CLEAN DEVELOPMENT MECHANISM
PROJECT DESIGN DOCUMENT FORM (CDM-SSC-PDD)
Version 03 - in effect as of: 22 December 2006

CONTENTS

Revision history of this document

Version Number	Date	Description and reason of revision
01	21 January 2003	Initial adoption
02	8 July 2005	• The Board agreed to revise the CDM SSC PDD to reflect guidance and clarifications provided by the Board since version 01 of this document. • As a consequence, the guidelines for completing CDM SSC PDD have been revised accordingly to version 2. The latest version can be found at <http://cdm.unfccc.int/Reference/Documents>.
03	22 December 2006	• The Board agreed to revise the CDM project design document for small-scale activities (CDM-SSC-PDD), taking into account CDM-PDD and CDM-NM.

SECTION A. General description of small-scale project activity

A.1 Title of the small-scale project activity:

>> Bundled Wind Project Activity by Sri Venkateswara Pipes Limited and Sri KPR Infra and Projects Limited
Version: 04
Date: 12/12/2011

A.2. Description of the small-scale project activity:

>>
The project activity is a bundled wind power project activity consisting of two numbers of 1500 kW capacity Wind Turbine Generators (WTGs) installed by Sri Venkateswara Pipes Limited (SVPL) in the state of Tamil Nadu and one number of 1500 kW WTG installed by Sri KPR Infra and Projects Limited (KPR) in the state of Tamil Nadu. The total installed capacity of the project activity is 4.5 MW and it is expected to generate 10829 MWh per annum.

The objective of the wind power project activity is to generate renewable electricity using wind energy. The electricity generated by the WTGs located in the Tamil Nadu is being /will be/ sold to Tamil Nadu Electricity Board (TNEB)

SVPL has implemented the project activity in 2 phases. In the 1st phase SVPL placed Purchase Order (P.O.) for one number of 1500 kW Suzlon make WTG at the location of Tirunelveli in the state of Tamil Nadu on 5th May 2009. In the 2nd Phase SVPL has placed the P.O. for one numbers of 1500 kW Suzlon make WTG's at the location of Tirunelveli in the state of Tamil Nadu on 11th December 2009. KPR placed the P.O. for one number of 1500 kW Suzlon make WTG at the location of Tirunelveli in the state of Tamil Nadu on 18th May 2009.

In the absence of the project activity equivalent amount of electricity would have been generated by the operation of existing/proposed grid connected fossil fuel based power plants. The Project activity thus reduces the anthropogenic emissions of greenhouse gases (GHGs) in to the atmosphere associated with the equivalent amount of electricity generation from the existing/proposed fossil fuel based grid connected power plant.

Contribution of the project activity to sustainable development

Ministry of Environment and Forests, Govt. of India has stipulated the social well being, economic well being, environmental well being and technological well being as the four indicators for sustainable development in the host country approval eligibility criteria for Clean Development Mechanism (CDM) projects[1].

Social well being:

- The project activity has led to direct and indirect employment opportunities due to the commissioning of the project in the areas.

[1] http://cdmindia.nic.in/host_approval_criteria.htm

Economic well being

- CDM provides financial incentives, which encourage channelling more investment into cleaner energy projects and also result in improved returns to the project stakeholders.
- It also promotes industrial growth in the state by catering to the energy needs arising out of the supply-demand gap of electricity.

Environmental well being:

- The project activity utilizes wind energy for the electricity generation. In the absence of the project activity, equivalent electricity would have been generated by existing/proposed grid connected fossil fuel based power plants. Hence the project activity reduces the anthropogenic GHG emissions into the atmosphere associated with equivalent electricity generation from the existing/proposed grid connected fossil fuel based power plants. Use of renewable energy source (wind energy) for energy generation helps in conservation of natural resources like coal and petroleum fuels.
- The project activity also reduces the other air pollutants such as SOx, NOx and particulate matter which would have otherwise been emitted by fossil fuel based power plants connected to the grid.

Technological well being

- Wind farm 'marks step towards cleaner and inexhaustible source of energy''

A.3. Project participants:

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Name of Party involved (*) ((host) indicates a host Party)	Private and/or public entity(ies) project participants (*) (as applicable)	Kindly indicate if the Party involved wishes to be considered as project participant (Yes/No)
India (Host)	Sri Venkateswara Pipes Limited – Private Entity.	No
India (Host)	Sri KPR Infra and Projects Limited – Private Entity	No

A.4. Technical description of the small-scale project activity:

A.4.1. Location of the small-scale project activity:

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A.4.1.1. Host Party(ies):

>>India

A.4.1.2. Region/State/Province etc.:

>>
Tamil Nadu

A.4.1.3. City/Town/Community etc:

>>
Tirunelveli District, Tamil Nadu

A.4.1.4. Details of physical location, including information allowing the unique identification of this small-scale project activity :

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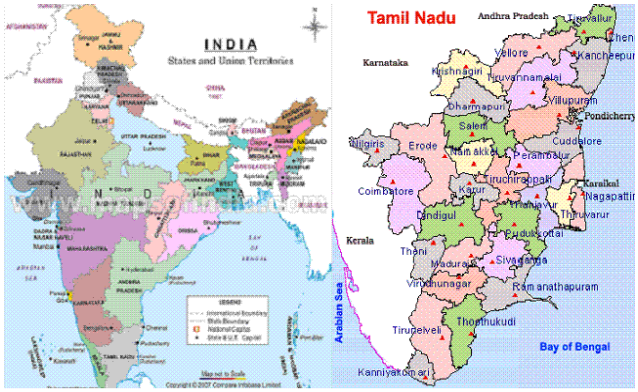
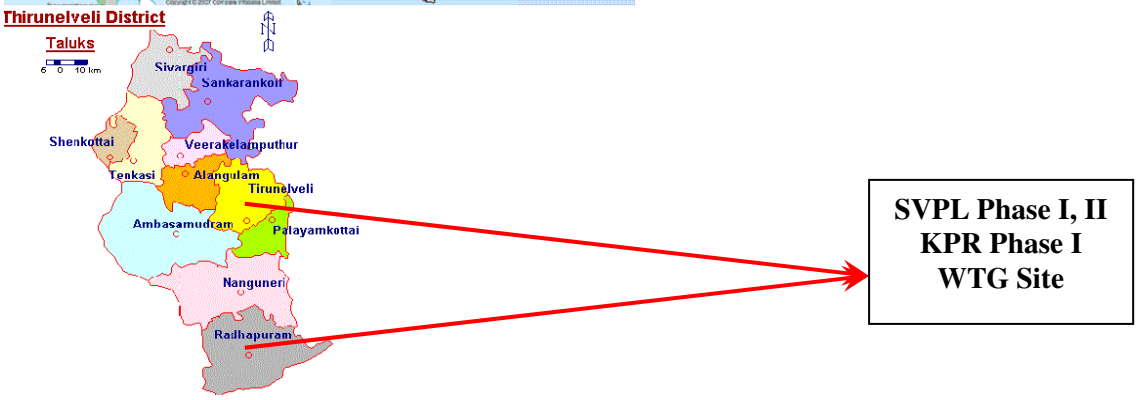
HTSC No.	WTG Location	Latitude	Longitude	District	Village
2948	TP-50	N 09^0 14' 67.2"	E 81^0 01' 79"	Tirunelveli	Karaichchuttupudur
3085	TDA-79	N 09^0 03' 10.2"	E 77^0 34' 01.6"	Tirunelveli	Balapathiramapuram
2949	TP-51	N 09^0 15' 37.6"	E 80^0 98' 32"	Tirunelveli	Karaichchuttupudur

The nearest airport for the WTG located in Tirunelveli District is Trivandrum and the nearest railway station is Tirunelveli.





A.4.2. Type and category(ies) and technology/measure of the small-scale project activity:

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Type I: Renewable Energy Projects
Category D: Electricity Generation for a system
Title of methodology: Grid connected renewable electricity generation

Technology /measure of the small-scale project activity

The technical life time for the Wind Turbine Generators is 20 years 0 months. Technical details of 1500 kW Wind Turbine Generators of Suzlon makes machine of S82 installed by SVPL and KPR are as under:

Sr. no.	Item	Description
1.	Make	Suzlon
2.	Model no.	S82
3.	Rating in KW	1500
4.	Hub Height	78.5m
5.	Rotor Type	3 bladed, Upwind/Horizontal axis
6.	Rotor diameter	82m
7.	Rotor Swept area	5281 m^2
8.	Cut-in wind speed	4.0 m/s
9.	Rated wind speed	14 m/s
10.	Cut-out wind speed	20 m/s
11.	Regulation	Active Pitch-Regulated
12.	Pitch System Type	Electrical

The expected electricity generation per annum will be around 10829 MWh at a Plant Load Factor (PLF) of 27.47%.

Installation and operation of the windmills do not pose any environmental hazards. The technology of harnessing wind power through windmills is environmentally safe and sound. The host Government also agrees to this fact and does not ask for Environmental Impact Assessment for this type of projects. As supplier of wind energy converters (wind mills), Suzlon is well known in the market. They have a strong R&D back up. The project activity also reduces the other air pollutants such as SOx, NOx and particulate matter which would have been emitted by fossil fuel based power plants connected to the grid in the absence of project activity.

The project activity doesn't involve any technology transfer to the host country.

A.4.3 Estimated amount of emission reductions over the chosen crediting period:

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Total Chosen Crediting period is from 01/06/2012 to 31/05/2022	
Years	Estimation of Annual Emission reductions in tonnes of CO_2 e
2012-2013	10234
2013-2014	10234

2014-2015	10234
2015-2016	10234
2016-2017	10234
2017-2018	10234
2018-2019	10234
2019-2020	10234
2020-2021	10234
2021-2022	10234
Total estimated reductions (tonnes of CO_2 e)	102340
Total number of crediting years	10
Annual average of estimated reductions over the crediting period (tCO_2 e)	10234

A.4.4. Public funding of the small-scale project activity:

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Public funding from Annex I and diversion of ODA is not involved in this project.

A.4.5. Confirmation that the small-scale project activity is not a debundled component of a large scale project activity:

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As mentioned under *Appendix C of the Simplified Modalities and Procedures for Small-Scale CDM project Activities,* the following results into debundling of large CDM project:

"A proposed small-scale project activity shall be deemed to be a debundled component of a large 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/measure; and
- Registered within the previous 2 years; and
- Whose project boundary is within 1 km of the project boundary of the proposed small-scale activity at the closest point."

The proposed project activity is not a debundled component of any larger project activity as there is no other small-scale project activity that fulfils the abovementioned criteria.

SECTION B. Application of a baseline and monitoring methodology

B.1. Title and reference of the approved baseline and monitoring methodology applied to the small-scale project activity:

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Project has applied approved methodology available for small-scale CDM project at UNFCCC website under Appendix B of the simplified modalities and procedures for small-scale CDM project activities

Type I: Renewable Energy Projects
Category D: Electricity Generation for a system

Title: Grid connected renewable electricity generation
Reference: Approved methodology small scale – ID, version 16, dated 11th June 2010 EB 54

Methodological tool: "Tool to calculate the emission factor for an electricity system.", Version 02.1, EB 60

B.2 Justification of the choice of the project category:

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The project activity involves generation of electricity by the means of renewable energy, wind. The project activity falls under the category of small scale projects. The methodology chosen for the project activity and its applicability to the project activity is discussed below.

Type I: Renewable Energy Projects
Category D: Electricity Generation for a system
Tile of methodology: Grid connected renewable electricity generation

S.No.	Technology /Measure as per AMS I.D/version 16	Measure of project activity
1.	This category comprises renewable energy generation units, such as photovoltaic, hydro, tidal/wave, wind, geothermal and renewable biomass that supply electricity to a national or a regional grid. Project activities that displace electricity from an electricity distribution system that is or would have been supplied by at least one fossil fuel fired generating unit shall apply AMS I.F.	The Project activity involves electricity generation using renewable energy which is based on wind power and supply of electricity to regional grid (Southern Grid).
2.	This methodology is applicable to project activities that (a) install a new power plant at a site where there was no renewable energy power plant operating prior to the implementation of the project activity (Greenfield plant); (b) involve a capacity addition[2]; (c) involve a retrofit[3] of (an)	The project involves installation of three numbers new WTG's with capacity 1500 kW at sites where there was no renewable energy

[2] A capacity addition is an increase in the installed power generation capacity of an existing power plant through: (i) the installation of a new power plant besides the existing power plant/units, or (ii) the installation of new power units, additional to the existing power plant/units. The existing power plant/units continue to operate after the implementation of the project activity.

[3] Retrofit (or Rehabilitation or Refurbishment). It involves an investment to repair or modify an existing power plant/unit, with the purpose to increase the efficiency, performance or power generation capacity of the plant, without adding new power plants or units, or to resume the operation of closed (mothballed) power plants. A retrofit

	existing plant(s); or (d) involve a replacement[4] of (an) existing plant(s).	power plant operating prior to the implementation of the project activity.
3.	Hydro power plants with reservoirs that satisfy at least one of the following conditions are eligible to apply this methodology: • The project activity is implemented in an existing reservoir with no change in the volume of reservoir; • 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/m2; The project activity results in new reservoirs and the power density of the power plant, as per definitions given in the Project Emissions section, is greater than 4 W/m2.	This is not applicable to the project activity as the project activity is not a hydro power plant.
4.	In the case of biomass power plants, no other biomass types than renewable biomass are to be used in the project plant.	The project activity is wind power project, hence this condition is not applicable.
5.	If the new unit has both renewable and non-renewable components (e.g. a wind/diesel unit), the eligibility limit of 15MW for a small-scale CDM project activity applies only to the renewable component. If the new unit co-fires fossil fuel[5], the capacity of the entire unit shall not exceed the limit of 15MW.	The project activity will generate electricity from wind energy which is renewable source of energy; hence this condition is not applicable.
6.	Combined heat and power (co-generation) systems are not eligible under this category.	The project activity doesn't involve co-generation; hence this condition is not applicable.
7.	In the case of project activities that involve the 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[6] from the existing units.	The project activity doesn't involve the addition of renewable energy generation units at an existing renewable power generation facility; hence this condition is not

restores the installed power generation capacity to or above its original level. Retrofits shall only include measures that involve capital investments and not regular maintenance or housekeeping measures.

[4] Replacement. It involves investment in a new power plant or unit that replaces one or several existing unit(s) at the existing power plant. The installed capacity of the new plant or unit is equal to or higher than the plant or unit that was replaced.

[5] Co-fired system uses both fossil and renewable fuels.

[6] Physically distinct units are those that are capable of generating electricity without the operation of existing units, and that do not directly affect the mechanical, thermal, or electrical characteristics of the existing facility. For example, the addition of a steam turbine to an existing combustion turbine to create a combined cycle unit would not be considered "physically distinct".

		applicable.
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.	The project activity doesn't retrofit or replace an existing facility; hence this condition is not applicable.
		The total installed capacity of the project activity is 4.5 MW which is less than the eligibility limit of 15 MW to qualify as a small scale project activity under Type I of the small scale methodologies Also no additional WTGs will be added to the project activity during its lifetime; Hence the project activity will remain under small scale project activity during every year of crediting period..

Hence it can be concluded that the selected methodology, AMS I.D, Version 16, EB 54 – Grid Connected Renewable Electricity Generation is applicable to project activity

B.3. Description of the project boundary:

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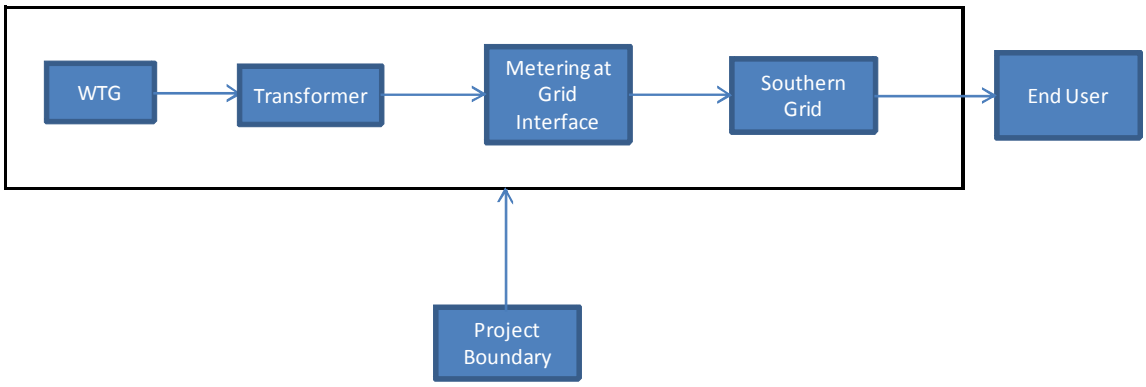
According to the methodology, AMS I.D, Version 16, EB 54, the physical, geographical site of the renewable generation source delineates the project boundary.

The project boundary encompasses the physical, geographical site of the Wind Power project activity at the project location as specified in Section A.4.1.4 above.



B.4. Description of baseline and its development:

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The emission reductions occur as the project activity generates electricity by the renewable energy, wind energy, and the sale of electricity generated to the state electricity board.

In the absence of the project activity the equivalent amount of electricity would have been generated by the operation of existing/proposed grid connected power plants that are predominantly GHG intensive Thermal power plants. The Project activity will thus reduce the anthropogenic emissions of greenhouse gases (GHGs) in to the atmosphere by displacing the equivalent amount of electricity generation through the operation of existing fossil fuel based power plant and future capacity expansion of fossil fuel-based power plants connected to the Grid.

As per AMS I.D version 16, EB 54:
10. If the project activity is the installation of a new grid-connected renewable power plant/unit, the baseline scenario is the electricity delivered to the grid by the project activity that otherwise would have been generated by the operation of grid-connected power plants and by the addition of new generation sources.

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

$$BE_y = EG_{BL,y} * EF_{CO_2,grid,y}$$

Where:

BE_y	Baseline Emissions in year y; t CO_2
$EG_{BL,y}$	Quantity of net electricity supplied to the grid as a result of the implementation of the CDM project activity in year y (MWh)
$EF_{CO2,grid,y}$	CO2 emission factor of the grid in year y (t CO2/MWh)

As per AMS I.D, version 16, EB 54 paragraph 12 the Emission Factor has to be calculated in a transparent and conservative manner as follows:

A combined margin (CM), consisting of the combination of operating margin (OM) and build margin (BM) according to the procedures prescribed in the 'Tool to calculate the Emission Factor for an electricity system'.
OR
The weighted average emissions (in tCO_2e/MWh) of the current generation mix. The data of the year in which project generation occurs must be used.

Calculations must be based on data from an official source (where available)[7] and made publicly available.

[7] Plant Emission Factors used for the calculation of Emission Factors should be obtained in the following priority:
1. *Acquired directly* from the dispatch center or power producers, if available; or

Accordingly, the option (a) of the paragraph 12, AMS I.D, Version 16, EB 54 has been chosen. The emission coefficient (measured in tCO_2e/MWh) calculated in a transparent and conservative manner as a combined margin (CM), consisting of the combination of operating margin (OM) and build margin (BM) according to the procedures prescribed in the "Tool to calculate the emission factor for an electricity system (version 02.1)" (hereafter referred to as "Tool"). This is being determined in line with paragraph 12 (a) of AMS I.D, Version 16, EB 54. Baseline scenario would be equivalent amount of electricity generation by the prevailing generation mix of the Southern Grid.

For Calculating the Operating Margin; the option B as mentioned in "Tool to calculate the emission factor for an electricity system" Version 01.1 which is "Based on data on net electricity generation, the average efficiency of each power unit and the fuel type(s) used in each power unit" is considered by Central Electricity Authority in the calculation of the Operating Margin as published in the Central Electricity Authority (CEA) CO2 Baseline database version 5 dated November 2009.

The same option has been revised to Option A in the "Tool to calculate the emission factor for an electricity system" Version 02.1.

Hence the calculation of the operating margin will remain the same for the "Tool to calculate the emission factor for an electricity system" Version 01.1 and Version 02.1
The data for the build margin is calculated by Central Electricity Authority using the formula 12 as mentioned in the "Tool to calculate the emission factor for an electricity system" Version 01.1, which is same as the formula 13 as mentioned in "Tool to calculate the emission factor for an electricity system" Version 02.1, and the same is published in the Central Electricity Authority CO2 Baseline Data base version 5 dated November 2009.

Hence the calculation of the Build margin will remain the same for the "Tool to calculate the emission factor for an electricity system" Version 01.1 and Version 02.1

Variable	**Data Source**
$EG_{BL,y}$ – Quantity of net electricity supplied to the grid as a result of the implementation of the CDM project activity in year y	Records maintained by project proponent

2. *Calculated*, if data on fuel type, fuel Emission Factor, fuel input and power output can be obtained for each plant;
If confidential data available from the relevant host Party authority are used, the calculation carried out by the project participants shall be verified by the DOE and the CDM-PDD may only show the resultant carbon Emission Factor and the corresponding list of plants;
3. *Calculated*, as above, but using estimates such as: default IPCC values from the 2006 IPCC Guidelines for National GHG Inventories for net calorific values and carbon Emission Factors for fuels instead of plant-specific values technology provider's name plate power plant efficiency or the anticipated energy efficiency documented in official sources (instead of calculating it from fuel consumption and power output). This is likely to be a conservative estimate, because under actual operating conditions plants usually have lower efficiencies and higher emissions than name plate performance would imply; conservative estimates of power plant efficiencies, based on expert judgments on the basis of the plant's technology, size and commissioning date; or
4. *Calculated*, for the simple OM and the average OM, using aggregated generation and fuel consumption data, in cases where more disaggregated data is not available.

Parameter	Data Source
$EF_{grid,OM,\ y}$ - Operating Margin Emission Factor (tCO_2 /MWh)	Central Electricity Authority (CEA) CO2 database version 5 dated November 2009. (www.cea.nic.in)
$EF_{grid,BM,\ y}$ - Build Margin Emission Factor (tCO_2 /MWh)	Central Electricity Authority (CEA) CO2 database version 5 dated November 2009. (www.cea.nic.in)
$EF_{CO2,grid,y}$ – CO2 emission factor of the grid in year y (t CO2/MWh)	Calculated as the weighted average of the operating margin and build margin

B.5. Description of how the anthropogenic emissions of GHG by sources are reduced below those that would have occurred in the absence of the registered small-scale CDM project activity:

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The alternatives to the project activity include:

- The project activity not undertaken as CDM project activity
- The generation of equivalent amount of electricity of the project activity from the power plants connected to the southern grid. The electricity generation from the project activity will effect the electricity generation from the cohort of existing power plants connected to the grid and also from the cohort of power units whose construction would be affected by the proposed CDM project activity.

As discussed below the Alternative 1 which is implementation of the project activity without the CDM revenue faces investment barrier. Hence the baseline scenario is equivalent amount of electricity would have been generated by the operation of existing/proposed grid connected power plants that are predominantly GHG intensive Thermal power plants.

The Project activity will thus reduce the anthropogenic emissions of greenhouse gases (GHGs) in to the atmosphere associated with the equivalent amount of electricity generation.

Additionality

As explained above, the project initiative qualifies under Type ID- Grid Connected Renewable Electricity Generation. The following paragraph has been detailed on project additionality.

In response to decision 1/CMP.2 (paragraph 15(a)), which encouraged the CDM Executive Board to provide non-binding best practice examples on the demonstration of additionality to assist the development of project design documents, in particular for small-scale project activities, after considering public input and an expert assessment, the Board at its thirty-fifth meeting agreed to provide the following examples:

Project participants shall provide an explanation to show that the project activity would not have occurred anyway due to at least one of the following barriers:

- **Investment barrier**:
- **Technological barrier:**
- **Barrier due to prevailing practice**:
- **Other barriers**

The additionality of the project activity is being established using the following barriers:

a) Investment Analysis

Investment Analysis:

There are three sub projects in the project activity i.e. sub project 1 comprising of one number of Wind Turbine Generator installed by Sri Venkateswara Pipes Limited in the state of Tamil Nadu at location TP 50, sub project 2 comprising of 1 number of WTG by Sri KPR Infra and Projects Limited in the state of Tamil Nadu at location TP 51 and sub project 3 comprising of one number of make Wind Turbine Generator by Sri Venkateswara Pipes Limited in the state of Tamil Nadu at TDA 79.

The investment analysis method recommends three analysis methods: simple cost analysis, investment comparison analysis and benchmark analysis. The proposed project produces economic benefits through the sales of electricity other than CDM related income; therefore, the simple cost analysis can not be taken. The investment comparison analysis is not applicable to the proposed project because the alternative of the proposed project is "Equivalent electricity service provided by the grid", is outside the direct control of the PP.

As per Annex 05 of EB 62, the benchmark approach is suited 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. In the project activity the baseline scenario is the generation of equivalent amount of electricity from the grid connected power plants.

The baseline scenario is outside the direct control of the PP. Hence, the benchmark analysis is chosen and the Post Tax Equity IRR is used as the financial indicator to assess the financial viability of the sub projects 1, sub project 2 and sub project 3.

As per the Tool for demonstration and assessment of Additionality, the benchmark can be derived from Government bond rates, increased by a suitable risk premium to reflect private investment and/or the project type, as substantiated by an independent (financial) expert or documented by official publicly available financial data.

Hence for the project activity the benchmark for the expected cost of equity is calculated using the standard, popular paradigm, the Capital Asset Pricing Model (CAPM). This model postulates a linear relationship between an asset's 'beta', a measure of systematic risk, and expected return.

We first estimate the cost of equity using the CAPM model. CAPM says:

$$CoE = r_f + \beta(ERP)$$

Where:
CoE = cost of equity
r_f = risk free rate
ERP = equity risk premium for the market
β =Beta or systematic risk for this type of equity investment coefficient reflecting the volatility (risk) of the stock relative to the market

Yield to Maturity of Central Government Securities for the latest month available at the time of decision making has been chosen as proxy for the Government Bond Rate. This works out 8.255% in case of SVPL for the decision taken on 31/01/2009 date and 7.5044% for SVPL for the decision taken on 20/05/2009 date and 8.255% for KPR for the decision taken on 02/02/2009.

Capital Asset Pricing Model (CAPM) provides the framework for computing risk premium. Risk premium, or market risk premium as it is commonly known as is the difference between the market return and the risk free return (YTM on Government Securities). As required by CAPM, market Index representing a widely diversified portfolio has been selected to compute the market return. Amongst the stock indices available in the Country at present, BSE 500 Index consists of 500 stocks. BSE 500 index was introduced on February 1, 1999. The return on BSE 500 index has been computed from 01/02/1999 till the month prior to which the decision was taken. This return works out to 13.78% in case of SVPL for the decision taken on 31/01/2009 date and 14.87% for SVPL for the decision taken on 20/05/2009 date and 13.78% for KPR for the decision taken on 02/02/2009.

Based on the market return arrived at as explained above and the risk free return, the market risk premium works out to be 8.26% in case of SVPL for the decision taken on 31/01/2009 date and 7.36% for SVPL for the decision taken on 20/05/2009 date and 8.26% for KPR for the decision taken on 02/02/2009.

The risk of the project type has been computed using Beta. Beta has been computed for all power generating companies listed and traded in the stock exchange and having a minimum track period of 5 years. The duration 5 years has been chosen as recommended from Page No. 10.10, Projects – Planning, Analysis, Selection, Financing, Implementation and Review, 7th Edition, Prasanna Chandra. There were in all 6 companies for the decision taken on 31/01/2009 by SVPL and for the decision taken on 02/02/2009 by KPR and 6 companies for the decision taken on 20/05/2009 by SVPL.

The beta of the selected companies was computed using 5 years trading data by regressing the stock return on BSE 500 index and the resultant beta represents both business and leverage risk. The leverage risk has been eliminated by using the well accepted HAMADA equation and using the gearing and the tax rate of the respective companies. Out of the unleveraed beta, normally known as asset beta the weighted average beta based ont eh market capitalization of the 6 companies has been chosen to compute the risk premium to reflect the risk of the project type. This works out to 1.05 in case of SVPL for the decision taken on 31/01/2009 date and 1.04 for SVPL for the decision taken on 20/05/2009 date and 1.05 for KPR for the decision taken on 02/02/2009.

The benchmark works out to 14.05 % in case of SVPL for the decision taken on 31/01/2009 date and 15.17% for SVPL for the decision taken on 20/05/2009 date and 14.05 % for KPR for the decision taken on 02/02/2009.

A detailed computation of the Benchmark is given in the enclosed work sheet.

Post Tax Equity IRR Calculation:

As per the guidance on assessment of Investment Analysis version 05, "Both project IRR and equity IRR calculations shall as a preference reflect the period of expected operation of the underlying project activity (technical lifetime), or - if a shorter period is chosen - include the fair value of the project activity assets at the end of the assessment period. In general a minimum period of 10 years and a

maximum of 20 years will be appropriate." The period considered for Post Tax Equity IRR calculation is 20 years which corresponds to the operational lifetime of the project activity.

Depreciation, and other non-cash items related to the project activity, which have been deducted in estimating gross profits on which tax is calculated, is added back to net profits for the purpose of calculating the financial indicator.

The following table illustrates the assumptions used for the calculation of the financial indicator i.e. Post tax equity IRR for the Sub Project 1. The use of these parameters indicating if they are assumed or based on actual figures is explained in the table. All the relevant costs and revenues for the project activity have been considered for calculation of post tax equity IRR.

Table 1: Assumptions along with the Source for calculating the post tax equity IRR for Sub Project 1 consisting of WTG installed at location TP 50 by SVPL.

Project Capacity in MW	1.50	Quotation from Suzlon Energy Limited dated 22nd December 2008
Plant Load Factor (PLF)	27.47%	Plant load factor provided to Debt Financers (State Bank of India) for Project financing
Operation & Maintenance Cost (free for first year from Date of commissioning and 16.5 Lakhs per annum per WTG from 2 year with 5% escalation every year) (INR Million)	1.65	Quotation from Suzlon Energy Limited dated 22nd December 2008
% of escalation per annum on O & M Charges every year	5.00%	Quotation from Suzlon Energy Limited
Insurance Premium (INR Million)	0.10	Quotation from Suzlon Energy Limited dated 22nd December 2008
Service Tax	12.36%	Service Tax of 12%, 2% of Secondary Cess and 1% of Higher Education Cess[8]
Tariff for Sale to TNEB (INR/kWh)	2.90	TNERC Order dated 15/05/2006
Project Cost	INR Million	
WTG Cost	84.36	Quotation from Suzlon Energy Limited dated 22nd December 2008
Other Charges	11.34	Quotation from Suzlon Energy Limited dated 22nd December 2008
Land Cost	1.80	Quotation from Suzlon Energy Limited dated 22nd December 2008
Total Project Cost	97.50	Based on the Quotation from Suzlon Energy Limited dated 22nd

[8] http://www.saraltaxoffice.com/resources/st-rates.php

		December 2008
Means of Finance	INR Million	
Internal Accruals	37.50	Calculated as the difference between the total project cost and the Loan Availed
Loan Component	60.00	Loan Sanction Document
Total Source	98.49	Based on the Quotation from Suzlon Energy Limited dated 22nd December 2008
Interest rate	14.25%	Loan Sanction Document
Repayment Period	7.00	Loan Sanction Document
Moratorium	0.50	Loan Sanction Document
Income Tax Depreciation Rate (Written Down Value basis)	80.00%	Appendix I of the I.T. Rules[9]
Book Depreciation Rate (Straight Line Method basis)	5.28%	Company's Act Schedule XIV[10]
Book Depreciation up to (% of asset value)	100.00%	Company's Act Schedule XIV
Income Tax		
Income Tax rate	30.00%	Income Tax rates as per First Schedule of Income Tax Act 1961 as amended by Finance Act 2008[11]
Surcharge	10.00%	Income Tax rates as per First Schedule of Income Tax Act 1961 as amended by Finance Act 2008
Cess	3.00%	Income Tax rates as per First Schedule of Income Tax Act 1961 as amended by Finance Act 2008
CER Revenues		

[9] http://law.incometaxindia.gov.in/DIT/File_opener.aspx?page=ITRU&schT=rul&csId=4a23cee1-1818-45d6-ab19-f155e08ed789&rNo=&sch=&title=Taxmann%20-%20Direct%20Tax%20Laws

[10] *asa-**india**.com/asa/**Depreciation**%20Rates%20**Companies**%20**Act**.pdf*

[11] http://law.incometaxindia.gov.in/DIT/File_opener.aspx?page=FINA&schT=FIN&csId=c4b5d78d-1411-405b-b2e8-7734f3a92e31&&pId=1d8b5417-3905-4dd8-b2c6-b36d95451422&sch=&title=Taxmann%20-%20Direct%20Tax%20Laws

CER Price in Euro	13.53[12]	CER Price as on 31/12/2008
Exchange rate Rs./Euro	68.70[13]	Exchange rate as on 29/12/2008

The following table illustrates the assumptions used for the calculation of the financial indicator i.e. Project IRR for the Sub Project 2. The use of these parameters indicating if they are assumed or based on actual figures is explained in the table. All the relevant costs and revenues for the project activity have been considered for calculation of post tax equity IRR.

Table 2: Assumptions along with the Source for calculating the post tax equity IRR for Sub Project 2 consisting of WTG at location TP 51 installed by KPR

Project Capacity in MW	1.50	Quotation from Suzlon Energy Limited dated 12th January 2009
Plant Load Factor (PLF)	27.47%	Plant load factor provided to Debt Financers (State Bank of India) for Project financing
Operation & Maintenance Cost (free for first year from Date of commissioning and 16.5 Lakhs per annum per WTG from 2 year with 5% escalation every year) (INR Million)	1.65	Quotation from Suzlon Energy Limited dated 12th January 2009
% of escalation per annum on O & M Charges every year	5.00%	Quotation from Suzlon Energy Limited dated 12th January 2009
Insurance Premium (INR Million)	0.10	Quotation from Suzlon Energy Limited dated 12th January 2009
Service Tax	12.36%	Service Tax of 12%, 2% of Secondary Cess and 1% of Higher Education Cess[14]
Tariff for Sale to TNEB (INR/kWh)	2.90	TNERC Order dated 15/05/2006
Project Cost	INR Million	
WTG Cost	84.36	Quotation from Suzlon Energy Limited dated 12th January 2009
Other Charges	11.34	Quotation from Suzlon Energy Limited dated 12th January 2009
Land Cost	1.80	Quotation from Suzlon Energy Limited dated 12th January 2009
Total Project Cost	97.50	Based on the Quotation from Suzlon Energy Limited dated 12th January 2009

[12] http://data.bluenext.fr/downloads/20111226_BNS_STATS.xls

[13] http://www.x-rates.com/cgi-bin/hlookup.cgi

[14] http://www.saraltaxoffice.com/resources/st-rates.php

Means of Finance	INR Million	
Internal Accruals	37.50	Calculated as the difference between the total project cost and the Loan Availed
Loan Component	60.00	Loan Sanction Document
Total Source	97.50	Based on the Quotation from Suzlon Energy Limited dated 12th January 2009
Interest rate	13.75%	Loan Sanction Document
Repayment Period	4.00	Loan Sanction Document
Moratorium	0.50	Loan Sanction Document
Income Tax Depreciation Rate (Written Down Value basis)	80.00%	Appendix I of the I.T. Rules[15]
Book Depreciation Rate (Straight Line Method basis)	5.28%	Company's Act Schedule XIV[16]
Book Depreciation up to (% of asset value)	100.00%	Company's Act Schedule XIV
Income Tax		
Income Tax rate	30.00%	Income Tax rates as per First Schedule of Income Tax Act 1961 as amended by Finance Act 2008[17]
Surcharge	10.00%	Income Tax rates as per First Schedule of Income Tax Act 1961 as amended by Finance Act 2008
Cess	3.00%	Income Tax rates as per First Schedule of Income Tax Act 1961 as amended by Finance Act 2008
CER Revenues		
CER Price in Euro	13.53[18]	CER Price as on 31/12/2008

[15] http://law.incometaxindia.gov.in/DIT/File_opener.aspx?page=ITRU&schT=rul&csId=4a23cee1-1818-45d6-ab19-f155e08ed789&rNo=&sch=&title=Taxmann%20-%20Direct%20Tax%20Laws

[16] *asa-**india**.com/asa/**Depreciation**%20Rates%20**Companies**%20**Act**.pdf*

[17] http://law.incometaxindia.gov.in/DIT/File_opener.aspx?page=FINA&schT=FIN&csId=c4b5d78d-1411-405b-b2e8-7734f3a92e31&&pId=1d8b5417-3905-4dd8-b2c6-b36d95451422&sch=&title=Taxmann%20-%20Direct%20Tax%20Laws

[18] http://data.bluenext.fr/downloads/20111226_BNS_STATS.xls

Exchange rate Rs./Euro	68.70[19]	Exchange rate as on 29/12/2008

The following table illustrates the assumptions used for the calculation of the financial indicator i.e. Post tax equity IRR for the Sub Project 3. The use of these parameters indicating if they are assumed or based on actual figures is explained in the table. All the relevant costs and revenues for the project activity have been considered for calculation of post tax equity IRR. The Estimated Plant Load Factor is considered as 27.47%.

Table 3: Assumptions along with the Source for calculating the post tax equity IRR for Sub Project 3 consisting of WTG installed by SVPL at location TDA 79.

Plant Load Factor (PLF)	27.47%	Plant load factor provided to Debt Financers (State Bank of India) for financing of Sub Project 1
Operation & Maintenance Cost (free for first year from Date of commissioning and 15 Lakhs per annum per WTG from 2 year with 5% escalation every year) (INR Million)	1.50	Purchase Order for TP 50 WTG of SVPL placed on 05th May 2009
% of escalation per annum on O & M Charges every year	5.00%	Purchase Order for TP 50 WTG of SVPL placed on 05th May 2009
Insurance Premium (INR Million)	0.10	Quotation from Suzlon Energy Limited 22nd December 2008 for TP 51 WTG
Service Tax	10.30%	Service Tax of 10%, 2% of Secondary Cess and 1% of Higher Education Cess[20]
Tariff for sale to TNEB - Rs./Kwh	3.39	TNERC Order "Comprehensive Tariff Order on WIND ENERGY" dated 20/03/2009
Project Cost	INR Million	
Total WTG cost capitalized	88.09	Purchase Order for TP 50 WTG of SVPL placed on 05th May 2009
Land Cost	1.91	Purchase Order for TP 50 WTG of SVPL placed on 05th May 2009
Total Project Cost	90.00	Purchase Order for TP 50 WTG of SVPL placed on 05th May 2009
Means of Finance	INR Million	
Internal Accruals	90.00	The entire funding is envisaged through internal accruals

[19] http://www.x-rates.com/cgi-bin/hlookup.cgi

[20] http://www.saraltaxoffice.com/resources/st-rates.php

Loan Component	0.00	The entire funding is envisaged through internal accruals
Total Source	90.00	Purchase Order for TP 50 WTG of SVPL placed on 05th May 2009
Income Tax Depreciation Rate (Written Down Value basis)	80.00%	Appendix I of the I.T. Rules[21]
Book Depreciation Rate (Straight Line Method basis)	5.28%	Company's Act Schedule XIV[22]
Book Depreciation up to (% of asset value)	100.00%	Company's Act Schedule XIV
Income Tax		
Income Tax rate	30.00%	Income Tax rates as per First Schedule of Income Tax Act 1961 as amended by Finance Act 2008[23]
Surcharge	10.00%	Income Tax rates as per First Schedule of Income Tax Act 1961 as amended by Finance Act 2008
Cess	3.00%	Income Tax rates as per First Schedule of Income Tax Act 1961 as amended by Finance Act 2008
CER Revenues		
CER Price in Euro	12.81[24]	CER Price as on 11/05/2009
Exchange rate Rs./Euro	67.70[25]	Exchange rate as on 13/05/2009

The following table indicates the Post Tax Equity IRR for the Sub Projects along with the benchmarks.

Type of machines	Post Tax Equity IRR	
	Benchmark	Without CDM Revenue
Sub Project 1:	14.05%	3.44 %
Sub Project 2:	14.05%	4.36%

[21] http://law.incometaxindia.gov.in/DIT/File_opener.aspx?page=ITRU&schT=rul&csId=4a23cee1-1818-45d6-ab19-f155e08ed789&rNo=&sch=&title=Taxmann%20-%20Direct%20Tax%20Laws

[22] *asa-**india**.com/asa/**Depreciation**%20Rates%20**Companies**%20**Act**.pdf*

[23] http://law.incometaxindia.gov.in/DIT/File_opener.aspx?page=FINA&schT=FIN&csId=c4b5d78d-1411-405b-b2e8-7734f3a92e31&&pId=1d8b5417-3905-4dd8-b2c6-b36d95451422&sch=&title=Taxmann%20-%20Direct%20Tax%20Laws

[24] http://data.bluenext.fr/downloads/20111226_BNS_STATS.xls

[25] http://www.x-rates.com/cgi-bin/hlookup.cgi

Sub Project 3:	15.17%	9.96 %

Thus, it is evident that the project is not financially attractive.

The robustness of the conclusion drawn above, namely that the project is not financially attractive, has been tested by subjecting critical assumptions to reasonable variation. As required by Annex 05 of EB 62, 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. PP has identified t the total revenue from the project activity is dependent on the Plant Load Factor and Project Cost, O&M Costs constitute more than 20% of the project costs.These three factors have been subjected to a 10% variation on either side and the results of the sensitivity analysis so conducted are given in the following table.

Sub Project1:

FACTOR	VARIATION		
	-10%	0%	10%
PLF	1.24%	3.44%	5.73%
Project Cost	5.00%	3.44%	2.28%
O&M Costs	4.01%	3.44%	2.86%
Tariff	1.24%	3.44%	5.73%
Benchmark	14.05%		

The Post tax Equity IRR crosses the benchmark if the PLF will reach 37.80% i.e. if the PLF increases by 37.60%. The PLF achieved by the WTG for the period from 01/04/2010 – 31/03/2011 is only 22.56%. Therefore the question of the wind mills achieving 38.46% consistently for the 20 year period (of which 1 year is already completed) is hypothetical. The Post Tax equity IRR crosses the benchmark if the Project Cost decreases by 31.00%, which is not possible as the actual project cost incurred is INR 90 Million which is 93% of the project cost considered in the calculation of the Financial Indicator. The Post tax equity IRR crosses the benchmark if the O&M costs decreases by 178% which is not practical. Since the O&M costs is subject to escalation and also subject to inflationary pressure any reduction in the O&M costs is highly unlikely. The Post tax Equity IRR crosses the benchmark if the tariff increases by 37.60% i.e. the tariff becomes INR 3.99/kWh. The PP has signed a Power Purchase Agreement with TNEB for a tariff of 3.39 INR/kWh for period of 20 years, hence the tariff becoming INR 3.99/kWh can be ruled out

Sub Project2:

FACTOR	VARIATION		
	-10%	0%	10%

PLF	2.34%	4.36%	6.85%
Project Cost	6.20%	4.36%	3.18%
O&M Costs	4.91%	4.36%	3.84%
Tariff	2.34%	4.36%	6.85%
Benchmark	14.05%		

The Post tax Equity IRR crosses the benchmark if the PLF will reach 37.94 % i.e. if the PLF increases by 38.10%. The PLF achieved by the WTG for the period from 01/04/2010 – 31/03/2011 is only 24.50%. Therefore the question of the wind mills achieving 37.94 % consistently for the 20 year period (of which 1 year is already completed) is hypothetical. The Post Tax equity IRR crosses the benchmark if the Project Cost decreases by 31.7%, which is not possible as the actual project cost incurred is INR 90.92 Million which is 93.25% of the project cost considered in the calculation of the Financial Indicator. The Post tax equity IRR crosses the benchmark if the O&M costs decreases by 181% which is not practical. Since the O&M costs is subject to escalation and also subject to inflationary pressure any reduction in the O&M costs is highly unlikely. The Post tax Equity IRR crosses the benchmark if the tariff increases by 38.10% i.e. the tariff becomes INR 4.00/kWh. The PP has signed a Power Purchase Agreement with TNEB for a tariff of 3.39 INR/kWh for period of 20 years, hence the tariff becoming INR 4.00/kWh can be ruled out

Sub Project3:

FACTOR	VARIATION		
	-10%	0%	10%
Project Cost	7.90%	9.96%	11.90%
PLF	11.74%	9.96%	8.45%
O&M Costs	10.30%	9.96%	9.61%
Tariff	7.90%	9.96%	11.90%
Benchmark	15.17%		

The Post tax Equity IRR crosses the benchmark if the PLF will reach 35.13% i.e. if the PLF increases by 27.9%. The PLF achieved by the WTG for the period from 01/04/2010 – 31/03/2011 is only 24.68%. Therefore the question of the wind mills achieving 35.05% consistently for the 20 year period (of which 1 year is already completed) is hypothetical. The Post Tax equity IRR crosses the benchmark if the Project Cost decreases by 25.1%, which is not possible as the actual project cost incurred is INR 87.60 Million which is 97% of the project cost considered in the calculation of the Financial Indicator. The Post tax equity IRR crosses the benchmark if the O&M costs decreases by 175% which is not practical. Since the O&M costs is subject to escalation and also subject to inflationary pressure any reduction in the O&M costs is highly unlikely. The Post tax Equity IRR crosses the benchmark if the tariff increases by 27.90 % i.e. the tariff becomes INR 4.34/kWh. The PP has signed a Power Purchase Agreement with TNEB for a tariff of 3.39 INR/kWh for period of 20 years, hence the tariff becoming INR 4.34/kWh can be ruled out

The Power Purchase Agreement for the sub project 1 and sub project 2 was entered with TNEB with the tariff as INR 3.39/kWh. At the time of decision making the Purchase Price of electricity was INR 2.90

/kWh. Hence the Post Tax Equity IRR was also calculated considering the tariff as INR 3.39/kWh for Sub Project 1 and Sub Project 2. The post tax equity IRR in this scenario works out to be 7.75% for sub project 1 and 8.60% for Sub Project 2.

Sensitivity Analysis has also been conducted considering the tariff of INR 3.39/kWh. The results of the sensitivity analysis are presented in the below table.

Sub Project1:

FACTOR	VARIATION		
	-10%	0%	10%
PLF	4.60%	7.75%	11.24%
Project Cost	10.74%	7.75%	5.65%
O&M Costs	8.43%	7.75%	7.05%
Tariff	4.60%	7.75%	11.24%
Benchmark	14.05%		

Sub Project2:

FACTOR	VARIATION		
	-10%	0%	10%
PLF	5.62%	8.60%	11.58%
Project Cost	11.22%	8.60%	6.64%
O&M Costs	9.17%	8.60%	8.01%
Tariff	5.62%	8.60%	11.58%
Benchmark	14.05%		

The above analysis proves that varying the parameters does not lead to a Post Tax Equity IRR without CDM revenue which will cross the benchmark value.

The carbon revenue from the project activity would provide significant amount of returns from the sale of the Emission Reductions accrued from the project activity and in turn increase the financial attractiveness of the project activity and hence make the project activity more financially viable.

The following table indicates the Post Tax Equity IRR after considering the carbon revenue

Type of machines	Post Tax Equity IRR	
	Benchmark	With Carbon Finance
Sub Project 1:	14.05%	10.41%
Sub Project 2:	14.05%	10.98%
Sub Project 3;	15.17%	14.38%

In spite of the low returns for the Project activity the Project participants have made the investment only in lieu of the due consideration of the Carbon Finance. Hence it is evident that without the GHG emission reduction credits the project activity wouldn't have been taken up.

The arguments in the above paragraphs with respect to the financial analysis of the project activity augment the fact that project activity can be deemed additional.

As per the EB's Guidance on Demonstration and assessment of the prior consideration of the CDM the following table indicates the events taken up by the PP to indicate that continuing and real actions were taken to secure CDM status for the project in parallel with its implementation.

Timeline			
Date	**Project Implementation**	**Actions for acquiring CDM**	**Proof**
31/01/2009		Consideration of the CDM in the Minutes of the Meeting of board of directors of Sri Venkateswara Pipes Limited for the installation of 1st WTG	Extracts of the Minutes of the Meeting of the Board of Directors
02/02/2009		Consideration of the CDM in the Minutes of the Meeting of board of directors of Sri KPR Infra and Projects Limited for the installation of WTG	
05/05/2009	P.O. to Suzlon for the supply of WTG by Sri Venkateswara Pipes Limited at location TP 50		Copy of the P.O.
05/05/2009		Intimation to UNFCCC and Indian DNA regarding the consideration of CDM benefits in the investment decision to undertake the project activity and with the expression of intent to seek CDM status for the 1st WTG installed by Sri Venkateswara Pipes Limited at location TP 50	Copy of the Letter
18/05/2009		Intimation to UNFCCC and Indian DNA regarding the consideration of CDM benefits in the investment decision to undertake the project activity and with the expression of intent to seek CDM status for the	Copy of the Letter

		WTG installed by Sri KPR Infra and Projects Limited at location TP 51	
20/05/2009		Consideration of the CDM in the Minutes of the Meeting of board of directors of Sri Venkateswara Pipes Limited for the installation of 2nd WTG	Extracts of the Minutes of the Meeting of the Board of Directors
25/06/2009	P.O. to Suzlon for the supply of WTG by Sri KPR Infra and Projects Limited at location TP 51		Copy of the P.O.
25/09/2009	Commissioning of the 1st WTG of Sri Venkateswara Pipes Limited		Commissioning Certificate
25/09/2009	Commissioning of the WTG of Sri KPR Infra and Projects Limited		Commissioning Certificate
12/11/2009		Appointment of Core CarbonX Solutions Pvt Ltd for providing the CDM consultancy services for the project activity	Copy of the LOI and contract
11/12/2009		Intimation to UNFCCC and Indian DNA regarding the consideration of CDM benefits in the investment decision to undertake the project activity and with the expression of intent to seek CDM status for the 2nd WTG installed by Sri Venkateswara Pipes Limited at location TDA 79	Copy of the contract
11/12/2009	P.O. to Suzlon for the supply of WTG by Sri Venkateswara Pipes Limited at location TDA 79		Copy of the P.O.
23/03/2010	Commissioning of the 2nd WTG of Sri Venkateswara Pipes		Commissioning Certificate

	Limited		
20/04/2010	Proposal received from TUV Nord for the CDM Validation		Copy of the proposal
03/05/2010	Finalization of TUV Nord as the DOE for the project activty		Copy of the contract

B.6. Emission reductions:

B.6.1. Explanation of methodological choices:

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As per AMS I.D, Version 16, EB 54 paragraph 11:
The baseline emissions are the product of electrical energy baseline $EG_{BL,\ y}$ expressed in MWh of electricity produced by the renewable generating unit multiplied by the grid emission factor.

$$BE_y = EG_{BL,y} * EF_{CO_2,grid,y}$$

Where:

BE_y	Baseline Emissions in year y; t CO_2
$EG_{BL,y}$	Quantity of net electricity supplied to the grid as a result of the implementation of the CDM project activity in year y (MWh)
$EF_{CO2,grid,y}$	CO2 emission factor of the grid in year y (t CO2/MWh)

Input values and data sources for emission reductions associated with electricity displacement

Parameter	Description	Value	Source
$BE_y = EG_{BL,y} * EF_{CO_2}$			
BE_y	Baseline Emissions in year y; t CO_2		Calculated
$EG_{BL,y}$	Quantity of net electricity supplied to the grid as a result of the implementation of the CDM project activity in year y (MWh)	10829	Electricity Invoices
$EF_{CO2,grid,y} = EF_{grid,CM,y}$	CO2 emission factor of the grid in year y (t CO2/MWh)	0.94505	Calculated

As per paragraph 12, AMS I.D Version 16, EB 54, the Emission Factor can be calculated in a transparent and conservative manner as follows:

(a) A combined margin (CM), consisting of the combination of operating margin (OM) and build margin (BM) according to the procedures prescribed in the 'Tool to calculate the Emission Factor for an electricity system'.

OR

(b) The weighted average emissions (in kg CO_2e/kWh) of the current generation mix. The data of the year in which project generation occurs must be used.

Calculations must be based on data from an official source (where available)[26] and made publicly available.
In the project activity, the option A has been used which prescribes use of "Tool to calculate the emission factor for an electricity system."

Step 1. Identify the relevant electric power system

Grid Selection
This approach is based on the assumption that the renewable energy project is displacing the average electricity mix in the grid. In India, power is a concurrent subject between the state and the central governments. The perspective planning, monitoring of implementation of power projects is the responsibility of Ministry of Power, Government of India. At the state level the state utilities or state electricity boards (SEBs) are responsible for supply, transmission, and distribution of power. With power sector reforms there have been unbundling and privatization of this sector in many states. Many of the state utilities are engaged in power generation also. In addition to this there are different central / public sector organizations involved in generation like National Thermal Power Corporation (NTPC), National Hydro Power Corporation (NHPC), etc. in transmission e.g. Power Grid Corporation of India Ltd. (PGCIL) and in financing e.g. Power Finance Corporation Ltd. (PFC). In August 2006, Northern Regional Grid was synchronised with the integrated Eastern, North Eastern and Western Grid in and the four regional grids have since been operating in synchronous mode. Hence there exist two regional grids i.e. NWENE and Southern Grid

The management of generation and supply of power within the regional grid is undertaken by the load dispatch centres (LDC). Different states within the regional grids meet the demand from their own generation facilities plus generation by power plants owned by the central sector i.e. NTPC and NHPC etc. Specific quota is allocated to different states from the central sector power plants. Depending on the demand and generation there are exports and imports of power within different states in the regional grid. Thus there is trading of power between states in the grid. Similarly there are imports and export of power between regional grids.

[26] Plant Emission Factors used for the calculation of Emission Factors should be obtained in the following priority:
1. *Acquired directly* from the dispatch center or power producers, if available; or
2. *Calculated*, if data on fuel type, fuel Emission Factor, fuel input and power output can be obtained for each plant;
If confidential data available from the relevant host Party authority are used, the calculation carried out by the project participants shall be verified by the DOE and the CDM-PDD may only show the resultant carbon Emission Factor and the corresponding list of plants;
3. *Calculated*, as above, but using estimates such as: default IPCC values from the 2006 IPCC Guidelines for National GHG Inventories for net calorific values and carbon Emission Factors for fuels instead of plant-specific values technology provider's name plate power plant efficiency or the anticipated energy efficiency documented in official sources (instead of calculating it from fuel consumption and power output). This is likely to be a conservative estimate, because under actual operating conditions plants usually have lower efficiencies and higher emissions than name plate performance would imply; conservative estimates of power plant efficiencies, based on expert judgments on the basis of the plant's technology, size and commissioning date; or
4. *Calculated*, for the simple OM and the average OM, using aggregated generation and fuel consumption data, in cases where more disaggregated data is not available.

Since the CDM project is connected to the Southern regional grid it is also preferred to take the Southern regional grid as project boundary than the state boundary. It also minimizes the effect of inter state power transactions, which are dynamic and vary widely.

Step 2: ***Choose whether to include off-grid power plants in the project electricity system (optional)***
Project participants may choose between the following two options to calculate the operating margin and build margin emission factor:
Option I: Only grid power plants are included in the calculation.
Option II: Both grid power plants and off-grid power plants are included in the calculation.

Only Grid power plants are included in the Combined Margin calculation as published by Central Electricity Authority in "The Central Electricity Authority (CEA): CO2 baseline database version 5 dated November 2009", hence the Option I has been considered for the project activity.

Step 3. Select an operating margin (OM) method

The calculation of the operating margin emission factor ($EF_{grid,OM,y}$) is based on one of the following methods: (a) Simple OM, (b), Simple adjusted OM, (c) Dispatch Data Analysis, or (d) Average OM.
The two variants "Simple adjusted operating margin" and "Dispatch data analysis operating margin" cannot currently be applied in India due to lack of necessary data.

In India, hydro and nuclear stations qualify as low-cost / must-run sources and are excluded. The operating margin, therefore, can be calculated by dividing the region's total CO_2 emissions by the net generation of all thermal stations. Thus, Simple OM has been chosen.

The Central Electricity Authority (CEA): CO2 baseline database version 5 dated November 2009 data have been publicised and the simple OM has been referred for the OM calculation.

The ex-ante option has been selected for the Project.

Step 4. Calculate the operating margin emission factor according to the selected method (OM)
The Operating Margin is calculated considering of the generation based average of Operating Margin date for the Southern Grid as published by CEA during the years 2006-2007, 2007-2008and 2008-2009. The average value for the Southern Grid is 0.98743 tCO2/MWh. (Source: Central Electricity Authority (CEA) CO2 database version 5 dated November 2009. (www.cea.nic.in))

The option B as mentioned in "Tool to calculate the emission factor for an electricity system" Version 01.1 which is "Based on data on net electricity generation, the average efficiency of each power unit and the fuel type(s) used in each power unit" is considered by Central Electricity Authority in the calculation of the Operating Margin as published in the Central Electricity Authority (CEA) CO2 database version 5 dated November 2009.

The same option has been revised to Option A in the "Tool to calculate the emission factor for an electricity system" Version 02.1. Hence the calculation of the operating margin will remain the same for the "Tool to calculate the emission factor for an electricity system" Version 01.1 and Version 02.1

Step 5. Identify the cohort of power units to be included in the build margin (BM)

The build margin is calculated as the generation-weighted average emission factor of a sample of power plants. As per the Tool, the sample group to calculate BM consists of either:

(a) The set of five power units that have been built most recently, or
(b) The set of power capacity additions in the electricity system that comprise 20% of the system generation (in MWh) and that have been built most recently.

The option (b) has been chosen for the BM calculation. As per the annex 12, EB 35 **"Tool to calculate the emission factor for an electricity system"**
In terms of vintage of data, project participants can choose between one of the following two options:
Option 1. For the first crediting period, calculate the build margin emission factor ex-ante based on the most recent information available on units already built for sample group m at the time of CDM-PDD submission to the DOE for validation. For the second crediting period, the build margin emission factor should be updated based on the most recent information available on units already built at the time of submission of the request for renewal of the crediting period to the DOE. For the third crediting period, the build margin emission factor calculated for the second crediting period should be used. This option does not require monitoring the emission factor during the crediting period.

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

The option (1) ex-ante calculation option has been chosen. This has been established by CEA.

Step 6. Calculate the build margin emission factor

The build margin considered is for the year 2008-2009 for the Southern grid and the value is 0.81792 tCO2/MWh. The data for the build margin is calculated by Central Electricity Authority using the formula 12 as mentioned in the "Tool to calculate the emission factor for an electricity system" Version 01.1, which is same as the formula 13 as mentioned in "Tool to calculate the emission factor for an electricity system" Version 02.1, and the same is published in the Central Electricity Authority CO2 Baseline Data base version 5 dated November 2009. The same is considered for project activity and is fixed ex-ante for the entire crediting period.

Step 7. Calculate the combined margin emission factor

The combined margin emission factor is calculated as follows:

Input values and data sources for the calculation of EF_{CO2} ($EF_{grid,CM,y}$)

Parameter	Description	Unit	Source
$EF_{grid,CM,y} = EF_{grid,OM,y} \times w_{OM} + EF_{grid,BM,y} \times w_{BM}$			"Tool to calculate the emission factor for an electricity system" version 02.1, equation

			14
$EF_{grid,CM,y}$ = $EF_{CO2,grid,y}$	Combined margin CO2 emission factor in year y. This equals to EF_{CO2}	tCO_2/MWh	Calculated
$EF_{grid,OM,y}$	Simple operating margin CO_2 emission factor in year y.	tCO_2/MWh	Calculated
$EF_{grid,BM,y}$	Build margin CO_2 emission factor in year y	tCO_2/MWh	Calculated
w_{OM}	Weighting of operating margin emission factor	0.75	"Tool to calculate the emission factor for an electricity system" version 02.1
w_{BM}	Weighting of build margin emission factor	0.25	"Tool to calculate the emission factor for an electricity system" version 02.1

Baseline Emission Factor: $EF_{CO2,grid,y}$ = Weighted Average OM & BM = 0.94505 tCO2e/MWh.

Emissions Reductions = Baseline Emissions ($BE_{y,}$) – Project Emissions (PE_y) – Leakage (L_y)

Leakage
In accordance with methodology AMS I.D, Version 16, EB 54 leakage is to be considered only if the energy generating equipment is transferred from another activity.
This is not applicable here so $L_y = 0$

Project Emissions
$PE_y = 0$

Hence,
$ER_y = BE_y$

B.6.2. Data and parameters that are available at validation:

(Copy this table for each data and parameter)

Data / Parameter:	$EF_{grid,OM\ ,\ y}$
Data unit:	tCO_{2e}/MWh
Description:	The Operating Margin emission factor of Southern Grid
Source of data used:	Central Electricity Authority (CEA) CO2 database version 5 dated November 2009. (www.cea.nic.in)
Value applied:	0.98743
Justification of the choice of data or description of measurement methods and procedures	The value used is calculated ex-ante as average of the last three years of the Operating margin provided by Central Electricity Authority (CEA) in the CO2 database version 5 dated November 2009. (www.cea.nic.in).

actually applied :	
Any comment:	

Data / Parameter:	$EF_{grid,BM,y}$
Data unit:	tCO_{2e}/MWh
Description:	The Build Margin emission factor of Southern grid
Source of data used:	Central Electricity Authority (CEA) CO2 database version 5 dated November 2009. (www.cea.nic.in)
Value applied:	0.81792
Justification of the choice of data or description of measurement methods and procedures actually applied :	The value used is calculated ex-ante as recent most Build margin provided by Central Electricity Authority (CEA) in the CO2 database version 5 dated November 2009. (www.cea.nic.in).
Any comment:	

Data / Parameter:	$EF_{grid,CM,y}$
Data unit:	tCO2e/MWh
Description:	The grid CO2 emission factor in year y
Source of data used:	Calculated
Value applied:	0.94505
Justification of the choice of data or description of measurement methods and procedures actually applied :	The value has been calculated as $0.75* EF_{grid,OM,y} + 0.25* EF_{grid,BM,y}$
Any comment:	Used for emission reduction calculation. The same is fixed ex-ante for the entire crediting period

Data / Parameter:	$\mathbf{EF_{CO2,grid,y}}$
Data unit:	tCO_2e/kWh
Description:	The grid CO_2 emission factor in year *y*
Source of data used:	Calculated
Value applied:	0.94505
Justification of the choice of data or description of measurement methods and procedures actually applied :	The value has been calculated as $EF_{CO2,grid,y} = EF_{grid,CM,y}$
Any comment:	Used for emission reduction calculation. The same is fixed ex-ante for the entire crediting period.

B.6.3 Ex-ante calculation of emission reductions:

>>

As per AMS I.D, version 16, EB 54 paragraph 11:
The baseline emissions are the product of electrical energy baseline $EG_{BL,\ y}$ expressed in MWh of electricity produced by the renewable generating unit multiplied by the grid emission factor.

Parameter	Description	Value	Source
$BE_y = EG_{BL,y} * EF_{CO_2,grid,y}$			
BE_y	Baseline Emissions in year y; t CO_2		Calculated
$EG_{BL,y}$	Quantity of net electricity supplied to the grid as a result of the implementation of the CDM project activity in year y (MWh)	10829	Electricity Invoices
$EF_{CO2,grid,y}$ = $EF_{grid,CM,y}$	CO2 emission factor of the grid in year y (t CO2/MWh)	0.94505	Calculated

BE_y = 10829 (MWh) * 0.94505 (tCO2/MWh) = 10234 tCO2e

Emissions Reductions = Baseline Emissions (BE_y) – Project Emissions (PE_y) – Leakage (L_y)

In accordance with methodology AMS I.D, Version 16, EB 54 leakage is to be considered only if the energy generating equipment is transferred from another activity.
This is not applicable here so $L_y = 0$
Project Emissions $PE_y = 0$
Hence,

$ER_y = BE_y$
ER_y = 10234 tCO_2 e

B.6.4 Summary of the ex-ante estimation of emission reductions:

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Year	**Estimation of project activity emissions (tCO_2 e)**	**Estimation of baseline emissions (tCO_2 e)**	**Estimation of Leakage (tCO_2e)**	**Estimation of Overall Emission Reduction (tonnes of CO_2 e)**
2012-2013	0	10234	0	10234
2013-2014	0	10234	0	10234
2014-2015	0	10234	0	10234
2015-2016	0	10234	0	10234
2016-2017	0	10234	0	10234
2017-2018	0	10234	0	10234
2018-2019	0	10234	0	10234
2019-2020	0	10234	0	10234

2020-2021	0	10234	0	10234
2021-2022	0	10234	0	10234
Total (tonnes of CO2e)	0	102340	0	102340

B.7 Application of a monitoring methodology and description of the monitoring plan:

B.7.1 Data and parameters monitored:

Data / Parameter:	**$EG_{export,y}$**
Data unit:	kWh
Description:	Electricity export to the grid during the year y
Source of data to be used:	Monthly billing records which is given by Tamil Nadu Electricity Board (TNEB). (TNEB statement showing the Energy Generated through the wind mill)
Value of data	10829000
Description of measurement methods and procedures to be applied:	Electricity exported will be measured at the grid interconnection point using energy meters. The meter readings are taken every month by TNEB officials in the presence of company representatives and the readings are jointly certified. These readings are mentioned in the monthly statement issued by TNEB in the statement showing the Energy Generated through the wind mill. The export readings as mentioned in the monthly statement by TNEB will be considered for calculating the annual electricity exported to the grid by the project activity during the year y. Accepted industry standard : National standard as described in the Power Purchase Agreement. Measurement equipment : Energy meters Calibration frequency : Once in a Year for Energy meters Accuracy of the meters : 0.5s Measurement interval : Continuous measurement, monthly recording
QA/QC procedures to be applied:	The energy meter installed is electronic trivector energy meter of 0.5s class accuracy. The meter will be tested for accuracy and calibrated once every year.
Any comment:	

Data / Parameter:	**$EG_{import,y}$**
Data unit:	kWh
Description:	The electricity imported from the grid during the year y
Source of data to be used:	Monthly billing records of the Tamil Nadu Electricity Board (TNEB) for the electricity import from the grid (TNEB statement showing the Energy Generated through the wind mill)

Value of data	0
Description of measurement methods and procedures to be applied:	The electricity imported from the grid will be measured using energy meter at grid interconnection point which is under the control of TNEB. The readings are taken every month by TNEB officials in the presence of company representatives. These readings are mentioned in the monthly statement issued by TNEB in the statement showing the Energy Generated through the wind mill. The import readings as mentioned in the monthly statement generated by TNEB will be considered for calculating the annual electricity imported from the grid by the project activity during the year y. Accepted industry standard : National standard as described in the Power Purchase Agreement. Measurement equipment : Energy meters Calibration frequency : Once in a Year for Energy meters Accuracy of the meters : 0.5s Measurement interval : Continuous measurement, monthly recording
QA/QC procedures to be applied:	The energy meter installed is electronic trivector energy meter of 0.5s class accuracy. The meter will be tested for accuracy and calibrated once every year.
Any comment:	

Data / Parameter:	**$EG_{BL,y}$**
Data unit:	MWh
Description:	Quantity of net electricity supplied to the grid as a result of the implementation of the CDM project activity in year y
Source of data to be used:	Calculated
Value of data	10829
Description of measurement methods and procedures to be applied:	The net electricity supplied to the grid as a result of the implementation of the CDM project activity is calculated $EG_{export,y} - EG_{import,y}$. The same is then converted from kWh to MWh. The electricity exported and electricity imported will be continuously monitored and recorded once every month using energy meter at grid interconnection point which is under the control of TNEB. The readings are taken every month by TNEB officials in the presence of company representatives. These readings are mentioned in the monthly statement issued by TNEB in the statement showing the Energy Generated through the wind mill. The electricity export and electricity import as mentioned in the monthly statement generated by TNEB will be considered for calculating the annual net electricity supplied to the grid by the project activity during the year y.The same electricity is considered for emission reduction calculations.
QA/QC procedures to be applied:	The data is used directly to calculate the emission reductions, hence the data is checked for accuracy with the statement showing the Energy Generated through the wind mill issued by TNEB to decrease the uncertainty. The data on net electricity exported to the grid can be cross-checked with the invoices raised by the PP to TNEB.
Any comment:	

B.7.2 Description of the monitoring plan:

>>

The project activity is operated and managed by the project proponent with the help of site incharge (personnel from the Wind Turbine Manufacturer (Suzlon Energy Limited)) and site O & M contractor (personnel from the wind turbine manufacturer). For the accurate execution of the Project activity a project team has been constructed. The wind power project abides and will abide by all regulatory and statutory requirements as prescribed under the state and central laws and regulations. The project team is delegated with the responsibility of monitor and document the electricity generated and also safe keeping of the recorded data. Based on the data for electricity generation the project team in consultation with associated consultants will calculate the emission reductions.

Metering: The Delivered Energy is metered by the Tamil Nadu Electricity Board (TNEB) and PP at the high voltage side of the step up transformer installed at the Project Site.

Metering Equipment: Metering equipment is bi-directional electronic trivector meter of accuracy class **0.5s** required for the Project activity capable of measuring both the import readings and export readings.

Meter Readings: The monthly meter reading which includes the readings of the electricity exported to the grid and the readings of electricity imported from the grid is taken jointly by the Tamil Nadu Electricity Board and representative of PP. At the conclusion of each meter reading an appointed representative of the Tamil Nadu Electricity Board (TNEB) and the representative PP sign a document indicating the number of Kilowatt-hours exported and imported indicated by the meter.

Inspection of Energy Meters: The main meters (export and import) and all associated instruments (CTPT) installed at the Project shall be of **0.5s** accuracy class. Each meter is jointly inspected and sealed on behalf of the Tamil Nadu Electricity Board (TNEB) and representative of PP and is not interfered with by either Party except in the presence of the other Party or its accredited representatives.

Meter Test Checking: The electronic trivector energy meter is tested for accuracy once every year with reference to a portable standard meter. The portable standard meter is owned by the TNEB at its own cost and tested and certified from an accepted laboratory standard meter. The meters are deemed to be working satisfactorily if the errors are within specifications. The responsibility of meter checking is with Tamil Nadu State Electricity Board.

If during the tests, the meter is found to be beyond the permissible limits of error, the meter shall be immediately calibrated and the correction applied to the reading registered by the meter to arrive the correct reading of energy supplied for billing purposes for the period from the last month's meter reading up to the current test. Billing for the period thereafter till the next monthly reading shall be as per the calibrated meter.
In case of failure of meter, the meter will be replaced by TNEB officials and the electricity generation during the replacement period will not be used for calculation of the emission reductions from the project activity.

The registration date is the starting date of the crediting period. There will be a timeline on the date on which the project activity will be registered and the date on which the joint meter reading (JMR) will be

conducted. To avoid confusion for metering of electricity for this initial period (date of registration to date of joint meter reading), the project proponent proposes to calculate the initial period generation from lowest of the following two:

1. prorated based on the average generation rate of the following month as per the JMR reading

2. as per the generation reading at the controller of the individual turbines for this period

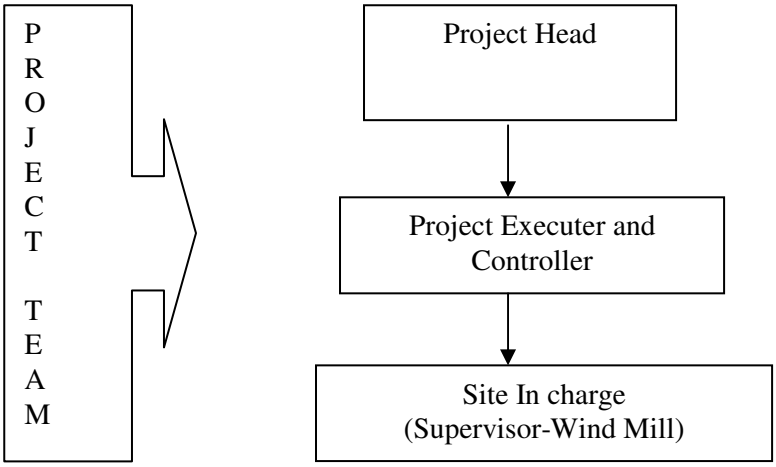
Verification periods would be taken upto a JMR date to avoid confusion.
For the last verification period, the remaining days between the JMR reading date and the end of verification period would be estimated based on the lowest of the following two:

1. estimated based on the average daily generation of the previous month as per the JMR reading.

2. as per the generation reading at the controller of the individual turbines for this period.

All the monitoring data is stored /will be recorded and kept under safe custody of the project head for a period of crediting period (10 years fixed crediting period) + 2 years.

Designation	Responsibilities
Project Head	Internal Audits and Performance reviews
Project Executor and Controller	• Verification • Storage of Data
Site In charge (personnel from Suzlon Energy Limited)	• Operation, Monitoring and Verification of Data • Data Recording • Storage of data
Operation and Maintenance Contractor (personnel from Suzlon Energy Limited)	• Operation and Maintenance • Storage of data • Data Recording



B.8 Date of completion of the application of the baseline and monitoring methodology and the name of the responsible person(s)/entity(ies)

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Date of completing the final draft of this baseline section *(DD/MM/YYYY)*: 18/12/2009

Name of the responsible entity:

Core CarbonX Solutions Pvt Ltd.
6-3-903/A/4/1,Vani Nilayam
Suryanagar Colony
Somajiguda, Rajbhavan Road,
Hyderabad –500482, Andhra Pradesh, India,
Landline: 040-23410367,+91-9908387772,+91-9963047666
Email:info@corecarbonx.com
Core CarbonX Solutions Private Limited is not a project participant.

SECTION C. Duration of the project activity / crediting period

C.1 Duration of the project activity:

C.1.1. Starting date of the project activity:

>>

05/05/2009 (Date of P.O. for the 1st WTG)

C.1.2. Expected operational lifetime of the project activity:

>>

20 years 0 months

C.2 Choice of the crediting period and related information:

C.2.1. Renewable crediting period

C.2.1.1. Starting date of the first crediting period:

>>Not Applicable

C.2.1.2. Length of the first crediting period:

>>Not Applicable

C.2.2. Fixed crediting period:

C.2.2.1. Starting date:

>>

01/06/2012 or a date not earlier than the date of registration

C.2.2.2. Length:

>>

10 years 0 months

SECTION D. Environmental impacts

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D.1. If required by the host Party, documentation on the analysis of the environmental impacts of the project activity:

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As per the Ministry of Environment and Forests (Government of India) notification the project activity does not fall under the purview of the Environmental impact Assessment thus the project activity is exempted from the environmental clearances.[27]

It should be noted here that though EIA is not a regulatory requirement in India for wind energy projects.

Some of the significant impacts taken into consideration during the construction and operation of the wind farm are as follows:

1. Land Use: The land for the proposed project activity is a barren land and could not be used for any agricultural activity. Appropriate measures were adopted in order to prevent any soil erosion during the construction phase.
2. Noise Pollution: The operation of WTG doesn't produce any major sound effect other than the sound made by cutting the wind by blades which is negligible. The noise levels are extremely low and conform to international standards and don't have any side effects. Also during the construction phase, suitable noise prevention and reduction measures were employed in order to reduce the ill-effects of noise pollution on the construction labourers.

[27] http://envfor.nic.in/divisions/iass/notif/eia.htm

3. Water Pollution: No water bodies exist in the area of the project activity. Suitable measures were adopted in order to prevent the contamination of water bodies during the construction phase. E.g. soak pits were provided for the colony of construction workers.
4. Air Pollution: The implementation of the project activity will reduce the dependence on fossil fuel generated power and thereby lead to the improvement in air quality during the operational phase. During the construction phase, the roads were rewetted with water regularly to reduce the suspension of dust from vehicular movement.
5. Local Flora and Fauna: As the land used for the WTG is a barren land, there was no destruction of local flora due to the project activity. The operation of the WTG doesn't involve any disruption to the local fauna.

D.2. If environmental impacts are considered significant by the project participants or the host Party, please provide conclusions and all references to support documentation of an environmental impact assessment undertaken in accordance with the procedures as required by the host Party:

>>
The Environmental Impacts are not considered significant both by the project participants and also the host party

SECTION E. Stakeholders' comments

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E.1. Brief description how comments by local stakeholders have been invited and compiled:

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The local stakeholder consultation meeting for the wind mill installations by KPR at location TP51 and SVPL at location TP50 was arranged for the local villagers, shareholders, employees of KPR & SVPL, representatives from Suzlon to discuss on the CDM initiatives taken up by KPR and SVPL on 22nd December 2009 at Conference Hall, CDM Building, Suzlon Office, Radharpuram Taluk, Tamil Nadu.

Accordingly the stakeholders were duly informed on 02.12.2009 by means of Public notice and on 15.12.2009 by means of newspaper advertisement. In addition public notices were also displayed and distributed at key public places for the local stakeholder consultation meeting.

Comments of stakeholders were recorded during the stakeholder meeting.

The stake holder meeting process is followed in the following sequence

- Welcome address
- Presentation of the CDM-Kyoto Protocol and role of local stake holder
- Presentation on the Project activity.
- Discussion and Articulation of concerns
- Vote of Thanks

Mr. R.K.S Pillai (representative from Suzlon) started with a brief introduction and welcomed all the stakeholders. He explained that the meeting has been convened for discussing opinions, concerns and benefits from Wind Power Project.

Mr. Pillai then explained about the Kyoto Protocol, Clean Development Mechanism and the importance of the Local Stakeholders Consultation Meeting.
In his speech he explained how carbon levels in the atmosphere are increasing and reduce the green house gas emission various Non-Polluting initiatives are to be initiated. He also briefed on the working of the Windmill and its positive impacts on the environment. The benefits of the erecting and operation of the wind mill to the local villagers was also discussed.

After the presentation was completed, the session was opened for stakeholders to express their queries, comments and suggestions.

The participants sought clarifications on Kyoto Protocol and Clean Development Mechanisms process.

Finally, Mr. RKS Pillai proposed the vote of thanks.

The local stakeholder consultation meeting for the wind mill installations by SVPL at location TDA 79 was arranged for the local villagers, shareholders, employees of SVPL, representatives from Suzlon to discuss on the CDM initiatives taken up by SVPL on 21st December 2009, CMS Building, Thattaparai, Alangulam Taluk, Tamil Nadu.

Accordingly the stakeholders were duly informed on 02.12.2009 by means of Public notice and on 15.12.2009 by means of newspaper advertisement. In addition public notices were also displayed and distributed at key public places for the local stakeholder consultation meeting.

Comments of stakeholders were recorded during the stakeholder meeting.

The stake holder meeting process is followed in the following sequence

- Welcome Speech by the organizers.
- Introduction to 'Clean Development Mechanism and the VCS 2007' by Suzlon.
- Speech by representative of all Participants.
- Discussion and Articulation of concerns with the stake holders.
- Vote of Thanks

Mr. Subramanian (representative from Suzlon) started with brief introduction and welcomed all the stakeholders. He explained that the meeting has been convened for discussing opinions, concerns and benefits from Wind Power Project established in this region for the aforementioned corporates by the Suzlon Group.

Mr. Subramanian then explained about the Kyoto Protocol, Clean Development Mechanism and the importance of the Local Stakeholders Consultation Meeting.
In his speech he explained how carbon levels in the atmosphere are increasing and reduce the green house gas emission various Non-Polluting initiatives are to be initiated. He also briefed on the working of the Windmill and its positive impacts on the environment. The benefits of the erecting and operation of the wind mill to the local villagers was also discussed.

After the presentation was completed, the session was opened for stakeholders to express their queries, comments and suggestions.

The participants sought clarifications on Kyoto Protocol and Clean Development Mechanisms process.

Finally, Mr. Subramanian proposed the vote of thanks.

E.2. Summary of the comments received:

>>

A detailed list of points/concerns raised by the stakeholders during the stakeholder meeting for the Wind Mills installations their respective replies have been provided below:

1. Question: Will the project help in improving the electricity supply to the villagers?
   Answer: It is expected as power generated from wind is fed to state electricity grid, but the same cannot be promised since once the electricity is supplied to the grid then it comes under the purview of the State. The state then has to decide according to the amount of power at its disposal and the amount of power required.

2. Question: In the speech it is mentioned that Chennai and coastal areas of Tamil Nadu are at risk. Do you perceive another Tsunami like threat from the sea waves?
   Answer: No, there is no immediate threat like Tsunami. But if we do not take proper steps even after the Tsunami to ensure that the emissions are kept under control, then such situations will keep recurring again and again. Although the Tsunami comes without any sufficient prior warning, but even then if we do not learn our lessons from the previous occurrence in 2004, then the whiplash of nature will be even more severe the next time and the next after that.

E.3. Report on how due account was taken of any comments received:

>>

The stakeholders were provided clarifications on the issues raised as above to their satisfaction. None of the concerns expressed by the stakeholders required an action to be taken by the SVPL and KPR during the project operation and at any other stage.

Annex 1

CONTACT INFORMATION ON PARTICIPANTS IN THE PROJECT ACTIVITY

Organization:	Sri Venkateswara Pipes Limited
Street/P.O.Box:	5th Floor, Near Anand Theatre, Sardar Patel Road
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State/Region:	Andhra Pradesh
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URL:	
Represented by:	
Title:	Chairman
Salutation:	Mr
Last Name:	N
Middle Name:	Reddy
First Name:	Kishan
Department:	
Mobile:	
Direct FAX:	
Direct tel:	
Personal E-Mail:	

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State/Region:	Andhra Pradesh
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URL:	
Represented by:	
Title:	Chairman
Salutation:	Mr
Last Name:	N
Middle Name:	Reddy
First Name:	Kishan

Department:	
Mobile:	
Direct FAX:	
Direct tel:	
Personal E-Mail:	

Annex 2

INFORMATION REGARDING PUBLIC FUNDING

No Public Funding is involved in the Project Activity.

Annex 3

BASELINE INFORMATION

Variable	Data Source
$EG_{BL,y}$ – Quantity of net electricity supplied to the grid as a result of the implementation of the CDM project activity in year y	Records maintained by project proponent
Parameter	**Data Source**
$EF_{grid,OM,\ y}$ - Operating Margin Emission Factor (tCO2 /MWh)	Central Electricity Authority (CEA) CO2 database version 5 dated November 2009. (www.cea.nic.in)
$EF_{grid,BM,\ y}$ - Build Margin Emission Factor (tCO2 /MWh)	Central Electricity Authority (CEA) CO2 database version 5 dated November 2009. (www.cea.nic.in)
$EF_{CO2,grid,y}$ – CO2 emission factor of the grid in year y (t CO2/MWh)	Calculated as the weighted average of the operating margin and build margin

Annex 4

MONITORING INFORMATION

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