CDM – Executive Board

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

CONTENTS

Annexes

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:

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Title : 1.5 MW Grid connected Wind Electricity Generation at Tirunelveli District, Tamilnadu, India by Kallam Agro Products and Oils Private Limited

Version: 04

Date : 15/01/2013

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

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The project activity is to establish a 1.5 MW Wind Electric Generator (WEG) in Tirunelveli District, Tamilnadu and export the electricity generated to the State grid the Tamil Nadu Electricity Board[1]. The substation is located at Udayathoor village which is at a distance of 10 KM's from project site. The electricity is being generated from wind power thereby displacing the electricity from the grid that is dominated by carbon intensive fossil fuels.

The expected net electricity export to the grid by the project activity is 4086 MWh annually. The generation from the project activity is exported to the grid for sale and there is no wheeling or adjustment involved. Electricity generated from Wind is a renewable source of energy and supports in reducing green house gases emissions. The project activity is commissioned during March, 2008.

The project proponent has not implemented any other renewable energy project other than the proposed project activity.

Prior to the implementation of the project activity, the same amount of electricity generated by the wind project could have been generated at the grid system by carbon intensive thermal power plants.

The Project activity utilises the velocity of the wind in the atmosphere for power generation by installation of Wind Electric Generators. In wind power generation, kinetic energy of wind is converted into mechanical energy and subsequently into electrical energy.

View of project participant about the project activity's contribution to Sustainable Development

Ministry of Environment and Forests (MoEF), Government of India, has stipulated the following indicators for sustainable development in the interim approval guidelines for CDM projects.

[1] *The project activity sells electricity to Tamil Nadu Electricity Board (TNEB). TNEB was restructured by establishing a holding company with the name "TNEB Ltd" and two subsidiary companies namely "Tamil Nadu Transmission Corporation Ltd.,"(TANTRANSCO) and "Tamil Nadu Generation and Distribution Corporation Ltd.," (TANGEDCO) as per the mandatory requirements of the Electricity Act 2003, which came in to effective from 01 Nov 2010 fully.*

http://www.tangedco.gov.in/template1.php?tempno=&cid=0&subcid=182
If any changes to the agency in future , the same will be acting on behalf of them .

1. Social well-being
2. Economic-well being
3. Environmental - well being and
4. Technological-well being

The project activity contributes to the above indicators in the following manner.

Social well being

- The project activity would provide employment to the local populace during erection and operation of the Wind Electric Generators (WEGs).

Economic well being

- The project would bring an additional investment to the tune of Rs.97.35 millions, which is a significant investment in that area.

- The project would contribute towards meeting power deficit in Tamilnadu. As per the statistics of CEA as on April'08, Tamilnadu has a deficit power of 4.2%
  (source: http://www.cea.nic.in/god/gmd/Monthly_Power_Supply_position/Energy_2008_04.pdf).
  The deficit has increased to 7.8% during December'08.
  (source: http://www.cea.nic.in/god/gmd/Monthly_Power_Supply_position/Energy_2008_12.pdf)

Environmental well being

- The Project activity would utilize wind velocity for generating and supplying power to the grid, which is dominated by power, generated using fossil fuels such as coal, lignite and gas etc. The project will result in reduction of GHG emissions and contributes to preserving and improving the environment.

Technological well being

The project activity has chosen Wind Electric generator Model S82-1.5MW-50Hz- Horizontal axis wind with flexible slip control and this type of design is established and similar machines are installed in the region by other project developers.

The contribution made by the project activity to sustainable development is evident from the foregoing.

Thus, the project activity meets the approved guidelines for CDM projects stipulated by the Government of India.

A.3. Project participants:

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Name of the party involved ((host) indicates a host party)s	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)	**Private Entity** Kallam Agro Products & Oils (P)Ltd	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):

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India

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

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State: Tamil Nadu

A.4.1.3. City/Town/Community etc:

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District: Tirunelveli
Taluk: Radhapuram
Village: Thiruvambalapuram

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

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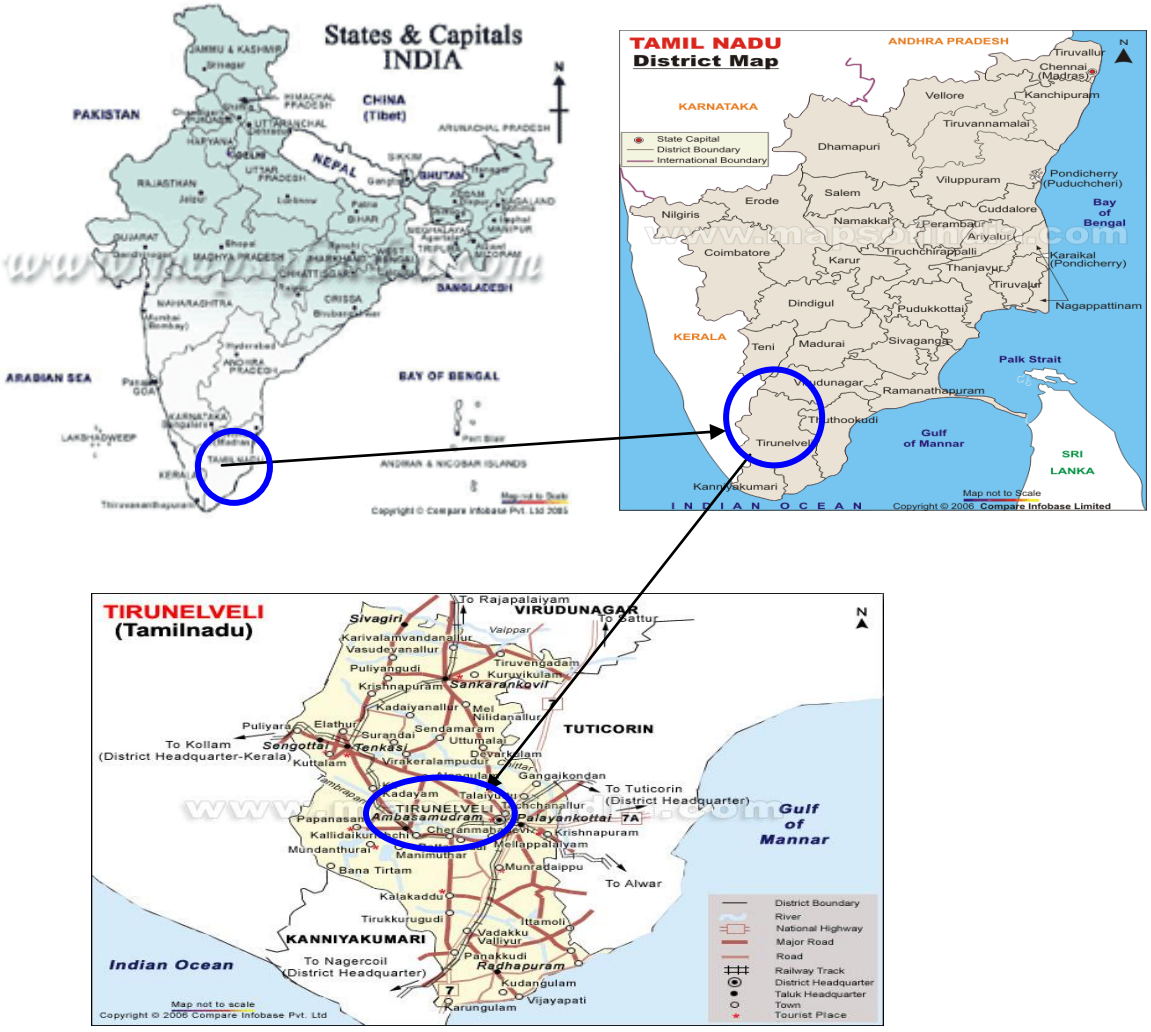
The project activity is located at S.F.No.266/1A2A/P, Thiruvambalapuram Village, Radhapuram Taluka, Tirunelveli District, Tamilnadu, India. The nearest railway station is Valliyoor located at a distance of 35Km from plant site and the nearest airport is Trivandrum located at a distance of 145 Km from plant site. The geographical co-ordinates of the project location is 77°48'03.3"E (longitude) and 8°15'11.4"N (latitude).



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

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The project is a small scale CDM project activity. According to the Appendix B[2] of the simplified modalities and procedures (M & P) for small-scale CDM project activities, the proposed project activity falls under the following type and category.

[2] http://cdm.unfccc.int/methodologies/SSCmethodologies

Project type : Type I – Renewable Energy Projects
Category : I.D – Grid connected renewable electricity generation
Reference[3] : AMS I.D, Version 13, Scope: 01, EB 36

Technical details of the project activity

The Project activity utilises the velocity of the wind in the atmosphere for power generation by using of WEGs. The project activity uses the Horizontal Axis Wind Turbine (HAWT) having three rotor blades. The HAWT consists of a tower and nacelle that is mounted on the tower. The turbine blades are mounted on the hub of the nacelle and are kept upwind into the direction flow of wind by a yaw system. The rotor is rotated by the wind velocity. The kinetic energy of wind is converted into mechanical energy and then converted into electrical energy by the electric generators. Power is transmitted to the generator through three-stage gearbox and main shaft. WEGs are monitored and controlled by a microprocessor based control unit.

In this process there would be no greenhouse gas emissions or burning of any fossil fuels. Thus, electricity would be generated through sustainable means without causing any negative impact on the environment. Therefore, the technology is environmentally safe and sound.

The project activity comprises of 1 no WEG of 1500 kW capacity. The electricity is generated at 690 V level and in order to connect to the utility to the grid, the voltage will be stepped upto 33kV. The average annual estimate of power export to the grid system would be around 4086 MWh.

The WTG supplied by Suzlon Energy is having following unique features:

- Unique Micro Pitch System
- State-of-the-art Manufacturing Technology
- Advanced Control System
- High quality power generation
- Well Balanced Design

The benefits that are achievable with the above features are higher efficiency / performance, reduced stress and loads, better power quality, increased safety, prolonged life / durability, higher reliability, lower operative cost.

The project activity is deployed taking into consideration all aspects of environmentally safe and sound technology. The WTGs confirms to the relevant code of safety and standards mandatory for setting up wind projects. The standard includes Wind Turbine Safety and Design, Noise level and Mechanical Load. Therefore the technology implemented can be depicted as environmentally safe and sound one. Moreover there has been no technology transfer involved in the project activity.

The technical specifications of the WTG are as given below:

[3] http://cdm.unfccc.int/UserManagement/FileStorage/CDMWF_AM_PHPV5WESACMBTJ2YY54GAJYSIEI3HD

S.No	Specification	Suzlon
1.	Wind turbine Make / Model / type	S82-1.5MW-50Hz- Horizontal axis wind with flexible slip control
2.	Wind turbine capacity	1500 kW
3.	No. of wind turbines	1
4.	Power Regulation Method	Pitch system and flexi slip system
5.	Number of Blades	Three
6.	Blade Material	Fibre glass / epoxy
7.	Blade Length	40 mts
8.	Rotor Diameter	82 meter
9.	Rated Wind Speed	16.30 m/s
10.	Generator type	Single speed induction generator with slip rings,
11.	Voltage	690 V
12.	Frequency	50 Hz
13.	RPM	1545
14.	Hub Height	78.5 meters
15.	Air Density	1.160 kg/m^3

The lifetime of the equipment is considered as 20 years as considered by Tamil Nadu Electricity Regulatory Commission, Chennai in its Order No.3 dt.15.05.2006.

No technology transfer is envisaged for the CDM project activity.

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

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The chosen crediting period for the project activity is 10 years. It is estimated that the project activity would generate 37960 CERs during the crediting period. Annual estimates of emission reductions by the project activity during the above crediting period are furnished below.

Years	Estimation of annual emission reductions in tonnes of CO_2 e
2009-10	3796
2010-11	3796
2011-12	3796
2012-13	3796
2013-14	3796
2014-15	3796
2015-16	3796
2016-17	3796
2017-18	3796
2018-19	3796
Total estimated reductions (tonne of CO_2 e.)	37960

Total number of crediting years	**10**
Annual average of the estimated reductions over the crediting period (tCO_2e)	**3796**

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

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No public funding from Annex I Party is involved in this project activity.

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

The project proponents hereby confirm that the project activity is not a debundled component of another larger project activity.

The project proponent further 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 the previous 2 years.

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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Title : Type - I: Renewable Energy Project.
Reference[4] : I.D. - Grid connected renewable electricity generation
Version : 13, EB 36
Tool used : Tool to calculate the emission factor for an electricity system, Version 1.1
Tool for the demonstration and assessment of Additionality, Version 05.2

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

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The Project activity is a 1.5 MW, wind power project. The project activity generates electricity from renewable sources and exports to a grid system, the capacity of the project activity is well below the qualifying limit of project activities under the small scale methodology AMS.I.D i.e. 15MW. Hence, AMS.I.D 'Grid connected renewable electricity generation' is applied to the project activity.

Since, the maximum electricity generating capacity is limited by the design of the WEG and by the license issued by the state authorities, there is no possibility of exceeding the limits of small-scale CDM project activities during the entire crediting period and would remain as small scale project activity.

[4] http://cdm.unfccc.int/UserManagement/FileStorage/CDMWF_AM_PHPV5WESACMBTJ2YY54GAJYSIEI3HD

B.3. Description of the project boundary:

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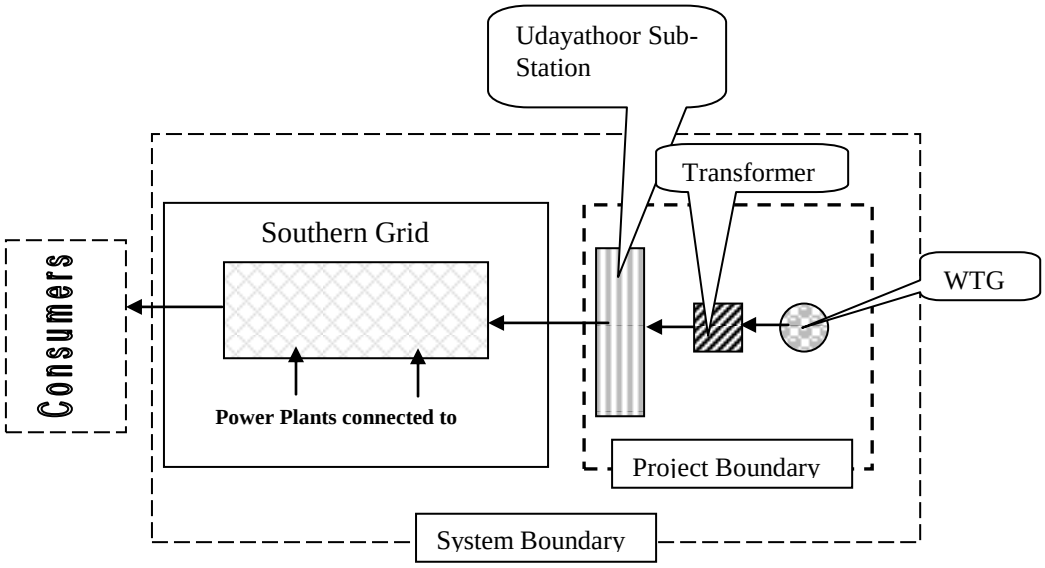
As per Para 6 of Indicative simplified baseline and monitoring methodologies for selected small scale CDM project activity categories, AMS I.D., Version 13, Scope 01, EB 36, the project boundary encompasses the physical, geographical site of the renewable generation source.

The project boundary includes the electricity generation from 1.5MW Wind Turbine Generator implemented by the project activity at Thiruvambalapuram Village, Radhapuram Taluka, Tirunelveli District, Tamilnadu State and the transmission system till the evacuation point at the Udayathoor substation. The project activity falls under Southern Regional Electricity Grid.

The spatial extent of the project boundary includes the project site and all power plants connected physically to the electricity system that the project power plant is connected to.

The schematic diagram of project boundary is as under:



B.4. Description of baseline and its development:

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As per Para 9 of methodology AMS I.D. Version 13, EB 36 the baseline emissions are calculated based on the net energy exported to the grid system (in GWh /yr) by renewable generating unit multiplied by an emission factor for the displaced grid electricity (in tCO_{2e} /GWh). The methodology provides following approaches for baseline 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 kg CO_2e/kWh) of the current generation mix.

The project proponent has opted for approach 'a' i.e. combined margin emission factor with ex-ante approach where emission factor is fixed for the whole crediting period. The ex ante approach is considered conservative since the grid system in future is expected to become more carbon intensive as the projects planned to establish in the region is mostly thermal energy based.

The key parameters and data sources are furnished below:

Key Parameter	Value	Data Source	Website
EF	Baseline emission factor for the southern region grid	CEA published baseline emission factor for southern region grid (CM) "**CO_2 Baseline Database**" Version 3.0	www.cea.nic.in
EG_y	Net energy generated and delivered to the grid	From Plant and TNEB Records. Ex-post determination.	------

The baseline emission factor has been calculated based on combined margin approach according to "Tool to Calculate the Emission Factor for an Electricity System, Version 01" considering the data from "**CO_2 Baseline Database**" Version 3.0 published by CEA which is available at the time of preparation and webhosting of the PDD. The emission factor, calculated based on the data published by CEA for the latest year 2006-07, is 0.9291 tCO_2/MWh based on combined margin approach.

Actual emission reductions will be calculated *ex-post* based on the actual monitored data on energy supplied to TNEB during each year of the crediting period and fixed CEA baseline grid emission factor of 0.9291 tCO_2/MWh.

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:

The National Electricity Policy aims at laying guidelines for accelerated development of the power sector, providing supply of electricity to all areas and protecting interests of consumers and other stakeholders keeping in view availability of energy resources, technology available to exploit these resources, economics of generation using different resources, and energy security issues.

The Tamil Nadu Energy Development Agency (TEDA) is a Nodal Agency of the Ministry of New and Renewable Energy (MNRE), Government of India for the promotion of Renewable Energy schemes in the State. TEDA has set the following as its main objectives.

- Identification and potential estimation of renewable energy in the State.
- Create awareness on the potential and prospects for use of renewable energy.
- Enhance renewable energy contribution in the overall energy mix in the State Grid.
- Abatement of Green house gas emissions caused from increasing use of conventional fuels by promoting the use of renewable energy / stand alone systems to combat Global Warming.

- Development and implementation of sustainable energy security policy towards attaining energy independence in small villages.

(http://www.tn.gov.in/policynotes/energy_2.htm)

Incentives / subsidies offered by Ministry of New and Renewable Energy, Government of India for investors in wind energy projects:

i. Accelerated depreciation on wind electric generator is permissible upto 80 % for income tax calculations subject to a minimum utilization for 6 months in the year in which deduction is claimed.

ii. Import of wind electric generator is permitted under Open General License

iii. Customs duty concessions on wind electric generators and certain essential spares

iv. Tax holiday is allowed for 10 years in respect of profits / gains from the private wind electric generators

(http://www.teda.gov.in/page/Wind.htm)

The project proponent has availed the incentive with respect to accelerated depreciation for the wind mill besides tax holiday subject to payment of minimum alternate tax. The project has also not utilized any incentive under Textile Industry under Technology Upgradation Fund (TUF) Scheme.

Power generation in the Southern Region (SR) grid is dominated by fossil fuel based power plants. Coal based power plants contribute ~67% of power generation in Southern Grid, while diesel and gas account for 10.14%. Wind power and other non-conventional energy contribute less than 2.22% of the total annual generation in the SR grid5. The domination of power generation by fossil fuel based power plants signify that in the absence of the proposed project activity, equivalent power would have been generated using fossil fuel and no emission reduction would have taken place. Government of India plans to generate at least 10% of the total power generation through renewable sources of power by 2010.

Under UNFCCC simplified modalities and procedures for small-scale CDM project activities, project activity should seek to establish additionality of the project activity as per attachment A to Appendix B, which lists various barriers, out of which at least one should be identified for the project to be additional. Various barriers listed are:

(i) Investment Barrier
(ii) Technological Barrier
(iii) Barrier due to prevailing practice
(iv) Other Barriers

The PP has chosen investment barrier to demonstrate the additionality of the project activity:

[5] Table 3.4 http://www.cea.nic.in/power_sec_reports/general_review/0405/ch3.pdf

Investment Barrier – Low Return on Investment :

The project faces investment barrier due to low return on investment.

IRR is the most commonly used financial indicator by the bankers and investors alike to asses the intrinsic viability of the project. The project IRR thus computed, has to be compared with a benchmark indicator.

Benchmark Return:

As per the guidance note issued by CDM EB at its 41st meeting (Annex 45, item 11, selection and validation of appropriate benchmarks) "*In cases where benchmark approach is used the applied benchmark shall be appropriate to the type of IRR calculated. Local commercial lending rates or weighted average cost of capital (WACC) are appropriate benchmarks for a project IRR*". Based on this guidance the PP has chosen Prime Lending Rate (PLR) as Benchmark.

At the time of decision making, i.e., 9th January 2008, the PLR was ranging from 12.75% to 13.25% and the average of the PLR, viz 13.00 % was taken as the benchmark for the project activity. The Reserve Bank of India publishes weekly statistical data on the PLR. Analysis of the weekly data, dated 04.01.2008[6], indicating the PLR values up to the week ending 21st December 2007 indicates that the PLR was in the range of 12.75 – 13.25 %. This weekly report was available to the Project Proponent while making the investment decision for the project activity. Hence the benchmark adopted by the PP to establish the investment barrier and consequently the project's additionality, was appropriate.

The Investment analysis has been carried out for 20 years (as required by the Guidance on the Assessment of Investment Analysis) and the results are furnished below:

As per the investment analysis, the project IRR works out to 11.30% in the baseline case and is less than the benchmark of 13.00%. The assumptions considered for working out the investment analysis along with source is furnished below:

Parameter	Value applied	Source
Installed Capacity in MW	1.5	Project Report
Plant Load Factor	31.10%	The project activity falls under Muppandal Pass in Tirunelveli District. As per TNERC Order dt.18.05.2006 (Annex VII-B3) the weighted average CUF for large machines is arrived at 27.87% and for the Muppandal Pass it is 31.10%. Hence the PLF mentioned for Muppandal Pass is considered for financial analysis as conservative.
Net generation available for sale (MWh)	4086	Calculated

[6] http://rbidocs.rbi.org.in/rdocs/Wss/PDFs/82360.pdf

Tariff (Rs.per kWh)	2.90	Project Report
O & M Expenses on project cost	1.10% with 5% escalation every year after five years	TNERC Order dt.18.05.2006
Insurance Charges (Rs.in million)/annum	0.10	Project Report
Administrative and General Overheads (Rs.in million)	0.30 with 5% escalation every year	Project Report
Interest on term loan	11.5%	Project Report
Loan repayment period including moratorium (quarters) period of 2 years	29	Project Report
Income Tax (MAT) FY 2007-08	11.33%	Indian Income Tax Act
Income Tax (Regular) FY 2007-08	33.99%	Indian Income Tax Act
Tax holiday (years) subject to MAT	10	Indian Income Tax Act
Accelerated Depreciation	80%	Indian Income Tax Act
Additional Depreciation	20%	Indian Income Tax Act
Emission Factor tCO2/GWh	929.10	CEA Baseline database Version 3.0
CER price Euro/CER	15	Assumed
Exchange rate Rs./Euro	65	Assumed
Project Cost (Rs.in million) – - Land Cost - Wind Turbine Generator - Tubular Tower - Civil Works - Transformer - Erection, installation and commissioning - Electrical items - Electrical line for power transmission and metering - TNEB Charges - Interest during construction period - Preliminary and Pre-op expenses - Loan processing fee	97.35 1.80 59.99 13.50 5.10 1.35 2.55 2.75 1.94 3.85 2.85 0.93 0.74	Project Report

Means of Finance (Rs.in million) - Share Capital - Term loan	 22.95 74.40	Project Report

The soft copy of the investment analysis is furnished to the DOE for verification.

Justification for PLF considered:

In the webhosted PDD, the PLF is considered at 29.68% (say 30%) based on the estimation provided in project report prepared by the third party consultant. The same is considered initially for the financial analysis.

During validation process in order to make the IRR analysis more conservative, the generation data available for the Muppandal pass as per the TNERC Order dt.18.05.2006 has been considered which has given a PLF of 31.1%. Thus the IRR analysis worked out for the project activity is conservative.

Sensitivity Analysis:

The Guidance on the Assessment of Investment Analysis issued by the EB in its 41st Meeting covers two aspects on sensitivity analysis, viz., subjecting those variables which account for more than 20% of project cost or total project revenue to sensitivity analysis and considering a +/- 10% variations in the selected variables. Accordingly, two sets of scenarios have been identified, viz., variation in project cost and generation, which have been subjected to 10% on either side. Sensitivity analysis for variation in tariff is not considered appropriate as the PP has considered uniform tariff for the entire period of 20 years and it is based on PPA/EPA. Further there will not be any difference in IRR whether generation is varied or tariff is varied. IRR will vary to the same extent in both the cases, as in either case what is subjected to variation is income, which is nothing but a product of generation and tariff.

The robustness of the conclusion has been tested by subjecting sensitive factors to reasonable variation. Three factors have been identified as sensitive, viz., PLF, project cost and O & M Costs. The outcome of the sensitivity analysis is given below:

	Without CDM revenue			**With CDM revenue**		
Details	**-10%**	**Baseline %**	**+10%**	**-10%**	**Baseline %**	**+10%**
Benchmark return (Lending Rate)	13.00%					
Project cost	12.86	11.30	9.93	16.89	15.01	13.39
PLF	9.69	11.30	12.81	13.12	15.01	16.80
O & M Cost	11.47	11.30	11.14	15.16	15.01	14.86

The sensitivity analysis proves that the project is unlikely to be financially viable even under the most optimistic conditions of project cost going down by 10% or PLF going up by 10% or O & M cost going down by 10%. In either case, the project IRR remains at 12.86%, 12.81% and 11.47% respectively in contrast to the benchmark return of 13.00%. This proves that the project activity is not a business-as-usual scenario. It was against this background that the PP, while taking a decision to invest in the project

activity, considered the CDM benefits. With the CDM benefits, the project becomes financially viable. The minutes of the meeting of the Board of Directors (Dated.09.01.2008), where the essentiality of the CDM benefits was discussed, is furnished to the DOE for verification. CDM benefits go to improve the financial viableness of the project activity, as evident from the fact that with CDM benefits, the project IRR in the baseline scenario improves to 15.01% in contrast the benchmark return of 13.00%. Hence, the project requires CDM benefits to make it financially viable.

The Project will become non-additional only if the PLF goes up by 11.25% or the project cost drops down by 10.85%. There is no possibility of PLF reaching 42% (increase in PLF by 11.25% from the considered PLF of 31.10%) as the TNERC itself has arrived a weighted average PLF of 27.46% in its TNERC Order dated: 18.05.2006 Source: http://tnerc.gov.in/orders/NCESamend.pdf) for determining the tariff.

As regards the project cost, there has been only increase in the cost in the last few years and there had never been a decrease so far. Moreover, the subsequent events - order has already been placed and the equipment delivered at the assumed cost – go to prove that the assumption of decrease in project cost even by 5% is unrealistic.

O & M Costs includes salaries and wages, repairs and maintenance and various other expenses required for the operation as well as maintenance of the plant. The PP has executed O & M contract with Suzlon Infrastructure Ltd., for a period of 11 years from the date of commissioning of the project activity and hence there is no possibility of decrease in O & M charges.

It is against the above background that CDM benefits assume importance for making the wind power project financially viable.

Early consideration of CDM

Annex 46 of EB 41 requires project activities for which the start date is prior to the date of publication of the PDD for global stakeholder consultation, to demonstrate that serious consideration of CDM in the decision to implement the project activity. Such demonstration, as per the Annex requires the following elements to be satisfied with documentary evidence, viz.,

a) awareness of the CDM prior to the project activity start date, and that the benefits of the CDM were a decisive factor in the decision to proceed with the project; and
b) that continuing and real actions were taken to secure CDM status for the project in parallel with its implementation.

Before implementation of the wind project activity, the group company of Kallam i.e., M/s. Kallam Spinning Mills Limited have developed a 2.4MW small hydro project under CDM and webhosted for public comments on 9th June, 2006. The link from UNFCCC website is furnished below:

http://cdm.unfccc.int/Projects/Validation/DB/E7H9UZF08J6PLPPC5TLI2L3T0B9OJK/view.html

Thus the project proponent is aware of the benefits from CDM prior to the project activity start date and passed a resolution to develop the wind project activity under Clean Development Mechanism.

The project activity is a small wind project. The project proponent were expecting bundling of similar projects in the region as promised by the wind equipment supplier to reduce transaction cost which are prohibitive for small projects. Inspite of best efforts this could not happen. The project proponents could not find competent consultant who can undertake the project activity at reasonable cost. Only after consistent follow up, a CDM consultant could be identified, PDD prepared and then a DOE was appointed.

The chronology of events of the project activity from the date of investment decision till appointment of validator are furnished below:

Webhosting of a hydro project of the Group company of Kallam evidencing awareness of CDM prior to project activity start date	09.06.2006
Investment decision (board resolution)	09.01.2008
Order for procurement of land	20.01.2008
Order for purchase of Wind Turbine Generator	20.01.2008
Order for Civil works	20.01.2008
Offer from Consultant for CDM services	08.02.2008
Financial closure achieved	25.02.2008
Appointment of Consultant for CDM	29.02.2008
Stakeholder meeting	18.03.2008
Date of Commissioning	28.03.2008
Proposal from Validator	17-06-2008
Request for Host country approval with MoEF	25.06.2008
Appointment of validator	07.07.2008
PDD webhosted for public comments	12.09.2008
Validator's site visit	02.12.2008

It could be observed from the above that the project activity is in line with the requirements of Annex 46 of EB 41.

Appropriateness of the start date of the project activity

In India, while projects of the nature of hydel, biomass or waste water are of extended duration and could take anywhere between 1 to 3 years for their completion, wind power projects are more or less 'ready made'. Almost all WTG manufacturers offer the wind energy projects on turnkey basis right from arranging land to equipment supply including erection and commissioning, obtaining clearance from nodal agencies and grid connection etc. Since the basic project related infrastructure and legal clearances for these wind farms are already developed by the Wind Turbine generator supplier, the only activity which involves time is getting nodal agency permission, transportation and installation. These activities are taken up simultaneously and if the order size is small, it takes a maximum of 30 to 90 days to erect and commission a windmill from the project start date. Confirmation received from Suzlon Energy on this aspect is furnished to the DOE for verification. The present project activity involved installation and commissioning of only one wind turbine generator, with a capacity of only 1.5 MW. The windmill installed is modular in design and also a standard model; it naturally had a faster delivery period.

In the case of the project activity , Suzlon Energy Limited, had supplied the WTG on turnkey basis right from arranging land, laying roads and constructing foundations to equipment supply, erection and commissioning, nodal agency clearance, Grid Connection, HV/ Substation creation and Electrical (Reticulation). Suzlon had already developed the wind farm, obtained all clearances in advance and had WTGs in ready stock. Hence, no sooner was the purchase/work order placed for the Wind Turbine generator by the Project Proponent, it was shifted to the site and erected. The project proponent was therefore able to operationalize the WTG in around 2 months time from the date of the purchase/work order (start date).

The start date of the project activity, viz., 20.01.2008 is the date of purchase/work order placed on Suzlon Energy Limited by the project proponent for supply of 1.5 MW Wind Turbine Generator, which conforms to the definition of 'start date' as indicated in the CDM Glossary of Terms. Further, on the same date, orders for supply of tubular tower, transformer components, electrical items, civil works and erection and commissioning of the Wind Turbine Generator was also placed on Suzlon Infrastructure Services Limited.

Based on the time schedule committed by Suzlon Energy Limited and as per the work order for erection, installation and commissioning, the plant was commissioned on 28.03.2008. The purchase/work order placed on the supplier for erection, installation and commissioning of the wind turbine generator has specifically stipulated the commissioning date as 29.03.2008. Hence we submit that the start date of the project activity considered in the project design document is appropriate and the WTG got commissioned on 28.03.2008. Copies of the Purchase Orders released to Suzlon Energy Ltd. and Suzlon Infrastructure Ltd. have already been furnished to the DOE at the time of validation. Commissioning Certificate issued by the TNEB evidences the actual commissioning date, i.e., 28th March 2008, has also been furnished to the DOE for verification.

B.6. Emission reductions:

B.6.1. Explanation of methodological choices:

>>

Baseline Emissions

The project activity is generation of electricity using renewable energy resources and exporting to the grid system and displaces grid electricity. Hence the applicable baseline is as per Para 9 of the methodology I.D, Version 13, EB 35. The baseline emissions are calculated as the amount of electricity produced with renewable energy technology (MWh) multiplied by the CO_2 emission factor of that grid**.**

As indicated at Section B.4, the project proponent has selected approach 'a' i.e. combined margin emission factor with ex-ante approach to calculate the baseline emissions.

The baseline scenario is net electricity exported to the grid system by the project activity and baseline emissions are calculated as under:

$$BE_y = EG_y * EF_y$$

Where,

BE_y The baseline emissions in the year *y*

EG_y Net electricity exported to the grid by the project activity during the year *y*

EF_y The emission factor of the grid

Emission reductions for the project activity are calculated as the difference between baseline emissions and project emissions and leakage.

The emission factor of the grid for the ex-ante approach is calculated in the following way:

In accordance with the "Tool to calculate the emission factor for an electricity system, Version 01" the grid emission factor is calculated using Combined Margin (CM), comprised of an Operating Margin (OM) emission factor and a Build Margin (BM) emission factor. The following procedure was adopted for estimating the grid electricity emission factor:

Step 1. Identify the relevant electric power system
Step 2. Select an operating margin (OM) method
Step 3. Calculating the operating margin emission factor according to the selected method.
Step 4. Identify the cohort of power units to be included in the build margin (BM)
Step 5. Calculate the build margin emission factor.
Step 6. Calculate the combined margin (CM) emission factor.

Step 1 – Identify the relevant electric power system

The CEA of the host country has published a delineation of the project electricity system and connected electricity systems. According to data published by the CEA of India the project activity falls under southern regional grid.

Step 2 – Select an operating margin (OM) method

The approved methodological tool recommends the use of one of the following for the calculation of the operating margin emission factor ($EF_{grid,OM,y}$):

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

The methodological tool recommends the use of dispatch data analysis as the first methodological choice. However, in India availability of accurate data on grid system dispatch order for each power plant in the system and the amount of power dispatched from all plants in the system during each hour is practically not possible. Also, still the merit order dispatch system has not become applicable and is unlikely to be so during the crediting period.

In view of this it is proposed to apply other choices as suggested in the METHODOLOGICAL TOOL. Since the power supplied by low cost must run power plants[7] to the Southern grid during 2006-07 is clearly below 50%, the CEA has applied the **Simple OM method.**

[7] Defined as Hydro, geothermal, wind, low cost biomass, nuclear and solar generation plants in the METHODOLOGICAL TOOL.

The data vintage option selected is the *ex-ante* approach, where a 3 year average OM is calculated. The most recent three year CEA data published on the emission factor of southern region is considered.

Step 3 – Calculate the operating margin emission factor according to the selected method.

a) Simple OM

In the Simple OM method, the emission factor is calculated as generation weighted average CO_2 emissions per unit net electricity generation (tCO_2/MWh) of all generating sources serving the system, not including low-operating cost and must-run power plants. simple OM can be calculated using any of the three available methods. Option A has been selected where the data on fuel consumption and net electricity generation of each power plant/ unit is available. The CEA baseline is derived using the following formulae to calculate simple OM

$$EF_{grid,OMsimple,y} = \frac{\sum_{i,m} FC_{i,m,y} * NCV_{i,y} * EF_{CO2,i,y}}{\sum_{m} EG_{my}} \quad (1)$$

Where:

$EF_{grid,OM,simple,y}$ is simple operating margin CO2 emission factor in year y (tCO2/MWh)

$FC_{i,m,y}$ is amount of fossil fuel type *i* consumed by power plant / unit m in year *y* (mass or volume unit)

$NCV_{i,y}$ is net calorific value (energy content) of fossil fuel type *i* in year *y* (GJ /mass or volume unit)

$EFco_{2,I,y}$ is CO2 emission factor of fossil fuel type *i* in year *y* (tCO2/GJ)

$EG_{m,y}$ is net electricity generated and delivered to the grid by power plant / unit m in year *y* (MWh)

m is all power plants / units serving the grid in year *y* except low-cost / must-run power plants / units

i is all fossil fuel types combusted in power plant /unit m in year y

y is either the three most recent years for which data is available at the time of submission of the CDM-PDD to the DOE for validation (ex-ante)

The CEA data published on Baseline emission factor for different regions in Indian electricity system are provided in Annex 3.

Table 1: Operating Margin[8]

Most recent three years	2004/05	2005/06	2006/07
Operating Margin* (OM) in tCO_2 e/ MWh	1.0008	1.0078	1.0030

[8] CEA published CO2 data base, http://www.cea.nic.in/planning/c%20and%20e/Government%20of%20India%20website.htm

Average of 3 years	**1.0038**

* including imports

Source: CO2 Baseline Data base, Version 3.0, December 2007(www.cea.nic.in)

Step 4 – Identify the cohort of power units to be included in the build margin

The tool to calculate the emission factor for an electricity system offers two options for determination of build margin emission factor: *ex ante* and *ex post* determination of the Build Margin (BM). Option 1 is selected wherein the build margin emission factor is calculated *ex- ante* based on most recent information available on plants already built for sample group *m* in southern region. This simplifies the monitoring procedures, but also offers a conservative approach of BM calculation. The sample group *m* shall be the one having higher power generation between (a) five power plants that have been built most recently and (b) the capacity additions in the electricity system that comprises 20% of the system generation built most recently. It is found that the option (b) has higher generation compared to option (a). Hence option (b) is selected.

Step 5 – Calculate the build margin emission factor

The build margin emissions factor is the generation of weighted average emission factor (tCO_2/MWh) of all power units *m* during the most recent year *y* for which power generation data is available, calculated as follows:

$$EF_{grid,BM,y} = \frac{\sum_m EG_{m,y} \times EF_{EL,m,y}}{\sum_m EG_{m,y}}$$

Where:

$EF_{grid,BM,y}$ –Build margin CO_2 emission factor in year y (tCO_2/MWh)

$EG_{m,y}$ –Net quantity of electricity exported to the grid by power unit m in year y (MWh)

$EF_{EL,m,y}$ –CO_2 emission factor of power unit m in year y (tCO_2/MWh)

m –Power units included in the build margin

y –Most recent historical year for which power generation data is available

Build Margin emission factor as published by CEA for the year 2006-07 is furnished below:

Build Margin (BM)	**0.7054**	tCO_2 e/ MWh

Source: CDM Carbon Dioxide Baseline Data base, Version 3.0, 15 December 2007 (www.cea.nic.in)

Step 6 – Calculation of the baseline emission factor (Combined Margin)

The baseline emission factor in year *y* is calculated as the average of the OM and BM emission factors, i.e. the defaults weights for OM and BM are each weighted at 75 % and 25 % respectively. As noted above, the resulting Combined Margin is fixed ex ante for the duration of the crediting period:

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

Where:

$EF_{grid,BM,y}$ –Build margin CO_2 emission factor in year y (tCO_2/MWh)
$EF_{grid,OM,y}$ –Operating margin CO_2 emission factor in year y (tCO_2/MWh)
w_{OM} –Weighting of operating margin emissions factor(%)
w_{BM} –Weighting of build margin emissions factor(%)

Default weights for calculation of Combined Margin	tCO_2 e/ MWh
75% of Operating Margin	**0.7528**
25% of Build Margin	**0.1763**
Combined Margin (CM)	**0.9291**

Project emissions

No project emissions are applicable to the project activity, since the electricity generation is based on Wind resources, which does not involve combustion or generation of emissions from fossil fuels.

Leakage:

Since no equipment is transferred from another project activity or that any existing equipment is transferred to another activity, leakage as per AMS ID is taken as zero.

Emission Reductions:

Since the project emissions as well as the leakage are zero, the emission reductions are equal to the baseline emissions. These are calculated based on the monitored net amount of electricity supplied to the grid, and the baseline emission factor.

$ER_y = BE_y - PE_y - L_y$

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

Data / Parameter:	EF_y
Data unit:	t CO_2/MWh
Description:	CO_2 emission factor for the regional grid system
Source of data used:	CEA published grid emission factors
Value applied:	0.9291 (2006-07) Average of 3 year OM and BM
Justification of the choice of data or	Central Electricity Authority (CEA) values have been used for authenticity of the data, available publicly by Govt of India with a view to obtain uniformity of

description of measurement methods and procedures actually applied :	approach in the country towards a common objective.
Any comment:	--

B.6.3 Ex-ante calculation of emission reductions:

>> **Baseline emissions**

Baseline emissions calculated as explained below:.

BE_y = EG_y * EF_y = 4086 MWh * 0.9291 tCO_2/MWh = 3796 tCO_2e

Project emissions

No project emissions are applicable

Leakage

No leakage is applicable

Emission reductions

ER_y = BE_y - PE_y - L_y

ER_y = 3796 - 0 - 0

ER_y = 3796 tCO_2e

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

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Summary of the ex ante estimation of emission reductions are furnished below.

Year	Estimation of project activity emissions (tCO_2 e)	Estimation of baseline emissions (tCO_2 e)	Estimation of leakage (tCO_2 e)	Estimation of overall emission reductions (tCO_2 e)
2009-10	0	3796	0	3796
2010-11	0	3796	0	3796
2011-12	0	3796	0	3796
2012-13	0	3796	0	3796
2013-14	0	3796	0	3796
2014-15	0	3796	0	3796
2015-16	0	3796	0	3796

2016-17	0	3796	0	3796
2017-18	0	3796	0	3796
2018-19	0	3796	0	3796
Total (tonnes of CO_2e)		**37960**	**0**	**37960**

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

B.7.1 Data and parameters monitored:

Data / Parameter:	EG_y
Data unit:	MWh/ year
Description:	Net electricity exported to the grid by the project activity during the year y
Source of data to be used:	Statement showing the electricity exported to the grid and imported from the grid issued by Tamil Nadu Electricity Board (TNEB)
Value of data	4086
Description of measurement methods and procedures to be applied:	Electricity exported & imported will be measured using energy meters. For billing purpose, the meter readings are taken every month by TNEB officials in the presence of company representatives and the readings are jointly certified. The Net electricity exported to the grid by the project activity will be calculated as the difference between electricity exported to grid and electricity imported from grid.
QA/QC procedures to be applied:	The Meter(s) used for reading electricity export & import will be calibrated atleast once in a year as per the energy purchase agreement (EPA)/ power purchase agreement (PPA). Net electricity exported to the grid can be cross checked with sales invoices/bills of electricity export and import.
Any comment:	The data will be archived for two years after the crediting period, or of the last issuance of CER's of this project activity. Whichever occur later.

Data / Parameter:	$EG_{export,y}$
Data unit:	MWh/year
Description:	The electricity exported to the grid during the year ,y
Source of data to be used:	Statement showing the electricity exported to the grid issued by Tamil Nadu Electricity Board (TNEB)
Value of data	4086
Description of measurement methods and procedures to be applied:	The electricity exported will be measured using energy meter(s) at grid which are under the control of TNEB. The readings are taken every month by TNEB officials in the presence of company representatives.
QA/QC procedures to be applied:	The Meters used for reading will be calibrated atleast once in a year as per the energy purchase agreement (EPA) / power purchase agreement (PPA).
Any comment:	The data will be archived for two years after the crediting period or of the last issuance of CER's of this project activity. Whichever occur

	later.

Data / Parameter:	$EG_{import,y}$
Data unit:	MWh/year
Description:	The electricity imported from the grid during the year y
Source of data to be used:	Statement showing the electricity imported from the grid issued by Tamil Nadu Electricity Board (TNEB)
Value of data	0
Description of measurement methods and procedures to be applied:	The electricity imported will be measured using energy meter(s) at grid which are under the control of TNEB. The readings are taken every month by TNEB officials in the presence of company representatives.
QA/QC procedures to be applied:	The Meters used for reading will be calibrated atleast once in a year as per the energy purchase agreement (EPA) / power purchase agreement (PPA)
Any comment:	The data will be archived for two years after the crediting period or of the last issuance of CER's of this project activity. Whichever occur later.

Data / Parameter:	$EG_{LSC,y}$
Data unit:	MWh/ year
Description:	Electricity generated by wind mill during the year y
Source of data to be used:	As per statement of monthly generation issued by the Operation & Maintenance (O & M) operator
Value of data	4086
Description of measurement methods and procedures to be applied:	Electricity generated will be recorded daily and aggregated monthly.
QA/QC procedures to be applied:	The electricity generated by the WTG is recorded by a controller which is micro-processor based controller using a Woodward Multi function Relay. Turbine cannot run without this relay hence it cannot be removed for calibration, thereby, calibration for this controller is not possible.
Any comment:	The parameter is included to provide data only for the apportioning. In this case of apportioning, only the electricity generation data of the project activity Wind Turbine Generator are required to be monitored The data will be archived for two years after the crediting period or of the last issuance of CER's of this project activity. Whichever occur later.

B.7.2 Description of the monitoring plan:

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The monitoring plan is developed in accordance with the modalities and procedures for small-scale CDM project activities and is proposed for grid-connected wind power project being implemented in Tamilnadu state in India. The monitoring plan, which will be implemented by the project proponent,

describes about the monitoring organisation, parameters to be monitored, monitoring practices, QA and QC procedures, data storage and archiving.

MONITORING ORGANISATION

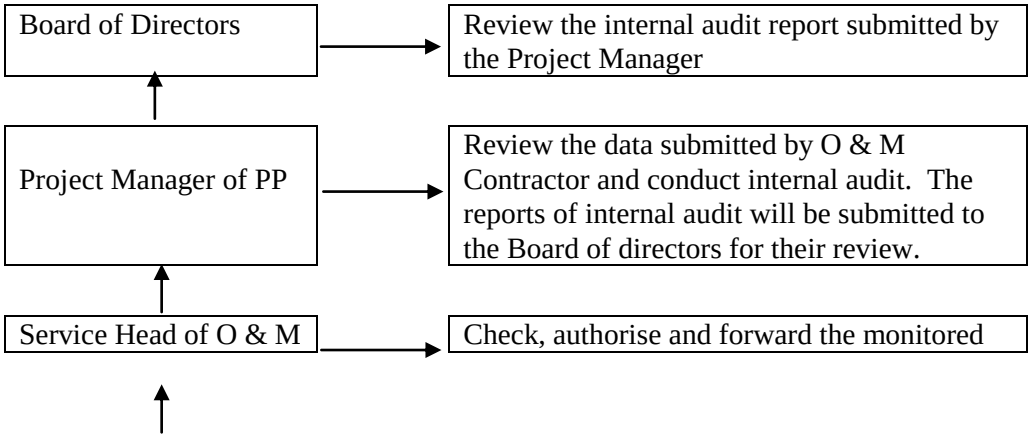
The Operation and Maintenance agreement executed by Kallam Agro Products & Oils (P) Ltd. with Suzlon Infrastructure Services Limited is for a period of 11 years from the date of commissioning of the project activity. Thereafter the agreement will be renewed on mutual terms. As per the O & M agreement the scope of work with respect to management services includes:

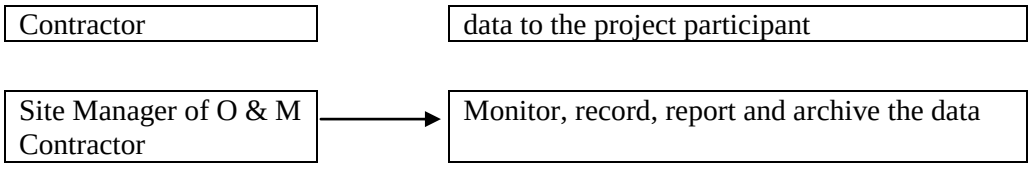
- data logging in for power generation
- Preparation and submission of monthly performance reports
- Taking monthly meter reading jointly with state electricity board

The activities of the O & M contractor will be supervised by the Project Manager of the company assisted by necessary technical and other staff. The prime responsibilities of the team includes the following:

i. Monitoring the functioning of the metering arrangements and getting them calibrated as per the TNEB norms for accuracy and reliability
ii. Conduct onsite inspections to ensure the quality of the data collected by the team and initiate steps in case of any abnormal conditions.
iii. Ensure monthly recording of the generation particulars jointly by representatives of project proponent and TNEB authorities.
iv. Obtaining and archiving the Statements of Energy generated through wind mill issued by TNEB properly for aggregation at the required intervals.
v. Verification and reconciliation, if needed, of the Statement of energy generated through wind mill issued by TNEB with the generation data recorded and maintained regularly.
vi. Continuous Monitoring of the electricity export to the grid & import from the grid and aggregating the net exported energy from the project thus verified and reconciled and submission to the Board of Directors or their authorised officer for approval which will be forwarded to the independent entity DOE for verification and issuance of Certified Emission Reductions.

The operational and management structure for monitoring of the data will be as under:





Parameters requiring monitoring

This monitoring plan requires monitoring of electricity generated by the wind mill, export of electricity to grid, import of electricity from TNEB grid and Net electricity exported to the grid. Necessary documents (like monthly generation statements and statements issued by TNEB) required for verification of the data will be maintained for later archiving. Using the monthly electricity exported to the grid & imported from grid, emission reductions will be estimated as illustrated in Section B.6.3. Emission reductions generated by the project will be monitored half yearly and will be reported to the Board of Directors.

Recording procedures

Every month on the 20th day readings of the meter will be noted jointly by the representatives of TNEB and project proponent. The meters will be observed for its operation every day by the operator. Readings are taken from the main meter only. The meters are calibrated and kept in good condition during operation of the WTG. Generally meter failures are not likely to happen. In exceptional cases if meter fails defective for that particular period check meter reading will be considered. In case of both meters found to be defective, the bill shall be revised for the previous three months or for the exact period if known and agreed upon by both the parties, by applying the correction of the meter with lesser error.

Internal Audit procedure

Internal audit will be conducted for every six months by the Project Manager of the project proponent. The audit includes verification of data viz., Statement showing the Energy Generated through wind mill issued by Tamil Nadu Electricity Board (TNEB), billed units as per bills raised to TNEB etc., which are submitted by the O & M Contractor. The internal audit report will be furnished to the board of directors for their review.

Performance Reviews

Board of directors will conduct performance reviews once in three months. The review includes performance on recording procedures, quality control procedures, reporting and internal audit reports.

Uncertainties with regard to Meter failures

The readings of the main meter and check meter will be cross checked (by TNEB) for correctness and if there is any difference in the readings the defective meter will be replaced immediately. The permissible variation in the main or check meter is +/- 0.5%. The defective meter will be replaced with new one if the variation is more than the permissible variation. The meters are calibrated once in a year. Check meter readings will be considered when main meter found to be defective or stopped.

In case of both meters found to be defective /out of order, the correction to data already measured / recorded by the meter which found be faulty / defective /out of calibration will be revised for the previous 3 (three) months or for the exact period if known and agreed upon by the project proponent and utility by the meter testing wing of the TNEB to the consumption registered by the meter with less error. However, for the estimation of CERs the corrections will be applied till the last calibration date.

Uncertainties with regard to mismatch of monitoring period with Initial and Final reading dates (Apportioning procedure)

In case monitoring period does not match with the dates of initial and final readings of Statement showing Energy Generated through wind mill issued by TNEB, the emission reductions of that particular period (from the date of registration of the project till the end of the month) will be calculated based on percentage generation of that particular period at controller end multiplied with the total units generated in the month as per generation report certified by TNEB. The sample calculation is furnished below:

Generation at Controller (MWh)
(For the particular period) = A

Total generation at Controller (MWh) = B
(Total generation of particular month)

% Generation
for the particular period = C = (A/B)*100

Net Export for particular month as per TNEB (MWh) report = D

Net Export used for calculation of emission reduction
Calculations (MWh) = (D * C/100)

Calibration procedure

The meters are calibrated once in a year at any accredited laboratory in the presence of the representative of project proponent and TNEB.

QA AND QC PROCEDURES

The project would employ latest state-of-the-art microprocessor based high accuracy of 0.5 metering equipment. Hence, high quality of data monitoring system would be ensured. Sales records would be used and kept for checking consistency of the recorded data. The sales records are basically the invoices raised and the payment received from the utility for power exported to the grid.

DATA STORAGE AND ARCHIVING

All of the above parameters monitored under the monitoring plan would be kept for 2 years after the end of the crediting period or the last issuance of CERs for the project activity, whichever occurs later. The data will be archived electronically and in hard copy and kept in safe storage.

The monitored data would be presented to the verification agency or DOE to whom verification of emission reductions is assigned.

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 completion of the baseline: 15/01/ 2009

Name of the person / entity determining the baseline: Kallam Agro Products & Oils (P) Ltd., with guidance from their Consultants.

Organization:	Kallam Agro Products & Oils (P)Ltd
Street/P.O.Box:	Dokiparru Village
Building:	
City:	Guntur
State/Region:	Andhra Pradesh
Postfix/ZIP:	522438
Country:	India
Telephone:	+91(0863) -2290223
FAX:	+91 (0863)-2290220
E-Mail:	kallamoil@yahoo.com
URL:	
Represented by:	Mr. Mohan Reddy
Title:	Managing Director
Salutation:	Mr
Last Name:	Reddy
Middle Name:	Mohan
First Name:	K
Department:	--
Mobile:	+919849391119
Direct FAX:	+91 (0863)-2290220
Direct tel:	+91(0863) -2290223
Personal E-Mail:	kallamoil@yahoo.com

The above entity is 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:

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20/01/2008 (Purchase order issued for civil works to Suzlon Infrastructure Services Pvt Ltd)

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

>>

20 y-0 m

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

Fixed crediting period

C.2.1. Renewable crediting period

Not chosen

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:

>>

01/09/2009 or from the date of registration of the project activity whichever occurs later

C.2.2.2. Length:

>>

10y- 0m

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 & Forests (MoEF), Government of India, Environmental Impact Assessment (EIA) studies need not to be done for the proposed project activity.

Since the project is wind power scheme of 1.5 MW only, the project does not result in adverse impacts on socio-economic environment of the region. Displacement of local populace, disturbance in the local eco systems, deforestation etc. are not involved.

Hence, in conclusion, the project does not cause any negative impacts on the environment or socio-economic situation in the region and does not require any environmental impact analysis by the host party.

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:

>>

There are no significant environmental impacts due to implementation of project activity by 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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Before implementing any project, project investors / developers need to identify the stakeholders, prepare necessary documents, approach the identified stakeholders directly and obtain required clearances / approvals etc. The stakeholders after review of documents and investment profile, will accord approvals / licences or send comments in writing to project investors for further clarifications / corrections. In case they are not satisfied with the project design or they feel that the project impacts any of the local environment / social / economical environments, they will not issue clearances / approvals and stop the implementation of the project.

Stake Holders Consultation

Project participants have conducted public hearing on 18.03.2008 at Radhapuram which is the convenient place for conducting stakeholder consultation. The venue is decided based on the consensus expressed by the local stakeholders. The project participants invited various stake holders through personnel invitation and public notice in the news papers (two English and one local language) published on 03.03.2008. A public notice was displayed in local gram panchayat office. In total 7 participants had participated in the meeting from Thiruvambalapuram village. The participants include Village Sarpanch, Ward Members, Panchayat Members, etc.

Project information is made available for the participants and explained orally during the meeting. Environmental and Social Impacts checklist was circulated to the participants. The participants have given positive response in respect of affect on natural resources, pollution, noise levels etc., There are also positive comments on improvements in lifestyle and employment. The summary of comments are furnished below. The minutes of the stake holders meeting of the project activity will be made available for the DOE.

The members who were present at the stakeholder meeting and their comments are furnished below.

S.No.	Name of the participant	Comment of the participant	Response from PP
1	N.Senthil Kumar Ward Member	I hope there will not be any effect on the environment by setting up the wind plant	As the power generation is from wind turbine generator which utilises the wind velocity there will not be any effect on the environment. The project is environment friendly.
2	R.Narayanan Junior Engineer, Electricity Board,	No comment	
3	S.Sudalaimani Panchayat Member	On behalf of the Thiruvambalapuram Village people, I request the company to provide employment opportunity for the needy people.	The company has executed Operation and Maintenance contract with Suzlon Infrastructure Services Ltd., for a period of 11 years. Suzlon Infrastructure will certainly engage the local people for operation and maintenance of the wind mills
4	I.Murugan, Panchayat Member	No comment	
5	R.Suyambu Durai Panchayat Member	No comment	
6	R.Senthil Sarpanch	After establishing the wind projects in this village, the roads, lighting, drinking water facilities have been improved. Further land value has also been increased. The village people are happy with the developments.	
7	R.Subramanian Ward Member	No comment	

The above members participated are from Thiruvambalapuram village grampanchayt.

The details of other participants are furnished below:

R.K.S.Pillai - Asst.Manager from Suzlon Energy
P.Subramanian - Representative from Suzlon
P.Venugopal Reddy - Director, Kallam Agro
Sambi Reddy - Technical Manager, Kallam Agro

The project participant has also obtained the following approvals from the identified stakeholders for the project activity.

Govt. Approvals

1. Approval from the TNEB for installation of WEG of 1.5 MW capacity at Thiruvambalapuram, Radhapuram taluk at Thirunelveli
2. No Objection Certificate from Thiruvambalapuram Village panchayat.
3. Power Purchase Agreement with the TNEB
4. Commissioning certificate from TNEB

E.2. Summary of the comments received:

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The participants have given positive response in respect of affect on natural resources, pollution, noise levels etc., There are also positive comments on improvements in lifestyle and employment. All participants have recognized the positive impact that brings in to the underdeveloped area and welcomed the project activity. No negative comments have been raised during the meeting.

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

>>

The comments received from the stakeholders were positive; therefore any corrective actions were not required.

Annex 1

CONTACT INFORMATION ON PARTICIPANTS IN THE PROJECT ACTIVITY

Organization:	Kallam Agro Products & Oils (P)Ltd
Street/P.O.Box:	Dokiparru Village
Building:	
City:	Guntur
State/Region:	Andhra Pradesh
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Telephone:	+91(0863) -2290223
FAX:	+91 (0863)-2290220
E-Mail:	kallamoil@yahoo.com
URL:	
Represented by:	Mr. Mohan Reddy
Title:	Managing Director
Salutation:	Mr
Last Name:	Reddy
Middle Name:	Mohan
First Name:	K
Department:	--
Mobile:	+919849391119
Direct FAX:	+91 (0863)-2290220
Direct tel:	+91(0863) -2290223
Personal E-Mail:	kallamoil@yahoo.com

Annex 2

INFORMATION REGARDING PUBLIC FUNDING

No public funding from the parties included in Annex -I is involved in the project activity

Annex 3

BASELINE INFORMATION

The baseline emission factor has been calculated based on combined margin approach according to "Tool to Calculate the Emission Factor for an Electricity System, Version 01" considering the data from "**CO_2 Baseline Database**" Version 3.0 published by CEA which is available at the time of preparation of PDD. The combined margin emission factor calculated for the latest year 2006-07 is 0.9291 tCO_2/MWh.

http://www.cea.nic.in/planning/c%20and%20e/Government%20of%20India%20website.htm

The detailed calculations are furnished under Section B.6.1.

Annex 4

Monitoring Information is provided in the B.7.2 section of the PDD.

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