Authority for the INDIAN grid and hence is not included in the monitoring procedures.

**Monitoring Plan:****QA/QC Procedures:**

The main and backup meter installed at connected substations for monitoring of the project activity are electronic tri-vector energy meters of 0.2 accuracy class. Each meter is jointly inspected and sealed on behalf of project owner and APSPDCL, in the presence of its authorised representatives. All main and backup meter are calibrated once in 5 year by APSPDCL or its representatives.

**Description of calibration of WTG Controller**

The controller used for the WTGs which is an SCS Controller is a micro-processor based intelligent controller which has been specially designed for control of wind turbines. It uses a Woodward Multi-function Relay that has three current inputs from CT and three direct voltage inputs (690 Volts). The analog values of current/ voltage is converted into digital signal internally using A/D Converters at very high sampling rate. A software program reads these values and displays instantaneous parameters such as voltage, current, power factor, kVAh, kVAh and kWh. These instantaneous values are then time integrated and displayed / stored. Woodward relay is having no display and needs special protocol to view energy readings as this relay is communicating digital signal through special communication protocol. Moreover, turbine cannot run without this relay hence it cannot be removed for calibration, hence, it is not possible to calibrate.

**Data Management and Data Archiving:**

Copies of the break-up sheet, invoices raised on APSPDCL and sales receipts will be retained and archived for the entire crediting period plus two years by the project owner.

**Procedures for Data Adjustments/Uncertainties:**

Data uncertainty in the project activity monitoring could occur under the following circumstances:

1. During the monthly joint meter reading at connected substations, the reading of the main meter and backup meter are cross checked to insure that the meters are working within the permissible limit. If during the cross checking the reading is found to be outside the permissible limit of accuracy, then calibration is done to identify the meter with the error and the faulty meter is replaced immediately. The meter reading for that month is to be taken from the correct meter.
2. During the monthly joint meter reading at the connected substations, if the display defect is in the main meter than in that case the backup meter reading are considered for the purpose of preparation of the break-up sheet and billing purpose. Defective main meter will be replaced immediately.
3. During the monthly joint meter reading at the connected substation, if the display defect is in the check meter than in that case the main meter reading are considered for the purpose of preparation of the break-up sheet and billing purpose. Defective check meter will be replaced immediately.
4. If during calibration of the meters at the connected substations, the main meter is found to be outside the permissible limit of accuracy and if the main meter reading have been used to prepare the break-up sheet, then the identified error would be applied to all the

measured value since the date of last calibration. Further the main meter would be replaced immediate.

5. If during the calibration of the meters the connected substations, the check meter is found to be outside the permissible limit of accuracy and if the check meter reading have been used to prepare the break-up sheet, then the identified error would be applied to all the measured value since the date of last calibration. Further the check meter would be replaced immediate.

#### Procedure for data apportioning:

Apportioning of net electricity generation from each WTG located at Andhra Pradesh determined by APSPDCL is as follows:

The apportioning of the electricity is the responsibility of the State Utility. The sample apportioning procedure adopted for any given WTG for any given month is given below:

**Generation Ratio at metering point (33 kV/220 kV level GSS):** The generation ratio is the ratio of electricity generated by installed WTG of Project Investor to the total generation by all the connected WTGs to the applicable metering point.

$$G_{R, \text{ metering point}} = \frac{EG_{\text{ Controller, WTG}}}{EG_{\text{ Controller, metering point}}} \quad (a)$$

Where,

$G_{R, \text{ metering point}}$  : Generation Ratio at metering point

$EG_{\text{ Controller, WTG}}$  : Electricity generated by installed WTG of Project Investor connected to the applicable metering point

$EG_{\text{ Controller, metering point}}$  : Total generation by all the connected WTGs to the applicable metering point

#### Transmission Loss Calculation:

The total transmission loss occurred during export of the electricity between the 33/220 kV level pooling station & 220 kV level common delivery point is calculated as the difference between total aggregated reading of export for all metering points at 33/220 kV level and the total reading of export for same metering points recorded at the 220 kV level. Similarly transmission loss occurred during import of the electricity is also calculated.

The Project Owner/WTG wise transmission loss during export & import is calculated by multiplying the values of arrived transmission loss for export & import for wind farm with the Generation Ratio at common delivery point.

#### Emergency Preparedness

The O&M Contractor and site- incharge for the project activity are trained professionals and they undergo rigorous training on- site before they are deployed to client location. They will be responsible for regular monitoring of net electricity generation and in case of any unusual event, they will report to their area incharge or state electricity board officials immediately.

#### Calculation of net electricity delivered to the Grid:

The values of transmission loss during export & import for the given WTG are subtracting from  $EG_{\text{ Export, metering point}}$  &  $EG_{\text{ Import, metering point}}$  respectively to get the values of export and import respectively for the given month.

The net electricity delivered to the Grid by the given WTG for the given month (net export kWh) is then obtained by subtracting import from export.

Thus,

$$\text{Net Electricity} = \text{Export} - \text{Import} \quad (f)$$

These apportioned values viz., import, export and net export kWh can be referred from the Monthly Break up of net export units report. The above procedure of calculation of net electricity supplied to grid by project activity is under purview of state electricity board and Project Owner does not have any control on it.

The above mentioned apportioning procedure is currently following for project activity, however there may be possibility to change apportioning procedure being under control of state electricity board. PP is getting value of net electricity supplied to grid and the same is mentioned as monitoring parameter.

If there is mismatch between dates of monitoring period and billing cycle period, then controller data will be used for apportioning of net electricity supplied to grid.

## **SECTION C. Start date, crediting period type and duration**

### **C.1. Start date of project activity**

The start date of project activity is considered to be 16/12/2016 which is the purchase order for the supply of WTGs to Inox Wind by Mangalam Fashion Limited.

### **C.2. Expected operational lifetime of project activity**

25 Years

### **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**

15/12/2020 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

## **SECTION D. Environmental impacts**

### **D.1. Analysis of environmental impacts**

The project activity has no significant impact on the environment. Wind projects are not included in the Schedule I of the EIA notification S.O.1533 (E) dated 14th September 2006 and thus an EIA is not required. Also as per notification dated 01/12/2009, The Ministry of Environment & forests has re-affirmed this and exempted Wind power plants from EIA and EC requirement.

### **D.2. Environmental impact assessment**

NA

## **SECTION E. Local stakeholder consultation**

### **E.1. Modalities for local stakeholder consultation**

The Local Stakeholder Meetings were organized for local stakeholder consultation on 14/12/2016 at Tallimadugula Site, Kanaganapalli Village, Ananthapuramu District. The stakeholders had been identified, and informed local stakeholder regarding the meeting via the personal invitation, such as an announcement at the local area, and personal communication through telephonic calls. In addition, a public invitation letter was sent also sent on 07/12/2016 to Gram Panchayat head to invite the local stakeholders for the meeting. The followings are the local stakeholders for the project activity:

- Local community
- Local village administration
- Students
- Shopkeepers
- Local vendors

All the stakeholders have been invited through public notice to attend the stakeholders meeting.

In the introductory speech, the representative of Mangalam Fashions 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 project is an environmental friendly power generation technology contributing to reduction in GHG emissions. They were also explained about the benefits of the wind power projects 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 copy of Public Notice 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 & economical benefits of the project. He also elaborated about CDM & its requirement for the current project. After the presentation, the session was open for questions/feedback from stakeholders.

Explanation about the main purpose of the project activity, i.e. to generate power through using green energy generation sources and to utilize the generated output for selling it to the state electricity utility, was narrated. Furthermore it was elaborated that the said project also conceives the following:

- Indian economy is highly dominated by generation of electricity using fossil fuels, and coal is mainly used in thermal power plants to generate electrical energy for basic energy needs, yet there is a wide gap in demand and supply. Use of wind energy will change consumption pattern and will change consumption pattern and will be mitigating the immense stress on the environment.
- Spread of commercialization of the wind projects in the region.
- Contribute to sustainable development of the region, socially, environmentally and economically.

After the detailed presentation some villagers raised question on the proposed wind power project to clear their doubts. The villagers raised various queries as summarised below:

**Q:** Will there be free supply of power to the local people?

**A:** The generated power will be fed in the grid. Project promoter can't supply directly power to the local people. They have to get authorized connection from Govt. body. But due to the project activity the supply of power in the area will increase.

**Q:** The stakeholders of the project wanted to know if there could be employment generation due to the project activity for youth from the adjoining areas.

**A:** Responding about the increased possibilities for employment of local youth due to the project activity, it was pointed out that preference would be given for locals in the employment opportunities. Also project will lead to various indirect employment generation due to implementation of project activity.

**Q:** Are there any safety practices to be adopted for this project?

**A:** Yes, all the risk associated mitigation measures will be implemented.

**Q:** Will it affect rainfall due to implementation of this project?

**A:** No, wind turbines do not have any impact on rainfall.

**Q:** Will the project release pollutants or hazardous, toxic or noxious substances to air?

**A:** No, not from what we know, there is no project emissions associated to the project & does not have any negative impacts.

**Q:** Will the project cause any noise & vibration or release of light, heat energy or harmful radiations?

**A:** No, not from what we know. It is harmless to human health.

All the above queries have been suitably and satisfactorily replied / clarified by project participant's representatives. 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**

There were no further comments raised by the stakeholders and they were totally in support for setting up of these kinds of projects in the region.

## **SECTION F. Approval and authorization**

The project obtained host country approval from Ministry of Environment Forest and Climate Change vide letter dated 13008/81/2017-CC dated 15/04/2019.

## Appendix 1. Contact information of project participants

<b>Organization name</b>	Mangalam Fashions Limited
<b>Country</b>	India
<b>Address</b>	11/1 Sarat Bose Road, Ideal Plaza, 2nd Floor, S 207/209, Kolkata- 700020
<b>Telephone</b>	033-22837484
<b>Fax</b>	033-22837479
<b>E-mail</b>	<a href="mailto:sunil@jbggroup.info">sunil@jbggroup.info</a>
<b>Website</b>	<a href="http://www.mangalam.com">www.mangalam.com</a>
<b>Contact person</b>	Mr. Sunil Singh

## Appendix 2. Affirmation regarding public funding

No public funding for this project activity was received from annex 1 parties.

## Appendix 3. Applicability of methodologies and standardized baselines

Please refer section B of the PDD for the same.

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

Please refer Section B.6.1 of the PDD.

## Appendix 5. Further background information on monitoring plan

Please refer section B.7.1 and B.7.2 for information on monitoring.

## Appendix 6. Summary report of comments received from local stakeholders

Please refer section E.2 for Summary report of comments received from local stakeholders

## 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: <ul style="list-style-type: none"> <li>• Ensure consistency with version 02.0 of the “CDM project standard for project activities” (CDM-EB93-A04-STAN);</li> <li>• Make editorial improvements.</li> </ul>
10.1	28 June 2017	Revision to make editorial improvement.
10.0	7 June 2017	Revision to: <ul style="list-style-type: none"> <li>• Improve consistency with the “CDM project standard for project activities” and with the PoA-DD and CPA-DD forms;</li> <li>• Make editorial improvement.</li> </ul>
09.0	24 May 2017	Revision to: <ul style="list-style-type: none"> <li>• Ensure consistency with the “CDM project standard for project activities” (CDM-EB93-A04-STAN) (version 01.0);</li> <li>• Incorporate the “Project design document form for small-scale CDM project activities” (CDM-SSC-PDD-FORM);</li> <li>• Make editorial improvement.</li> </ul>
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: <ul style="list-style-type: none"> <li>• Include provisions related to statement on erroneous inclusion of a CPA;</li> <li>• Include provisions related to delayed submission of a monitoring plan;</li> <li>• Provisions related to local stakeholder consultation;</li> <li>• Provisions related to the Host Party;</li> <li>• Make editorial improvement.</li> </ul>
05.0	25 June 2014	Revision to: <ul style="list-style-type: none"> <li>• 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));</li> <li>• Include provisions related to standardized baselines;</li> <li>• 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;</li> <li>• Change the reference number from F-CDM-PDD to CDM-PDD-FORM;</li> <li>• Make editorial improvement.</li> </ul>
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).



<i>Version</i>	<i>Date</i>	<i>Description</i>
03.0	26 July 2006	EB 25, Annex 15
02.0	14 June 2004	EB 14, Annex 06b
01.0	03 August 2002	EB 05, Paragraph 12 Initial adoption.
Decision Class: Regulatory Document Type: Form Business Function: Registration Keywords: project activities, project design document		