

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

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**Revision history of this document**

<b>Version Number</b>	<b>Date</b>	<b>Description and reason of revision</b>
01	21 January 2003	Initial adoption
02	8 July 2005	<ul style="list-style-type: none"><li>• The Board agreed to revise the CDM SSC PDD to reflect guidance and clarifications provided by the Board since version 01 of this document.</li><li>• As a consequence, the guidelines for completing CDM SSC PDD have been revised accordingly to version 2. The latest version can be found at <a href="http://cdm.unfccc.int/Reference/Documents">http://cdm.unfccc.int/Reference/Documents</a>.</li></ul>
03	22 December 2006	<ul style="list-style-type: none"><li>• 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.</li></ul>

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**SECTION A. General description of small-scale project activity**
**A.1 Title of the small-scale project activity:**
**8.55 MW bundled wind project**

Version: 1.0

Date: 27/02/2007

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

Project activity includes installation and operation of wind turbine generators with an aggregate capacity of 8.55 MW in Dewas district of Madhya Pradesh (MP) and Sangli & Dhule districts of Maharashtra State in India. Project activity is in the Western Region (WR) grid. Power generated from the wind mills located in Madhya Pradesh is to be wheeled through grid for captive consumption while the wind mills located in Maharashtra will supply power to Maharashtra State Electricity Distribution Company Limited (MSDCL). The project activity reduces greenhouse gas (GHG) emission by reducing the use of electricity generated in the Western Grid (WR) of India, which predominantly has fossil fuel based power stations and therefore leads to generation of ~ 0.95 tCO<sub>2e</sub> /MWh<sup>1</sup> of net electricity supplied.

The project is being developed by a consortium of 10 private sector companies. The following table shows the ownership, capacity and location details of Wind Turbine Generators -

SN	Project Developer	Capacity (MW)	Location
1	Agarwal Flour Mills	1 X 0.60	Dewas District, MP
2	AD-Manum Packagings Ltd.	1 X 0.60	Dewas District, MP
3	Mittal Appliances Ltd	1 X 1.25	Dewas District, MP
4	Sanghvi Foods Pvt. Ltd	2 X 1.25	Dewas District, MP
5	Ad-Manum Finance Ltd.	1 X 0.60	Sangli District, Maharashtra
6	Shri Agarwal Coal India Pvt. Ltd.	1 X 0.60	Sangli District, Maharashtra
7	Signet Overseas Ltd.	1 X 0.60	Sangli District, Maharashtra
8	Ferro Concrete & Construction India. Pvt. Ltd.	1 X 0.60	Sangli District, Maharashtra
9	Roshani Energy	1 X 0.60	Sangli District, Maharashtra
10	Sanghvi Energy	1 X 0.60	Dhule District, Maharashtra

Total wind mills = 11

Total capacity = 8.55 MW

**Sustainable Development:**

Proposed project activity has following sustainable development aspects:

<sup>1</sup> Combined Margin (CM) for the WR grid; for details refer section B.5 of the document

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1. Madhya Pradesh is witnessing acute power crisis (~25%), according to a recent survey only 2250 million units are available as against total demand of 3003 million units<sup>2</sup>. Similar situation is also witnessed in Maharashtra<sup>3</sup>. During the year 2004-2005 the electricity scenario in the two states was-

Parameter	Maharashtra	Madhya Pradesh
Power demand	92715 million units	3003 million units
Power availability	81541 million units	2250 million units
Power deficit	12 %	25%

In this scenario of power shortage these states, project activity partially helps the state grid to bridge electricity demand and supply gap.

2. Project activity uses renewable energy source (wind energy) which helps in conservation of natural resources (like coal).
3. The project activity has generated employment opportunities during different phases of plant commissioning and operation. Further success of the project activity will promote other business groups to invest in similar type of projects which will generate additional employment in the region.
4. The wind energy based electricity generation leads to reduction GHG emissions in power generation.
5. Implementation of the project activity will encourage technology suppliers/manufacturers to further their efforts in developing new and better technologies. This will bring in more funds in R&D efforts from manufacturers.

### **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)
Government of India (Host Party)	AD-Manum Packagings Ltd. (Private Entity)	No

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

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

##### **A.4.1.1. Host Party(ies):**

Country: India

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

<sup>2</sup> <http://www.thehindubusinessline.com/bline/2005/05/24/stories/2005052400920400.htm>

<sup>3</sup> [http://www.ndtv.com/debate/showdebate.asp?show=1&archive=yes&story\\_id=175&template=&category=business](http://www.ndtv.com/debate/showdebate.asp?show=1&archive=yes&story_id=175&template=&category=business)

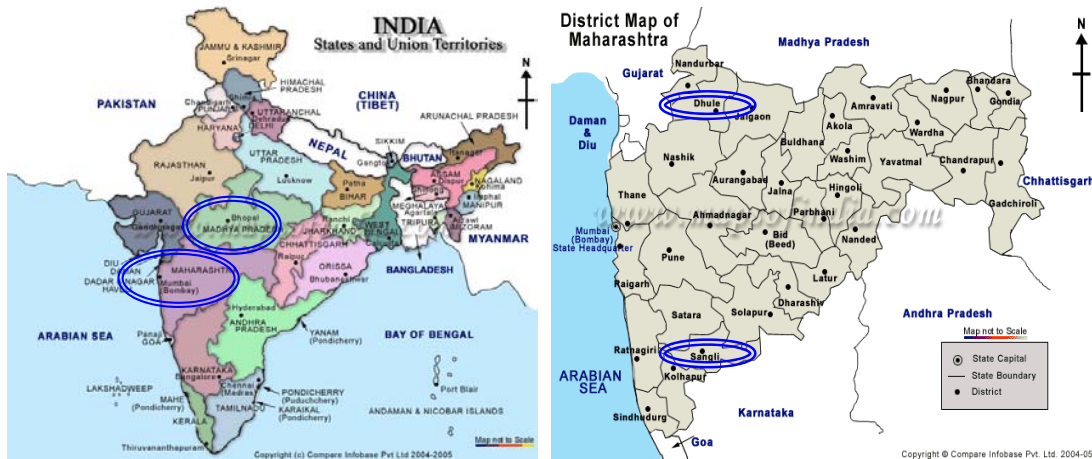
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State: Madhya Pradesh and Maharashtra

**A.4.1.3. City/Town/Community etc:**

District: Dewas in Madhya Pradesh and Dhule & Sangli in Maharashtra

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



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

Project Category: I.D. “Grid connected renewable electricity generation”  
Version 10; dated 23 December 2006

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The project activity is a renewable energy project with a maximum output capacity of 8.55(<15 MW), this comes under the Appendix B of the simplified modalities and procedures for small-scale CDM-project activities.

**Technology:**

Two types of windmills of capacities 0.6 MW and 1.25 MW have been installed. Following are the specification of these windmills-

**0.6MW: S-52 (Eight WTG) of capacity – Suzlon make****Rotor**

Rotor Diameter:	52m
Hub Height:	75 m
Swept Area:	2124 square meter
Rotational Speed:	24 rpm
Rotor Material:	GRP
Regulation:	Pitch –regulated

**Operational Data**

Cut in wind speed:	3 m/s
Rated wind speed:	11 m/s
Cut out wind speed:	25 m/s
Survival wind Speed:	65 m/s

**Generator**

Type:	Asynchronous system
Rated Out put:	600 KW
Rotational Speed:	1500 rpm
Operational Voltage:	690 V
Frequency:	50 Hz

**Gear Box**

Type:	Combined Spur / Planetary
Gear Ratio:	1.63: 0.63

**Yaw Drive**

Yaw Drive System:	Electrical Gear Motor
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**Tower**

Type:	Lattice Tower
Erection:	With Crane
Design Standards:	GL Special Class
Tower Height:	75 m
Construction:	Welded

**1.25 MW: S-64 (Three WTG) of Capacity Suzlon make**

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**Rotor**

Diameter:	66
No. of Rotor Blade:	3
Orientation:	Upwind / Horizontal axis
Rotational Speed:	20.7/13.8
Rotational Direction:	Clockwise
Rotor Blade Material:	GRP
Swept Area:	3421.19 square meter
Hub Height:	74 m
Regulation:	Pitch regulated

**Operational Data**

Cut in wind speed:	3 m/s
Rated wind speed:	13 m/s
Cut off wind speed:	25 m/s

**Gear Box**

Type:	Integrated 3 stage 1 planetary & 2 helical
Gear Ratio:	74.917:1
Nominal Load:	1390 kW
Type of Cooling:	Oil cooling system

**Generator**

Type:	Asynchronous 4/6 pole
Rotation Sped:	1006/1506 RPM
Rated Output:	250/1250 kW
Rated Voltage:	690 volt
Frequency:	50 Hz
Insulation:	Class H
Enclose Class:	IP56
Cooling System :	Air Cooled

**Operating Brakes**

Aerodynamic Brake:	Independent systems with blade pitching
Mechanical Break:	Spring powered disc brakes, hydraulically released, fail safe

**Yaw Drive**

Method of Operation:	4 Active electrical yaw motors
Bearing Type:	Polyamide slide bearing

**Tower:**

Type:	Free Standing, Tubular Tower, Epoxy painted
Tower Height:	TO suit hub height
Construction:	Bolted
Erection:	With Crane
Design:	GL special Class

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

Year	Annual Estimation of emission reduction in tonnes of CO <sub>2</sub> e
2007-2008	13610
2008-2009	13610
2009-2010	13610
2010-2011	13610
2011-2012	13610
2012-2013	13610
2013-2014	13610
2014-2015	13610
2015-2016	13610
2016-2017	13610
<b>Total estimated reductions (tonnes of CO<sub>2</sub>e)</b>	136100
<b>Total number of crediting years</b>	10 years(fixed crediting period)
<b>Annual average over the crediting period of estimated reductions (tonnes of CO<sub>2</sub>e)</b>	13610

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

- No Public Funding from Annex 1 countries for the project activity.
- No ODA Funding for the project activity.

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

There is no registered small-scale CDM project activity or a request for registration for another small-scale project activity:

- By the same project participants;
- In the same project category and technology/measure; and
- Registered within the previous 2 years; and
- Whose project boundary is within 1 km of the project boundary of the proposed small-scale activity at the closest point

It therefore satisfies all conditions listed in “Appendix C” of the simplified M&P for the small-scale CDM project activities for guidance on how to determine whether the proposed project activity is not a de-bundled component of a larger project activity”

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



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AMS ID “Grid connected renewable electricity generation”  
Version 10, 23 December 2006

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

The project status is in line with the methodology AMS ID; specific features of project and applicability of methodology AMS ID are discussed below-

<b>Applicability of AMS ID</b>	<b>Project Status</b>
This category comprises renewable energy generation units, such as photovoltaic, hydro, tidal/wave, wind, geothermal, and renewable biomass, that supply electricity to and /or displace electricity from an electricity distribution system that is or would have been supplied by at least one fossil fuel firing power station	Project activity involves wind energy generating units that supply electricity to the regional distribution system (WR grid) that is supplied by a number of fossil fuel fired units.
If the unit added has both renewable and non renewable components (e.g. a wind/diesel unit), the eligibility limit of 15MW for a small-scale CDM project activity applies only to the renewable component.	The project has only renewable components and the capacity is lower than 15MW.

**B.3. Description of the project boundary:**

The project boundary consists of the Wind Turbine Generator (WTG), the metering equipments for each generator, and substation from where power is supplied to grid.

**B.4. Description of baseline and its development:**

Baseline for the project activity is power generated from renewable energy source multiplied by the grid emission factor of WR grid calculated in transparent and conservative manner as:

A combined margin (CM), consisting of the combination of operating margin (OM) and build margin (BM) as per guidelines in AMS ID.

$$CM = 0.75 \times (OM) + 0.25 \times (BM)$$

<b>Parameter</b>	<b>Value</b>	<b>Data Source</b>
Operating Margin (OM)	1.01	Central Electricity Authority, Government of India, Dated 21 <sup>st</sup> December 2006 in accordance with ACM0002
Build Margin (BM)	0.77	
Combined Margin (CM)	0.95	

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

The project reduces anthropogenic emissions of greenhouse gases by source below those that would have occurred in absence of the proposed CDM project activity. The project activity is located in Madhya Pradesh and Maharashtra State. The project additionality is established as per *Attachment A* of Appendix

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B of the simplified modalities and procedures for small-scale CDM project activities. Project participants provide an explanation to show that the project activity would not have occurred anyway due to at least one of the following barriers:

The additionality test is conducted for the two sub bundles in the project activity separately based on the location of wind mills. Based on this, two sub bundles are identified as -

Sub-Bundle1- 4.95MW Capacity in Madhya Pradesh

Sub-Bundle2 - 3.6MW Capacity in Maharashtra

### **Barrier Analysis for Sub-Bundle1**

#### *Risk related with Returns*

Internal rate of return (IRR) is the driving factor of any investment which decides the financial viability and economic attractiveness of the project. For sub-bundle-1, project IRR on equity without CDM benefits is about 12.2% and is below the desired benchmark (return on equity at 16%). So, IRR does not encourage the project developers to invest in the project. When CDM benefits are taken into account the project IRR improves to about 16.4% and the project becomes financially viable.

#### Financial Features of Project:

Wind Mill Capacity	600 kW
Investment	INR 39 million
Debt to Equity Ratio	70:30
Tariff rate	INR 3.97/ kWh for first year; 3.80/ kWh in second year; 3.63/ kWh for third year; 3.46/ kWh for fourth year and; 3.30/ kWh for the entire project life (MPERC tariff rate)
Interest Rate	9%
Repayment Period	7 Years ( Including 1 Year Moratorium)
Expected Generation per annum	1.1 million units at 22.5% CUF <sup>4</sup>
Insurance	0.60 lacs per annum
Operation and Maintenance Charges	1% of project cost for the first 10 years, and 5% increment for next 10 years (MPERC data)
Wheeling Charges	2% (MPERC data)
Transmission and non-availability of grid	7% (MPERC data)
Depreciation benefits	80% in the first year
IRR with out CDM Benefit	12.2%
IRR with the CDM Benefit	16.4%
Required Return on equity	16% (Return on equity for power projects in India)

Financial performance of a wind power project depends on a number of factors that are not under direct control of project promoters. These factors include effective capacity utilization factor, grid availability or

<sup>4</sup> CUF =22.5% as taken by Madhya Pradesh Electricity Regulatory Commission. The CUF given by Indian Wind Turbine Manufacturers' Association (IWTMA) is much lower than this at 19.4%

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the lack of it, wheeling charges, and transmission charges levied on power supplied to the grid by regulatory authorities, wind conditions (speed and density) in the region etc.

**Capacity utilization factor (CUF)** of a wind mill is a measure of actual performance against power generation potential. The financial performance of a wind mill is directly related to the value achieved of CUF in a year. As has been seen over the years, CUF in Madhya Pradesh state has been on a lower side compared to that in other states. Madhya Pradesh Electricity Regulatory Commission (MPERC) has adopted CUF at 22.5% for calculation of tariff rates for wind power producers. This gives 1.6 million power units in a year from 1MW capacity. However, a report from Indian Wind Turbine Manufacturers' Association (IWTMA) says that the maximum generation potential lies between 1.2-1.4 million units per annum per MW capacity. This is equivalent to a CUF of ~19.4%, 13% less than what MPERC has assumed for estimation of tariff rate for power sale from wind power projects. The project activity is not financially attractive even at 22.5% CUF and any reduction further would again negatively impact IRR in the project activity. The impact of CUF change on IRR is tabulated below –

CUF	22.5% (Base)	-5% of base CUF	-10% of base CUF	+5% of base CUF	+10% of base CUF
IRR	12.2 %	9.8%	7.7%	14.7%	17.5%
Remarks	This is based on CUF value assumed by MPERC for wind power projects in Madhya Pradesh	This is very likely given the state of wind power generation in the state and given by IWTMA		Given the scenario of power generation of wind power projects, this is highly unlikely	

*Other Barriers*

Wind power generation in Madhya Pradesh has not seen growth it should have. This is evident from the fact that despite special incentives, tax benefits and long term financial schemes provided by Government of India for power generation from WTG, it has not been able to realize its full potential in Madhya Pradesh as yet. As per a report from Ministry of New and Renewable Energy (MNRE), the total available potential for power generation in Madhya Pradesh from wind energy is 825 MW. However, the installed capacity is only 35.5 MW which is just about 4.3 % of the available potential. In 2000-01, Madhya Pradesh had wind power generation capacity of 22MW and in the last 5 years it could reach only up to 35.5 MW. This growth can't be termed as encouraging at all (table below) despite the "incentives" provided by government.

Year	2000-01	2002-02	2002-03	2003-04	2004-05
Installed Capacity (MW)	22	22	22	27	35.5
% Utilization of Available Potential against total potential of 825 MW	2.67	2.67	2.67	3.27	4.30

*No change in wind power generation capacity took place between 2000 & 2003 and only a small improvement happened since due to barriers faced by wind energy projects in the state*

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(Data Source: Ministry of New and Renewable Energy's annual report of corresponding year)

Wind energy projects in the state of Madhya Pradesh have not shown encouraging progress in the past years despite the policy initiatives from central and state governments. This is reflected in poor implementation of these projects in the state as shown in the table above. Only recently some wind mills have come up in the state and these have also considered CDM benefits.<sup>5</sup>

### **Barrier Analysis for Sub-Bundle-2**

For sub-bundle 2 (WTG s located in the state of Maharashtra), project proponents are supplying power to Maharashtra State Electricity Distribution Company Limited (MSEDCL). For this case financial analysis has been carried out and it is seen that IRR without CDM revenue is well below the required return on equity mark (16%).

Financial Features of Project:

Wind Mill Capacity	600 kW						
Investment	INR 39 million						
Debt to Equity Ratio	70:30						
Tariff rate (Rs/ kWh)	<b>Yr1</b>	<b>Yr2</b>	<b>Yr3</b>	<b>Yr4</b>	<b>Yr5</b>	<b>Yr6</b>	<b>Yr7</b>
	3.50	3.65	3.80	3.95	4.10	4.25	4.40
	<b>Yr8</b>	<b>Yr9</b>	<b>Yr10</b>	<b>Yr11</b>	<b>Yr12</b>	<b>Yr13</b>	<b>Yr14 onwards</b>
	4.55	4.70	4.85	5.00	5.15	5.30	Repeat of tariff rates. However this is uncertain and rates may vary
Interest Rate	9%						
Repayment Period	7 Years ( Including 1 Year Moratorium)						
Expected Generation per annum	1.05 million units at 20% CUF						
Insurance	0.60 million per annum						
Operation and Maintenance Charges	1% of project cost for the first 10 years, and 5% increment for next 10 years						
Wheeling Charges	2%						
Transmission and non-availability of grid	5%						
Depreciation benefits	80% in the first year						
IRR with out CDM Benefit	11%						
IRR with the CDM Benefit	16.6%						
Required Return on equity	16% (Return on equity for power projects in India)						

<sup>5</sup> <http://cdm.unfccc.int/Projects/DB/RWTUV1135356510.37/view.html>

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**Capacity utilization factor (CUF)** as discussed above would have a direct impact on projects financial viability. Keeping this mind a sensitivity analysis has been done on CUF.

CUF	20% (Base)	-5%	-10%	+5%	+10%
IRR	11 %	9.1%	7.3%	12.9%	14.9%
Remarks	This is based on CUF value assumed by MERC for wind power projects in Maharashtra state	This is very likely given the state of wind power generation in the state and suggested by IWTMA report		Still lower than the required return on equity for power projects. Given the scenario of power generation of wind power projects, this is unlikely.	

Other important that is critical determining project's financial viability is **tariff rate** of power sold to the grid. For wind power projects, MSEDCL has fixed tariff rates only for the first 13 years and that leaves a lot of uncertainty about the returns from the project activity in subsequent years (unlike other states where tariff rates are fixed for the entire project life of 20 years). Hence, sensitivity analysis is carried out for tariff rates after first 13 years of project running.

Tariff rate (Rs/kWh)	5.30 (Base)	-5%	-10%	+5%	+10%
IRR	11.8 %	10.8%	10.6%	11.2%	11.4%
Remarks	This is assumed the tariff rate would continue as is at the end of 13 <sup>th</sup> year from commissioning year, which is highly unlikely.	Any change in tariff rate shall further reduce IRR in the project activity		Given the scenario of power generation of wind power projects, this is highly unlikely. And even a 10% tariff hike shall not impact project activity substantially so as to overcome the hurdle rate (16%, return on equity)	

#### *Regulatory and policy barriers*

The barrier due to prevailing practice essentially categorizes problems due to state policies, local issues which decrease the inclination of proponents to invest in such projects.

The major risk for renewable energy is of policy changes by government. Government policies to support renewable energy project have been irregular<sup>6</sup>. It has been seen in past that Maharashtra state has curtailed a policy after declaring it. Irregular policy changes lead to uncertainties in revenue generation

<sup>6</sup> Regulations regarding third party sale/self use when decision to invest in the project was taken- (for Tariff, Wheeling charges, T&D losses, sale to third party, incentives etc) have undergone several changes. Many of the assumptions taken at the time of decision making have significantly turned adverse.

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and thus more project risk. Following are a few examples for policy related issues witnessed by wind power projects in Maharashtra.

- 1- Sales tax benefits: Government had capped sales tax benefits available to wind power project up to a maximum project cost of Rs 50 million/MW irrespective of technology of the wind mill (Industries, Energy & Labor Department circular dated 03-01-2002). In a subsequent decision by same department (dated 01-04-2002), sales tax benefits for electricity generated by wind mills were withdrawn altogether.
- 2- Income tax benefits: Initially 100% accelerated depreciation was allowed, however it was reduced to 80% afterwards<sup>7</sup>. Also benefits available from accelerated depreciation are only moderate given reduced corporate tax rate over the years and introduction of Minimum alternative tax (MAT).
- 3- Change in Transmission and Distribution (T&D) charges: In year 2003, MSEB had changed T&D charges from 0% in first three years and 1% thereafter to distance slab basis. A petition was filed to Maharashtra Electricity regulatory Commission (MERC) against Maharashtra State Electricity Board -MSEB ruling (case 20 of 2004). In this particular ruling MERC has fixed T&D charges as 5%.
- 4- The tariff rate contract with the state electricity board as per MERC is only for initial 13 years and there is no clarity on what the tariff rates would be post expiry of the contract. As the project life is 20 years, any negative policy change would further diminish the financial viability of project.

Stability in government policies is a key element that determines conduciveness of a business environment. Regulatory risk (mid-term policy corrections) is a major barrier identified by the project promoter while taking decision to invest in the project activity. The policy changes of past have definitely increased the apprehensions on part of project proponents. A change in policy in future can affect the returns associated to project activity.

#### *Managerial Constraints*

Project proponents have core business interest in financing, coal and flour business. This is the first power generation project by project proponents Project promoters have no prior experience of power generation from renewable energy sources and project promoters were entirely dependent on wind farm developer. Due to lack of knowledge and dependence on wind farm developers, project promoters faced a number of problems<sup>8</sup> during erection and commissioning of the wind mills.

#### *Summary*

As discussed above the project activity is not financially attractive and faces many barriers. The project activity is not a business as usual scenario and to overcome the aforesaid barriers project proponents would need CDM revenue support.

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<sup>7</sup> [Hindu Business Line New article](#)

<sup>8</sup> Wind mills in some cases could not be commissioned in time as promised by project developers. The delays resulted into loss of revenue.

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**B.6. Emission reductions:****B.6.1. Explanation of methodological choices:**Baseline emission:

$$BE = \text{GEN} \times \text{CM} / 1000$$

Where;

BE= Baseline emission in tCO<sub>2</sub>/MWh

GEN= Generated electricity by the project activity in kWh

CM= Combined margin of WR grid in tCO<sub>2</sub>/MWhProject emissions:

There is no emission due to the project activity and hence,  
Emission reduction, ER = BE-PE = BE

**B.6.2. Data and parameters that are available at validation:***(Copy this table for each data and parameter)*

<b>Data / Parameter:</b>	Combined Margin
Data unit:	tCO <sub>2</sub> / MWh
Description:	Anthropogenic emissions by western grid by generating per MWh
Source of data used:	Central Electricity Authority ,India
Value applied:	0.95
Justification of the choice of data or description of measurement methods and procedures actually applied :	Central Electricity Authority (India) is a government body and data published by them is in line with the ACM0002/ Version06, dated 19 May 2006.
Any comment:	-

**B.6.3 Ex-ante calculation of emission reductions:**

GEN = 143262000 kWh per annum (expected net power supply from all WTGs in the project activity in a year)

$$\text{GEF} = 0.95 \text{ tCO}_2\text{e/ MWh}$$

$$\begin{aligned} \text{ER} &= 143262000 \times 0.95 / 1000 \\ &= 13610 \text{ tCO}_2 / \text{annum} \end{aligned}$$

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

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Year	Baseline Emissions	Project Emissions	Leakage	Emission Reduction
2007-08	13610	0	0	13610
2008-09	13610	0	0	13610
2009-10	13610	0	0	13610
2010-11	13610	0	0	13610
2011-12	13610	0	0	13610
2012-13	13610	0	0	13610
2013-14	13610	0	0	13610
2014-15	13610	0	0	13610
2015-16	13610	0	0	13610
2016-17	13610	0	0	13610

**B.7 Application of a monitoring methodology and description of the monitoring plan:**
**B.7.1 Data and parameters monitored:**

*(Copy this table for each data and parameter)*

<b>Data / Parameter:</b>	GEN
Data unit:	kWh
Description:	Electricity supplied by WTGs in the project activity
Source of data to be used:	Electricity meter installed by respective State Electricity Board at uploading station connected to WTGs
Value of data	143262000
Description of measurement methods and procedures to be applied:	Direct reading from meter installed by State Electricity Board at uploading station is used for estimation of emission reduction in the project activity.
QA/QC procedures to be applied:	These meters are the property of respective state electricity boards and calibration of the meters are carried out regularly.
Any comment:	

**B.7.2 Description of the monitoring plan:**

For monitoring the project activity, project promoters ensure the reliability of monitoring equipments and results of those equipments-

**1. Metering Equipments**

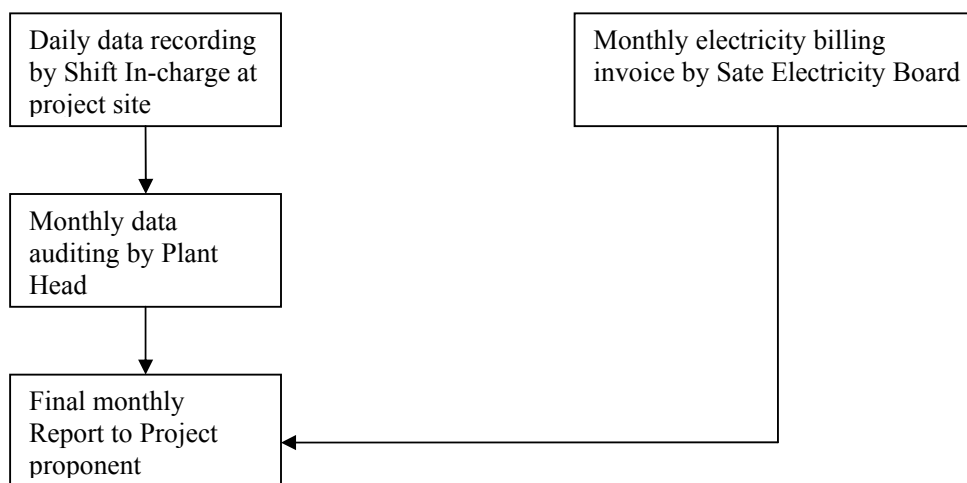
Generated power is measured first on project site by meters installed on the wind mills, which are well tested and accurate. Each meter has its specific serial number for its identification. All the project site meters have been sealed by respective state electricity board. These meters are calibrated annually by SEBs metering and testing department.

**2. Meter Reading**



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A daily report of power generation is made by the project site personnel and finally compiled into month wise electricity generation. These reports are sent to the project developer at the end of the month. These reports can be cross checked by the invoice issued by the respective state electricity board.



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

Date of Completion of the application of the baseline and monitoring methodology – 02/01/2007

Mr. Praveen Agrawal (Director)  
**AD-Manum Packagings Ltd.** (Also a project participant)  
 Rau Pithampura Bypass, Gram –Sonvay  
 District Indore 453331 (MP)  
 Mobile No: 91-9826020202  
 Tel: 91-731-4020202  
 Fax: 91-731-4020203  
 E-mail: [praveenagarwal@admanum.com](mailto:praveenagarwal@admanum.com)

**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:**

31/03/2006

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

20 Years

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

Fixed Crediting Period

**C.2.1. Renewable crediting period**
**C.2.1.1. Starting date of the first crediting period:**

Not Applicable

**C.2.1.2. Length of the first crediting period:**

Not applicable

**C.2.2. Fixed crediting period:**
**C.2.2.1. Starting date:**

01/05/2007

**C.2.2.2. Length:**

10 Years

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

Ministry of Environment and Forest i.e. Government of India does not require any Environment Impact Assessment (EIA) of wind mill projects. The project activity has only positive impacts on environment and people. It results in no emission of GHGs and other gases i.e. SO<sub>x</sub> and NO<sub>x</sub> common in conventional power generation sources.

**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 project activity is a renewable energy project. Wind power projects do not negatively impact environment and are only having positive environmental benefits.

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**SECTION E. Stakeholders' comments**

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

The following stakeholders were identified for the project activity in Madhya Pradesh

- District Magistrate of Dewas District
- Commissioner of Municipal Corporation of Dewas District
- Local population residing near the project site

Similarly for Maharashtra state following listed personnel were found as stakeholders

- District Magistrate of Dhule District
- District Magistrate of Sangli District
- Village Gram Panchayat
- Local Population

**Communication mode with stakeholders (Madhya Pradesh)-**

- A letter was sent to the District Magistrate of Dewas district on 01/09/2006 informing about the project activity and inviting him to share his views.
- A letter was sent to the commissioner of Municipal Corporation of Dewas District on 01/09/2006 informing about the project activity and was invited to share his views.
- A news paper advertisement was published on 07/09/2006 in a Hindi news paper named *Nai Dunia* which has a circulation all over Madhya Pradesh.
- A public meeting was organized where local population was invited to share their views and suggestions about the project activity.

Similarly the stake holders identified in **Maharashtra** were communicated and invited to give their views

- A letter was sent to District Magistrate of Sangli district on 27/12/2006 informing about the project activity and inviting him to put his views.
- A letter was sent to District Magistrate of Dhule district informing about the project activity and was invited to put his views.
- A letter to relevant Gram-Panchayat was sent, informing about the installation of wind mills. Further Gram Panchayat has been requested to put its perception about the project activity.
- Meetings were organized with nearby communities at all villages where the project activity is located.
- One News Paper Advertisement has been published on 7 Sep. 2006, in the newspaper *Tarun Bharat* in local language, which has a circulation in entire Maharashtra state.

**E.2. Summary of the comments received:**

Meeting conducted for taking views project activities were attended by people living in the proximity of project sites. Project activity was explained to the people from the project proponents and was described as how this would have positive impact on environment. This was also discussed how the project activity would result in employment in the area. People in general appreciated and acknowledged the good work done by project proponents.

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

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Project activity was appreciated by all the stakeholders consulted.

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**Annex 1****CONTACT INFORMATION ON PARTICIPANTS IN THE PROJECT ACTIVITY**

Organization:	AD-Manum Packagings Ltd.
Street/P.O.Box:	Rau
Building:	
City:	Indore
State/Region:	Madhya Pradesh
Postfix/ZIP:	453331
Country:	India
Telephone:	91-731-4020202
FAX:	91-731-4020203
E-Mail:	<a href="mailto:praveenagarwal@admanum.com">praveenagarwal@admanum.com</a>
URL:	<a href="http://www.admanum.com">www.admanum.com</a>
Represented by:	Praveen Agarwal
Title:	Director
Salutation:	Mr.
Last Name:	Agarwal
Middle Name:	-
First Name:	Praveen
Department:	-
Mobile:	91-9826020202
Direct FAX:	91-731-4020203
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Personal E-Mail:	<a href="mailto:praveenagarwal@admanum.com">praveenagarwal@admanum.com</a>

**Annex 2**

**INFORMATION REGARDING PUBLIC FUNDING**

- No Public Funding from Annex 1 countries for the project activity.
- No ODA Funding for the project activity.

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### Annex 3

#### BASELINE INFORMATION

Baseline information has been taken from the annual report of Central Electricity Authority<sup>9</sup>, Government of India. This report is inline with the approved consolidated methodology ACM0002/Version06 dated 19 May 2006.

OM, Operating Margin	1.01
BM, Build Margin	0.78
<b>CM, Combined Margin</b>	<b>0.95</b>

Unit: tCO<sub>2</sub>e/ MWh

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<sup>9</sup> [CO<sub>2</sub> Baseline Database for the Indian Power Sector \(http://www.cea.nic.in/planning/c and e/user\\_guide ver1.1.pdf\)](http://www.cea.nic.in/planning/c_and_e/user_guide_ver1.1.pdf)

**Annex 4**

**MONITORING INFORMATION**

Please refer section B.7.2 of the document for details of monitoring plan.

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