CLEAN DEVELOPMENT MECHANISM
PROJECT DESIGN DOCUMENT FORM (CDM-PDD)
Version 03 - in effect as of: 28 July 2006

CONTENTS

Annexes

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 project activity

A.1 Title of the project activity:

>> 8.75 MW Wind Power Project by Taurian Iron & Steel Company Private Limited in District Sangli, Maharashtra, India.
Version: 05
Date- 23/10/2008

A.2. Description of the project activity:

>>

Description of the project activity

The proposed project activity involves the establishment of a wind farm of 8.75 MW installed capacity enabling generation of electricity by Suzlon 1250 kW Wind Electricity Generators in Sangli district in the state of Maharashtra in western India. The project location at Sangli is in the 40 potential wind sites identified by Ministry of Non Conventional Energy Sources (MNES, now called MNRE – Ministry of New and Renewable Energy), Government of India, having wind power density of 388 W/m^2 and 398 W/m^2 respectively at 50 m height.

Table 1: Ownership details of the companies

Name of the Company	Number of WEGs	Total Installed Capacity	Location
Taurian Iron & Steel Company Private Limited	7 x 1250 kW	8.75 MW	Waiphale,Tisangi,Dahiwadi,Ghatnandre District : Sangli

The electricity generated from the project will be initially fed into a 33 kV grid, and will then be further stepped up to 110 and 230 kV grid lines.

The electricity generation from this wind park will contribute to annual GHG reductions estimated at 13228 tCO_2e (tonnes of carbon dioxide equivalent). Although the project life is envisaged as 20 years, it is proposed that the project activity needs to mitigate the risks involved in Renewable Energy Technology for the first 10 years. During the proposed 10 years crediting period, the project is expected to reduce approximately 13228 tCO_2e, thereby generating equivalent amount of Certified Emission Reductions ("CERs").

Purpose of the project activity

The main purpose of the project activity is to generate electrical energy through sustainable means using wind power resources, the generated output of electricity will be fed to the grid and to contribute to climate change mitigation efforts. This renewable energy will partially substitute the electricity currently evacuated into the grid by the thermal power plants.

Apart from generation of renewable electricity, the project has also been conceived for the following:

- To enhance the propagation of commercialisation of wind turbines in the region

- To contribute to the sustainable development of the region, socially, environmentally and economically
- To reduce the prevalent regulatory risks for this wind park through revenues from the CDM

View of the project participants on the contribution of the project activity to sustainable development

Ministry of Environment and Forests, Govt. of India has stipulated the following indicators for sustainable development in the interim approval guidelines for CDM projects:

a > Social well being – *The CDM project activity should lead to alleviation of poverty by generating additional employment, removal of social disparities and contribution to provision of basic amenities to people leading to improvement in quality of life of people.*
The proposed project activity leads to alleviation of poverty by establishing direct and indirect employment benefits accruing out of operation and maintenance of the project activity. The infrastructure in and around the project area will also improve due to project activity. This includes development of road network and improvement of electricity quality, frequency and availability as the electricity is fed into a deficit grid.

b >Economic well being - *The CDM project activity should bring in additional investment consistent with the needs of the people*.
The project activity leads to an investment of about INR 439.6 million to a developing region which otherwise would not have happened in the absence of 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 & sub-urban habitants) which will provide 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.

c > Environmental well being - *This should include a discussion of impact of the project activity on resource sustainability and resource degradation, if any, due to proposed activity; bio-diversity friendliness; impact on human health; reduction of levels of pollution in general.*
The project utilizes wind energy for generating electricity which otherwise would have been generated through alternate fuels (most likely - fossil fuel) based power plants, contributing to 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 resource, using wind energy to generate electricity contributes to resource conservation. Thus the project causes minimal negative impact on the surrounding environment contributing to environmental well-being.

d >Technological well being - *The CDM project activity should lead to transfer of environmentally safe and sound technologies with a priority to the renewables sector or energy efficiency projects that are comparable to best practices in order to assist in upgradation of technological base*.
The project activity leads to the promotion of Wind Electricity Generators (WEGs) into the region, demonstrating the success of small, medium and large sized 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.

A.3. Project participants:

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Table 2: 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)
Government of India (Host Country)	Taurian Iron & Steel Company Private Limited	No

A.4. Technical description of the project activity:

A.4.1. Location of the project activity:

A.4.1.1. Host Party(ies):

>> Government of India

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

>> State – Maharashtra
District – Sangli

A.4.1.3. City/Town/Community etc:

>> District – Sangli
Villages- Waiphale, Tisangi, Dahiwadi, Ghatnandre.

A.4.1.4. Detail of physical location, including information allowing the unique identification of this project activity (maximum one page):

>> The project activity is located in Village Dahiwadi, Tisangi, Ghainandre, and Waiphale, which fall in the Sangli district of the state of Maharashtra. The wind data at the Dhalgaon site is adequately promising. According to the MNES survey the mean annual wind speed at Dhalgaon has been observed as 5.89 m/s (at 20/25 m hub height)[1]. The mean annual wind power density at this site has been observed as 216 W/m^2. The geographical details of the location are given below:

Table 3: Geographic details of the location

Location	District	Latitude	Longitude	Elevation

[1] http://www.windpowerindia.com/statwind2.html

		N		E		
		Deg.	Min	Deg.	Min	Above mean sea level
Dhalgaon	Sangli	17	08	74	59	810

Figure 1: Location of Maharashtra in India

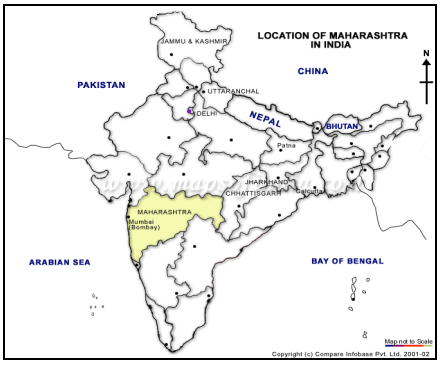


Figure 2: Map of Maharashtra

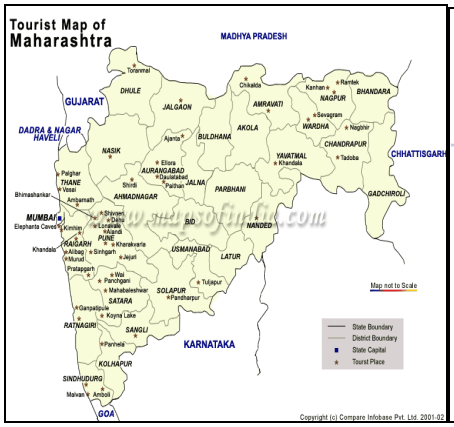
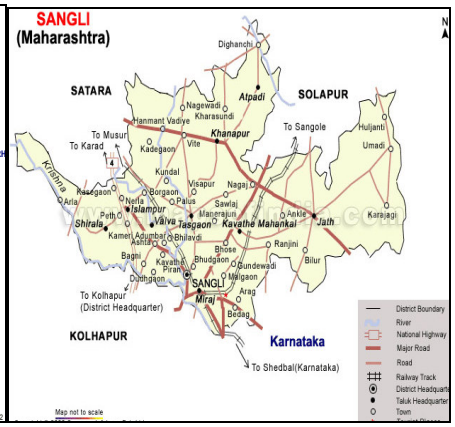


Figure 3: District Map of Sangli



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

Type and Category

Since, the capacity of the proposed project is only 8.75 MW, which is less than the maximum qualifying capacity of 15MW, the project activity has been considered as a small scale CDM project activity and UNFCCC indicative simplified modalities and procedures are applied. The project activity utilizes the wind potential for power generation and exports the generated electricity to the grid. According to small-scale CDM modalities the project activity falls under:

Sectoral Scope 1 Energy industries (renewable / non renewable sources)
Type – I Renewable Energy Projects

Category I-D Grid connected renewable electricity generation

Technology

In wind energy generation, kinetic energy of wind is converted into mechanical energy and subsequently into electrical energy. Wind blowing at high speeds, has considerable amount of kinetic energy. When this kinetic energy passes through the blades of the wind turbines, it is converted into mechanical energy and rotates the wind blades. When the wind blades rotate, the connected generator also rotates, thereby producing electricity. The technology is a clean technology since there are no GHG emissions associated with the electricity generation. The project installs Suzlon make seven WEGs 1.25 MW individual capacity.

Technology - 1.25 MW WEG

A direct grid-connected high-speed generator, in combination with the multiple-stage combined spur/planetary gearbox of the Suzlon Megawatt Series, offers greater robustness and reliability than a low-speed generator connected to the electrical grid via AC-DC-AC-inverter systems. High-speed asynchronous generator with a multi-stage intelligent switching compensation system delivers power factor up to 0.99. The generated power is free from harmonics and is grid friendly.

Operating Data:

1. Cut in Speed: 3 m/s
2. Rated Speed: 14 m/s
3. Cut out speed: 25 m/s
4. Survival Speed: 65 m/s

Rotor:

1. Blade: 3 Blade Horizontal Axis
2. Swept Area: 3421.19 m^2
3. Rotational Speed: 13.9 / 20.8 rpm
4. Regulation: Pitch Regulated
5. Rotor Diameter: 66 m
6. Hub Height: 74 m

Generator:

1. Type: Asynchronous 4 / 6 Poles
2. Rated Output: 250 / 1250 kW
3. Rotational Speed: 1010 / 1515 rpm
4. Frequency: 50 Hz

Gear Box:

1. Type: Integrated (1 Planetary & 2 Helical)
2. Gear Ratio: 1: 74.917

Yaw System:

1. Drive: 4 electrically driven planetary gearbox
2. Bearings: Polyamide slide bearings

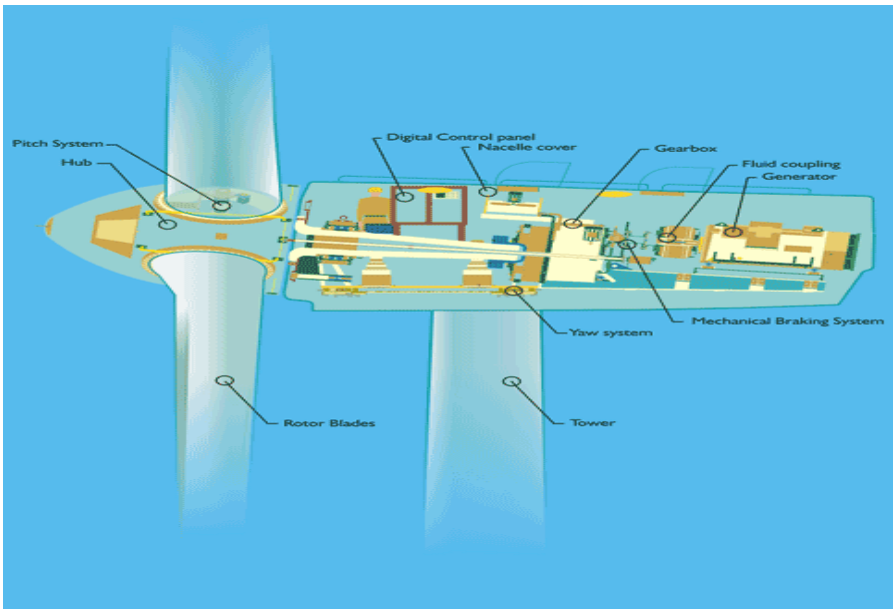
Braking System:

1. Aerodynamic Brake: 3 independent systems with blade pitching
2. Mechanical Brake: Hydraulic fail safe disc braking system

Control Unit:

1. Type: Programmable microprocessor based; high speed data communication, active multilevel security, sophisticated operating software, advance data collection remote monitoring & control option, UPS backup, Real time operating indication.

Technical description of technology used:



Technology transfer

There is no technology transfer involved in the project activity.

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

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Table 4: Estimated amount of Emission Reductions

Years	Annual Estimation of Emission Reduction in tonnes of CO_2e
2008 - 2009	13228
2009 - 2010	13228

2010 - 2011	13228
2011 - 2012	13228
2012 - 2013	13228
2013 - 2014	13228
2014 - 2015	13228
2015 - /2016	13228
2016 - 2017	13228
2017 - 2018	13228
Total estimated reductions (tonnes of CO_2e)	132280
Total number of crediting years	10
Annual average over the crediting period of estimated reductions (tonnes of CO2 e)	13228

A.4.4.Public funding of the project activity:

>> There is no public funding involved in the project activity.

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

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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 debundled 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 1km of the project boundary of the proposed small scale activity

The project promoters hereby confirm that there is no registered small scale project activity registered within the previous two years with them in the same project category and technology whose project boundary is within 1km of the project boundary of the proposed small scale activity. Thus the project is not a de-bundled component of any other large scale 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 project activity:

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Project Type: I - Renewable energy project
Project Category: I D - Grid connected renewable electricity generation

Version:	12
Date :	valid from 10th August 2007
Reference:	Appendix B of the Simplified Modalities & Procedures for small scale CDM project activities.

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

>> The project category is renewable electricity generation for a grid system, which is also fed by both fossil fuel fired generating plants (using fossil fuels such as coal, natural gas, diesel, naphtha etc.) and non-fossil fuel based generating plants (such as hydro, nuclear, biomass and wind). Hence, the applicable baseline, as per Clause 29 of Appendix B, indicative simplified baseline and monitoring methodologies is the kWh produced by the renewable generating unit multiplied by an emission coefficient (measured in kgCO2/kWh) calculated in a transparent and conservative manner.

The project activity meets the eligibility criteria to use simplified modalities and procedure for small-scale CDM project activities as set out in paragraph 6 (c) of decision 17/CP.7.

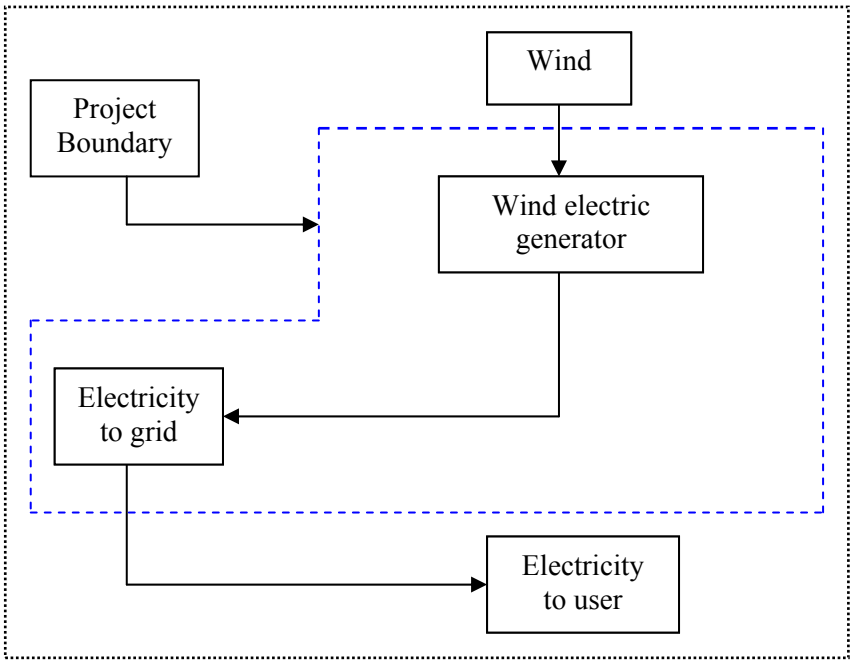
B.3. Description of the project boundary:

>> The project boundary is defined as the notional margin around a project within which the project's impact (in terms of GHG reduction) will be assessed. As per the Appendix B of simplified modalities & procedures for small-scale CDM-project activities, the project boundary is "The project boundary encompasses the physical, geographical site of the renewable generation source."

The project boundary is thus composed of the Wind Energy Generators, the metering equipment for each generator and substation, and the grid which is used to transmit the generated electricity.

The project is supplying the generated electricity to the Western Region Grid, thus the Western grid, which includes all the power plants connected physically to this system, has been chosen as the grid system for the baseline calculation.

Figure 4: Project Boundary



Grid System of the proposed project activity:

There are three choices available for choosing the grid system for the project activity, viz. national grid, regional grid or state grid.

In India, electricity is a concurrent subject between the State and the Central Governments. The perspective planning, monitoring of implementation of power projects is the responsibility of Ministry of Power, Government of India. At the state level the state utilities or State Electricity Boards (SEBs) are responsible for generation, transmission, and distribution of power. With power sector reforms there have been unbundling and privatisation of this sector in many states. Many of the state utilities are engaged in power generation also. In addition, there are different central / public sector organizations involved in generation like National Thermal Power Corporation (NTPC), National Hydro Power Corporation (NHPC), etc. in transmission e.g. Power Grid Corporation of India Ltd. (PGCIL) and in financing e.g. Power Finance Corporation Ltd. (PFC).

There are five regional grids: Northern, Western, Southern, Eastern and North-Eastern. Different states are connected to one of the five regional grids as shown in the Table below-

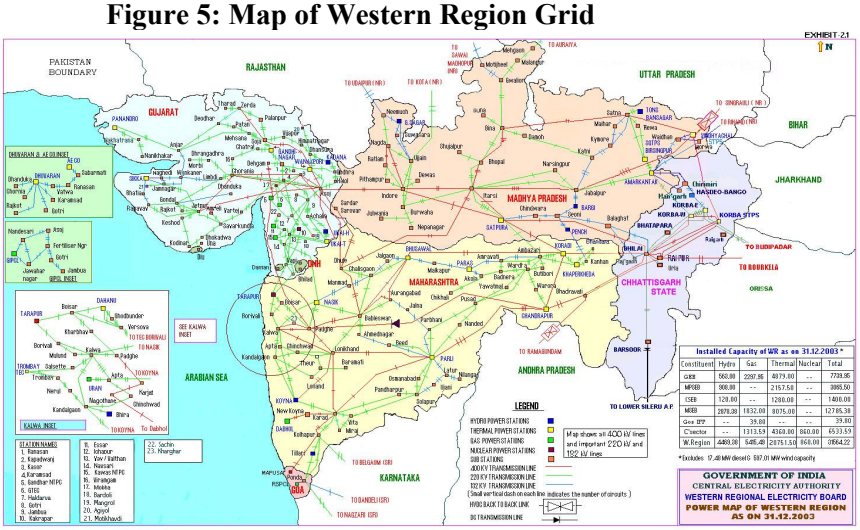
Table 5: States connected to different regional grids

Regional grid	Northern	Western	Southern	Eastern	North Eastern
States	Haryana, Himachal Pradesh, Jammu & Kashmir, Punjab, Rajasthan, Uttar Pradesh, Uttaranchal, Delhi, Chandigarh	Gujarat, Madhya Pradesh, Maharashtra, Goa, Chattisgarh	Andhra Pradesh, Karnataka, Kerala, Tamil Nadu, Puducherry	Bihar, Orissa, West Bengal, Jharkhand Sikkim	Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Tripura

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

The Western Region grid managed by Western Region Electricity Board (WREB) constitutes five states (viz Maharashtra, Madhya Pradesh, Chhatisgarh, Gujarat and Goa) and two Union territories (Daman & Diu and Dadar & Nagar Haveli). These states under the regional grid have their own power generating stations as well as centrally shared power-generating stations. While the power generated by own generating stations is fully owned and consumed through the respective state's grid systems, the power generated by central generating stations is shared by more than one state depending on their allocated share. WREB facilitates the share of power generated by the central generating stations. Presently the share from central generating stations is a small portion of their own generation.

Figure 5: Map of Western Region Grid



Since the CDM project would be supplying electricity to the western regional grid it is preferable to take the regional grid as project boundary than the state boundary. It also minimizes the effect of inter state power transactions, which are dynamic and vary widely. Considering free flow of electricity among the member states and the union territory through the Western Region Load Dispatch Centre (WRLDC), the entire western grid is considered as a single entity for estimation of baseline.

B.4. Description of baseline and its development:

The approach adopted for selecting the baseline scenario for the project is based on the existing actual emissions. The project generates electricity and supplies it to the western regional grid. In the absence of the CDM project, the grid would have continued to draw electricity from the current sources of generation.

Appendix B to the simplified Modalities and Procedures for Small-Scale CDM project activities (FCCC/CP/2002/7/ADD.3) gives two options for calculating the baseline for a Type I D project:

(a) The Weighted average of the "approximate operating margin" and the "built margin" or the Combined Margin

OR

(b) The weighted average emissions (in tCO_2 eq./MWh) of the current generation mix.

As per the *Indicative simplified baseline and monitoring methodologies for selected small scale CDM project activity categories* the baseline should be calculated in a conservative and transparent manner.

Below is a comparison of the Emission Co-efficient from the two methods mentioned above. Only the more conservative of two would be used for the calculation of emission reductions.

Combined Margin Emission Co-efficient:

Step 1: Calculation of Operating Margin Emission Factor
The operating margin emission factor has been calculated using a 3 year data vintage:
The $EF_{OM,Y}$ is estimated to be:

Simple Operating Margin (tCO2/MWh) (incl. Imports)

	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07
North	0.9768	0.9778	1.0003	0.9872	0.9801	0.9992	0.9985
East	1.2198	1.1874	1.1704	1.1960	1.1745	1.1291	1.0909
South	1.0237	1.0027	1.0075	1.0048	1.0009	1.0079	1.0030
West	0.9782	1.0101	0.9850	0.9921	**1.0129**	**1.0039**	**0.9936**
North-East	0.7353	0.7107	0.7437	0.7366	0.9019	0.6994	0.7031
India	1.0132	1.0204	1.0171	1.0219	1.0236	1.0191	1.0106

For the year 2004-2005 the $EF_{OM,Y}$ is 1.0129 tCO_2/MWh
For the year 2005-2006 the $EF_{OM,Y}$ is 1.0038 tCO_2/MWh
For the year 2006-2007 the $EF_{OM,Y}$ is 0.9936 tCO_2/MWh

Thus the final $EF_{OM,Y}$ based on three years average is estimated to be 1.0034 tCO_2/MWh.

Step 2: Calculation of the Build Margin Emission Factor $EF_{BM,Y}$

Build Margin (tCO2/MWh) (not adjusted for imports)

	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07
North					0.5336	0.6006	0.6283
East					0.9043	0.9672	0.9281
South					0.7047	0.7101	0.7055
West					0.7700	0.6300	**0.5938**
North-East					0.1456	0.1489	0.2265
India					0.6944	0.6838	0.6771

The $EF_{BM,y}$ is estimated as 0.5938 tCO_2/MWh (with sample group m constituting most recent capacity additions to the grid comprising 20% of the system generation).

Step 3: Calculation of Baseline Emission Factor EF_y
The baseline emission factor EF_y is calculated as the weighted average of the Operating Margin emission factor ($EF_{OM,y}$) and the Build Margin emission factor ($EF_{BM,y}$):

$EF_y = w_{OM} EF_{OM,y} + w_{BM} . EF_{BM,y}$

Where the weights w_{OM} and w_{BM}, are 75% and 25% respectively, and $EF_{OM,y}$ and $EF_{BM,y}$ are calculated as described in Steps 1 and 2 above and are expressed in tCO_2/MWh.

Baseline Emission factor: **0.9009 tCO_2/MWh**

Weighted Average Emission Co-efficient:

Weighted Average Emission Rate (tCO2/MWh) (incl. Imports)

	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07
North	0.7237	0.7265	0.7406	0.7098	0.7235	0.7274	0.7373
East	1.0600	1.0320	1.0852	1.0760	1.0534	1.0507	0.9957
South	0.7388	0.7498	0.8242	0.8423	0.7850	0.7360	0.7219
West	0.8991	0.9249	0.9045	0.9025	0.9243	0.8922	**0.8629**
North-East	0.4249	0.4143	0.4030	0.4281	0.5150	0.3309	0.3974
India	0.8191	0.8285	0.8521	0.8480	0.8398	0.8147	0.8001

The weighted emission rate for the current generation mix as per the CEA CO2 Baseline database is **0.8629 tCO_2/MWh**

As calculated from the CEA published baseline data of the Indian power sector, the weighted average emission rate gives a more conservative emission co-efficient than the Combined Margin (CM) baseline.
Thus, approach (b) the weighted average emissions (in tCO_2eq/MWh) of the current generation mix has been taken for the calculation of baseline.

Moreover, the *Indicative simplified baseline and monitoring methodologies for selected small scale CDM project activity categories* also specifies that the applicable emission co-efficient data should be as per the year in which project generation occurs. The actual emission reductions will then be calculated in each year of the crediting period based on the observed net generation and the weighted average emission factor for the respective year.

Details of Baseline data:
Data for Weighted Average Emission Rate (tCO_2/MWh) has been obtained from the following:
'The CO2 Baseline Database for the Indian Power Sector'
Central Electricity Authority (CEA), Ministry of Power.
Version 3
Dated: 15th December 2007
This database is prepared as per ACM0002 version 6.

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:

>> Justification for additionality of the project

UNFCCC simplified modalities seek to establish additionality of the project activity as per Attachment A to Appendix B, which listed various barriers, out of which, at least one barrier shall be identified due to which the project would not have occurred any way. Project participants identified the following barriers for the proposed project activity:

Project proponents had to face various barriers to innovate and implement the project activity that would prevent the installation of the technology. The following section addresses barriers faced by project proponents to implement the project activity.

Investment barrier:

Project proponents had to face various barriers to innovate and implement the project activity that would prevent the installation of the technology. The following section addresses barriers faced by project proponents to implement the project activity.

Maharashtra Electricity Regulatory Commission assessed that the CUF for the Group-III WTGs that are commissioned after 31st March 2003 could be 20% and the same was being used for the tariff determination. Project Proponent has utilized the same data for the conservative estimation of electricity generation from their windmill installations.

The benchmark analysis was carried out in accordance with Sub-step 2b: Option III and the benchmark is chosen using (6) b of the additionality tool version 05.

For the financial analysis the project IRR was identified as a financial indicator. Project IRR had been calculated based on project cash outflows and inflows. The project IRR is a measure for return on investment.

The Weighted Average Cost of Capital (WACC) was identified as a relevant benchmark value for the project activity, as the WACC represents the actual cost of debt and return on equity for the project activity based on conservative assumptions and estimates relevant to the Indian power sector (example beta value).

WACC represents the weighted average of the required returns of the project proponent for the project activity -the equity investors and debt creditors. It can be considered as a minimum rate of return which the project should earn to merit consideration by all investor groups (investors and creditors).

In other words the investment is financially reasonable if the project IRR should exceed the minimum required rate of return –i.e. the weighted average cost of capital (WACC).

WACC Calculation

Cost of debt

The post tax cost of debt was estimated based on the actual lending rate for the project activity. (Refer loan papers for cost of debt).

Cost of Equity Calculation

Expected return on equity has been arrived at using the Capital Asset Pricing Model (CAPM).The formulae used to calculate expected rate of return on equity is given below:

$$E(r_e) = r_f + Equity\ Beta * [E(r_m) - r_f]$$

Where:
$E(r_e)$ is the expected rate of return on equity (cost of equity)
$_{rf}$ is the risk-free rate of return (e.g. return on government bonds)
$E(r_m)$ is the expected rate of return on a market portfolio
Equity Beta (β) is the coefficient reflecting the volatility (risk) of the stock relative to the market, which measures the systematic risk of the stock.

As mentioned above, the required return on equity investment is the return of a risk-free security plus beta times the difference between the market return and the risk-free return. The long term Government of India Securities can be the most conservative risk free return in the Indian economy and the same has been taken from Annual Report, Reserve Bank of India, 2004-05, for the calculations. Stock index has been used to represent the market return. With a view to eliminating the unsystematic risks associated with the projects totally, BSE - 500 indexes has been taken to represent the market return. The market return has been arrived based on the average annual return of the listed securities forming part of BSE - 500 indexes for five years prior to the investment decision. This leaves the systematic risk (βe or beta) to be accounted for, which in the CAPM model is referred to as market beta (β).There can be no objective method of selecting the beta value, which is acceptable to investors (which determines required rate of return), than the beta value of existing companies engaged in the similar activity. The annual market return which is based on average return of the listed securities is multiplied by asset beta of similar companies which takes into account the *specific risk of the project type.* By doing so, the risk associated with the specific project type is well accounted.

In the case of project proponent a similar/comparable (listed) firm is identified, and the asset beta of that firm is used as a proxy for the asset beta of the company (Taurian Iron and Steel Co. P.Ltd.). At the time of project investment decision making BF Utilities was the only listed wind power generating company in the BSE index. Hence the asset beta for BF Utilities has been derived and used for calculating the Equity beta of the Taurian Iron and Steel Co.P.Ltd, the equity beta has been conservatively estimated to be 1.81.

Based on the above, the cost of financing the project has been computed, which represents standard returns in the market, considering the *specific risk of the project type*. The cost of financing works out to 14.73%

Using the above two values cost of debt and cost of equity, the WACC works out to be 14.73%, which gives the conservative estimate return to Taurian Iron and Steel. Co. P. Ltd. for this wind power project.

The investment analysis of the project was carried out in a conservative and transparent manner with the following assumptions:

Project Details:	
Size of the Project(MW)	1.250
Location of the Project	Sangli, Maharashtra
No of WTGs	7
Project Cost/WTG:	
Project Cost(Rs. Lakhs)	4557.22
Land Cost (Rs. Lakhs)	105
Loan Processing Charges(Rs. Lakhs)	30.50
Total Cost(Rs. Lakhs)	4692.72
Recuring Cost:	
O&M Cost (Rs. Lakhs)	10
O&M Escalation (%)	5%
Insurance Cost(Rs. Lakhs)	0.70
Depreciation Rates:	
Annual Depreciation as per companies act (%)	5.28%
Depreciation as per IT Act (%)	80.00%
Project Financials:	
Equity (Rs. Lakhs)	1642.72
Debt (Rs. Lakhs)	3050
Interest Rate	9.10%
Tariff Details:	
Tariff (Rs./KWh)	3.50
Escalation (Rs./Kwh)	0.15
Tax Components:	
MAT(%)	8.42%
Corporate Tax(%)	33.66%
CDM Components:	
CER Price (in $)	12.00
Emission Factor	0.8613*
$-Rupee Conversion Factor	44.95
Generation Details:	
CUF (%)	20.00%
Generation (Lac Units)	153.30

The Project IRR is the indicator which will represent the appropriate financial returns for the project proponent and is tabulated below:

SI. No	Project IRR without CDM Revenue	Project IRR with CDM Revenue
1	12.15%	13.68%

Analysis

The WACC represents a return on investment demanded by investors and creditors. In contrast to the estimated WACC benchmark of 14.73%, the project IRR (excluding CER revenues) over the 20 years project activity lifetime works out to be 12.15%.

The project IRR (inclusive of CER revenues) over the 20 years project activity lifetime works out to be 13.68%.

Both the Project IRR and the WACC estimation assumptions are conservative and referenced from public reports and documents.

*The value of emission factor considered for estimation of revenue from emission reduction was provided by Senergy Global Limited (Consultants and Group Company of the EPC contractor) as they were in touch with the project proponent from the project start itself. The value of emission factor used can be verified from the registered project of Senergy Global Limited, project number: 0237 for which the baseline calculation was finalized in August 2005.

Sensitivity Analysis:

A sensitivity analysis was also carried out for the project IRR of the project considering the variability of wind power generation of the region. The sensitivity analysis was carried out taking 10% variation in wind power generation. The analysis shows that even after 10% increase in wind power generation the project IRR for the project remains below the benchmark. The IRR of the project with this variation is listed below.

Sl. No	Electricity Generation	Project IRR without CDM	Project IRR with CDM
1	+ 5 %	13.03%	14.60%
2	+ 10 %	13.88%	15.50%

The above result shows that even after increasing the wind power generation by 10% the project IRR for the project is not crossing the benchmark thus clearly showing financial unattractiveness of the project.

As per the actual generation the PLF for the project activity for the year 2006-07 and 2007-08 is 15.1% and 16.4% respectively which is even lesser than the PLF considered for the project activity i.e 20%.

Regulatory Risk:

A healthy regulatory environment is a pre-requisite for the development of wind power in the country, due to the inbuilt disadvantages of this source. Following are few of the issues which question the feasibility of wind power projects in the existing scenario.

i) Barrier due to CDM benefit sharing

The project promoter has entered into power purchase agreement (PPA) with Maharashtra State Electricity Distribution Company Ltd. (MSEDCL) for the sale of electricity. This Agreement (Article 18, Section 18.02 CDM Benefit) stipulates the following:

> *"MERC shall be approached to review the tariff structure (contained in the Agreement) once the project becomes eligible for CDM benefit or similar credits and any mechanism for sharing of CDM or similar credit between the seller (in this case PPL) and MSEDCL. The decision of the MERC will be binding on both parties."*

Though an Agreement has been signed, the rate at which electricity will be sold to MSEDCL may change if the project is benefited under CDM or they may have to share the benefit with MSEDCL. The extent of sharing of the CDM benefit has not been specified by MERC. Benefit sharing of this sort decreases the net expected revenues to the project and thus affects the returns. Moreover, no fixed proportion of the CDM sharing has been mentioned, thus causing huge uncertainty in the returns to the project. In such a case, a healthy benefit from CDM will ensure that any legible proportion of benefit sharing stated by the MERC does not affect the returns to the project greatly. Hence, this is a big risk undertaken by the project promoter as his revenue, either from the sale of electricity or from the CDM benefit may be affected depending upon the decision of MERC.

Though the investors are eligible for the entire CDM benefits for investing into clean technology yet they would be entitled to only a small portion of it because of the policy of sharing with the utility. Moreover, the financial returns to the project initially conceived would also change if and when the commission revises the tariff applicable. Thus a great deal of uncertainty exists even after the investors become entitled to CDM benefits. The importance of the CDM benefits to the project is reflected from the fact that the investors still want to go for apply for CDM benefits.

ii) Barrier due to short term PPA

The power purchase agreement signed between project participants and the utility will last only for 13 years from the date of commercial operation. Beyond this period, the tariff rate applicable is highly likely to change. Keeping in mind the following issues, decrease in the tariff rates would not be surprising:

- Unhealthy financial status of the utilities
- Introduction of Availability Based Tariff
- Competitive Bidding

Thus, for the rest of the seven years of operation of the project, great deal of uncertainty will exist among the present investors. Moreover, past record related to group 2 projects (projects commissioned between 27th December 1999 and 1st April 2003) do not portray a very encouraging picture. The group 2 projects which had a PPA of ten years are facing great trouble as their agreement has neither been renewed nor extended. Thus, the project proponents are incurring huge losses for the same. In a situation like this, wind power projects are definitely not the most preferable investment strategy. However, the proponents

of this project have still gone ahead to invest in a green energy to contribute to the process of sustainable development.

CDM Consideration:

The time gap between the consideration of CDM by project proponent and appointment of the DOE is because of various reasons which are pointed out in a chronological order in the explanation given below.

The project proponent Taurian Iron and Steel did serious consideration of CDM in their board resolution dated 09 September 2005 prior to which they had meeting with Suzlon Energy in order to have a clarification on availing CDM benefits for their wind project. After getting confirmation from Sulzon energy that environmental friendly project is eligible for registration with UNFCCC for CDM projects the project proponent in their board meeting on 09.09.05 considered to avail CDM benefits for their Wind project.

Project Proponent signed an agreement with the EPC Contractor i.e Suzlon Energy Ltd. on 23 September 2005. Soon after the purchase order the project proponent started looking for appropriate CDM consultant for their wind project.

Sulzon Energy assisted Taurian Iron and Steel Pvt. Ltd in finalizing a CDM Consultant. Project proponent got in touch with Senergy Global to provide CDM consultancy for their project in May 2006.The copy of trailing mails regarding the communication is provided to the DOE. Finally the agreement was signed on 27 January 2007 between the consultant and the project proponent after the series of negotiations and communications.

Due to lack of manpower at Senergy Global PVT Ltd. at that point of time, there was delay in starting the work on the PDD. The Project was presented at the Ministry of Environment and Forest on 30th July 2007.

Simultaneously the DOE was finalized and the project was sent to for webhosting for international stakeholder comments from 25.08 07 to 23.09.07.

Chronology of events of the project activity:

- Offer letter for wind mill installation was sent to the Project proponent on 01.09.2005 by Suzlon Energy.

- A letter for clarification regarding availing CDM benefits for the proposed wind mill installation was sent to Suzlon Energy on 05.09.2005 by Taurian Iron and Steel Pvt. Ltd depicting their seriousness

- A reply from Suzlon Energy was sent to Taurian Iron and Steel Pvt. Ltd on 07.09.2005 confirming the eligibility of renewable energy projects to avail CDM benefits.

- A board meeting by Taurian Iron and Steel Pvt. Ltd was conducted on 09.09.2005 to discuss risk and CDM benefits from the proposed wind Project.

- On 23.09.2005 Taurian Iron and Steel Pvt. Ltd and Suzlon energy got into an agreement and signed the purchase order.

- Out of 7 turbines, 4 got commissioned on 25.03.2006 and the rest 3 got commissioned on 28.03.2006.

- Side by side the project proponent got in touch with Suzlon Energy for helping them in finding an appropriate CDM consultant. Project proponent got in touch with Senergy Global to provide CDM consultancy for their project in May 2006. After series of negotiation and communication between Project proponent and Senergy Global (as per the trailing mails provided to the DOE) both the parties got into an agreement on 27.01.2007.

- The first version of PDD was prepared on 03.05.2007

- The PDD was submitted for Host country approval on 18.06.2007 and the meeting was held on 30.07. 2007.

- The investor signed the agreement with the DOE i.e SGS India on 14.08.2007.

- Project was sent for Webhosting for stakeholders comments from 25.08 07 till 23.09.07.

B.6. Emission reductions:

B.6.1. Explanation of methodological choices:

>>

The project category is renewable electricity generation for a grid system, which is also fed by both fossil fuel fired generating plants (using fossil fuels such as coal, natural gas, diesel, naphtha etc.) and non-fossil fuel based generating plants (such as hydro, nuclear, biomass and wind). Hence, the applicable baseline, as per Clause 29 of Appendix B, indicative simplified baseline and monitoring methodologies is the kWh produced by the renewable generating unit multiplied by an emission coefficient (measured in kgCO2/kWh) calculated in a transparent and conservative manner.

Appendix B to the simplified Modalities and Procedures for Small-Scale CDM project activities (FCCC/CP/2002/7/ADD.3) gives two options for calculating the baseline for a Type I D project:

(c) The average of the "approximate operating margin" and the "built margin"
OR
(d) The weighted average emissions (in tCO_2 equ/MWh) of the current generation mix.

As per the Indicative simplified baseline and monitoring methodologies for selected small scale CDM project activity categories the baseline should be calculated in a conservative and transparent manner. Since according to the baseline data published by the Central Electricity Authority (CEA), the weighted average emission rate gives a more conservative emission co-efficient, baseline approach (b) the weighted average emissions (in tCO_2 e/MWh) of the current generation mix has been taken for the calculation of baseline.

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

EF_y

Data / Parameter:	Weighted Average Emission Rate (tCO2/MWh) (incl. Imports)
Data unit:	tCO_2/MWh
Description:	Emission factor of the existing generation mix for Western Grid
Source of data to be used:	CEA : 'The CO2 Baseline Database for the Indian Power Sector' http://www.cea.nic.in/planning/c%20and%20e/Government%20of%20India%20website.htm
Value of data applied for the purpose of calculating expected emission reductions in section B.5	0.8629 tCO_2/MWh
Description of measurement methods and procedures to be applied:	The methods for measuring EF_y can be found in the User Guide for the CO2 Baseline Database for the Indian Power Sector by CEA. The URL is as below: http://www.cea.nic.in/planning/c%20and%20e/user_guide_ver2.pdf
QA/QC procedures to be applied:	The data for the EF_y would be calculated by the Central Electricity Authority of India every year. Thus, the data would reflect the updated existing generation mix for the western grid and used ex-post.
Any Comment	Used to calculate emission reductions

B.6.3 Ex-ante calculation of emission reductions:

The baseline is calculated using the weighted average emission rate approach. The baseline emission factor is calculated in the following steps:

Step 1: Calculation of Weighted Average Emission Rate (tCO2/MWh) (incl. Imports)

The weighted emission rate for the current generation mix as per the CEA CO2 Baseline database (version 3) is 0.8629 tCO_2/MWh (EF_y)

Step 2: Calculation of Baseline Emissions (BE_y)
Baseline emissions due to displacement of grid electricity are the product of the baseline Weighted Average Emission Rate (tCO2/MWh), times the electricity supplied by the project activity to the grid (EG_y), over the crediting period.

$BE_y = EG_y . EF_y$

Baseline Emissions = 13228 tCO2e/yr

Step 3: Calculation of Emission Reductions (ER_y)

The emission reductions by the project activity during a given year y is the difference between Baseline emissions (BE_y), project emissions (PE_y) and emissions due to leakage (L_y).

$ERy = BE_y – PE_y – L_y$

- Project Emissions by sources of GHGs due to the project activity within the project boundary are zero since wind power is a GHG emission free source of energy.
- Leakage is not applicable as the renewable energy technology used is not equipment transferred from another activity. Therefore, as per the simplified procedures for SSC project activities, no leakage calculation is required.

Total project activity emissions, including leakage are zero for the project activity.

Therefore, Net anthropogenic emission reductions due to the proposed project are equal to the baseline emissions on a yearly basis. The project activity will evacuate approximately 15330 MWh/yr of renewable power annually to the power deficit Western Region Grid and the annual emissions reductions are equal to 13228 tCO2.

Key baseline information is furnished in Annex 3.

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

>>

Table 6: Ex-ante estimation of emission reductions:

Year	Estimation of baseline emission reductions (tonnes of CO_2e)	Estimation of project activity emissions (tonnes of CO_2e)	Estimation of Leakage (tonnes of CO_2e)	Estimation of emission reductions (tonnes of CO_2e)
2008 - 2009	13228	0	0	13228
2009 - 2010	13228	0	0	13228
2010 - 2011	13228	0	0	13228
2011 - 2012	13228	0	0	13228
2012 - 2013	13228	0	0	13228
2013 - 2014	13228	0	0	13228
2014 - 2015	13228	0	0	13228
2015 - 2016	13228	0	0	13228
2016 - 2017	13228	0	0	13228
2017 - 2018	13228	0	0	13228
Total (tonnes of CO_2e)	**132280**	**0**	**0**	**132280**

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

B.7.1 Data and parameters monitored:

According to AMS I D, for this project the parameters that needs to be monitored is the electricity generation and the baseline emission factor which is calculated ex post.

The following parameter will be monitored during the project activity:

a) EGy

Data / Parameter:	EG_y
Data unit:	MWh
Description:	Electricity supplied to the grid by the project
Source of data to be used:	JMR Sheets/measurement records of the EPC contractor.
Value Applied:	15330 MWh/yr
Justification of the choice of data or description of measurement methods and procedures actually applied :	- Electricity measured is used in calculation of emission reductions. - The electricity is measured with the help of electronic meters both by the operator and the grid representative. - The data is measured hourly and recorded monthly - 100% of the data is monitored - The data will be archived electronically
QA/QC procedures to be applied:	This data will be directly used for calculation of emission reductions. Sales record to the grid and the other records are used to cross check this data and hence ensure consistency.
Any comment:	Electricity is supplied by the project activity to the grid. This is double checked by receipt of sales.

b) EFy

Data / Parameter:	**EF_y**
Data unit:	tCO_2/MWh
Description:	Emission factor of the existing generation mix
Source of data to be used:	CEA: 'The CO_2 Baseline Database for the Indian Power Sector' Version 3, 15th December 2007
Value of data	The baseline emission factor would be furnished every year and data of the year in which project generation occurs will be used.
Description of measurement methods and procedures to be applied:	The data will be taken from the CEA database and this data is made publicly available.
QA/QC procedures to be applied:	The CO_2 Baseline Database is taken from Central Electricity Authority (CEA), Ministry of Power, Govt. of India hence it is authenticated and reliable.
Any comment:	Used to calculate emission reductions every year

B.7.2 Description of the monitoring plan:

>>

The investors have entered into Operation & Maintenance Agreement with the EPC contractors M/s Suzlon Windfarm Services Limited, for carrying out the necessary maintenance of the installations during the designed life of the project. These respective agencies will be responsible for the operation and maintenance structure that will be implemented in order to monitor emission reductions generated by the project activity is as under:

1 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

2 Security Services

This service includes watch and ward and Security of the Wind Farm and the Equipment.

3 Management Services

a) Data logging in 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 SEB, of power generated at the Wind Farm and supplied to SEB Grid from the meter/s maintained by SEB for the purpose and co-ordinate to obtain necessary power credit report/ certificate.

4 Technical Services

a) Visual inspection of the WTG 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 responsibility of registration of the project has been assigned to

Mr. Sandeep Bhadresa
Taurian Iron & Steel Co.Pvt. Ltd.
302-A, Poonam Chambers,
Dr. Annie Besant Road, Worli,
Mumbai, India- 400 018.

Mobile no.- +09322331877
Fax : 91-22-66698010/20
E-mail: sandeep.bhadresha@tauriansteel.com

Mr. Sandeep Bhadresa, has been assigned overall supervision of the project performance including the following:

- Performance review of the WEG installations.
- Arranging for annual verification of the installations for issuance of CERs

Leakage
The project activity essentially involves generation of electricity from wind, the employed WEGs convert wind energy into electrical energy and do not use any other input fuel for electricity generation. Thus no special ways and means are required to monitor leakage from the project activity.

Since the project activity does not involve any leakage and only measurement of generated electricity from wind farm installations will form the basis of annual GHG reduction by the project. The project management does not require any extensive training of personnel. The respective EPC contractors do the operation and maintenance of the installations and measurement of generated electricity is done by state electricity utility. The EPC contractors are ISO certified organizations and follow designated procedures for the assigned tasks. One of the EPC contractors (Suzlon) has also implemented SAP3 for stringent management of project. The operation and maintenance structure for the project activity has been given in a flow chart in Annexure 6.

Metering Equipment
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. Thus no special ways and means are required to monitor leakage from the project activity.

1. The proposed CDM project activity requires evacuation facilities for sale to grid and the evacuation facility is essentially maintained by the state utility MSEDCL, which also requires electricity generation measurements.
2. The project activity has therefore envisaged two independent measurements of generated electricity from the wind turbines.
3. The primary recording of the electricity fed to the state utility grid will be carried out jointly at the incoming feeder of the state power utility, MSEB. The metering is carried out at the sub station via a common meter for a group of windmills that is inclusive of the WEGs not a part of this proposed CDM project activity.
4. The primary monitoring is done through main a meter which is located at the sub station. In case the main meter is not working, the secondary monitoring will provide a backup (fail-safe measure) which is done through Check meters.
5. Each WEG is equipped with an integrated electronic meter called controller meter. This meter is connected to the Central Monitoring Station (CMS) of the wind farm maintained by Suzlon Energy Limited. The generation data of individual machine can be monitored as a real-time entity at CMS. The snapshot of generation on the last day of every calendar month will be kept as a record both in electronic as well as printed (paper) form.
6. JMRs are taken at the feeder level by the local electricity utility. Against the net electricity generation invoices are raised.
7. The investors have entered into Operation & Maintenance Agreement with the EPC contractors M/s. Suzlon Infrastructure Services Limited (SISL), (then, Suzlon Wind Farm Services Limited) for carrying out the necessary maintenance of the installations during the designed life of the project. SISL will be responsible for collecting the necessary data in order to monitor emission reductions generated by the project activity.

8. SISL will do the operation and maintenance of the installations and measurement of generated electricity is done by state electricity utility. The EPC contractors are ISO certified organizations and follow designated procedures for the assigned tasks.
9. The monitoring data will be archived both electronically and on paper by the project proponent and the data will be archived for 10 + 2 years.
10. Wherever, more than one Power Producer(s) are injecting energy produced by them using the common evacuation/ injection system and through the common metering equipment with MSEB, the joint meter reading taken at common evacuation/ injection system shall be supported by meter readings of individual power producers using such common evacuation/injection system. Based on this break up limited to total energy injection, the power supplied from the individual power plant shall be regulated for the purpose of apportioning electricity exported to the grid.
11. Calibration and Testing of Meters will be done annually. The Main meter and Check Meter will be tested for accuracy by MSEDCL's testing division. The MSEDCL will carry out Calibration, periodical testing, sealing and maintenance of meters in the presence of authorized representative(s) of the seller and the representative(s) of the seller shall sign on the result thereof.

Training:

On the job training is provided to the employees for operation and maintenance. Training is also provided associated with specific issues which arise as in when. Periodic training is also provided to the employees in corporate learning centre in which the training range from basics of wind energy to evacuation issues, grid associated problems and other trouble shootings which arise.

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

>>

Date of completion of the baseline study: 15/02/2008

Contact:

Senergy Global Limited (Not a Project Proponent)
Ground Floor, Eros Plaza, Eros Corporate Tower,
Nehru Place
New Delhi – 110019
India
Tel: +91 11 4180 5501/02
Fax: +91 11 4180 5504

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:

>> 23/09/2005 (date of purchase order)

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

>> 20 years 0 months

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

C.2.1. Renewable crediting period

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

>> A fixed crediting period is chosen hence this is not applicable.

C.2.1.2. Length of the first crediting period:

>> N/A

C.2.2. Fixed crediting period:

C.2.2.1. Starting date:

>> 01.10.2008 or the date of registration of the project activity which ever is later.

C.2.2.2. Length:

>>10 years 0 months without renewal

SECTION D. Environmental impacts

D.1. Documentation on the analysis of the environmental impacts, including transboundary impacts:

>> According to Indian regulation, the implementation of the wind park does not require an Environmental Impact Assessment (EIA) study. As per the prevailing regulations of the Host Party i.e. India represented by the Ministry of Environment and Forests (MoEF), Govt. of India and also the line ministry for environmental issues in India, Environmental Impact Assessment (EIA) studies need not to be conducted for the projects which comes under the list whose investment is less than Rs. 1000 millions[2, 3] Since the Wind parks are not included in this list and also the total cost of the project is only Rs 439.6 million, the project activity doesn't call for EIA study.

Also, in the redefined EIA notification i.e. S.O. 1533[4], dated 14th September 2006, Ministry of Environment & Forests (MoEF), Govt. of India, the wind projects are not included in the list of projects that has to get Prior Environmental Clearance (EC) either from State or Central Govt. authorities and hence no EIA study was conducted.

[2] S.O. 60 (E), Environment Impact Assessment Notification, Ministry of Environment and Forests, Govt. of India dated 27th January 1994.

[3] Amendments made on 13th June 2002 vide S.O. 632 (E), Ministry of Environment and Forests, Govt. of India.

[4] Page No: 10, S. O. 1533, Ministry of Environment & Forests (MoEF), Govt. of India, http://envfor.nic.in/legis/eia/so1533.pdf

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

>> The analysis concluded that there are no reasons and areas for concern. The wind park is located in a sparsely populated area with no vulnerable flora or fauna. The wind park results only in positive environmental impacts and no negative impacts

SECTION E. Stakeholders' comments

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

The local stakeholders identified for the project activity were as follow;

- Maharashtra State Electricity Distribution Company limited, MSEDCL
- Maharashtra Energy Development Agency (MEDA)
- The local people of villages Tisangi, Ghatnandre, Yaipahle, Dahiwadi, District Sangli.

The land used for implementation of the Wind farm belongs to the villagers and has been procured by the EPC contractor "Suzlon Energy Limited" for development of WEG wind farm purposes, thus local stakeholders was approached right from the inception of the project.

A stakeholder meeting was conducted for the project to inform the villagers about the CDM project activity. The forum to invite villagers was public forum. The stakeholder meeting was conducted on 10/04/06.

The land used for implementation of project was not used for agriculture or any other economic activities, the real estate agencies involved in the land acquisition carried out meetings with the land owners (landowners and prominent people of villages) and apprised them about the proposed project activity.

E.2. Summary of the comments received:

The clearances and approvals have been received from each of the administrative institutions by the project proponent.

The villagers have made following submissions for consideration:

- The village was lacking basic amenities, and thus EPC contractors were requested to consider some development of the villages.
- Employment, if possible should be given to the local villagers

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

>>

The submissions from the villagers were considered by the concerned management and

- Villagers were provided with basic amenities like Dispensary, ambulance etc

- Employment of O & M staff, up to the level of technicians and machine supervisors has been done for the local villagers only.

Annex 1

CONTACT INFORMATION ON PARTICIPANTS IN THE PROJECT ACTIVITY

Organization:	Taurian Iron & Steel Co. Pvt. Ltd.
Street/P.O.Box:	302-A, Poonam Chambers,
Building:	Dr. Annie Besant Road,
City:	Worli,
State/Region:	Mumbai
Postfix/ZIP:	400018
Country:	INDIA
Telephone:	+91-22-6669 8000 extn: 8042
FAX:	+91-22-66698010/20
E-Mail:	sandeep.bhadresha@tauriansteel.com
URL:	
Represented by:	Mr. Sandeep Bhadresa
Title:	MR.
Salutation:	Manager
Last Name:	Bhadresa
Middle Name:	--
First Name:	Sandeep
Department:	
Mobile:	--
Direct FAX:	--
Direct tel:	--09322331877
Personal E-Mail:	

Annex 2

INFORMATION REGARDING PUBLIC FUNDING

There is no resource to any public funding for the Project Activity

Annex 3

BASELINE INFORMATION

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

Annex 4
Technical Specifications of WEGs

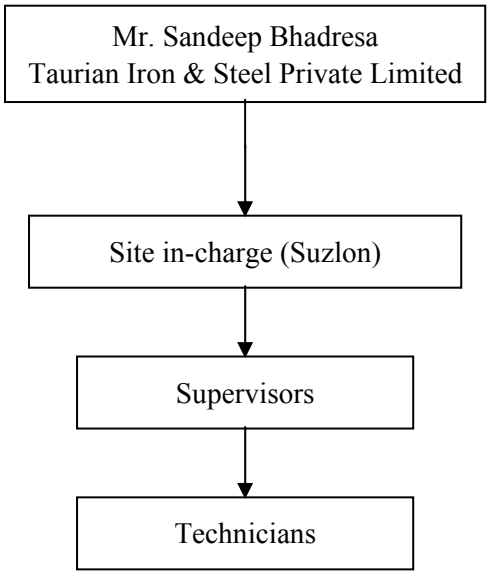
Technical Specifications of various models of SUZLON 1.25 MW WEG

Operating Data	**Models**				
	S.60/1250	**S.64/1250 (50 Hz)**	**S.64/1250 (60 Hz)**	**S.66/1250 (50 Hz)**	**S.66/1250 (60 Hz)**
Rotor diameter	60 m	64 m	64 m	66 m	66 m
Hub height	65 m (variable as per requirements)				
Installed elec. Output	1250 kW				
Cut-in wind speed	3 m/s				
Rated wind speed m/s	14	12	12	14	12
Cut-out wind speed m/s	25				
Survival wind speed m/s	67				
Rotor					
Blade	3 bladed horizontal axis				
Swept area m^2	2828	3217	3421	3421	3421
Rotational Speed	13.9 / 20.8 rpm				
Regulation	Pitch regulated				
Generator					
Type	Asynchronous 4/6 poles				
Rated output	250 / 1250 kW				
	1006/1506	1006/1506	1208/1506	1006/1506	1208/1506
Rotational speed	rpm	rpm	rpm	rpm	rpm
Frequency	50 Hz	50 Hz	60 Hz	50 Hz	60 Hz
Gear Box					
Type	Integrated (1 planetary & 2 helical)				
Ratio	74.917:1	74.917:1	89.229:1	74.917:1	89.229:1
Yaw System					
Drive	4 electrically driven planetary gearbox				
Bearings	Polyamide slide bearings				
Braking System					

Aerodynamic brake	3 independent systems with blade pitching
Mechanical brake	Hydraulic fail safe disc brake system
Control Unit type	Programmable microprocessor-based; high speed data communication, active multilevel security, sophisticated operating software, advance data collection remote monitoring & control option, UPS back up, Real time operation indication
Tower type	Lattice / Tubular, Hot Dip Galvanized, Epoxy / PU coated

Annex 5

Operation and Maintenance Structure for the CDM project



ANNEX 6

Detailed location of the turbines

Wind Turbine No.	Name of Village in Sangli District	Date of Commissioning	Survey No.	Location/Installation No. given by SUZLON
11	Tisangi	24/03/2006	336	G 332
22	Waiphale	24/02/2006	1707	G 373
33	Waiphale	24/02/2006	1713-1709	G 374
44	Waiphale	24/02/2006	1713	G 375
55	Ghatnandre	25/03/2006	423	G 59
66	Dahiwali	27/03/2006	438	G 313
77	Tisangi	27/03/2006	452	G 336

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