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

CONTENTS

Revision history of this document

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

SECTION A. General description of small-scale project activity

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

5.10 MW Bundled Wind Power Project in India
Version : 01
Date : 13.03.2008

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

Renewable sources of energy have a vital significance in the context of growing concern about sustainable energy supplies and protection of the environment from adverse effects of fossil fuel utilization.

Project activity is a bundled wind power project of 5.10 MW. The project activity can generate electricity to the order of 116.32 lacs units annually that can displace approximately 10,481 tonnes of CO_2 equivalent. The electricity generated will be supplied to the state grid of Maharashtra and Gujarat. The wind power produced; being GHG neutral will not only displaces thermal power but will reduce the associated emissions with thermal power generation in the western regional grid of India.

This project activity bringing together various small-scale project activities, to form a single project where the distinctive characteristic of each project has been retained. However for the purpose of the project activity, M/s Standard Greases (Silvassa) Pvt. Ltd. (SGSPL) will act as a co-ordinator and the CER sharing among the participants will be done through internal agreement between the others. Other participants are M/s Standard Oil & Greases Pvt. Ltd. (SOGPL) and M/s Royal Castor Products Ltd. (RCPL). SGSPL & SOGPL will sale-generated energy to state electricity utility while RCPL will use the generated units for captive consumption.

The bundled project activity consists of the following sub-bundles:

Sub bundle	Name of the Sponsor	No. of WEG	Installed Capacity (MW)	Technology Used	WEG Location District / State
1	SGSPL	1	1.5	Suzlon S-82	Sangli/ Maharashtra
		1	1.5	Suzlon S-82	Sangli/ Maharashtra
2	SOGPL	1	1.5	Suzlon S-82	Kutch/ Gujarat
3	RCPL	1	0.6	Suzlon S-52	Kutch/ Gujarat
	Total	**4**	**5.10**		

Purpose of the project activity

The main purpose of the project activity is to generate electrical energy through sustainable means using wind power resources, to utilize the generated output for selling it to the state electricity utility (SGSPL,SOGPL), for captive use (RCPL) and to contribute to climate change mitigation efforts. 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 & economically.
- To reduce the prevalent regulatory risks for this project through revenues from the CDM.

Contribution of project activity to sustainable development

Out of the total coal production in India most of the coal is used to produce power/electricity to meet the basic requirement of various sectors [1].

This results in excessive demands for electricity and place 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. This particular project activity is a step in the same direction.

Government of India has stipulated following indicators for sustainable development in the interim approval guidelines [2] for CER projects.

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

1. Social well being:

- The plant site is an isolated rural area where unemployment, poverty and other economic backwardness are prevailing; the project would lead to the development of the region.
- During the initial stage of project development, a lot of civil works, construction work takes place, which generates employment for local people around the plant site.
- Other than these, there are various kinds of mechanical work, which would generate employment opportunity on regular and permanent basis after the commissioning of the project activity.

[1] http://www.coal.nic.in/annrep0607.pdf Page no. 48

[2] Ministry of Environment and Forest web site: http://envfor.nic.in:80/divisions/ccd/cdm_iac.html

2. Economic well being:

- The project activity generates various employment opportunity which leads to increase in their daily wages in the local area.
- The project activity leads to investment to a developing region which otherwise would not have happened in the absence of project activity. The generated electricity is fed into the 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.
- Use of wind energy for electricity generation instead using fossil fuels like coal reduces stress on the economy of the country.
- Due the project activity land prices in the neighboring area have gone up substantially thereby benefiting the villagers.

3. Environmental well being:

- The project utilizes wind energy for generating electricity which otherwise would have been generated through alternate fuels (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 fossil fuel 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 600 kW of S-52 and 1500 kW of S- 82 WEGs into the region, demonstrating the success of this type of wind turbines, which feed the generated power into Ghatnandre and suthri site sub-station, thus strengthening the grid supply and improving quality of power under the service area of the substation. Hence the project leads to technological well being.

In view of the above, the project participants consider that the project activity profoundly contributes to the sustainable development.

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, Ministry of Environment & Forest (MoEF, India)	• Standard Greases (Silvassa) Pvt. Ltd. • Standard Oil & Greases Pvt. Ltd. • Royal Castor Products Limited	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.		

Refer contact information in Annex – 1 to this PDD.

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

Technology

The project activity consists of WEGs of 600 kW × 1 no. & 1500 kW × 3 nos. manufactured, supplied & maintained by M/s Suzlon Energy Ltd. & installed in Sangli & Kutch districts. The technology as well as service provider for all the WEGs is M/s Suzlon Energy Ltd. The technology is a clean technology since there are no GHG emissions associated with the electricity generation. The technological key features of the S-52, S-82 are as follows:

Salient Features of 0.6 MW (S 52) WEG

Sr. No.	Particulars	Specifications
1.	Rotor diameter	52 m
2.	Hub height	75 m
3.	Installed electrical output	600 kW
4.	Cut-in wind speed	3.5 m/s
5.	Rated wind speed	12 m/s
6.	Cut-off wind speed	25 m/s
7.	Rotor swept area	2124 m^2
8.	Rotational speed	24 rpm
9.	Rotor material	GRP
10.	Regulation	Pitch
11.	Generator	Asynchronous Generator, 4 pole
12.	Rated output	600 kW
13.	Rotational speed	1500 rpm
14.	Operating voltage	690 V
15.	Frequency	50 Hz
16.	Enclosure class	IP 56
17.	Insulation class	H
18.	Cooling system	Air cooled

Salient Features of 0.6 MW (S 52) WEG Contd.

Sr. No.	Particulars	Specifications
19.	Gear box	3-stage gearbox, 1 planetary & 2 helical.
20.	Manufacturer	Winergy
21.	Gear ratio	1:63.633
22.	Nominal load	660 kW
23.	Type of cooling	Oil cooling system, Forced lubrication
24.	Yaw drive system	2 active electrical yaw motors
25.	Yaw bearing	Polyamide slide bearing
26.	Safety system	
26.1	Aerodynamic brake	3 independent system with blade pitching
26.2	Mechanical brake	Spring applied hydraulically released disc brake
27.	Control unit	Actual operating conditions, UPS back-up system
28.	Tower	Tubular
29.	Design standards	GL special class

Salient Features of 1.5 MW (S-82) WEG

Sr. No.	Particulars	Specifications
1.	Rotor diameter	82 m
2.	Hub height	80 m
3.	Installed electrical output	1500 kW
4.	Cut-in wind speed	4.0 m/s
5.	Rated wind speed	14.0 m/s
6.	Cut-out wind speed	20 m/s
7.	Rotor swept area	5281 m^2
8.	Rotational speed	1511 rpm
9.	Rotor material	GRP
10.	Regulation	Pitch
11.	Generator	Asynchronous Generator, 4 pole with slip ring
14.	Operating voltage	690 V
15.	Frequency	50 Hz
16.	Enclosure class	IP 54
17.	Insulation class	H
18.	Slip control	Unique Macro slip providing slip up to 16.7 %
19.	Gear box	3-stage gearbox, 1 planetary & 2 helical.
20.	Gear ratio	1:95.09
21.	Nominal load	1650 kW
22.	Type of cooling	Oil cooling system, Forced lubrication
23.	Yaw drive system	Active electrical yaw motors
24.	Yaw bearing	Polyamide slide bearing
25.	Aerodynamic brake	3 independent system with blade pitching
26.	Mechanical brake	Hydraulic disc brake
27.	Design standards	GL special class

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.:

- Western Region for both sites
- Site 1 - Maharashtra / Sangli
- Site 2 & 3 - Gujarat / Kutch

A.4.1.3 City/Town/Community etc:

- **Site 1 –**

- Sangli/Tasgaon/Jarandi
- Sangli/Kavathe Mahakal/Nagaj

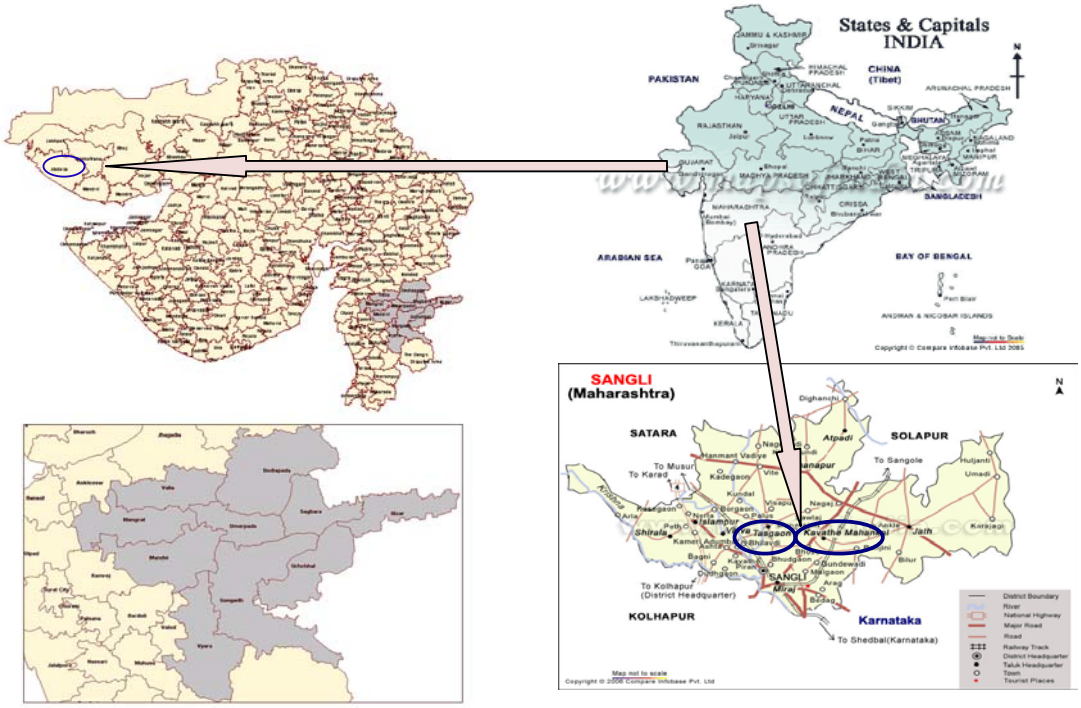
- **Site 2 -**
- Kutch/Abdasa/Nani Sindholi

- **Site 3 -**
- Kutch/Abdasa/Suthri

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

Sr. No	Project promoter	Capacity (MW)	Commissioning Date	Survey No.	Village	Dist.	State	Latitude	Longitude
1	SGSPL	1.5	29/03/2007	RS - 435	Jarandi	Sangli	Maharashtra	17.03 N	74.60 E
		1.5	30/09/2007	Gut No. 585/251	Nagaj	Sangli	Maharashtra	17.13 N	74.93 E
2	SOGPL	1.5	29/09/2007	RS-12/p	Nani Sindholi	Kutch	Gujarat	23.10 N	68.94 E
3	RCPL	0.6	01/03/2007	RS-898/1p	Suthri	Kutch	Gujarat	23.05 N	68.92 E
	Total	**5.10**							

Fig. A, Site Location



The project site Sangli is situated 250 km from Pune City. The Sangli lies on NH 9 i.e., Mumbai – Bangalore highway. The nearest Railway Station is Miraj junction. Nearest Airport is Pune.

The nearest airport for the project site Kutchh is Ahmedabad international airport is located 10 Kms north of the city center. From Ahmedabad Kutchh is connected through road & rail network. State transport buses are also available from Ahmedabad.

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

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

Project Category : **I.D. –** Grid connected renewable electricity generation (Version 13, 14th December 2007)

Technology

This project is a clean renewable energy project that uses wind energy for generation of electricity with available proper conversion technology. This meets the basic requirement of type I.D of Appendix B of the simplified modalities and procedures for small-scale CDM project activities. The project technology manufactured, operated & maintained indigenously and doesn't involve any technology transfer from foreign countries.

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

Years	Estimation of annual emission reductions in tonnes of CO_2 e
2008-09[3]	10481
2009-10	10481
2010-11	10481
2011-12	10481
2012-13	10481
2013-14	10481
2014-15	10481
2015-16	10481
2016-17	10481
2017-18	10481
Total estimated reductions (tonnes of CO_2 e)	**104810**
Total number of crediting years	10
Annual average of the estimated reductions over the crediting period (tCO_2 e)	10481

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 debundled 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 (UNFCCC/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 participants have not registered or applied for registration of another wind project. Therefore the proposed project is not a debundled component of a larger CDM project activity.

SECTION B. Application of a baseline and monitoring methodology

[3] Project activity is expected to get registration with CDM EB by September 2008. Hence start date has been taken from September 2008. Start date will be actual date of registration.

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

Title: Grid connected renewable electricity generation

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

Methodology	:	AMS I. D (Version 13, 14th December 2007)
Type I	:	Renewable Energy Project (Small Scale)
Category	:	"D", Grid connected Renewable Electricity Generation

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

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

Renewable technologies that supply electricity to the grid are covered in category I.D. The category comprises renewable technologies such as small hydro, 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 generation unit.

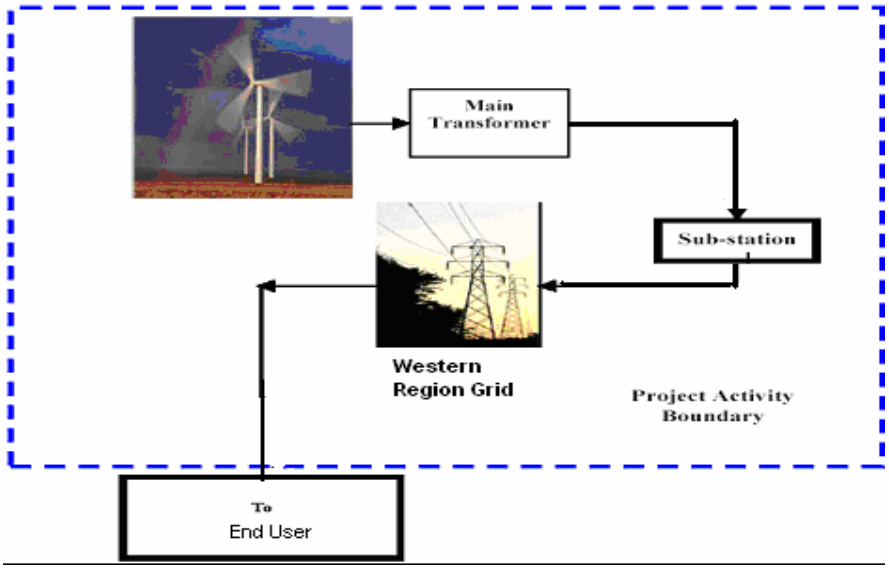
The project activity is 5.10 MW bundled wind power project & remains same throughout the crediting period, which is less than the specified limit of 15 MW for small scale project activities. The project activity feeds the generated power into the Ghatnandre & suthri sub-station. Hence, the project activity qualifies the small-scale methodology applicability criteria, which is as follows:

Methodology	**:**	AMS I. D (Version 13, 14th December 2007)
Type I	**:**	Renewable Energy Project (Small Scale)
Category	**:**	"D", Grid connected Renewable Electricity Generation

B.3 Description of the project boundary:

Project boundary specified in the Appendix B of simplified modalities and procedures is that encompasses the physical, geographical site of the renewable generation source. This includes the wind turbine installation; pooling and respective State electricity utility's sub-stations. The proposed project activity evacuates the power to the Western Region Grid. Therefore all the power plants contributing electricity to the Western Grid are taken in the connected (project) electricity system for the purpose of baseline estimation.

Fig. B, Project Boundary



B.4 Description of baseline and its development:

Baseline Estimation:

The wind power project produces electricity which is otherwise being produce by using fossil fuels. This leads to the GHG emissions. The wind power produced being GHG neutral will not only displaces thermal power but will reduce the associated emissions with thermal power generation in the western regional grid of India.

As per the latest guidelines in I.D to estimate the baseline emissions, the emission factor is calculated as per the procedures laid in paragraph 9 (a).

Variable	**Data Source**
EG_y = Electricity generated	Records maintained by project proponent
Parameter	**Data Source**
$EF_{grid, OM, y}$ = Build Margin Emission Factor (tCO_2/MWh)	CEA Data, version 3 dated 15/12/2007
$EF_{grid, BM, y}$ = Operating Margin Emission Factor (tCO_2/MWh)	CEA Data, version 3 dated 15/12/2007
$EF_{grid, CM, y}$ = Grid Emission Factor	Calculated as the weighted average of the operating margin and build margin

The baseline emission factor is calculated as follows:

$$BE_y = (EG_y - EG_{baseline})\ EF_y$$

Since the following project does not involve any modification or retrofit of the existing generation facility hence $EG_{baseline} = 0$

$$EF_{y} = EF_{grid, CM, y}$$

Hence the baseline emission factor ($EF_{grid, CM, y}$) is determined as follows

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

As per the 'Tool to calculate the emission factor for an electricity system' for wind and solar projects, the default weights are as follows: $w_{OM} = 0.75$ and $w_{BM} = 0.25$ (owing to their intermittent and non-dispatchable nature)

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

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. As per the decision 17/cp.7 Para 43, a CDM project activity is additional if anthropogenic emissions of greenhouse gases by sources are reduced below those that would have occurred in the absence of the registered CDM project activity.

Further, the 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 following barriers for the proposed project activity.

Barrier analysis

Establishing the project activity is a voluntary step undertaken by the participants with no direct or indirect mandate by law. The main driving forces to this 'climate change initiative' have been:

- GHG reduction and subsequent carbon financing against sale consideration of carbon credits
- Rural development of the region by creating job opportunities for the local people
- Demonstration of developing such projects to the other entrepreneurs

However, the project participants were aware of the various barriers associated to project implementation. But it was felt that the availability of carbon financing against sale consideration of carbon credits generated due to project activity would help to overcome these barriers. The barriers faced by the project activity are discussed below:

a) Investment barriers

Since the CDM Project activity generates financial benefits other than CDM related income, the sub-step 2b-Option I is not followed.

The Benchmark is calculated with reference of CDM – Executive Board, "Tool for demonstration and assessment of additionality" Version 05 Step 2 (b), Sub step 2b – Option III 6 (d). The investment analysis is carried out by 'Benchmark Analysis'. Equity IRR is identified as the appropriate financial indicator. The benchmark is taken from the state regulatory commission's tariff order as follows-

For determining the tariffs for wind power projects, the Electricity Regulatory Commissions of the Gujarat State has considered the return on equity (ie.post-tax equity IRR) at 14%[4] while in the Maharashtra State considered the return on equity (ie.post-tax equity IRR) at 16%[5]

Investment analysis is carried out on the basis of following key assumptions -

Particular	**SGSPL**	**SOGPL**	**RCPL**	**Source**
State	Maharashtra	Gujarat	Gujarat	Commission Cert.
Selling rate	Rs. 3.50 per unit	Rs. 3.37 per unit	Rs. 3.78 per unit (Captive Consumption Rate)	State Tariff Order MERC & GERC
WEG capacity, MW	1.5 X 2 Nos.	1.5	0.6	Purchase Order
Gross generation, units in Lacs	76.00	38.00	15.50	Purchase Order
Reduced to 95% due to Non Availability of Machine & due to 95% wind availability, units in Lacs	68.59	34.30	13.99	Purchase Order
Transmission / Wheeling Charges	------	-------	4 %	State Tariff Order MERC & GERC
Net Unit Generation. Units in lacs	68.59	34.30	13.43	
Escalation in selling rate	Rs. 0.15 per unit per year	----	----	State Tariff Order MERC & GERC
Reactive energy	5%	5%	5%	
Reactive energy charges	Rs. 0.25/ unit	Rs. 0.10/ unit	Rs. 0.10/ unit	
Particular	**SGSPL**	**SOGPL**	**RCPL**	**Source**
Escalation in Reactive energy charges	5%	----	-----	

[4] http://gercin.org/docs/Orders/Nonconv%20orders/Year%202006/wind%20enrrgy%20tariff.pdf page no.09

[5] http://www.mercindia.org.in/ORDERS2003.htm Tariff Order dated 24.11.2003 Pageno.46

O & M Expenses	First Two year free 3rd to 5th year @ 1.5% of capital cost per annum thereafter 2% of capital cost per annum.	1.5% of Capital Cost from third year of operation	1.5% of Capital Cost from third year of operation	Purchase Order
O & M Expenses	Rs. 27.0 Lacs	Rs. 13.7 Lacs	Rs. 5.42 Lacs	
Annual Escalation in O & M Charges	5 %	5 %	5 %	Purchase Order
Insurance charges	Rs. 2.38 Lacs	Rs. 1.24 Lacs	Rs. 0.74 Lacs	Insurance Policy
CO_2 emission reductions per annum, tCO_2e	6105	3052	1195	
Euro/ tCO_2e	10	10	10	
Rs. / Euro	59	59	59	
CER Revenue/ Year, Rs. Lacs	36.02	18.01	7.05	
Interest Rate	11.50 %	11.50 %	11.00 %	Loan Sanction Letter
Debit, Rs.Lacs	540	273.30	108.30	
Equity, Rs. Lacs	1260	637.70	252.70	
Total Cost, Rs. Lacs	1800	911	361	Purchase Order

Common Assumptions		
Depreciation Rate (As per Income Tax Method)	80%	
Depreciation Rate (As per Companies act)	5%	
Income Tax	30%	
Minimum Alternate Tax	10%	
Surcharge	10%	
Education Cess	3%	
Length of Crediting period	10 years	
Baseline Emission Factor for Western Region	0.89 (tCO_2/MWh)	CEA, CO_2 Database

The results of the financial analysis of the bundled project is as detailed in the table below -

Name	Benchmark IRR	IRR without CDM benefits	IRR with CDM benefits
SGSPL	16.00%	13.21%	17.50%
SOGPL	14.00%	6.32%	8.98%
RCPL	14.00%	8.86%	11.36%

All the reasonable costs and benefits accruing to the project have been considered in the calculation of the project return.

The bundled project activity generates Equity IRR as mentioned in above table which is substantially below the benchmark IRR. Hence the project activity cannot be considered as financially attractive / feasible and needs the CDM benefits as the additional flow of revenue.

Sensitivity analysis

To demonstrate further additionality, a sensitivity analysis of the sub projects has been carried out, to assess the sensitivity of the IRR to variations in the most critical parameter i.e. Electricity units generation. Since the revenue to be earned from sale of net electricity generated, depends entirely on the electricity units generation of the WEGs, it is of vital importance to evaluate the impact of electricity units generation on the equity IRR of the project. Electricity units generation is the key variable encompassing variation in wind profile and variation in off-take (including grid availability) including machine downtime.

Sensitivity analysis has been carried out considering a variation of 2.5%, 5% and 10%in electricity units generation of the WEGs. The results are as under:

Name	SGSPL	SOGPL	RCPL
Unit Generation: Reduced by			
2.5 % without CDM	12.29 %	5.60 %	8.10%
2.5 % with CDM	16.42%	8.17%	10.51%
5 % without CDM	11.38 %	4.90%	7.35%
5 % with CDM	15.37%	7.38%	9.68%
10 % without CDM	9.60%	3.51%	5.89%
10 % with CDM	13.31%	5.84%	8.06%
Unit Generation: Increase by			
2.5 % without CDM	14.15%	7.04%	9.64%
2.5 % with CDM	18.61%	9.79%	12.23%
5 % without CDM	15.10%	7.78%	10.43%
5 % with CDM	19.74%	10.63%	13.11%
10 % without CDM	17.07%	9.29%	12.06%
10 % with CDM	22.09%	12.35%	14.96%

Despite of the lower IRR, the promoters went ahead to install wind turbines just to promote the Renewable Energy and to reduce the GHG emissions in to environment.

b) Regulatory and policy barriers

Despite of above mentioned investment barrier, there are some regulatory and policy barriers which also discourages the private investors to invest in renewable projects.

The CDM benefit sharing percentage is not clearly mentioned under section 18.02 of MERC detail wind tariff order dated 24.11.2003. This raises doubts that on what extent the promoter really receive CDM benefit from his project.

In Gujarat state, the Govt. clearly states in its order dated 11th August 2006 under section 21 that 25% of gross CDM benefit received to the promoter, he has to be pass on to the Distribution Licensee.

Such regulatory barrier will discourage the investment in wind power project by the private promoters.

c) Technological barrier

The technical wind power potential of the Maharashtra & Gujarat state is 3060 MW&1900 MW respectively[6].While during 2004-05 about 675.4 MW (31.4%) in Tamilnadu, 201.5 MW (15.3%) in Karnataka while only 48.8 MW (1.5%) in Maharashtra & 51.5 MW (2.7%) in Gujarat state was installed as compare to their respective technical potential. This clearly shows that peoples in the Maharashtra & Gujarat state are not familiar/popular technology, due to which though having huge technical potential they are not able to harness it.

Region	State	Installation in %	Technical Potential[6] (MW)	Installed Capacity[7] (MW)
Western	Gujarat	2.7	1900	51.5
	Maharashtra	1.5	3060	48.8
	Madhya Pradesh	0.6	1050	6.3
Total		4.9		106.6
Southern	Tamilnadu	31.4	2150	675.4
	Karnataka	15.3	1310	201.5
	Andhra Pradesh	1.0	2110	21.8
Total		47.8		898.7
Northern	Rajasthan	10.1	1050	106.3

d) Barriers due to Common Practice

- In the Western region's the generation from Hydro, Coal, Nuclear, Gas, Wind + RES and Diesel has been 5844.63MWh, 20916.50 MWh, 760.00 MWh, 5057.31 MWh, 736.73 MWh and 17.48 MWh respectively during the year 2004-05[8]. The respective percentage of this generation with respect to gross generation from above sources has been 17.53%, 62.75%, 2.28%, 15.17%, 2.21% and 0.05%.

- In the Maharashtra & Gujarat state Power Sector, common practice of the private sector to investing mostly in Non-Renewable Energy Sources (about 87.15%, 91.90% respectively), than in renewable sector (12.84%, 8.09 % respectively)[9]. This is mainly due to the assured return on investment, economies of scale and easy availability of finances for non-renewable energy sources.

- During the year 2004-05 total wind power installed capacity in India is about 1111.6 MW[7] out of that southern region comprises about (898.7 MW) 80.8 % while western region comprises only (106.6 MW) 9.5 %.

[6] http://mnes.nic.in/booklets/Book6-e.pdf Page no. 10 of pdf
[7] http://www.windpowerindia.com/statyear.html during 2004 to 2005

[8] http://www.wrpc.nic.in/htm/anrpt0405.pdf Table no.1 Page No. 04

[9] http://www.cea.nic.in/power_sec_reports/general_review/0405/ch2.pdf Table no.2.6 Page No.11

Region	State	Installation in %	Installed Capacity (MW)
Western	Gujarat	4.6	51.5
	Maharashtra	4.3	48.8
	Madhya Pradesh	0.5	6.3
	Total	**9.5**	**106.6**
Southern	Tamilnadu	60.7	675.4
	Karnataka	18.1	201.5
	Andhra Pradesh	1.9	21.8
	Total	**80.8**	**898.7**
Northern	Rajasthan	**9.5**	**106.3**

Above statistics indicates that investing in wind power projects is not a common practice at all & hence the project activity is additional.

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). 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 'Tool to calculate the emission factor for an electricity system'.

OR

(b) The weighted average emissions (in kg CO2e/kWh) of the current generation mix.

The data of the year in which project generation occurs must be used

In the proposed project, the baseline selected as per option (a). Western Region grid is used as the reference region for estimating the Combine Margin. Using the 'Tool to calculate the emission factor for an electricity system', the Combine Margin emission in (tCO2 e/GWh) for regional grid of India is used for calculation of baseline. Actual CO2 emission factor are used for the purpose.

The baseline emission (BE_y in tCO_2) is the product of the baseline emission factor (EF_y in tCO_2/MWh) times the electricity supplied by the project activity to the grid (EG_y in MWh) minus the baseline electricity supplied to the grid in the case of modified or retrofit facilities ($EG_{baseline}$ in MWh), as follows:

$$BE_y = (EG_y - EG_{baseline}) EF_y$$

Since the project does not involve any modification or retrofit of the existing generation facility hence $EG_{baseline} = 0$

As per paragraph 9 (a) of I.D., $EF_y = EF_{grid, CM, y}$

$EF_{grid, CM, y}$ is determined as follows:

The weighted average of the Operating Margin emission factor ($EF_{grid, OM, y}$) and the Build Margin emission factor ($EF_{grid, BM, y}$)

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

For wind and solar projects, the default weights are as follows: $w_{OM} = 0.75$ and $w_{BM} = 0.25$ (owing to their intermittent and non-dispatchable nature).

$EF_{grid, CM, y} = EF_{grid, OM, y} * 0.75 + EF_{grid, BM, y} * 0.25$

Where,

$EF_{grid, OM, y}$ = Operating Margin CO_2emission factor in year y (tCO_2/MWh)
$EF_{grid, BM, y}$ = Build Margin CO_2emission factor in year y (tCO_2/MWh)
w_{OM} = Weighting of operating margin emissions factor (%)
w_{BM} = Weighting of build margin emissions factor (%)

Step 1. Identify the relevant electric power system

The project qualifies the project electricity system criteria as per the 'Tool to calculate the emission factor for an electricity system' as it is physically connected through transmission & distribution lines of the western regional grid of Indian power sector [10].

The composition of the installed capacity in the Western Regional Grid can be comprehended from the WRPC's 2004-05 annual report [8]. It can be clearly seen that Coal based power generation 20916.50 MW out of 33332.65 MW (i.e. 62.75%) presides over other sources. Whereas, wind and other sources constitute only 736.73 MW out of 33332.65 MW (i.e 2.21%) approximately in the total installed capacity.

[10] http://www.cea.nic.in/planning/c%20and%20e/user_guide_ver3.pdf, Page 11

Step 2. Select an operating margin (OM) method

The calculation of the operating margin emission factor ($EF_{grid, OM, y}$) is based on one of the following methods:

(a) Simple operating margin;
(b) Simple adjusted operating margin;
(c) Dispatch data analysis operating margin;
(d) Average operating margin.

Since the "Tool to calculate the emission factor for an electricity system", version 01, gives the freedom to choose any of the four options of calculating the OM, Simple OM has been chosen to be the most appropriate method of calculating the emission reductions in the project. Since the low cost/ must run resources constitute less than 50% of the total grid generation in the average of the five most recent years. (refer table below)

Share of Must-Run (% of Net Generation) [11]

Regional Grid	2000-01	2001-02	2002-03	2003-04	2004-05	Average of last 5 years.
North	25.9%	25.7%	26.1%	28.1%	26.8%	26.5%
East	10.8%	13.4%	7.5%	10.3%	10.5%	10.5%
South	28.1%	25.5%	18.3%	16.2%	21.6%	21.9%
West	**8.2%**	**8.5%**	**8.2%**	**9.1%**	**8.8%**	**8.6%**
North-East	42.2%	41.7%	45.8%	41.9%	55.5%	45.4%
India	19.2%	18.9%	16.3%	17.1%	18.0%	17.9%

The above table clearly shows that the percentage of total grid generation by low-cost/must-run plants (on the basis of average of five most recent years) for the western regional grid is only 8.6 % which is much lesser than 50% of the total generation. Thus, Simple OM method can be used for calculating the emission factor.

Step 3. Calculate the operating margin emission factor according to the selected method ($EF_{grid, OM, y}$)

Simple OM

The calculation for Simple OM has been taken from the CEA, Baseline Carbon Dioxide Emission Database version 03 for the Indian Power Sector, where the calculations have been done as per the methodology ACM0002.

As per the "Tool to calculate the emission factor for an electricity system" Simple OM should be calculated using any one of the two following data vintages for years(s), y:

[11] http://www.cea.nic.in/planning/c%20and%20e/Government%20of%20India%20website.htm baseline CO_2 emission database version 03

- Ex ante option: A 3-year generation-weighted average, based on the most recent data available at the time of submission of the CDM-PDD to the DOE for validation, without requirement to monitor and recalculate the emissions factor during the crediting period, or

- Ex post option: The year in which the project activity displaces grid electricity, requiring the emissions factor to be updated annually during monitoring. If the data required to calculate the emission factor for year y is usually only available later than six months after the end of year y,

Out of the above two options, the Ex-ante vintage is opted and the Simple OM selected will remain same throughout the entire crediting period of the project activity.

In this project, the operating margin emission factor has been calculated (E*x-ante*) using the full generation-weighted average for the most recent 3 years i.e. 2004-05, 2005-06, 2006-07 for which data are available at the time of PDD submission. The data has been taken from the Baseline Carbon Dioxide Emission Database version 03 published by the Central Electricity Authority (CEA) Refer Annex 5.

The $EF_{grid, OM, y}$ for Western region is estimated	t CO_2/MWh
For the year 2004-2005	1.0129
For the year 2005-2006	1.0039
For the year 2006-2007	0.9936
Average $EF_{grid, OM, y}$	**1.0035**

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

The value of the data has been taken from the data published by CEA as referred in earlier step. The CEA Baseline Carbon Dioxide Emission Database version 03 has been calculated as per the methodology ACM0002 and the details of the key assumptions considered to calculate the figure can be found in the Baseline Carbon Dioxide Emission Database version 03 of the same.

Two following options for years(s) *y* are present, in terms of vintage of data:

Option 1.

For the first crediting period, calculate the build margin emission factor *ex-ante* based on the most recent information available on units already built for sample group m at the time of CDM-PDD submission to the DOE for validation. For the second crediting period, the build margin emission factor should be updated based on the most recent information available on units already built at the time of submission of the request for renewal of the crediting period to the DOE. For the third crediting period, the build margin emission factor calculated for the second crediting period should be used. This option does not require monitoring the emission factor during the crediting period.

Option 2.

For the first crediting period, the build margin emission factor shall be updated annually, *ex-post*, including those units built up to the year of registration of the project activity or, if information up to the year of registration is not yet available, including those units built up to the latest year for which Out of the above two, Option 1 is selected. The Build margin

emission factor has been calculated *ex-ante* based on the most recent information available on plants already built for sample group *m* at the time of PDD submission. The sample group *m* consists of the power plant capacity additions in the electricity system that comprise 20% of the system generation (in GWh) and that have been built most recently as this sample group comprises larger annual generation than the generation of the sample group *m* consisting of the five power plants that have been built most recently. Information is available. For the second crediting period, the build margin emissions factor shall be calculated ex-ante, as described in option 1 above. For the third crediting period, the build margin emission factor calculated for the second crediting period should be used. The BM is calculated using latest year data calculated by Central Electricity Authority (CEA) in their Baseline Carbon Dioxide Emission Database version 03.

Step 5. Calculate the build margin emission factor ($EF_{grid, BM, y}$)

As per the CEA Baseline Carbon Dioxide Emission Database version 03, the BM for the 2006-07 has been calculated to be:

$EF_{grid, BM, y}$ = 0.5938 tCO_2e/MWh

Step 6. Calculate the combined margin (CM) emissions factor ($EF_{grid, CM, y}$)

$EF_{grid, CM, y}$ is determined as follows:

The weighted average of the Operating Margin emission factor ($EF_{grid, OM, y}$) and the Build Margin emission factor ($EF_{grid, BM, y}$) :

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

For wind and solar projects, the default weights are as follows: w_{OM} = 0.75 and w_{BM} = 0.25 (owing to their intermittent and non-dispatchable nature).

$$EF_{grid, CM, y} = EF_{grid, OM, y} \times 0.75 + EF_{grid, BM, y} \times 0.25$$

$$= 1.0035 \times 0.75 + 0.5938 \times 0.25$$
$$= 0.9011 \text{ t } CO_2/MWh$$

Thus, the CM emissions factor ($EF_{grid, CM, y}$) for the project has been calculated to be:

$EF_{grid, CM, y}$ = 0.9011 tCO_2/MWh

Baseline Emission Factor: 0.9011 t CO_2/MWh

The project proponent wishes to use the BEF calculated Ex-ante, and has fixed the same for the entire crediting period.

Leakage

According to Methodology AMS I.D, if the energy generating equipment is transferred from another activity or if the existing equipment is transferred to another activity, leakage is to be considered.

As the project activity does not involve any such type of transfer of equipment. Hence no leakage is to be considered.

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

Data / Parameter:	**$EF_{grid, CM, y}$**
Data unit:	t CO_2 / MWh
Description:	Carbon Emission Factor of the Western regional grid
Source of data used:	Baseline Carbon Dioxide Emission Database Version 03 for the Indian Power Sector, by CEA [11]
Value applied:	0.9011
Justification of the choice of data or description of measurement methods and procedures actually applied :	The values for OM and BM have been calculated by Ministry of Power, Central Electricity Authority hence are authentic and reliable. **$EF_{grid, CM, y}$** is calculated as suggested in baseline methodology **"Tool to calculate the emission factor for an electricity system"** version 01
Any comment:	The values are calculated by using latest database from CEA. Data will be archived during the whole crediting period + 2 years or of the last issuance of CERs for this project activity, whichever occurs later

Data / Parameter:	**$EF_{grid, OM, y}$**
Data unit:	t CO_2/MWh
Description:	CO_2 value of Operating Margin (including import) is considered as average of last three years for the Western Grid
Source of data used:	Baseline Carbon Dioxide Emission Database Version 03 for the Indian Power Sector, by CEA [11]
Value applied:	1.0035
Justification of the choice of data or description of measurement methods and procedures actually applied :	The values have been calculated by Ministry of Power, Central Electricity Authority hence is authentic and reliable.
Any comment:	The values are calculated by using latest database from CEA. Data will be archived during the whole crediting period + 2 years or of the last issuance of CERs for this project activity, whichever occurs later

Data / Parameter:	$EF_{grid, BM, y}$
Data unit:	t CO_2/MWh
Description:	CO_2 value of Build Margin Emission Factor of the recent available year ie 2006-07 for the Western Grid is considered.
Source of data used:	Baseline Carbon Dioxide Emission Database Version 03 for the Indian Power Sector, by CEA [11]
Value applied:	0.5938
Justification of the choice of data or description of measurement methods and procedures actually applied :	The values have been calculated by Ministry of Power, Central Electricity Authority hence is authentic and reliable.
Any comment:	The values are calculated by using latest database from CEA. Data will be archived during the whole crediting period + 2 years or of the last issuance of CERs for this project activity, whichever occurs later

B.6.3 Ex-ante calculation of emission reductions:

The basic assumption for calculating baseline emissions (BE_y) of the project activity is due to the displacement of grid electricity. Hence, the following formula is applied for estimation of baseline emissions.

$$\mathbf{BE_y = (EG_y - EG_{baseline}) EF_y}$$

Since the following project does not involve any modification or retrofit of the existing generation facility hence $EG_{baseline} = 0$

As per paragraph 9 (a) of I.D., $EF_y = EF_{grid, CM, y}$

$BE_y = EG_y * EF_{grid, CM, y}$

Baseline Emission = Units of electricity generated (EG_y) X Carbon Emission Factor ($EF_{grid, CM, y}$)

$BE_y = EG_y$ X $EF_{grid, CM, y}$
= 11632 MWh / yr. X 0.9011 tCO_2 / MWh
= 10481.5952 tCO_2 / yr
BE_y = 10481 tCO_2 / yr.

Where:
EG_y - is the net quantity of electricity generated by the project in year y, and
$EF_{CM, grid, y}$ - is the combine margin Ex-ante carbon emission factor of the regional Grid

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

The ex-ante estimation of aggregate emission reductions for all years of the crediting period of the project activity is as follows:

Year	Estimation of project activity emissions (tCO_2e)	Estimation of baseline emissions (tCO_2e)	Estimation of leakage (tCO_2e)	Estimation of overall emission reductions (tCO_2e)
2008-09	0	10481	0	10481
2009-10	0	10481	0	10481
2010-11	0	10481	0	10481
2011-12	0	10481	0	10481
2012-13	0	10481	0	10481
2013-14	0	10481	0	10481
2014-15	0	10481	0	10481
2015-16	0	10481	0	10481
2016-17	0	10481	0	10481
2017-18	0	10481	0	10481
Total (tonnes of CO_2e)	**0**	**104810**	**0**	**104810**

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

B.7.1 Data and parameters monitored:

Data / Parameter:	EG_y
Data unit:	MWh
Description:	Electricity supplied by project. Net electricity export by the project annually to grid obtained from joint meter readings by regional electricity utility & project promoter on monthly basis. Note: Net electricity export to grid = electricity export to grid – electricity import from grid – Electricity losses , if any (Transmission and Distribution losses)
Source of data to be used:	Measured
Value of data	11632
Description of measurement methods and procedures to be applied:	Monitoring: trivector meter will be used for monitoring Data Type: measured Frequency: hourly measured Recording: Monthly from joint meter Archiving Policy: Paper & Electronic Responsibility: Project Site Incharge would be responsible for regular calibration of the meter.

	Calibration Frequency: Once a year.
QA/QC procedures to be applied:	The project revenue is based on the net units exported as measured by main metering system installed at the interconnection point (substation point). The meters used will be calibrated periodically by state electricity utility. The net electricity exported to the grid can be cross verified with the joint meter readings. Also can be double checked with electricity sales receipt (Invoice)
Any comment:	Data will be archived during the whole crediting period + 2 years or of the last issuance of CERs for this project activity, whichever occurs later

B.7.2 Description of the monitoring plan:

The project participants have undertaken an operation and maintenance agreement with the supplier of the wind turbines i.e. Suzlon Energy Limited. The performance of the turbines, safety in operation and scheduled /breakdown maintenances are organized and monitored by the contractor. So the authority and responsibility of project management lies with the contractor.

The monitoring personnel receive intensive training at the Suzlon Energy Limited Manufacturing facility before being appointed at the site to look after the operations.

The O& M services included are as follows -

- **Routine Maintenance Services:**

  Routine Maintenance Labor 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 WEGs can only convert wind energy into electrical energy and cannot use any other input fuel for electricity generation. As 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 & GETCO).
- The electricity generation measurements are required by the utility and the investors to assess electricity sales revenue and / or wheeling charges.
- 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 will be carried out jointly at the incoming feeder of the state power utility (MSEDCL & GETCO). Machines for sale to utility will be connected to the feeder.
- The joint measurement will be carried out once in a month in presence of both parties (the developer's representative and officials of the state power utility). Both parties will 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 shall be installed and owned by MSEDCL & GETCO, 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 shall be taken simultaneously and jointly by the parties on a pre-decided day of the following month. At the conclusion of each meter reading an appointed representative of the respective SEBs and the company signs a document indicating the number of kWh exported to the grid.
- The secondary monitoring, which will provide a backup (fail-safe measure) in case the primary monitoring is not carried out, would be 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 turbine 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.

All the relevant data & reports for maintaining accuracy in future monitoring and reporting of GHGs emission reduction is with SGSPL, SOGPL, RCPL.

SGSPL, SOGPL, RCPL has appointed a full time project in-charge to manage the overall project activities 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).

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

Application of Baseline Completion Date: 30.01.2008

Name of person/entity determining the baseline:

M/s.Standard Greases (Silvassa) Pvt. Ltd.
101, Ketan Apartments,
233, R. B. Mehta Marg, Ghatkopar (East),
Mumbai – 400 077
Maharashtra, India

M/s. Standard Greases (Silvassa) Pvt. Ltd. (listed in Annex 1 of this document) is the project participant

SECTION C. Duration of the project activity / crediting period

C.1 Duration of the project activity:

C.1.1 Starting date of the project activity:

26/10/2006 date of Purchase Order of WEG by SGSPL, which is 1st in bundle.

C.1.2 Expected operational lifetime of the project activity:

20 years and 00 months

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

C.2.1 Renewable crediting period

Not opted

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:

Opted

C.2.2.1 Starting date:

01/09/2008 or the date of registration of project activity whichever is later.

C.2.2.2 Length:

10 years and 00 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:

Wind is clean fuel. Wind turbine generator emits no air or water pollution because no fossil fuel combustion is required to generate electricity.

As per the Schedule 1 of Ministry of Environment and Forest (MoEF, Government of India) notification dated January 27, 1994, there are 30 activities which require undertaking environmental impact assessment studies[12].

The proposed project does not fall under the list of activity requiring EIA as it will not involved any negative environmental impacts. Thus no EIA study was conducted.

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 participants identified local communities, farmers, and villagers, as the stakeholders with an interest in the CDM activities. The meeting was conducted for the site i.e., Jarandi, Nagaj, Nani Sindholi, Suthri. Accordingly, project participants issued letters to respective stakeholders requesting to attend meeting or depute representatives at respective venues: The agenda of the meeting was fixed as follows:

- Welcome to all stakeholders
- Description of the project details
- Queries and responses from the proponent and the stakeholders

[12] http://envfor.nic.in/divisions/iass/eia/Annex1.htm

- Vote of thanks

The stakeholder's view is project participants in it's own small way is contributing positively to local economy, development & to tackle the problem of global warming. The stakeholder consultation was taken as follows:

Stakeholder consultation meeting for SGSPL. at Village: Ghatnandre on date: 23th NOV. 2007.

SGSPL representative explaining the stakeholders about the project.

The stakeholders meeting was over successfully.

Stakeholder consultation Meeting for SOGPL. at Venue: Community Hall, Village: Nani Sindholi on DATE: 05th DEC 2007.

The participants for meeting are-

- Prominent residents of Nani Sindholi Village,
- Mr. Ketan Vyas, Mr. Patel, Mr. Agrawal & Mr. Baldi of M/s Standard Oil & Grease Ltd & Group, Mumbai & Siddhpur Division.
- Employees of Suzlon Kutch site

Company officials welcome the stakeholders and share the information about global warming & related issues.

Stakeholder asking about the impacts of the project activity on the local area. (e. g. Agriculture, Environment)

Local stakeholder mentioning his doubts about project during meeting.

Stakeholders asking the queries regarding the impacts of project activity on local area.

Company Representative answering to the questions of stakeholders & then delivering the vote of thanks to the stakeholders.

Stakeholder consultation meeting for RCPL at Venue: Community Hall, Village Suthri on Date: 5^{h} Dec 2007.

Company representative welcomes the stakeholders at suthri on half of RCPL.

Stakeholders discussing their views & doubts during meeting.

Company representative answering the questions & doubts of stakeholders in meeting. Company representative also briefs about the need for the activity & its inter connection with global warming, employment generation, economic development of the region.

Officials from Suzlon explaining the technical issues & clarifying the doubts of stakeholders.

Company officials giving vote of thanks to the stakeholders for their presence & support.

E.2	Summary of the comments received:

Stakeholders had no objections from installations of WEGs instead they have openly said that wind power projects helped them by:

- Job opportunities for day -to - day maintenance and security of WEGs
- Additional revenue generated thro' land / lease to outsiders like contractors & their employees
- Developments of roads
- Raining season as usual and no any adverse impact on agriculture, crop yield.
- Villagers states that the medical facility in their village (clinic & ambulance) is provided to them otherwise they use to take from the taluka place which is time consuming & expensive.

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

Stakeholders raise their doubts about the life span, working technology & impacts of WEGs on the local environment; all these doubts are resolved by the officials of the company.

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

Annex 1

CONTACT INFORMATION ON PARTICIPANTS IN THE PROJECT ACTIVITY

Organization:	M/s Standard Greases (Silvassa) Pvt. Ltd.
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FAX:	(+ 91-22) 2510 0384
E-Mail:	standardgroup@standardgreases.co.in
URL:	N.A.
Represented by:	
Title:	Director
Salutation:	Mr.
Last Name:	Vyas
Middle Name:	V.
First Name:	Ketan
Department:	NA
Mobile:	+ 91 9821087591
Direct FAX:	NA
Direct tel:	NA
Personal E-Mail:	standardgroup@vsnl.net

SGSPL is lead promoter of CDM process for this bundle project activity. Other participant's details are-

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URL:	NA
Represented by:	
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Middle Name:	V.
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State/Region:	Maharashtra
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E-Mail:	rcppl@bom3.vsnl.net.in
URL:	NA
Represented by:	
Title:	Director
Salutation:	Mr.
Last Name:	Vyas
Middle Name:	S.
First Name:	Haresh
Department:	NA
Mobile:	+ 91 9821087579
Direct FAX:	NA
Direct tel:	NA
Personal E-Mail:	NA

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

CENTRAL ELECTRICITY AUTHORITY: CO2 BASELINE DATABASE [10]
VERSION : 3.0
DATE : 15 December 2007
BASELINE METHODOLOGY: ACM0002 / Ver 07

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

	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07
North	0.72	0.73	0.74	0.71	0.72	0.73	**0.7373**
East	1.06	1.03	1.09	1.08	1.05	1.05	**0.9957**
South	0.74	0.75	0.82	0.84	0.79	0.74	**0.7219**
West	0.90	0.92	0.90	0.90	0.92	0.89	**0.8629**
North-East	0.42	0.41	0.40	0.43	0.52	0.33	**0.3974**
India	0.82	0.83	0.85	0.85	0.84	0.81	**0.8001**

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

	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07
North	0.98	0.98	1.00	0.99	**0.9801**	**0.9992**	**0.9985**
East	1.22	1.19	1.17	1.20	**1.1745**	**1.1291**	**1.0909**
South	1.02	1.00	1.01	1.00	**1.0009**	**1.0079**	**1.0030**
West	0.98	1.01	0.99	0.99	**1.0129**	**1.0039**	**0.9936**
North-East	0.74	0.71	0.74	0.74	**0.9019**	**0.6994**	**0.7031**
India	1.01	1.02	1.02	1.02	1.02	1.02	1.01

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

	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07
North					0.53	0.60	**0.6283**
East					0.90	0.97	**0.9281**
South					0.70	0.71	**0.7055**
West					0.77	0.63	**0.5938**
North-East					0.15	0.15	**0.2265**
India					0.69	0.68	0.68

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 and is, installed before the grid.
- Its is a three phase, four wire, 50Hz, 110 Volts, 6Amp, Time of Day (ToD), 0.2 class Export-Import tri- vector Energy meter.
- The calibration procedure followed requires calibrating the meter once in a 12 month, by the SEBs. MSEDCL & GETCO is State Electricity Utility Company which functions under Government of Maharashtra (GoM) & Government of Gujarat respectively, as per Central Electricity Act & it is responsible for Energy Meter calibration check
- 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 participants and State electricity utility.
- This meter is located at the delivery point of wind power in State electricity utility's substation. This accounts for the import of electricity that is used by the project participants. 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:

- Monitoring is joint responsibility of both owner as well as State electricity utility hence, daily monitoring is in the scope of owner
- Monthly monitoring is a joint responsibility. All services are provided by State electricity utility to the owner of wind farm.
- Though the ownership of the meter is with owner, but it is in possession of State electricity utility which sealed meter box under lock & key as per statutory requirements. Owner can only see readings through glass window of sealed meter box.