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:

10 MW Wind Power Project in Maharashtra by Deepak Fertilizers and Petrochemicals Corporation Limited
Version: 05
Date : 05/06/2009

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

The proposed project activity is a wind power project of 10 MW installed capacity in the State of Maharashtra by M/s Deepak Fertilisers and Petrochemical Corporation Ltd. (hereafter DFPCL or project participant). It consists of eight wind electricity generators (WEGs) of 1.25 MW capacity each.

The details of each of the WTGs are tabulated below:-

WTG location no and commissioning date	Installed capacity	Make	Village	District
J087- 29.09.2006	1.25	Suzlon Model S-70	Aichale	Dhule
J091- 29.09.2006	1.25	Suzlon Model S-70	Aichale	Dhule
K441-29.09.2006	1.25	Suzlon Model S-70	Dhandane	Nandurbar
K442-29.09.2006	1.25	Suzlon Model S-70	Dhandane	Nandurbar
K513-29.09.2006	1.25	Suzlon Model S-70	Wankute	Nandurbar
K514-29.09.2006	1.25	Suzlon Model S-70	Wankute	Nandurbar
K478-29.09.2006	1.25	Suzlon Model S-70	Mandal	Nandurbar
K503-29.09.2006	1.25	Suzlon Model S-70	Vavad	Nandurbar

The electricity generation from this project will contribute to GHG reductions estimated at 14,313 tCO2e p.a. over its estimated life of 20 years. It will evacuate approximately 17 million kWh of renewable power annually to the power deficit Western Region Grid .

Purpose of the project activity:

The main purpose of the project activity is to generate electrical energy through sustainable means thus contributing to climate change mitigation efforts.

Contribution of project activity to sustainable development:

Indian economy is highly dependent on “Coal” as fuel to generate energy and for production processes. Thermal power plants are the major consumers of coal in India and yet the basic electricity needs of a large section of population are not being met.

This results in excessive demands for electricity and places immense stress on the environment. Changing coal consumption patterns will require a multi-pronged strategy focusing on demand, reducing wastage of energy and the optimum use of Renewable Energy (RE) sources.

Government of India has stipulated following indicators for sustainable development in the interim approval guidelines[1] for CDM projects.

1. Social well-being

The proposed project activity has led to alleviation of poverty by establishing direct and indirect employment benefits accruing out of ancillary units for manufacturing towers, erection and maintenance of the WTGs and security services. The infrastructure in and around the project area has also improved due to project activity. This includes development of road network, increased accessibility to medical facilities and improvement in the quality of electricity in terms of its availability and frequency as the generated electricity is fed into a deficit grid.

2. Economic well-being

The project activity has resulted in investment in the developing region which otherwise would not have happened in the absence of the project activity. The generated electricity is fed into the Western Regional Grid through local grid, thereby improving the grid frequency and availability of electricity to the local consumers (villagers and sub-urban habitants) which has provided new opportunities for industries and economic activities to be setup in the area thereby resulting in greater local employment, ultimately leading to overall development. The project activity also leads to diversification of the national energy supply, which is dominated by conventional fuel based generating units.

3. Environmental well-being

The project utilizes wind energy for generating electricity which otherwise would have been generated through alternate fuels (most likely - fossil fuel) based power plants, thereby contributing to the reduction in specific emissions (emissions of pollutant/unit of energy generated) including GHG emissions. As wind power projects produce no end products in the form of solid waste (ash etc.), they address the problem of solid waste disposal encountered by most other sources of power. Being a renewable source, using wind energy to generate electricity contributes to resource conservation. Thus the project causes no negative impact on the surrounding environment contributing to environmental well-being.

4. Technological well-being

The project activity leads to the promotion of WEGs into the region, demonstrating the success of high capacity wind turbines, which feed the generated power into the nearest sub-station, thus increasing energy availability and improving quality of power under the service area of the substation. Hence, the project leads to technological well-being.

[1] Ministry of Environment and Forests web site: http://cdmindia.nic.in/host_approval_criteria.htm

A.3 Project participants:

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.	• Private entity - M/s Deepak Fertilisers and Petrochemical Corporation Ltd.	No.
(*) In accordance with the CDM modalities and procedures, at the time of making the CDM-PDD public at the stage of validation, a Party involved may or may not have provided its approval. At the time of requesting registration, the approval by the Party (ies) involved is required.		

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

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

A.4.1.1 Host Party (ies):

India.

A.4.1.2 Region/State/Province etc.:

Maharashtra.

A.4.1.3 City/Town/Community etc:

Dhule and Nandurbar

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

WTG Location no	Village	Taluka	District	Latitude	Longitude	Elevation
J087	Aichale	Sakri	Dhule	20º59´27.39″ N	74º18´51.94″ E	1383 ft
J091	Aichale	Sakri	Dhule	20º59´27.39″ N	74º18´51.94″ E	1383 ft
K441	Dhandane	Nandurbar	Nandurbar	21º21´57.31″ N	74º14´32.09″ E	713 ft
K442	Dhandane	Nandurbar	Nandurbar	21º21´57.31″ N	74º14´32.09″ E	713 ft
K513	Wankute	Nandurbar	Nandurbar	21º21´57.31″ N	74º14´32.09″ E	713 ft
K514	Wankute	Nandurbar	Nandurbar	21º21´57.31″ N	74º14´32.09″ E	713 ft
K478	Mandal	Nandurbar	Nandurbar	21º21´57.31″ N	74º14´32.09″ E	713 ft
K503	Vavad	Nandurbar	Nandurbar	21º21´57.31″ N	74º14´32.09″ E	713 ft

Fig: 1 Location Map of Maharashtra

Fig: 2 District Map of Maharashtra

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

As defined under Appendix B of the simplified modalities and procedures for small-scale CDM project activities, the project activity proposes to apply following project types and categories:

- **Type : I – Renewable Energy Projects**
- **Project Category : I.D. – Grid connected renewable electricity generation**
  (Version 13: 14 December 2007)

The project is a renewable energy project generating electricity (Type ID) – the monitoring methodology and baseline have been selected as suggested in the document 'Simplified Modalities and Procedures for Small-Scale CDM project activities'

Technology

Wind has considerable amount of kinetic energy when blowing at high speeds. This kinetic energy when it passes through the blades of the wind turbines is converted into mechanical energy and rotates the wind blades. When the blades rotate, the connected generator also rotates, thereby producing electricity.

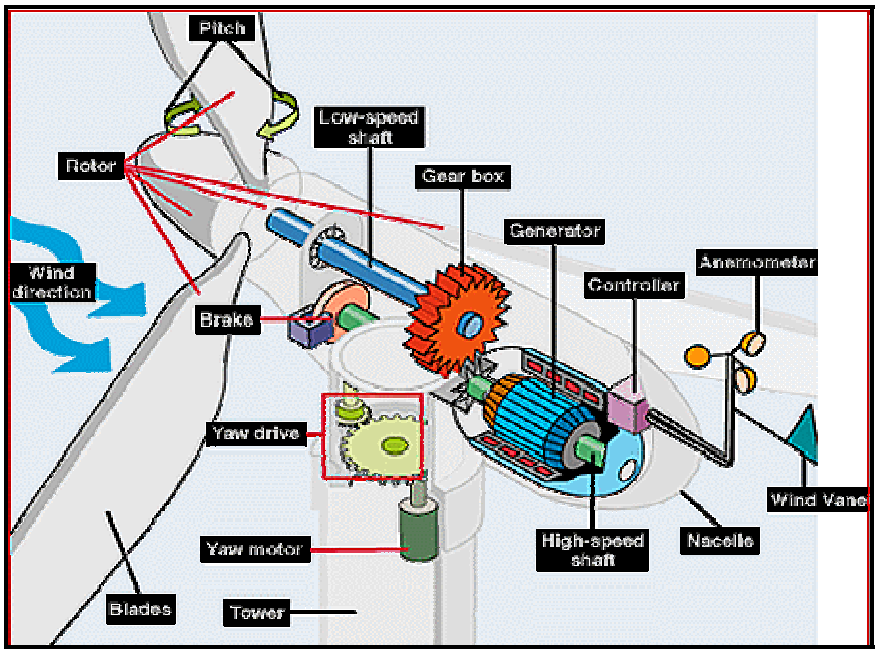


Figure 04, Major Mechanical Parts of a Wind Turbine

The technology is a clean technology since there are no GHG emissions associated with the electricity generation. The project involves 8 nos. Suzlon make WEGs, model S-70 of individual 1.25 MW capacities. Salient features of the model S70 WEGs are -

Salient Features of 1.25 MW (S 70) WEG

Sr. No.	Particulars	Specifications
1.	Rotor diameter	69.1 m
2.	Hub height	74 m
3.	Installed electrical output	1250 kW
4.	Cut-in wind speed	3 m/s
5.	Rated wind speed	12 m/s
6.	Cut-out wind speed	20 m/s
7.	Rotor swept area	3750 m^2
8.	Rotational speed	13.2/19.8
9.	Rotor material	GRP
10.	Regulation	Pitch
11.	Generator	Asynchronous Generator, 4/6 poles
12.	Rated output	250/1250 kW
13.	Rotational speed	1010/1515 rpm
14.	Operating voltage	690 V
15.	Frequency	50 Hz
16.	Protection	IP 56
17.	Insulation class	H
18.	Cooling system	Air cooled
19.	Gear box	3-stage gearbox, 1 planetary & 2 helical
20.	Manufacturer	Winergy
21.	Gear ratio	77.848
22.	Nominal load	1390 kW
23.	Type of cooling	Oil cooling system
24.	Yaw drive system	4 active electrical yaw motors
25.	Yaw bearing	Polyamide slide bearing
26.	Safety system	
26.1.	Aerodynamic brake	3 times independent pitch regulation
26.2	Mechanical brake	Spring power disc brake, hydraulically released, fail safe. Microprocessor controlled, indicating.
27.	Control unit	Actual operating conditions, UPS back-up system
28.	Tower	Tubular
29.	Design standards	GL/IEC

The 1.25 MW S-70 windmills used in the project have been developed indigenously by Suzlon Energy Limited and no transfer of technology is involved.

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

Years	Estimation of annual emission reductions in tonnes of CO2 e
2009	14,313
2010	14,313
2011	14,313
2012	14,313
2013	14,313
2014	14,313
2015	14,313
2016	14,313
2017	14,313
2018	14,313
Total estimated reductions (tonnes of CO2 e)	143130
Total number of crediting years	**10**
Annual average of the estimated reductions over the crediting period (tCO2 e)	**14,313**

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

The project has not received any public funding from Annex I countries and Official Development Assistance (ODA). The project is a unilateral project.

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

According to paragraph 2 of Appendix C to the Simplified Modalities and Procedures for Small-Scale CDM project activities (FCCC/CP/2002/7/Add.3), a small-scale project is considered a de-bundled component of a large project activity if there is a registered small-scale activity or an application to register another small-scale activity:

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

None of the above applies to the above project and project participant has not registered or applied for registration for any other wind power project. Therefore, the proposed project is not a de-bundled component of a larger CDM project activity.

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:

Project Type : I – Renewable Energy Projects
Project Category: D – Grid connected renewable electricity generation (Version 13: 14 December 2007)
Reference: Appendix B of the simplified M&P for small-scale CDM project activities (UNFCCC, 2003b)

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

Requirements with respect to technology/measure under AMS I.D. – Grid connected renewable electricity generation (Version 13: 14 December 2007)

- This category comprises renewable energy generation units, such as photovoltaics, hydro, tidal/wave, wind, geothermal and renewable biomass, that supply electricity to and/or displace electricity from an electricity distribution system that is or would have been supplied by at least one fossil fuel fired generating unit.

- If the unit added 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 unit added co-fires fossil fuel, the capacity of the entire unit shall not exceed the limit of 15MW.

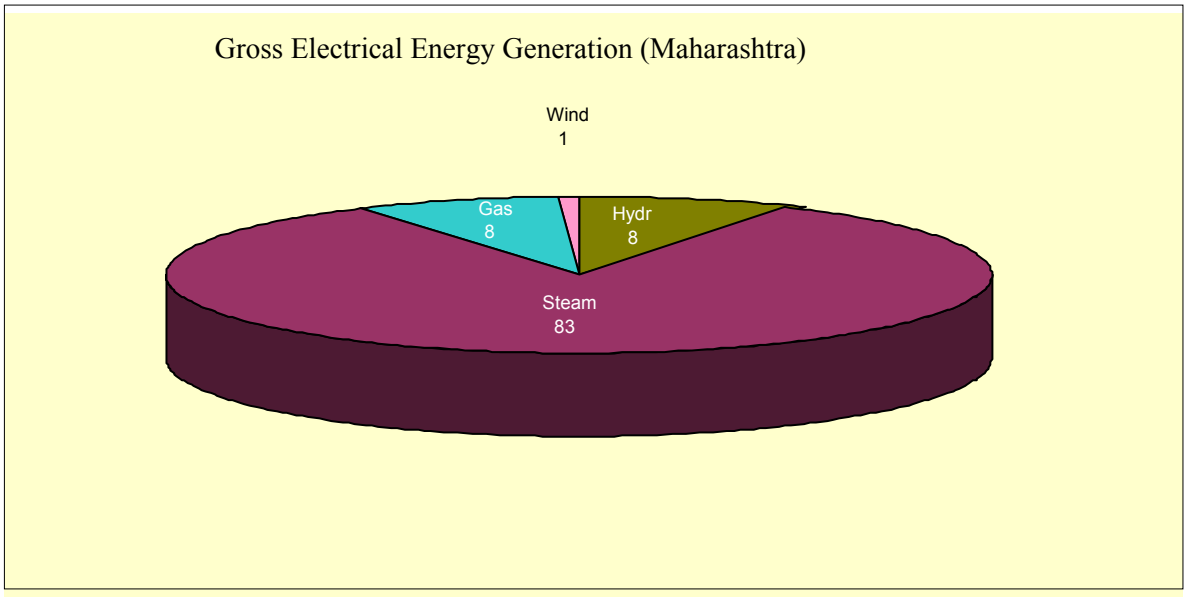
- Combined heat and power (co-generation) systems are not eligible under this category.

- 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 from the existing units.

- Project activities that seek to retrofit or modify an existing facility for renewable energy generation are included in this category. To qualify as a small scale project, the total output of the modified or retrofitted unit shall not exceed the limit of 15 MW.

Justification:

The installed capacity of the project is 10 MW, which is less than the limiting capacity of 15 MW and is thus eligible to use small-scale simplified methodologies. Further, the project activity supplies electricity to Western Region Grid, where major part of electricity comes from non-renewable electricity generation. Hence, the type and category of the project activity matches with I.D. as specified in Appendix B of the indicative simplified baseline and monitoring methodologies for small-scale CDM project activities.



Source: CEA General Review 2006 (Table No 3.4)

B.3 Description of the project boundary:

Project boundary specified in the Appendix B of simplified modalities and procedures is that which encompasses the physical and geographical site of the renewable generation source. This includes the wind turbine installation, pooling and MSEDCL sub-stations. The proposed project activity evacuates the power to Western Region Grid. Therefore, all the power plants contributing electricity to the Western Region Grid are taken in the connected (project) electricity system for the purpose of baseline estimation. The meter which is used to measure the electricity supplied to grid is at substation and is an integral part of project boundary.

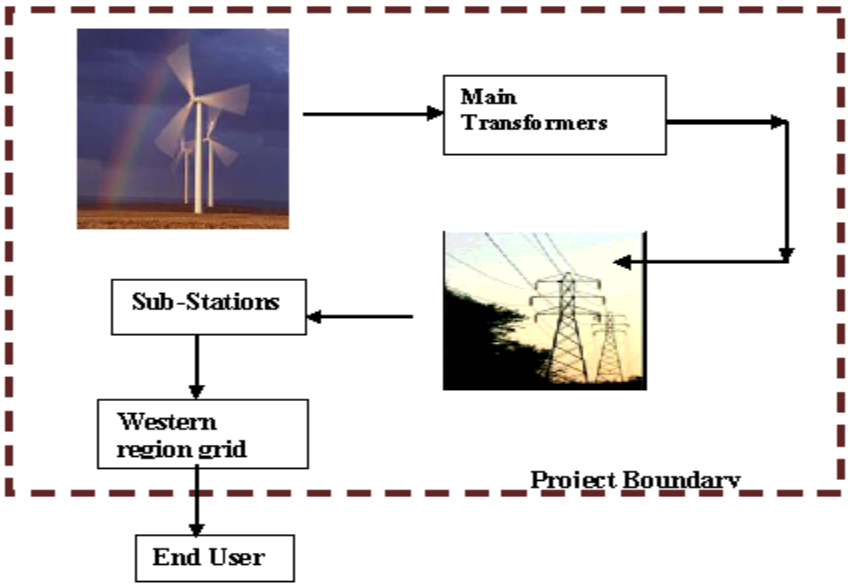


Figure 03, Project Boundary

B.4 Description of baseline and its development:

Baseline Estimation:

Baseline for projects under Type I.D has been detailed in paragraphs 7-11(Type I.D) of the above-mentioned document. Paragraph 9 (Type I.D) applies to this project activity, which states that:

The baseline for all other projects (excluding landfill gas, waste gas, waste water treatment, agro- industry projects and projects where all generators use exclusively fuel oil and/or diesel fuel) is the kWh produced by the renewable generating unit multiplied by an emission coefficient (measured in kg CO_2equ/kWh) calculated in a transparent and conservative manner as:

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 CO2equ/kWh) of the current generation mix. (The data of the year in which project generation occurs must be used)

Baseline emission reductions have been estimated using weighted average emissions (in tCO_2 equ/MWh) for the Western Region Grid.

Following information is used for baseline determination:

Sr. No.	Key information/data used for baseline	Source of data/information
1.	Electricity generated	Monthly Meter Reading
2	Western Region Grid	CO_2 Baseline Database for the Indian Power Sector User Guide[2]- Version 3 Central Electricity Authority, Government of India.

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:

In accordance with EB 41, annex 46 "Guidance on the demonstration and assessment of prior consideration of the CDM", DFPCL is required to demonstrate:

- 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.
- Continuing and real actions taken to secure CDM status for the project in parallel with its implementation.

The awareness of project promoters on CDM is evident from their Board note in which decision to invest in the project activity was taken. The promoters were conscious of the fact that as per the PPA with MSEDCL, they were bound to take necessary steps to get the project registered for CDM benefits. Considering these aspects the promoters made it an integral part of negotiation with the WTG manufacturing and supplying company i.e. Suzlon Energy Limited (SEL) and accordingly prior to the release of purchase order for the WTGs, representatives from Synergy Global, which was then sister concern of SEL and DFPCL had met at the latter's office to discuss CDM. In the same meeting Synergy Global had submitted their proposal for purchase/trading of CERs from the yet to come up, wind power project. The purchase order was only released when the promoters were convinced that part of risk associated with investment in the wind sector will be requited through funds received from CDM. The following table represents the chronology of events that took place prior to start of project activity.

S. No.	Date	Event	Reference
1.	01/02/2006	Draft wind energy purchase agreement mentioning about CDM benefits	Mail from Suzlon to DFPCL
2.	22/03/2006	Decision to invest 51 crores in wind power	Board note dated 22/03/2006
3.	06/06/2006	Proposal by Suzlon Energy to develop the project as candidate CDM project	Letter from SEL to DFPCL dated 06/06/2006; SG/P/496
4.	***07/06/2006***	***Purchase/Work order for Commissioning, erection & Installation of the WTGs***	***P.O. dated 07/06/2006***

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

In order to demonstrate continued and real actions taken by the PP towards securing CDM funds, the following evidences have been submitted to the DOE:

S. No.	Date	Event	Reference
4.	***07/06/2006***	***Start date of project activity***	***Purchase Order dated 07/06/2006***
5.	13/07/2006	Discussion between Synergy Global and DFPCL regarding formalities for development of the project under CDM	Mail from Synergy Global to DFPCL
6.	16/09/2006	Negotiation with Asia Carbon for CDM consultancy services	Mail from Asia Carbon dated 16/09/2006
7.	29/09/2006	Commissioning of the project activity	Commissioning certificates SE/DHL/Tech/Wind/No 8166 and SE/DHL/Tech/Wind/No 8171 dated 30/09/2006
8.	September 2006	Cable theft problem starts in Dhule and Nandurbar districts of Maharashtra	Presentation by Suzlon; series of mails exchanged between PP and Suzlon
9.	06/11/2006	Signing of Power Purchase Agreement	Wind Energy Purchase Agreement between DFPCL 10 MW and MSEDCL
10.	27/12/2006	Discussion between E & Y and DFPCL for CDM consultancy for the project activity	Mail from E&Y dated 28/12/2006
11.	30/12/2006	Joint offer for CDM consultancy from MITCON Consultancy Services Ltd. and IDBI Ltd.	mail from IDBI to DFPCL ,dated 30/12/2006
12.	11/04/2007	Post negotiation release of Work Order to MITCON for CDM consultancy services	W.O. dated 11/04/2007
13.	April-07 – June -07	Windmills of the promoter shut down because of cable theft problem	Series of mail from Suzlon
14	05/06/2007	Stakeholders consultation meeting	Invitation letter for stakeholders meeting dated 25/05/2007
15	30/07/2007	Discussion on Draft Tri Partite Agreement	Mail from IDBI to DFPCL
16	30/07/2007	Last two wind mills J 87 & J 91 that had to be shut down because of cable theft problem, resume generation.	Mail from Suzlon Energy Limited dated 31/07/2007
17.	03/09/2007	Internal discussion on tri partite agreement within DFPCL	Series of mails from legal department of DFPCL

18	20/09/2007	PIN & PDD submission to the promoter by MITCON Consultancy services Limited	Invoice – Mitcon; dated 20/09/2007 Invoice – IDBI; dated 28/09/2007
19.	18/12/2007	Indication from the Management of DFPCL to the concerned person regarding finalization of the Draft tri partite agreement.	Letter dated 18/12/2007
20.	17/01/2008	Application for Host country Approval	Application letter dated 17/01/2008
21.	12/02/2008	Tripartite Agreement Signed between IDBI, DFPCL and MITCON	Agreement Copy
22.	20/03/2008	Negotiation with DOE	Mail dated 20/03/2008
23.	09/04/2008	HCA accorded	Host Country Approval Document
24.	12/05/2008	Agreement with DOE for validation services	Copy of work order
25.	12/06/2008	Web hosting of the project for international stakeholders' comments	http://cdm.unfccc.int/Projects/Validation/DB/W1715YOXN98VYVOMSIKQN9P6FD5C58/view.html

After the release of purchase order for the WTGs, the promoters approached various consultants for developing their project as candidate CDM Project and finally in April 2007, entrusted this job to their present consultant. In the meanwhile the cable theft problem that was brewing up in the Dhule, Nandurbar districts of Maharashtra disrupted the operation of promoter's wind mills as a result of which the generation from all windmills stopped until July end. This caused impediment in all other activities as restoration of generation became the prime concern for the promoters. Everything else including CDM was put to halt for the next two - three months. The WTGs were finally restored by July end. Until this stage, the tri partite agreement was not signed, as three parties- IDBI, DFPCL and MCSL[3] were involved and it took longer than expected to draft the clauses which would be acceptable to all. The major points of difference that were responsible for delaying the signing of this tri partite agreement were these:

- Term of Validity of Agreement
- Inclusion of Indemnity clause stating that maximum liability of MITCON & IDBI not to exceed the fixed fee received by them and at the same time maximum liability of DFPCL not to exceed the fixed fee payable to the other 2 parties.
- Fixed fee payable by DFPCL to MITCON & IDBI

It took nearly five months from submission of first draft of this agreement to DFPCL on 30/07/2007, to the final consensus on all clauses in the agreement by the three parties. In the meanwhile the first draft of PIN & PDD of the project activity was submitted to the promoters on 20/09/2007. Finally in December 2007 the Legal department of DFPCL approved the Agreement. At this point of time all the three parties involved had accepted the final draft of agreement. This was a necessary step as the fixed fee and share of

[3] MITCON Consultancy Services Limited

CDM revenues amongst the three parties had to be legally established before the project activity entered the actual CDM cycle.
As soon as there was indication on general agreement on all the clauses in the tri-partite agreement, the project was submitted for host country approval. A month later, the Agreement was signed on 12/02/2008 at the DFPCL office. Talks with various DOEs for validation of the project began in March 2008 and finally on 12/06/2008 the project was web hosted for international stakeholders' comments.

The evidences that have been submitted to the DOE explicate the fact that the project activity conforms to the requirements of "Guidance on the demonstration and assessment of prior consideration of the CDM"

Justification for additionality of the project

UNFCCC simplified modalities seek to establish additionality of the project activity as per Attachment A to Appendix B, (Version 06: 30 September 2005). It states that 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:

a) Investment barrier: a financially more viable alternative to the project activity would have led to higher emissions;

b) Technological barrier: a less technologically advanced alternative to the project activity involves lower risks due to the performance uncertainty or low market share of the new technology adopted for the project activity and so would have led to higher emissions;

c) Barrier due to prevailing practice: prevailing practice or existing regulatory or policy requirements would have led to implementation of a technology with higher emissions;

d) Other barriers: without the project activity, for another specific reason identified by the project participant, such as institutional barriers or limited information, managerial resources, organizational capacity, financial resources, or capacity to absorb new technologies, emissions would have been higher.

Project participant has identified following barriers for the proposed project activity.

✓ **Financial infeasibility**

Investment analysis was carried out by using Sub-step 2b - Option III i.e. 'Benchmark Analysis' of the additionality tool version 5.2. Equity IRR has been identified as the appropriate financial indicator.

Equity IRR is used as appropriate financial indicator, because this was the measure used by the Project Proponent while making this investment decision. It is an established practice accepted across various countries / industries as well. Investors compare the equity IRR derived from future cash flow projections and their required return. The required returns are dependent on a number of factors such as the risk in the project, the interest rate structure in the economy, likely inflation rates, to quote a few.

A project investor's decision to invest always rests on extent of returns (i.e. Equity IRR) generated on his funds only. For calculating such returns the payment of interest on lenders funds is duly considered.

***Determining appropriate analysis method*:**

Since the project activity generates financial benefits other than CDM related income the sub-step 2b-option I is not followed. The investment analysis is carried out by 'benchmark analysis ' as referred in additionality tool version 5 sub-step 2b – option III.

As per option III *Discount rates and* ***benchmarks*** *shall be derived from*:

(a) 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;
(b) Estimates of the cost of financing and required return on capital (e.g. commercial lending rates and guarantees required for the country and the type of project activity concerned), based on bankers views and private equity investors/funds' required return on comparable projects;
(c) A company internal benchmark (weighted average capital cost of the company), only in the particular case referred to above in paragraph 5. The project developers shall demonstrate that this benchmark has been consistently used in the past i.e. that project activities under similar conditions developed by the same company used the same benchmark;
(d) Government/official approved benchmark where such benchmarks are used for investment decisions;
(e) Any other indicators, if the project participants can demonstrate that the above Options are not applicable and their indicator is appropriately justified.

The benchmark has been derived as per option III (a) of additionality tool version 5.2

According to Dividend Capitalization Method (Gordon Model)

Required return = [Dividend/Price + Growth Rate].
According to Bond Yield + Risk Premium Method

Required return = Bond Yield + Risk Premium

By equating the two results we can derive the risk premium

A Deriving General Risk Premium

		%	Source
Dividend Yield (Data of CnX 100 index 1 April 05 to 21 March 06)	(a)	1.81%	CNX 100 data 1 April 05 to 21 March 06 ['http://www.nse-india.com' (Indices/statistices/Historical-P/E, P/B & Div. Yield values/ Index-CNX 100)
Growth rate : GDP-industrial (which is more relevant than overall GDP) per Govt estimates + inflation factor (9%+5%)	(b)	14.00%	Ministry of Finance : Macro economic framework statement 2006-07 budget documents (pg5 item7).(http://indiabudget.nic.in/ub2006-07/frbm/frbm1.pdf); Inflation to be 5%; Economic survey of India, GOI press release. (http://pib.nic.in/release/release.asp?relid=15914)
Divd Yield + Growth rate [a + b]	(c)	15.81%	
Bond Yield	(d)	7.49%	RBI Statistical Data
Risk Premium [c-d]	**(i)**	**8.31%**	

B Deriving Required Rate of Return on Power generation activity

Bond Yield	(j)	7.49%	As referred above
Risk Premium on General Businesses in India	(k)	8.31%	As calculated
Benchmark : (J + K)		**15.81%**	

According to this calculation, a return of 15.81% should be a reasonable expectation from investment in wind mill projects. This has been considered as a benchmark[4] for the proposed project activity.

[4]When the promoter had conceived this project, the return expected from it was compared to the minimum return on equity as accepted by the Maharashtra Electricity Regulatory Commission order for wind power projects in Maharashtra. There was a strong reason to consider this as standard benchmark as – it was sector specific and also because it was used for calculation of tariff which would be the source of revenue for the project. However after EB 40, this benchmark has been derecognised.

Conservativeness of the benchmark considered may be further appreciated by the following points:-

- Consistent, to some extent, with these figures is the figure considered by Yes Bank for financing wind energy projects. In a presentation – Green Power financing- A banker's perspective[5], Yes Bank has quoted its expected return at 17% for extending loan to wind power projects.

- According to a discussion[6] paper - Policy Environment and Regulatory Reforms for Private and Foreign Investment in Developing Countries – A Case Study of Indian Power Sector; "Based on a survey of investors in the power sector in developing countries, Lamech and Saeed (2003) find that nearly 44% respondents are looking for over 16% return on their investment in the power sector in developing countries"

When all these arguments are evaluated, the Benchmark of 15.81 % is most conservative value.

Following further assumptions were made for the investment analysis.

Life of project	20 yrs
Installation period	6 months
Period for which O&M services will be provided free of cost	2 yrs
Annual O&M Exp 3rd to 10th yr	1.212 Mn
Annual Increase in O&M	5%
Debt Component	56.23%
Term Loan interest	11.25%
Income tax rate	33.67%
Depreciation on WTG	80%
Tariff Rate per unit	Rs. 3.50
Escalation per year in tariff up-to 13th year	Rs. 0.15
Tariff rate[7] considered from 14th year – 20th year	Rs. 5.40
Section 80IA of 100% exemption in profits for 10 years in first 15 years of operation considered	

[5] http://greenbusinesscentre.com/images/Photos/Gre12.pdf

[6] http://www.adbi.org/discussion-paper/2007/04/26/2236.policy.environment.power.sector/framework.for.return.and.private.investment.in.developing.countries/

[7] The MERC order Dated November 24, 2003 mentions a tariff rate of Rs. 3.50/unit with an escalation of Rs. 0.15/year up-to 13th year for Group III wind power projects in Maharashtra. Rate From the 14th year is not clear. For the present case, tariff rate applicable for 13th year i.e. Rs. 5.40 has been taken for 14th to 20th year for carrying out investment analysis, which itself is very conservative. The State Electricity Commission has hinted at reduction in this tariff rate after the 13th year. This fact is further substantiated by MERC Order dated November 20, 2007 (Case No. 33 of 2007) on Group II projects where the tariff has been frozen at 90% of lowest HT Industrial Energy Tariff. Similar treatment has been anticipated for Group III projects. http://www.mercindia.org.in/pdf/Ord_20_11_2007_CNo_33_of_2007.pdf

The project set up by the proponent generates an Equity IRR of 12.06 % only which is substantially below the benchmark rate of 15.81 %. Hence the project activity cannot be considered as financially attractive.

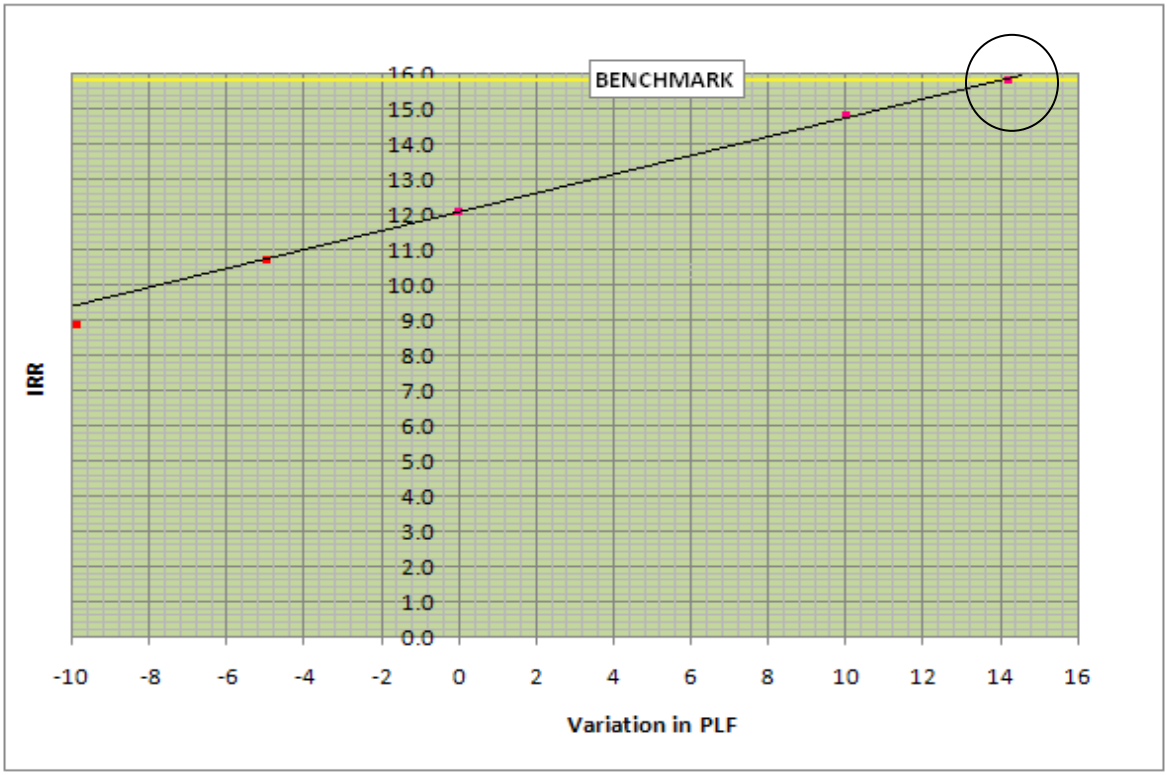
Sensitivity Analysis

The Guidance on the Assessment of Investment Analysis (Version 02), paragraph 16, states that 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.

The different parameters that affect the viability of a wind power project are mentioned below –

Electricity Generation *This is the most important and critical parameter for any Power Project & hence viability of the project will be affected by any fluctuation in this parameter. Sensitivity analysis has therefore been carried out for it.*

Variation	*-10.0%*	*-5.0 %*	*0%*	*5.0%*	*10.0%*
IRR	*8.98%*	*10.71%*	*12.06 %*	*13.69 %*	*14.90%*



Project Cost *As directed by the CDM EB, sensitivity analysis has been carried out for this parameter. Even with a 10 % decrease in the project cost the IRR is below the benchmark*[8].

Variation	*-10.0%*	*-5.0 %*	*0%*	*5.0%*	*10.0%*
IRR	*15.56%*	*13.61%*	*12.06%*	*10.78%*	*9.70%*

O & M Cost *This does not add to 20% of either total project cost or total project revenues and hence, sensitivity analysis has not been carried out for this parameter.*

Income from sale of electricity *The parameter is dependent on two factors; generation and tariff rate. Sensitivity analysis for generation has already been carried out.*
For tariff rate, the Maharashtra Electricity Regulatory Commission Order[9] *dated.24.11.2003 which mentions the tariff rate, was readily available to the promoter at the time of project conceptualisation.*

Conclusion: ***Hence the returns from the project are found to be clearly less attractive than the benchmark return.***

To mitigate the risk mentioned in the above paragraphs and encourage the setting up of a wind power project in Maharashtra, CDM support to the project participant is required.

B.6 Emission reductions:

B.6.1 Explanation of methodological choices:

Baseline methodology for projects under Type I.D has been detailed in paragraphs 7-11 (Type I.D) of the above-mentioned document. Paragraph 9 (Type I.D) applies to this project activity, which states that:

For all other systems, the baseline is the kWh produced by the renewable generating unit multiplied by an emission coefficient (measured in kg CO_2equ/kWh) calculated in a transparent and conservative manner as:

(a) 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 ACM0002. Any of the four procedures to calculate the operating margin can be chosen, but the restrictions to use Simple OM and the Average OM calculations must be considered.

[8] It is to be noted that the actual cost incurred by the PP is only 2.6% lower than the cost that was considered at project conceptualization stage.

[9] Maharashtra Electricity Regulatory Commission
Order: Case no. 17(3), 3, 4 & 5 of 2002, Date: November, 24 2003; (Website: www.mercindia.com)

OR

(b) The weighted average emissions (in kg CO_2equ/kWh) of the current generation mix.

Baseline emission reductions have been estimated using the weighted average emission (in kgCO_2 equ/kWh) of the current generation mix, using the most recent statistics available at the time of PDD submission. (Paragraph 9, sub point (b))

In the proposed baseline, Western Region Grid is used as the reference region for estimating the current generation mix. Using the methodology available for small-scale project activities, the weighted average emissions (in tCO_2 e/GWh) of current generation mix of Western region Grid of India is used for the calculation of baseline. The weighted average emission factor data calculated and provided by Central Electricity Authority (CEA) is used for the proposed project activity.

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

(Copy this table for each data and parameter)

Data / Parameter:	**Grid Emission Factor**
Data unit:	t CO_2 / MWh
Description:	Weighted Average Grid Emission rate
Source of data used:	Central Electricity Authority – CDM - Carbon Dioxide baseline database, latest available version at the time of validation.
Value applied:	0.86
Justification of the choice of data or description of measurement methods and procedures actually applied :	The used data is from an official source.
Any comment:	This value will be used for calculating certified emission reduction from the present project activity. However, the value of grid emission factor may be change; hence latest available value will be used during the entire crediting period.

B.6.3 Ex-ante calculation of emission reductions:

Assumptions for calculation of Net Electricity generation			
		Per WTG	Entire Project
Guaranteed Generation[10]	MWh	2800	22400
Capacity Utilization Factor	Percent	20.00%	20.00%
Average Deductions due to transmission losses[11]	Percent	5.0%	5.0%

[10] Suzlon Purchase Order (Generation Guarantee)

[11] MERC Tariff Order dated 24th November 2003

Net electricity supplied to the grid = Generation at 20 % CUF * (1-TL)
= (10 *365*24*0.20) * (1-0.05)
= **16644 MWh**

Baseline Emission = Net electricity supplied to grid * Weighted avg. emission factor
= 16644× 0.86 t CO_2 / MWh
= **14,313 t CO_2 / annum**

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

Year	Project Emission (tonnes CO_2e /yr.)	Baseline Emissions (tonnes CO_2e /yr.)	Leakage (tonnes CO_2e / yr.)	Emission Reductions (tonnes CO_2e /yr.)
2009	0	14,313	0	14,313
2010	0	14,313	0	14,313
2011	0	14,313	0	14,313
2012	0	14,313	0	14,313
2013	0	14,313	0	14,313
2014	0	14,313	0	14,313
2015	0	14,313	0	14,313
2016	0	14,313	0	14,313
2017	0	14,313	0	14,313
2018	0	14,313	0	14,313
Total (tonnes CO_2e)	**0**	143130	**0**	143130

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

B.7.1 Data and parameters monitored:

(Copy this table for each data and parameter)

Data / Parameter:	**$EG_{(Net\ export\ by\ project\ activity)}$**
Data unit:	MWh
Description:	Net generation from all the WTGs of the promoter at a particular site connected to same feeder.
Source of data to be used:	Joint meter reading and MSEDCL electricity bills
Value of data	14,313
Description of measurement methods and procedures to be applied:	The value will be taken from MSEDCL electricity bill.
QA/QC procedures to	The value can be cross checked by calculating the value using apportioning

be applied:	procedure as explained in the section B.7.2 of the PDD.
Any comment:	Data will be archived during the whole crediting period + 2 years.

Data / Parameter:	$\sum_{0}^{n} EG_{n,y}$
Data unit:	MWh
Description:	The summation of total Electricity Generated (MWh) at the controller from all the wind turbines of the project proponent at a particular site
Source of data to be used:	Monitored through meters.
Value of data	This will be measured daily and summation of month will be summarised.
Description of measurement methods and procedures to be applied:	EGn,y is the electricity generated from an individual wind turbine measured through its controller meter.
QA/QC procedures to be applied:	--
Any comment:	Data will be archived during the whole crediting period + 2 years

Data / Parameter:	$\sum_{0}^{m} EG_{m,y}$
Data unit:	MWh
Description:	The summation of total Electricity Generated (MWh) from all the wind turbines at the site and connected to a particular feeder as measured at the individual controllers.
Source of data to be used:	Monitored through meters.
Value of data	This will be monitored daily and summation of month will be summarised.
Description of measurement methods and procedures to be applied:	Direct reading from the controller meter
QA/QC procedures to be applied:	--
Any comment:	Data will be archived during the whole crediting period + 2 years

Data / Parameter:	$EG_{JMR,export}$
Data unit:	MWh
Description:	Total export as measured at the substation feeder of all wind turbines connected to the same feeder.
Source of data to be used:	Monitored through meters.
Value of data	This will be measured monthly.
Description of	The value of total export from the all wind turbines connected to the same

measurement methods and procedures to be applied:	feeder is monitored through main meter & check meter at the substation.
QA/QC procedures to be applied:	Other than main meter, there is check meter to verify the accuracy of main meter. The calibration of the meters will be done annually by state utility. Other than periodic calibration of the meters the reading of both meters, will be matched every month.
Any comment:	Data will be archived during the whole crediting period + 2 years

Data / Parameter:	$EG_{JMR,import}$
Data unit:	MWh
Description:	Total import as measured at the substation feeder of all wind turbines connected to the same feeder.
Source of data to be used:	Monitored through meters.
Value of data	This will be measured monthly.
Description of measurement methods and procedures to be applied:	The value of total import from the all wind turbines connected to the same feeder is monitored through main meter & check meter at the substation.
QA/QC procedures to be applied:	Other than main meter, there is check meter to verify the accuracy of main meter. The calibration of the meters will be done annually by state utility. Other than periodic calibration of the meters the reading of both meters, will be matched every month.
Any comment:	Data will be archived during the whole crediting period + 2 years

Data / Parameter:	**Grid Emission Factor**
Data unit:	t CO_2 / MWh
Description:	Weighted Average Grid Emission rate
Source of data to be used:	Central Electricity Authority – CDM - Carbon Dioxide baseline database latest available version at the time of validation
Value of data	0.86
Description of measurement methods and procedures to be applied:	The used data is from an official source.
QA/QC procedures to be applied:	The archive of data will be maintained for crediting period + 2 years. The archiving will be done both on paper and electronically.
Any comment:	This value will change every year as per the latest information available from CEA.

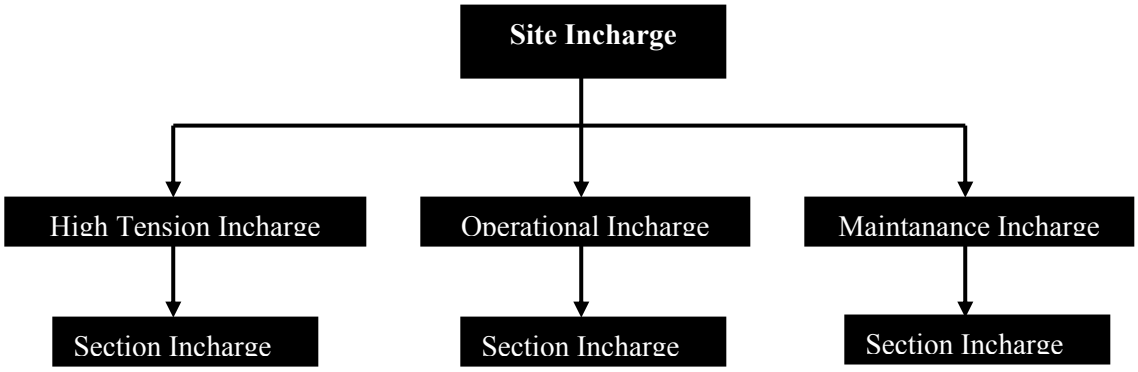
B.7.2 Description of the monitoring plan:

The project participant has signed an operation and maintenance agreement with the supplier of the wind turbines i.e. Suzlon. The agreement is for a period of 10 years. The performance of the turbines, safety in

operation and scheduled /breakdown maintenances is responsibility of Suzlon and are organized and monitored by them. So the authority and responsibility of project management lies with the O & M contractor.

ISO 9001:2000 standard has been adopted by Suzlon, who is responsible for monitoring, calibration and O & M of the project. Training is an essential part of the ISO system. To comply with the ISO standard, the training has to be provided to personnel according there responsibility with in organization.

The organizational hierarchy of Suzlon for O& M management is as follows –



Routine Maintenance Services:

Routine Maintenance Labour Work involves making available suitable manpower for operation and maintenance of the equipment and covers periodic preventive maintenance, cleaning and upkeep of the equipment including –

a) Tower Torquing
b) Blade Cleaning
c) Nacelle Torquing and Cleaning
d) Transformer Oil Filtration
e) Control Panel & LT Panel Maintenance
f) Site and Transformer Yard Maintenance

Security Services:

This service includes watch and ward and security of the wind farm and the equipment.

Management Services:

a) Data logging for power generation, grid availability, machine availability.
b) Preparation and submission of monthly performance report in agreed format.
c) Taking monthly meter reading jointly with utility of power generated at Wind Farm and supplied to grid from the meter/s maintained by utility for the purpose and co-ordinate to obtain necessary power credit report/ certificate.

Technical Services:

a) Visual inspection of the WEGs and all parts thereof.
b) Technical assistance including checking of various technical, safety and operational parameters of the equipment, trouble shooting and relevant technical services.

The project activity essentially involves generation of electricity from wind, the employed WEG can only convert wind energy into electrical energy and cannot use any other input fuel for electricity generation. The operation of WEGs is emission free and no emissions are produced during the lifetime of the WEG.

Although it is being anticipated that there would be no unintended emissions/leakages from this project, however, if any such condition arises, and leakage effect is found due to the project, such leakage will be accounted accordingly as mentioned in the chosen applied baseline methodology.

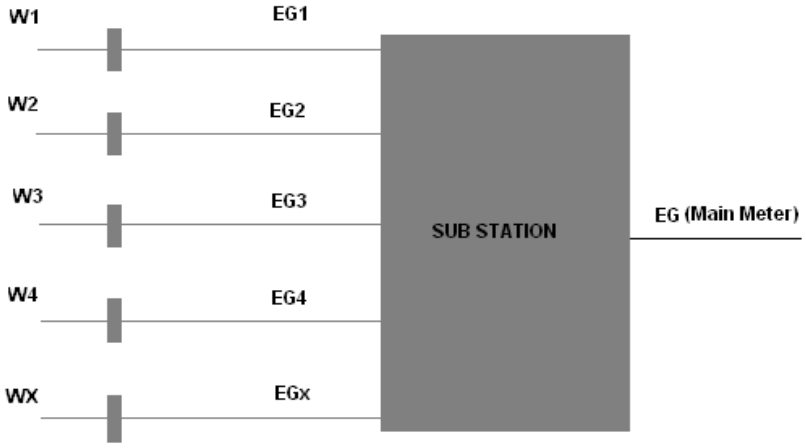
- The proposed project activity requires evacuation facilities for sale to grid and the evacuation facility is essentially maintained by the state power utility (MSEDCL).
- The electricity generation measurements are required by the utility and the investors to assess electricity sales revenue.
- The project activity has therefore envisaged two independent measurements of generated electricity from the wind turbines.
- The primary recording of the electricity fed to the state utility grid is carried out jointly at the incoming feeder of the state power utility (MSEDCL). Turbines for sale to utility are connected to the feeder.
- The joint measurement is carried out once in a month in presence of both parties (the project participant's representative and officials of the state power utility). Both parties sign the recorded reading.
- Metering equipment - Metering is carried out through electronic trivector meters of accuracy class 0.2% required for the project. The main meter has been installed and owned by MSEDCL, whereas the project participant owns the check meters. The metering equipments are maintained in accordance with electricity standards.
- Meter readings - The monthly meter readings (both main and check meters) at the project site and the receiving station are taken simultaneously and jointly by the parties on a pre-determined day of the following month. At the conclusion of each meter reading an appointed representative of the MSEDCL and the project participant's signs a document indicating the number of kWh exported to the grid.
- The secondary monitoring, which provides a backup (fail-safe measure) in case the primary monitoring is not carried out, as it is done at the individual WEGs. Each WEG is equipped with an integrated electronic meter. These meters are connected to the Central Monitoring Station (CMS) of the entire wind farm through a wireless Radio Frequency (RF) network (SCADA). The generation data of individual machine can be monitored as a real-time entity at CMS.

All the relevant data & reports for maintaining accuracy in future monitoring and reporting of GHG's emission reductions is with the project participant, which follows Quality Management System (QMS) procedure as per ISO 9001 and is ISO certified organization.

Project participant has appointed a full time project in-charge to manage the overall project activity after commissioning. The project in-charge supervises the functioning of the wind farm in close coordination with the officials & technical personnel of Suzlon Energy Limited (SEL).

Description of billing calculation from main meter to individual meters

Each substation is connected to a number of wind turbines. The generation reading is collectively displayed by the substation meter. The net generation of each of the wind turbines is then calculated in the following manner:



The generated electricity is measured through a two step procedure wherein the first metering is carried out at the controller of the machine with on-board meter. The monitoring of all these wind turbines is done from a common monitoring station as a part of central monitoring system. The system consists of a state- of- the- art controlling and monitoring and well trained staff personnel of O&M contractor are always present on site to monitor various parameters of power generation and deal with any problems related to generation, transmission or maintenance. EGn,y is the electricity generated from an individual wind turbine measured through its controller meter. The summation of total Electricity Generated (MWh) from all the wind turbines of the project proponent at a particular site is presented as

$$\sum_{0}^{n} EG_{n,y}$$

And the summation of total Electricity Generated (MWh) from all the wind turbines connected to the particular feeder as measured at the individual controllers is presented as

$$\sum_{0}^{m} EG_{m,y}$$

A ratio based on these two set of measured values is used for apportioning the net electricity supplied to the grid by the project activity. The second metering is carried out at grid interconnection point (sub station) wherein the Joint Meter Reading (JMR) is carried out, usually in the first week of every month, in presence of the representatives of the project proponent & the state electricity utility. This JMR is used for calculation of the amount of electricity supplied to the grid against which the utility makes the

payment to the project proponent. The JMR gives both the "export" ($EG_{JMR,export}$) and "import" ($EG_{JMR,import}$) of the electricity to/ from the grid. From these two values, $\mathbf{EG_{(Main\ Meter\ reading)}}$ is calculated by deducting $EG_{JMR,import}$ from $EG_{JMR,export}$. This $EG_{(Main\ Meter\ reading)}$ value is then used for calculating net export from individual windmills.

There is a single meter which gives both the export and import values, the reading gives the net value of line losses and auxiliary consumption by all windmills connected to a particular feeder. The apportioning of electricity generated from the various wind turbines is done by the EPC contractor based on the power generation at the controller from the individual wind turbines connected to the main meter. A monthly report on generation and consumption is prepared by the O&M contractor. This report contains details of power exported/imported to/from the grid by each of the wind turbines connected. This value is then used by the project proponent to raise invoice from state utility.

$EG_{(Net\ Export,\ Project\ activity)}$, the electricity supplied to the grid by the project activity is calculated as follows:

$$EG_{(Net\ export\ by\ project\ activity)} = \frac{\sum_{0}^{n} EG_{n,y} * EG_{(Main\ Meter\ reading)}}{\sum_{0}^{m} EG_{m,y}}$$

Where

$EG_{(Net\ export\ by\ project\ activity)}$	Net generation from all the WTGs of the promoter at a particular site.
$\sum_{0}^{n} EG_{n,y}$	Total electricity generated by the WTGs of the promoter as measured at the controller
$EG_{(Main\ Meter\ reading)}$	Total net generation from all wind turbines at the common metering point as calculated by $EG_{JMR,export}$ - $EG_{JMR,import}$ at the substation feeder.
$\sum_{0}^{m} EG_{m,y}$	Total generation of all the WTGs connected to the feeder as measured at controller.

This procedure will be applicable for all the wind turbines of the PP connected to a particular feeder of the substation. The net export to grid from the project activity will be the summation of net export of individual wind mills of the promoter.

The responsibility of calibration, periodical testing, sealing and maintenance of meters is with the respective state utilities. This is done in the presence of representatives of the promoter. The frequency of meter testing is annual or as decided by the state utility. All meters are tested only at the Metering Point. Additionally, each wind turbine is equipped with an integrated electronic meter. The electricity generated is recorded by the O & M staff of the EPC contractor on 24 hour basis

The Accounts department of DFPCL receives the data from both the sources and keeps track of project activity which reduces the carbon emission reductions. The project performance is communicated to the higher management by the accounts department.

Description of calibration of WEG Controller

SCS Controller is a micro-processor based intelligent controller which has been specially designed for control of wind turbines. It uses a Woodward Multi function Relay that has three current inputs from CT and three direct voltage inputs (690 Volts). The analog values of current/voltage are converted into digital signal internally using A/D Converters at very high sampling rate. A software program reads these values and displays instantaneous parameters such as voltage, current, power factor, kVAh, kVArh and kWh. These instantaneous values are then time integrated and displayed/stored. Woodward relay does not have a display and needs special protocol to view energy readings as this relay communicates digital signal through special communication protocol.

In case of Malfunctioning of the controller, the WTG is programmed for automatic shut-down. Hence probability of error in controller meters is negligible.

For the project the feeder connections are as follows:

Villages- Dahndane, Wankute, Mandal & Vavad , Nandurbar

WTG Location No.	WTG Connected on 33 /11KV Feeder
K 441	Ranala
K442	Ranala
K513	Ranala
K514	Ranala
K478	Ranala (Proposed to sift to Gangapur _07 substation vide letter SE/DHL/ESTM/T/No. 9707 dated 08/09/2008)
K503	Ranala

Village – Aichale, Dhule

WTG Location No.	WTG Connected on 220 /33KV Feeder
J 087	Jamde Substation
J 091	Jamde Substation

Training

Training of staff operating and maintaining the WTGs is carried out by the WTG manufacturer and supplier (Suzlon). Special emphasis is given to the training of the employees to enable them to develop their skills to meet changing WTG technology and to provide efficient and effective O&M services. There is an initial learning programme as well as continuous learning programmes for all employees. All newly-hired employees are required to attend an intensive two- to four-week, full-time training programme to familiarize them with business and operations.

Besides the usual training programs for their staff Suzlon conducts specific familiarization capsules for customers, such that they are fully aware of the capabilities of the highly sophisticated WECs of Suzlon.

The training programme focuses mainly on the management, monitoring and maintenance, and safety and reliability aspects of wind power. The objectives include:

1. Understanding the various stages and aspects in the management of Wind Power systems
2. Understanding the importance of monitoring and maintenance of Wind Power systems and hence the various tasks involved in this
3. Understanding the importance of safety and reliability aspects involved with Wind Power and the measures taken.
4. Managing generation and other data for future reference

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

Date of completion of Baseline and Monitoring methodology – 27/11/2008
Name of person/entity determining the baseline: M/s Deepak Fertilisers and Petrochemical Corporation Ltd. and their consultant.

*Project consultant is not project participant.

No Annex 1 party is involved

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:

07.06.2006 (based on purchase order issued to Suzlon)

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

Not opted for.

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:

Applicable

C.2.2.1 Starting date:

The starting date of crediting period is presumed as 01/05/2009 or the date of registration with CDM EB, whichever is later.

C.2.2.2 Length:

10 years and 0 months.

SECTION D. Environmental impacts

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

The project activity does not fall under the purview of Environmental Impact Assessment[12] notification of the Ministry of Environment and Forests (MoEF), Government of India (GOI) and the project activity is exempted from environmental clearances. The project activity has no significant impact on the environment. However, certain foreseen impacts due to the project activity are discussed below:

Impact on air
Wind power plants are known to contribute to zero atmospheric pollution as no fuel combustion is involved during any stage of the operation.

Impact on water
There is absolutely no effluent discharge during operation of wind turbine generators.

Impact on ecology
No harm on the ecological environment is envisaged.

Impact due to noise
Noise is generated due to the movement of rotor blades. Noise is very much below the regulatory norms. It has no direct effect on the population, as the area is less populated and noise generated will be

[12] http://envfor.nic.in/legis/eia/so1533.pdf

attenuated by ambient conditions. Considering the overall impact of the project in reducing GHG's, creation of employment etc., makes this effect negligible.

Socio-economic impacts
There is no inconvenience to the local community due to the transmission lines. The locals have benefited economically through land sales. The project activity helps the upliftment of skilled and unskilled manpower in the region. The project activity provided employment opportunities not only during the construction phase, but will also provide during its operational lifetime. The project activity improves employment rate and livelihood of local populace in the vicinity of the project. Moreover, the project generates eco-friendly, GHG free power, which contributes to sustainable development of the region.

Conclusion
The net impact under environmental pollution category would be positive as all necessary abatement measures would be adopted and periodically monitored. The project activity does not have any major adverse impacts on environment during its construction or operational phase. The human-interest parameters would show positive impacts due to increased job opportunities at the facility as well as other ancillary units coming up.

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:**

Not Applicable.

SECTION E. Stakeholders' comments

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

Project participant identified local communities, farmers, and villagers, as the stakeholders with an interest in the CDM activities. The meeting was conducted on 05/06/2007 at 10:30 for both the sites i.e. Dhule & Nandurbar. Venue of the meeting was Chadvel office of Suzlon Infrastructure Limited. Project participant issued invitation letters to the respective stakeholders requesting them to attend meeting or depute representatives at respective venues:

The agenda of the meeting was as follows:

- Description of the project and its associated benefits
- Queries and responses from the participant and the stakeholders

The stake holder's are of the view that the project participant in its own small way is contributing positively to local economy & development.

E.2	Summary of the comments received:

Stakeholders had no objections from installations of WEGs. Instead they welcomed the investment as it has lead to

- Additional revenue generated through land / lease to outsiders like contractors & their employees.
- Job opportunities for day -to - day maintenance and security of WEGs
- Developments of roads

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

The stakeholders have given positive feedback and thus no measures are required to be taken.

Annex 1

CONTACT INFORMATION ON PARTICIPANTS IN THE PROJECT ACTIVITY

Organization:	Deepak Fertilisers and Petrochemical Corporation Ltd.
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State/Region:	Maharashtra
Postfix/ZIP:	411006
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E-Mail:	dbanerjee@deepakfertilisers.com
URL:	www.dfpcl.com
Represented by:	
Title:	Sr. General Manager (Accounts, Taxation & Project Finance)
Salutation:	Mr.
Last Name:	Banerjee
Middle Name:	--
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Direct FAX:	+91-20- 26683723
Direct tel:	+91-20- 66458070
Personal E-Mail:	--

Annex 2

INFORMATION REGARDING PUBLIC FUNDING

- The project has not received any public funding and Official Development Assistance (ODA).
- The project is a unilateral project.

Annex 3

BASELINE INFORMATION

Baseline emissions are calculated as the MWh produced by the project activity multiplied by an emission coefficient for the Western Region grid, calculated as the weighted average emissions (in kg CO_2equ/kWh) of the current generation mix.

$BE = EGy * CEF_{grid}$

Where EGy is the net quantity of electricity generated by the project in year y, and CEF_{grid} is the carbon emissions factor of the Western Region Grid.

CEF_{grid} is taken from CDM database provided by CEA and it is approved by DNA i.e Ministry of Environment and Forest, India.

Annex 4

MONITORING INFORMATION

The points given below detail the monitoring plan:

- The electronic meter that is used for monitoring is the Export-Import Energy Meter and is, installed before the grid.
- It is a three phase, four wire, 50 Hz, 110 Volts, 6 Amp, Time of Day (ToD), 0.2 class Export-Import tri- vector Energy meter.
- The calibration procedure followed requires periodic calibration by the MSEDCL. MSEDCL is State Electricity Utility Company which functions under Government of Maharashtra (GoM) as per Central Electricity Act & it is responsible for Energy Meter calibration check with their calibrated Reference Standard Meter having traceability with International Standards through Institute for Design of Electric Measuring Instruments, Sion, Mumbai (IDEMI, Govt. of India Institution). The purchaser/ wheeling agent of power performs calibration check in presence of representative of owner.
- The import and export of electricity is continuously monitored by the export/ import meter and the data is recorded on a monthly basis jointly by the participant and the electricity utility
- This meter is located at the delivery point of wind power in MSEDCL grid. This accounts for the import of electricity that is used by the project participant. Hence the net electricity generated is calculated from the joint meter reading and recorded /archived in paper/electronic.

The complete monitoring responsibility is carried out as follows:

Data monitoring	The data will be measured continuously in the Project Promoter (PP)'s energy meters (microprocessor control panel) located at individual WEGs and also in the MSEDCL energy meters located at substation. The Technicians of the CDM team will record the generation data from the PP's meters on a daily basis in log books. The reading from MSEDCL meter will be recorded every month by MSEDCL personnel in the presence of site Engineer. The invoices will be raised on the basis of Joint Meter Reading sheets. The monitoring records will be maintained at the PP's end for the entire crediting period plus two years.
QA/QC procedures	The main & check meters will be calibrated once every year. The monthly MSEDCL meter reading will be cross-checked with the PP's meter data by the Site Engineer. In case the deviation in MSEDCL's recorded data is beyond the allowable limits for energy meters, the PP would request MSEDCL to calibrate/rectify the meter at the earliest. For the period of error, data would be adjusted as described under "Data uncertainties and adjustments". Responsibility of calibration will be with MSEDCL.
Reporting	The Site Engineers (SE) will review the PP's energy meter log books on a daily basis and record the data in computer. On a daily basis, a compilation of the energy data from each WEG will be uploaded in the O&M Contractor's website. This website data will be accessible by the Head - Wind Power Projects (WPP) at the respective project promoter's

	administration office. The Head – WPP will then take a print of the daily report from the website and file it. He will prepare a monthly consolidated report of the energy meter data. The monthly consolidated report will also include reading provided by MSEDCL's monthly report for cross-checking purposes.
Data archiving	Once the monthly reports are approved, it would be archived in paper at the respective administrative office by the Head-WPP. Electronic copy of monthly reports would be archived by the PP. Log books at the site would be archived by the Site Engineer.
Data uncertainties and adjustments	For this parameter, data uncertainties are likely during the following scenarios: • During error in meter • When meter is dismantled for O&M or calibration • When records are lost Error in main meter will be usually identified during cross-checking with check meter. If an error is found in the MSEDCL main-meter, the PP will request MSEDCL for recalibrating the main meter. Data recorded by check meter & the PP's meter minus average transmission losses would be used for emission reduction determination for the error period. When main-meter is dismantled for O&M or calibration, the same procedure as listed above will be used for emission reduction calculation. When records are lost, the JMRs by state utility will be used as reference.

Procedures for internal audit and Management review:

An internal audit of the project activity would be done on a yearly basis by a special audit team. The audit team would comprise of competent person. The team would audit the project for the following aspects among other things:

- Are the monitoring of CDM parameters done in line with the CDM PDD ?
- Is the documentation of monitored CDM parameters done properly?
- Are equipments calibrated and maintained as scheduled?
- Is the quantity of CERs generated inline with that projected in the CDM PDD, if not, what are the reasons for deviation?
- Are necessary corrective actions being taken to address deviations?
- Check the authenticity of data monitored and recorded by random cross-checking with other sources.

The audit team would submit their observations to the Head- Wind Power Projects for his review and necessary action.

Procedures for maintenance of monitoring equipments:

- The Site Engineer would conduct a physical inspection of all the energy meters once a month
- Any maintenance requirements would be immediately attended
- The responsibility of maintenance will be with the Site Engineer

Internal Audit and GHG Compliance at the Suppliers End

Since the promoters have signed an O&M contract with the suppliers of the windmills i.e. Suzlon, internal audits regarding GHG compliance is carried out by the suppliers.

The Suzlon Quality Management system is constantly reviewed by both internal and external audit to ensure ongoing adherence to the highest international standards of quality control and assurance. The quality systems are certified as compliant with the requirements of ISO 9001 (2000) by Det Norske Veritas (DNV), one of the leading global registrars of Quality Management systems. GHG compliance of the project activity is associated with the ISO 9001 system and project performance reviews will be conducted and verified on a regular basis.