

# **MONITORING REPORT**

## **Registered PDD Details**

- **Project 0310:** Bundled Wind power project in Jaisalmer (Rajasthan in India) managed by Enercon (India) Ltd.
- **Version:** Version 2.0
- **Date of PDD:** 15/12/2005

## **Monitoring Periods**

1 July 2004 to 30 June 2005 and 1 July 2005 to 30 June 2006

## **Commencement of crediting period**

1 July 2004

## **Date of monitoring report and version**

**Date:** 31 July 2006

**Version:** Version 1.0

## **Project Description**

The project activity involves the development and operation of grid-connected wind based electricity generation facilities with aggregate installed capacity of 58.2 MW, located within a wind park.

The wind park is located near Jaisalmer and supplies electricity using internal electrical lines to a local sub-station of the state electricity board named Rajasthan Rajya Vidyut Prasaran Nigam Ltd. (RRVPNL) at Badabagth using local transmission lines. The project activity has many sub-projects (individual wind farms owned by several entities) of smaller capacities sharing common facilities within a wind park managed by Enercon (India) Ltd. (EIL); hence these sub-projects have been bundled in the project activity

The project generates and sells electricity to the RRVPNL under 20 year power purchase agreements (PPAs) under similar tariff. Enercon (India) provides operation and maintenance services under contract to the sponsors for the entire 58.2 MW capacities. All the component wind farms have been commissioned, and supplies electricity to the RRVPNL (transmission company) in accordance with the preferential dispatching system.

## **Project Location**

The wind farm is located at Soda village, in Jaisalmer District of Rajasthan state in India. The project area is located in a wind zone of geographic location 26°54'N and 70°55'E. The project area extends between 26°40'N latitude and 69°36'E longitude to 26°42'N latitude and 69°38'E longitude. The sites are located at a distance of 5 – 45 km from Jaisalmer, 300 km from Jodhpur by road. The nearest railway station is at Jaisalmer

## Methodology Used

Title: “Consolidated monitoring methodology for zero-emissions grid-connected electricity generation from renewable sources”

Reference: ACM 0002, version 01

## Monitoring Parameters

The monitoring requirement for this project activity is as follows:

ID number	Data variable	Source of data	Data unit	Measured (m), calculated (c), estimated (e),	Recording frequency	Proportion of data to be monitored	Comment
1.EG <sub>y</sub>	Electricity supplied to the grid by the project	Electricity meters	MWh	m	Continuous	100%	This is the summation of the electricity supplied by all the subprojects to the grid.

The only monitoring parameter for this project is the net supply of electricity to the grid. As commented in the above table, it is the summation of the electricity supplied by all the sub-projects comprising the 58.2 MW bundle to the Rajasthan grid and is calculated as follows:

$$EG_y = \sum_i (G_i - L_i)$$

EG<sub>y</sub> : Electricity supplied to grid by the project activity

G<sub>i</sub> : Generation of electricity by individual turbines i (measured at individual turbines by meters installed at the site)

L<sub>i</sub> : Transmission loss allotted on each turbine

Transmission loss is calculated as:

$$L = \sum_j G_j - N$$

$\sum_j G_j$  : Summation of electricity generation data measured at the site feeding to the meter at the grid substation

N : Electricity generation data measured at grid substation

L : Total transmission loss

$$L_i = G_i * (L / \sum_j G_j)$$

## Grid emission factor

The emission factor for the Northern grid has been calculated *ex ante* and does not require monitoring.

### QA/QC Measures in Monitoring

The uncertainty level of the net energy exported by the Project is low. The general conditions set out for metering, recording, meter readings, meter inspections, Test & Checking and communication are governed as per the PPA (Power purchase agreement) with RRVPNL/Discoms.

The measurement and recording of the net supply to grid is done as follows:

- The net delivered energy (using export and import meters) is metered at the high voltage side of the step up transformer installed at the individual sub project site.
- Representatives of RVPN and/or Jodhpur Discom and Enercon jointly read the metering system on the first day of every month at the delivery point.
- Meter reading is jointly signed by both the representatives.
- In case the main metering system is not in service, then the backup metering system shall be used until the main system is back to service.
- The main and the backup metering systems is sealed in presence of representatives of Power producers, EIL, Jodhpur discom and RVPN
- When any of these metering systems is found to be outside acceptable limits of accuracy or otherwise not functioning properly, it is repaired, recalibrated or replaced.

### CER Calculations

As per methodology ACM0002 the emission reduction **ER<sub>y</sub>** is calculated as:

$$ER_y = EG_y * EF_y \dots\dots\dots(1)$$

where *EG<sub>y</sub>* is the electricity supplied to the grid, *EF<sub>y</sub>* is the CO<sub>2</sub> emission factor of the grid .

*EF<sub>y</sub>* for this project as reported in the project design document (PDD) is 908.52 tCO<sub>2</sub>/GWh. Accordingly:

Emission reduction calculation **for the period July 2004 to June 2005:**

$$\begin{aligned} EG_y \text{ (Net supply to grid)} &= 87,247 \text{ MWh} \\ ER &= 87,247 \text{ (MWh)} * 0.90852 \text{ (tCO}_2\text{/MWh)} \\ &= \mathbf{79,265 \text{ tCO}_2} \end{aligned}$$

Emission reduction calculation **for the period July 2005 to June 2006:**

$$\begin{aligned} EG_y \text{ (Net supply to grid)} &= 91,769 \text{ MWh} \\ ER &= 91,769 \text{ (MWh)} * 0.90852 \text{ (tCO}_2\text{/MWh)} \\ &= \mathbf{83,374 \text{ tCO}_2} \end{aligned}$$

Total Emission Reductions **for the period July 2004 to June 2006**  
**= 162,639 tCO<sub>2</sub>**