



**CLEAN DEVELOPMENT MECHANISM  
FORM FOR SUBMISSION OF BUNDLED SMALL SCALE PROJECT ACTIVITIES  
(SSC-CDM-BUNDLE)**

**SECTION A. General description of the Bundle**

**A.1. Title of the Bundle:**

**3.00 MW bundled Wind Power Project by Shree Jai Ambe Associates at Brahmanvel, Dist. Dhule (Maharashtra), India.**

**A.2. Version and Date:**

Version: 07  
Dated: 03/04/2009

**A.3. Description of the Bundle and the subbundles:**

The project consists of implementation of 3.00 MW windmill farm at Brahmanvel in Dhule district.

This promoted project is a bundled project by 'Shree Jai Ambe Associates (Power Division)'. They are the traders & exporter of Rice in many parts of India. Well established in the field of Poultry farming, Warehousing and Rice Milling. Also generate wind power energy.

The bundled project activity consists of 4 bundles:

- Bundle I: 0.750 MW windmill by Shree Jai Ambe Associates (Power Division).
- Bundle II: 0.750 MW windmill by Automotive Valves Pvt. Ltd.
- Bundle III: 0.750 MW windmill by M.G. Patel & Brothers (Power Division).
- Bundle IV: 0.750 MW windmill by Gayson & Company Pvt. Ltd.

All windmills are installed at village Brahmanvel of district Dhule in state of Maharashtra, India.

Details of individual windmills installed in project are as given in following table:

Sr. No.	Capacity of Windmill <sup>1</sup>	Starting Date of Installation Work <sup>2</sup>	Date of Commissioning <sup>3</sup>
1.	0.750 MW	02/11/2006	23/01/2007
2.	0.750 MW	02/11/2006	23/01/2007
3.	0.750 MW	02/11/2006	23/01/2007
4.	0.750 MW	02/11/2006	23/01/2007

To fulfil their commitment towards sustainable development and a cleaner environment the Project Participants have invested in green renewable energy based power generation by establishing a wind farm of 3.00 MW installed capacity at village Brahmanvel, District Dhule in the state of Maharashtra. The

<sup>1</sup> Commissioning Reports from Superintending Engineer MSEDCL O&M Circle Dhule.

<sup>2</sup> Performa Innovices from VESTAS.

<sup>3</sup> Commissioning Reports from Superintending Engineer MSEDCL O&M Circle Dhule.



## CDM-SSC-BUNDLE

project mainly aims at generating electricity from renewable source namely wind energy and consists of four wind mills of 0.75 MW capacity each. The electricity generated is fed to Western regional grid of India. The project activity will result in avoidance of greenhouse gas (GHG) emission generations, which would have otherwise occurred due to CO<sub>2</sub> emissions from electricity generation by fossil fuel, based power plants that is supplied to MSEDCL.

**A.4. Project participants:**

<b>Name of Party involved (*) ((host) indicates a host party) Private</b>	<b>Private and/or public entity (ies) Project participants (*) (As applicable)</b>	<b>Kindly indicate if the party involved wishes to be considered as project participant (Yes/No)</b>
India	A) Shree Jai Ambe Associates (Power Division), Gondia, Maharashtra, India	No

**SECTION B. Technical description of the Bundle:****B.1. Location of the Bundle:**

Brahmanvel Village, Taluka Sakri, District Dhule.

**B.1.1. Host Party(ies):**

India

**B.1.2. Region/State/Province etc.:**

District: Dhule, State: Maharashtra

**B.1.3. City/Town/Community etc:**

Village: Brahmanvel

**B.1.4. Details of physical location, including information allowing the unique identification of this Bundle:**

The project activity involves installation of windmills located at Village Brahmanvel, Dist.- Dhule in the state of Maharashtra. WEG wise location details are as follows:

Latitude: 21°8'60 N  
Longitude: 74°13'0 E

Mean annual wind speed<sup>4</sup>: 23.1 km / h at 30m height. Mean annual wind power density: 324 w/m<sup>2</sup> at 50m height and 278 w/m<sup>2</sup> at mast.

Sr.	Wind mill Location No.	Village	Taluka	District
1	D1	Brahmanvel	Sakri	Dhule
2	D2	Brahmanvel	Sakri	Dhule
3	D6	Brahmanvel	Sakri	Dhule
4	AA	Brahmanvel	Sakri	Dhule

Fig 1: Location of Maharashtra in India



Fig 2: Location of Dhule in the Maharashtra State

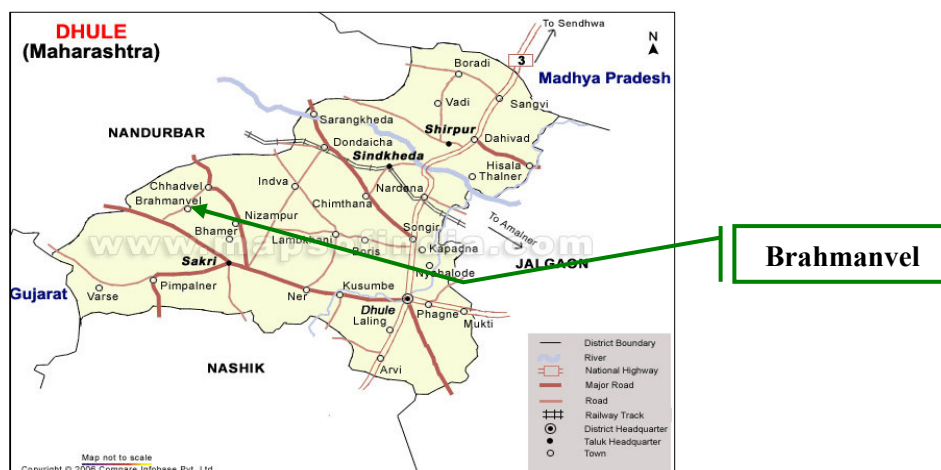
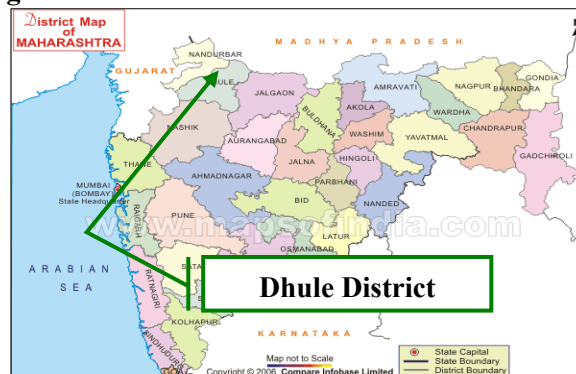


Fig 3: Location of Brahmanvel in Dhule District

## B.2. Type(s), category(ies) and technology/(ies)/Measure/(s) of the bundle:

Paragraph 1 of “Type AMS. I.D. Grid connected renewable electricity generation (Version 13: Valid from 14 Dec 07 onwards)” of appendix B of the simplified M&P for small-scale CDM project activities, states that “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

<sup>4</sup> Values of Mean Annual Wind Speed and Mean Annual Wind Power Density are taken from Centre for Wind Energy Technology, which is ISO 9001-2000 certified.

<http://www.cwet.tn.nic.in/Docu/WindMonitoringStations.pdf>



## CDM-SSC-BUNDLE

electricity distribution system that is or would have been supplied by at least one fossil fuel fired generating unit.”

At this project site, four windmills are generating electricity, which is then supplied to western grid of India.

In this project, total electricity generation capacity of all four windmills is 3.00 MW, which is less than the limit of 15 MW of maximum output capacity as specified in Annex-II “Simplified Modalities & Procedures for Small Scale CDM Project Activities” for Type (i) project activities: renewable energy project activities with a maximum output capacity equivalent to up to 15 megawatts (or an appropriate equivalent) (decision 17/CP.7, paragraph 6 (c) (i)). Thus, this project reduces anthropogenic emissions by sources and its maximum output capacity is less than 15 MW. Therefore it confirms to this category thereby qualifying as a small-scale project activity.

**B.3 Estimated amount of emission reductions over the chosen crediting period:**

The chosen crediting period is 10 years which is fixed crediting period. Estimated amount of emission reductions over these 10 years is as follows:

Years	Estimation of annual emission Reductions tCO <sub>2</sub> e
2009	5313
2010	5313
2011	5313
2012	5313
2013	5313
2014	5313
2015	5313
2016	5313
2017	5313
2018	5313
<b>Total estimated reductions (tonnes of CO<sub>2</sub>e)</b>	<b>53130</b>
<b>Total number of crediting years</b>	<b>10</b>
<b>Annual average over the crediting period of estimated reductions (tonnes of CO<sub>2</sub> e)</b>	<b>5313</b>

In the above table the year 2009 corresponds to the period starting from 01.08.2009 to 31.07.2010. Similar interpretation shall apply for subsequent years.

**SECTION C. Duration of the project activity / Crediting period:**
**C.1. Duration of the Bundle**
**C.1.1. Starting date of the Bundle:**



## CDM-SSC-BUNDLE

30/08/2006 ('Supply Agreement' signed to buy first wind mill)

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

20 years 0 month

**C.2. Choice of crediting period and related information:****C.2.1. Renewable crediting period:**

Not Chosen

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

Not Chosen

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

Not Chosen

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

01/08/2009 or from the date of registration of the project activity, whichever is latter.

**C.2.2.2. Length:**

10 years & 0 month

**SECTION D. Application of a monitoring methodology:**

The type and category of this project activity are:

Project Type: I – Renewable Energy Projects

Project Category: D – Grid connected renewable electricity generation

In this project activity monitoring plan as per paragraph 13 of “Type AMS. I.D. Grid connected renewable electricity generation (Version 13: Valid from 14 Dec 07 onwards)” of Appendix B of the Simplified M&P for Small-Scale CDM Project Activities is followed, which states that:

“13. Monitoring shall consist of metering the electricity generated by the renewable technology.”

As per paragraph 13 of “Type AMS. I-D Grid connected renewable electricity generation (Version 13: Valid from 14 Dec 07 onwards)”, KWh generated by windmills is to be recorded.

The data monitoring will involve measurement of KWh generated by windmills.

The bundled 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. Thus no special ways and means are required to monitor leakage from the project activity. So monitoring only involves **metering the electricity generated by renewable technology**.

1. The Wind Energy generated from the WEGs has been evacuated to the Maharashtra State Grid System through the Maharashtra State Grid’s sub-station (Sakri substation) and the evacuation facility is maintained by the Maharashtra State Electricity Board (MSEB).
2. The electricity generation measurements are required by the Maharashtra State Electricity Distribution Company Limited (MSEDCL) and the Project Participants (PPs) to assess electricity sales revenue and / or wheeling charges.
3. The bundled project activity therefore involves independent measurements of generated electricity for each of the four project proponents wind turbines.
4. The primary recording of the electricity fed to the MSEDCL will be carried out jointly at the incoming feeder main meter of the State Grid sub-station.
5. The joint measurement will be carried out on first working day of the month in presence of both parties (the developer’s representative and officials of MSEDCL). Both parties will sign the recorded reading.
6. **Metering equipment:** Metering is carried out through electronic LCS (Local Control System) at each WEG and electronic meters at Sakri Substation. The LCS at WEG are installed and owned by project proponents. Power output is measured continuously for all three phases by LCS. The values calculated are stored and averaged using different averaging times. Based on the active power outputs measured in all three phases, a total three-phase power output is displayed in the meter. The power output displayed is summed up to give a total turbine power production. The main meter at Sakri substation has been installed and owned by MSEDCL along with check meter. The metering equipments are maintained in accordance with electricity standards. The readings shown by main meter alone will hold well for the purpose of billing.
7. **Meter Readings:** The monthly meter readings at the project site and the receiving station are taken simultaneously and jointly by the parties on the first working day of the following month. At the conclusion of each meter reading an appointed representative of the MSEDCL and the

- company signs a document indicating the number of KWh exported to the grid, which is obtained by subtraction of total electricity generated by WEGs and number of KWh imported from the grid.
8. The secondary recording, which will provide a backup in case of primary recording face some malfunctioning, would be done at the incoming feeder check meter. The main meter and check meter at the incoming feeder are calibrated annually.
  9. **Calibration Procedure:** The energy meters that are main & check meters at Sakri sub-station will be tested and calibrated once in a year by MSEDCL. The testing of the meter will be jointly conducted by authorised representatives of Vestas and MSEDCL and the results and corrections so arrived at mutually will be applicable and binding on both the parties. If any of the meters is found to be registered inaccurately, the affected meter will be immediately repaired or replaced. If during the test, main meter and check meter are found beyond permissible limits of error, both the meters will be immediately repaired or replaced and the correction applied to the consumption registered by the main meter to arrive at the correct energy exported for billing purposes. Corrections in consumption registered by the main meter will be applicable to the period between the two previous monthly readings. Computation of exported energy for the period thereafter till next monthly reading will be as per the repaired or replaced meter.
  10. MSEDCL allocates the reading recorded at substation to individual customer based on the site meter (LCS) reading & substation meter; as explained under heading “Description of billing calculation from main meter to individual meters.”
  11. This report is forwarded to MSEDCL upper authority for auditing the Joint Meter Reading (JMR) report and units recorded in that report.
  12. Once the report is audited the credit note is issued by MSEDCL. Based on the credit notes, project participant’s site Incharge, if authorized, will raise the invoice to MSEDCL.
  13. Based on this invoice and credit note MSEDCL pays to the project proponents.

#### Description of billing calculation from main meter to individual meters:

The total generation reading of all windmills on the farm is collectively displayed by the substation common feeder meter. The net generation of each of the wind turbines is then calculated (as per the method notified in MERC Order dated 12/09/2006 for Group III installation machines<sup>5</sup>; also specified in PPA, section 11.05 – Joint Meter Reading, point [c], page 24) in the following manner:

Electricity exported by project activity to the grid is calculated as follows:

$$EG_{PP, \text{ export, app}} = EG_{\text{feeder, export}} \times \frac{EG_{PP, \text{ export}}}{EG_{PP, \text{ export}} + EG_{\text{windfarm, export}}}$$

Electricity imported by project activity from the grid is calculated as follows:

$$EG_{PP, \text{ import, app}} = EG_{\text{feeder, import}} \times \frac{EG_{PP, \text{ export}}}{EG_{PP, \text{ export}} + EG_{\text{windfarm, export}}}$$

Therefore, net electricity supplied to the Western regional grid i.e.  $EG_y$  is calculated as follows:

$$EG_y = EG_{PP, \text{ export, app}} - EG_{PP, \text{ import, app}}$$

This calculated parameter is the net electricity supplied from project activity to Western regional grid, which is used to calculate emission reduction by the project activity.

<sup>5</sup> MERC Order dated 12/09/2006; point 07 under heading of Group Metering on page 03  
[http://mercindia.org.in/pdf/58\\_Order\\_dt\\_12\\_09\\_06\\_CN\\_10\\_of\\_2006.pdf](http://mercindia.org.in/pdf/58_Order_dt_12_09_06_CN_10_of_2006.pdf)

**The operational and management structure basically consists of three levels:**

- A. Project Owner
- B. Project Manager
- C. Project Operator

**A. Project Owner:**

The project owner represents the project activity, which is Shree Jai Ambe Associates (Power Division) Management.

Their specific responsibilities:

- 1. Handling of the project performances
- 2. Keeping all the financial records of selling of electricity

**B. Project Manager: Sr. Manager (Vestas Wind Technology Pvt. Ltd.).**

His specific responsibilities:

- 1. Appointment of Project Operators
- 2. Ensure that Project Operators have undergone initial training to raise awareness about all processes
- 3. Assure that the Project Operators have received proper training regarding all the processes

**C. Project Operators, (Site Engineer)**

Their specific responsibilities:

- 1. Collect/Monitor the necessary data as required by the monitoring methodology
- 2. Store the collected/monitored data in credit note (paper) and spread sheet (electronic)
- 3. Keep the record of collected/monitored data in credit note and spread sheet for two year after the end of crediting period
- 4. Ensure that the data is entered properly and take proper care to avoid any loss of information
- 5. Prepare the annual monitoring report

**Training Plan:**

Training of staff operating and maintaining the WEGs are carried out by the WEG manufacturer and supplier i.e. Vestas (formally NEG Micon). Special emphasis is given to the training of the employees to enable them to develop their skills to meet changing WEG technology and to provide efficient and effective O&M services.

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

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





## CDM-SSC-BUNDLE

All the monitored data will be kept for 2 years after the end of crediting period or the last issuance of CERs for this project activity whichever occurs later. The monitored data will be presented to the DOE to whom verification of emission reductions is assigned.

Organization:	Shree Jai Ambe Associates (Power Division)
Street/P.O.Box:	Pal Chowk, Rail Toly
Building:	Near Bank of Baroda,
City:	Gondia
State/Region:	Maharashtra.
Postfix/ZIP:	441 614
Country:	India
Telephone:	+91-7182-252510
FAX:	+91-7182-252587
E-Mail:	<a href="mailto:shreejaiambe@gmail.com">shreejaiambe@gmail.com</a>
URL:	
Represented by:	
Title:	Managing Partner
Salutation:	Mr.
Last Name:	Patel
Middle Name:	Rajendrabhai
First Name:	Dharmesh
Department:	
Mobile:	09372397039
Direct FAX:	+91-7182-252587
Direct Tel:	+91-7182-252510
Personal E-Mail:	<a href="mailto:dharmesh_80@yahoo.com">dharmesh_80@yahoo.com</a> <a href="mailto:shreejaiambe@gmail.com">shreejaiambe@gmail.com</a>