

KALADONGER WIND POWER PROJECT IN RAJASHTHAN

Document Prepared By M/s Bindu Vayu Urja Private Limited

Project Title	Kaladonger wind power project in Rajasthan
Version	3
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Project ID	CDM requesting registration Id: 9342
Monitoring Period	18 th February 2012 to 30 th December 2012
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1 PROJECT DETAILS

1.1 Summary Description of Project

The project activity is a 75.6 MW wind power project consisting of 36 Wind Electric Generators (WTGs) of individual capacity 2.1 MW, at Kaladonger village in Rajasthan, India by M/s Bindu Vayu Urja Private Limited (BVUPL).

The electricity generated by the project has been exported to the NEWNE electricity grid. The project activity will therefore displace an equivalent amount of electricity which would have otherwise been generated by fossil fuel dominant electricity grid.

The project activity helps to reduce the supply demand gap in the state and also helps in contributing to the sustainable development by using wind energy as the source of power generation and reduction of GHG Emissions. In the project site, there are other wind projects owned by other customers connected to the same substation. There is an apportioning procedure which is approved by the state nodal agency for apportioning the electricity to each and every customer. The project uses Suzlon's wind energy technology. The project activity implements S95 model 2.1MW WTGs.

1.2 Sectoral Scope and Project Type

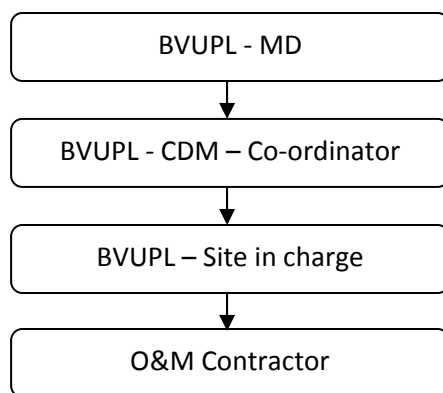
As per the categorisation by UNFCCC, the project activity falls under: "Consolidated baseline methodology for grid-connected electricity generation from renewable sources" Sectoral Scope 1.

Methodology applied is ACM 0002 of version 12.3.0

The project is not a bundled project activity

1.3 Project Proponent

The organisational structure of this CDM project activity is as follows:



The project proponent has entered into agreement with the WTG- Supplier – Suzlon Energy Limited for the operation and maintenance of WTGs. The WTG supplier has dedicated and technically well equipped O&M team for day to day Operation and maintenance of each WTG. O&M contractor will provide a monthly report, which includes generation data, major breakdown events and machine availability. Project Manager is responsible for recording of monthly Meter Readings of export and import. Monthly power export and import data will be sent regularly to CDM coordinator of BVUPL.

Contact details of the project proponent are as follows:

Organization:	M/s Bindu Vayu Urja Private Limited
Street/P.O.Box:	8001,
Building:	Q-City, S.No: 109,Nanakramguda, Gachibowli
City:	Hyderabad
State/Region:	Andhra Pradesh
Postfix/ZIP:	500032
Country:	India
Telephone:	+91-40- 3376 0100
FAX:	+91-40- 3376 0101
E-Mail:	Not Available
URL:	Not Available
Represented by:	
Title:	Managing Director
Salutation:	Mr
Last Name:	Kailas

Middle Name:	
First Name:	Vikram
Department:	
Mobile:	
Direct FAX:	+91-40- 3376 0100
Direct tel:	+91-40- 3376 0101
Personal E-Mail:	Vikram.Kailas@mytrah.com

1.4 Other Entities Involved in the Project

There are no other entities involved in this project activity.

1.5 Project Start Date

The project start date for this project is said to be 18th February 2012. This is because the first WTG was commissioned as on the said date.

1.6 Project Crediting Period

The project is registered under Clean Development Mechanism (CDM) of UNFCCC with 10 years crediting period (Reference No: 9342).¹ Crediting period of the project under CDM starts on 31st December 2012, the date on which the project activity has been submitted to UNFCCC and ends on 30th December 2022.

The project has begun generating GHG emission reductions from 18th February 2012. Crediting period under VCS will be renewed after the end of first crediting period under VCS, i.e., 18th February 2012 to 17th February 2022. However, the second crediting period is limited to 30th December 2022.

The project proponent will also not claim same GHG emission reductions under VCS and CDM during the period of 31st December 2012 to 30th December 2022

¹ <http://cdm.unfccc.int/Projects/DB/DNV-CUK1354785555.66/view>

1.7 Project Location

The project activity is located at Kaladonger, Rajasthan State, India. The geo- coordinates of the project location is as follows:

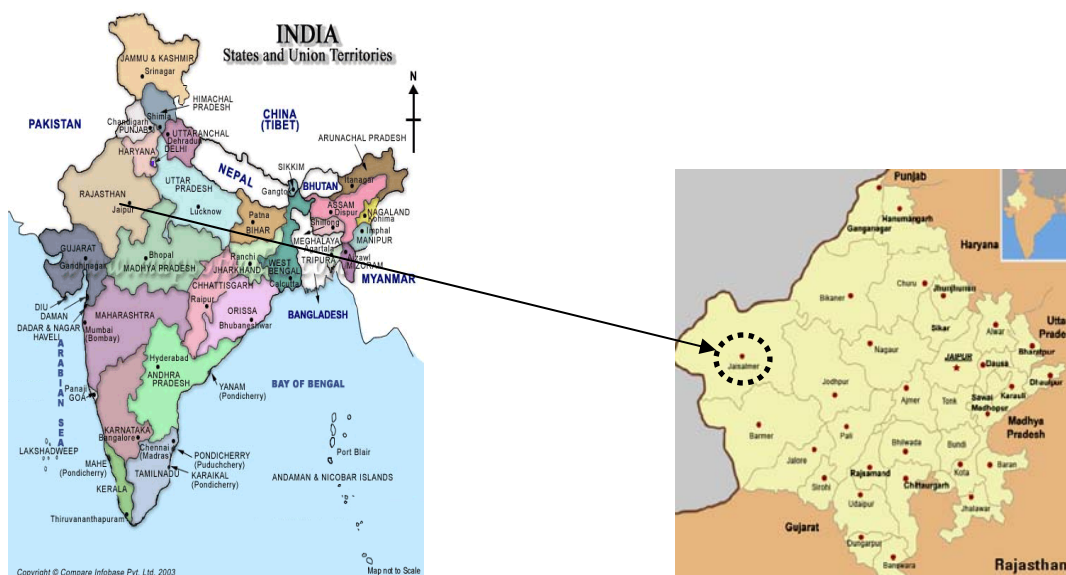
The location of WTGs is as given below

The geographical location of the project site is as shown below:

S.No.	Loc.No.	LATITUDE			LONGITUDE		
		Deg	Min	Sec	Deg	Min	Sec
1	KD-001	27	05	35.4	70	59	59.0
2	KD-002	27	05	54.9	70	59	53.5
3	KD-003	27	06	16.8	70	59	54.4
4	KD-004	27	06	27.3	70	59	42.5
5	KD-005	27	06	38.7	70	59	30.8
6	KD-006	27	06	49.8	70	59	18.6
7	KD-007	27	07	01.7	70	59	04.3
8	KD-012	27	07	26.1	70	59	48.0
9	KD-013	27	07	14.1	70	59	59.1
10	KD-014	27	07	01.8	71	00	09.9
11	KD-024	27	07	09.5	71	02	04.5
12	KD-027	27	07	36.3	71	01	28.8
13	KD-028	27	07	41.5	71	01	13.0
14	KD-029	27	07	51.5	71	00	54.8
15	KD-030	27	07	54.5	71	00	33.3
16	KD-035	27	08	40.9	71	00	46.3
17	KD-036	27	08	34.2	71	01	03.8
18	KD-037	27	08	27.5	71	01	23.9
19	KD-038	27	08	17.6	71	01	39.8
20	KD-039	27	08	10.4	71	01	56.5

21	KD-040	27	07	59.8	71	02	04.9
22	KD-042	27	07	44.8	71	02	35.6
23	KD-054	27	08	22.4	71	02	59.3
24	KD-055	27	08	30.7	71	02	49.9
25	KD-056	27	08	38.2	71	02	38.8
26	KD-057	27	08	45.1	71	02	26.5
27	KD-058	27	08	52.9	71	02	06.3
28	KD-059	27	09	02.5	71	01	51.7
29	KD-060	27	09	11.0	71	01	31.3
30	KD-061	27	09	17.0	71	01	17.4
31	KD-067	27	09	21.4	71	02	54.1
32	KD-068	27	09	14.6	71	03	09.3
33	KD-076	27	08	23.5	71	04	55.5
34	KD-077	27	08	39.3	71	04	47.2
35	KD-078	27	08	48.3	71	04	31.9
36	KD-079	27	09	02.9	71	04	29.8

The geographical location of the project site is as shown below:



1.8 Title and Reference of Methodology

Title: Consolidated baseline methodology for grid-connected electricity generation from renewable sources

The methodology applied for the project is ACM 0002 of version 12.3.0.

2 IMPLEMENTATION STATUS

2.1 Implementation Status of the Project Activity

The project activity has been commissioned and commenced operation on 18th February 2012. The commissioning schedule of the project activity is shown below.

S.No	Make	WEG-HTSC No.	Commissioned on
1	Suzlon	KD01	20/07/2012
2	Suzlon	KD02	20/07/2012
3	Suzlon	KD03	20/07/2012
4	Suzlon	KD04	20/07/2012
5	Suzlon	KD05	20/07/2012
6	Suzlon	KD06	20/07/2012
7	Suzlon	KD07	20/07/2012
8	Suzlon	KD58	30/03/2012
9	Suzlon	KD 27	30/03/2012
10	Suzlon	KD 28	30/03/2012
11	Suzlon	KD12	30/03/2012
12	Suzlon	KD13	30/03/2012
13	Suzlon	KD 14	30/03/2012
14	Suzlon	KD 24	23/03/2012
15	Suzlon	KD 40	23/03/2012
16	Suzlon	KD 78	30/03/2012
17	Suzlon	KD 76	28/03/2012
18	Suzlon	KD 67	28/03/2012
19	Suzlon	KD 29	28/03/2012
20	Suzlon	KD 54	27/03/2012
21	Suzlon	KD 77	27/03/2012
22	Suzlon	KD 68	27/03/2012
23	Suzlon	KD 79	27/03/2012
24	Suzlon	KD 30	27/03/2012
25	Suzlon	KD 35	14/03/2012
26	Suzlon	KD 37	14/03/2012
27	Suzlon	KD 39	14/03/2012
28	Suzlon	KD 59	14/03/2012
29	Suzlon	KD 60	14/03/2012
30	Suzlon	KD 61	14/03/2012
31	Suzlon	KD 57	14/03/2012
32	Suzlon	KD 36	18/02/2012
33	Suzlon	KD 38	25/03/2012
34	Suzlon	KD 55	25/03/2012

35	Suzlon	KD 56	25/03/2012
36	Suzlon	KD 82	10/09/2012

Since the project activity is a wind energy project, there no leakage emissions associated with the project. The shutdown details and single line diagram showing feeder lines and metering points for the project activity has been included under section 5. Additional Information

2.2 Project Description Deviations

There have been no temporary deviations from the description of the project activity

2.3 Grouped Project

Not Applicable

3 DATA AND PARAMETERS

3.1 Data and Parameters Available at Validation

Data Unit / Parameter:	EF _{grid,OMsimple,y}
Data unit:	tCO ₂ /MWh
Description:	Operating margin CO ₂ emission factor of NEWNE Grid
Source of data:	Central Electricity Authority:CO2 Emission Database CEA CO ₂ Baseline database Version 07
Value applied:	0.9841
Purpose of the data:	Baseline Emission calculation
Any comment:	The operating margin emission factor is a 3-year generation-weighted average (2008-11) Data calculated to be 0.9841. The operating Margin is calculated ex ante and fixed during the crediting period

Data Unit / Parameter:	EF _{grid,BM,y}
Data unit:	tCO ₂ /MWh
Description:	Build margin CO ₂ emission factor of NEWNE grid
Source of data:	Central Electricity Authority:CO2 Emission Database CEA CO ₂ Baseline database Version 07

Value applied:	0.8587
Purpose of the data:	Baseline Emission calculation
Any comment:	The Build Margin would be calculated ex ante and fixed during the crediting period. For ex ante calculation the most recent data available has been used and the build margin thus calculated is 0.8587.

Data Unit / Parameter:	EF _{grid,CM,y}
Data unit:	tCO ₂ /MWh
Description:	Combined margin CO2 emission factor of NEWNE grid
Source of data:	Central Electricity Authority:CO2 Emission Database CEA CO2 Baseline database Version 07
Value applied:	0.9527
Purpose of the data:	Baseline emission calculation
Any comment:	The combined margin would be calculated ex-ante and fixed for the entire crediting period and the combined margin thus calculated is 0.9527.

3.2 Data and Parameters Monitored

Data Unit / Parameter:	EG _{facility,y}
Data unit:	MWh
Description:	Quantity of net electricity exported to the grid during the year y.
Source of data:	Monthly billing records issued by JVVNL
Description of measurement methods and procedures to be applied:	Continuous monitoring and monthly recording.
Frequency of monitoring/recording:	Monthly recording of electricity export and import
Value applied:	91379.587
Monitoring equipment:	Energy Meters of accuracy class 0.2s and details of the same has been included under section 3.3
QA/QC procedures to be applied:	Net electricity supplied to the grid by the project activity will be cross checked with invoices

	submitted to JVVNL.
Calculation method:	Net electricity supplied will be calculated based on the difference between calculated values of “export” and calculated value “import” on the JVVNL energy meter at the common evacuation point and the percentage transmission loss as prescribed in the PPA for metering at 220 kV
Any comment:	-

3.3 Description of the Monitoring Plan

The electricity exported to the grid through the project activity and the electricity imported from the JVVNL grid will be monitored. The electricity export and import is through a common evacuation system having common metering equipment's. Suzlon Energy Limited has been identified as the common agency responsible for joint metering. net electricity exported by the project proponent is calculated as mentioned below:

$$EG_{PJ,y} = (\text{Export-Import}) \times (1 + \text{Transmission Loss}).$$

The project proponent has entered into agreement with the WTG- Supplier – Suzlon Energy Limited for the operation and maintenance of WTGs. The WTG supplier has dedicated and technically well equipped O&M team for day to day Operation and maintenance of each WTG. O&M contractor will provide a monthly report, which includes wind data, generation data, major breakdown events and machine availability, which forms the basis for invoicing and emission reduction computation. Project Manager is responsible for recording of monthly Joint Meter Readings of export and import. Monthly power export and import data will be sent regularly to CDM coordinator of MEIL. All data will be archived for a period two years after crediting period.

The details of energy meters are as follows:

S. No	Meter Number	Meter Make	Calibration Date	Due Date
1	UPP31771	Secure Meters Limited	13/12/2012	13/12/2013
2	UPP31772	Secure Meters Limited	13/12/2012	13/12/2013
3	UPP31774	Secure Meters Limited	13/12/2012	13/12/2013
4	UPP31776	Secure Meters Limited	13/12/2012	13/12/2013
5	UPP31769	Secure Meters Limited	13/12/2012	13/12/2013
6	UPP31770	Secure Meters Limited	13/12/2012	13/12/2013
7	UPP31766	Secure Meters Limited	13/12/2012	13/12/2013
8	UPP31783	Secure Meters Limited	13/12/2012	13/12/2013
9	RJB78190	Secure Meters Limited	13/12/2012	13/12/2013
10	RJB78191	Secure Meters Limited	13/12/2012	13/12/2013

The single line diagram for the project activity has been included under section 5. Additional information:

4 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

4.1 Baseline Emissions

The baseline emissions are the product of electrical energy baseline $EG_{BL,y}$ expressed in MWh of electricity produced by the renewable generating unit multiplied by the grid emission factor. Baseline emission factor is calculated as combined margin, consisting of a combination of operating margin (OM) and build margin (BM) factors.

$$BE_y = EG_{BL,y} * EF_{CO_2,grid,y}$$

Where:

BE_y : Baseline Emissions in year y; t CO₂

$EG_{BL,y}$: Energy baseline in year y; kWh

EF_{CO_2} : Emission Factor in year y; t CO₂e/kWh

As per the registered PDD, combined margin emission factor is 0.9529 tCO₂ /MWh. Hence the baseline emissions for the project activity for the current monitoring period are as follows.

$$BE_y = EG_{BL,y} * EF_{CO_2} = (91379587/1000) * 0.9527 = 87,057 \text{ tCO}_2.$$

4.2 Project Emissions

The proposed project activity is a wind power project and there are no emissions associated with the project. Hence the Project Emissions for the project activity is zero.

4.3 Leakage

The project activity is a Greenfield wind power project and there is no technology transfer with respect to this project activity. Hence the Leakage emissions for the project are zero.

4.4 Summary of GHG Emission Reductions and Removals

Item	Baseline emissions or baseline net GHG removals by sinks (t CO ₂ e)	Project emissions or actual net GHG removals by sinks (t CO ₂ e)	Leakage (t CO ₂ e)	Emission reductions or net anthropogenic GHG removals by sinks (t CO ₂ e)
Total	87057	0	0	87057

The annual estimated emission reduction for the project activity as per PDD is 126,817. The current monitoring period includes generation from February 2012 to December 2012 and hence the estimated emission reduction for this monitoring period of 11 months is 116,248. The emission reduction achieved for the current monitoring is 25% lesser than estimated reduction as per the registered PDD. This is due to the fact that the project activity wind turbines were commissioned in a phased manner and therefore the total capacity (i.e. 75.6 MW) was not operational from the start date of this crediting period.

5 ADDITIONAL INFORMATION

Month on Month generation and shutdown details for this monitoring period are shown below:

Months	Electricity Exported (Kwh) E,exp	Electricity Imported (Kwh) E,imp	Net Export
Feb-12			
	8004	11184	-3180
Net Electricity Export			-3180
Mar-12			
KD 36,37,38,39,4024,29,30,35,59,60,61,67,68,78,79,54,55,5 6,57,76,77,12,13,14	105287	51371	53916
KD 27, 28, 58	73	37	36
Net Electricity Export			53952
Apr-12			
KD 36,37,38,39,4024,29,30,35,59,60,61,67,68,78,79,54,55,5 6,57,76,77,12,13,14	1587858	77257	1510601
KD 27, 28, 58	38382	1463	36919
Net Electricity Export			1547520
May-12			
KD 36,37,38,39,4024,29,30,35,59,60,61,67,68,78,79,54,55,5 6,57,76,77,12,13,14	10190624	17694	10172930
KD 27, 28, 58	1287136	1986	1285150
Net Electricity Export			11458080
Jun-12			
KD 36,37,38,39,4024,29,30,35,59,60,61,67,68,78,79,54,55,5 6,57,76,77,12,13,14	20476496	8631	20467865
KD 27, 28, 58	2512144	969	2511175
Net Electricity Export			22979040
Jul-12			
KD 36,37,38,39,4024,29,30,35,59,60,61,67,68,78,79,54,55,5 6,57,76,77,12,13,14	19081209	13467	19067742
KD 27, 28, 58	2324740	1422	2323318
KD 01,02,03,04,05,06,07	1081571	1431	1080140
Net Electricity Export			22471200
Aug-12			
KD 36,37,38,39,4024,29,30,35,59,60,61,67,68,78,79,54,55,5 6,57,76,77,12,13,14	9074105	34459	9039646
KD 27, 28, 58	1095039	4142	1090897
KD 01,02,03,04,05,06,07	2708776	9399	2699377
Net Electricity Export			12829920
Sep-12			
KD 36,37,38,39,4024,29,30,35,59,60,61,67,68,78,79,54,55,5 6,57,76,77,12,13,14	5476641	47462	5429179
KD 27, 28, 58	661521	5868	655653
KD 01,02,03,04,05,06,07,82	1680078	14830	1665248
Net Electricity Export			7750080
Oct-12			
KD 36,37,38,39,4024,29,30,35,59,60,61,67,68,78,79,54,55,5 6,57,76,77,12,13,14	2909276	87555	2821721
KD 27, 28, 58	331303	10605	320698
KD 01,02,03,04,05,06,07,82	873021	27600	845421
Net Electricity Export			3987840
Nov-12			
KD 36,37,38,39,4024,29,30,35,59,60,61,67,68,78,79,54,55,5 6,57,76,77,12,13,14	2151248	85579	2065669
KD 27, 28, 58	221623	9562	212061
KD 01,02,03,04,05,06,07,82	642969	28219	614750
Net Electricity Export			2892480
December			
For 16.8 MW	1101265	18964	1082301
For 52.5 MW	4108821	63970	4044851
For 6.3 MW	407233	6918	400315
Net Electricity Export			5412655
Generation on 31st December 2012	114812		

Shutdown Details:

S.No	WEG No	Total Shutdown Hours
1	KD0001	250.90
2	KD002	175.80
3	KD003	240.61
4	KD004	196.50
5	KD005	427.10
6	KD006	698.70
7	KD007	556.70
8	KD012	1478
9	KD0013	1197
10	KD0014	1232.81
11	KD0024	1147.80
12	KD0027	1011.0
13	KD0028	1090.70
14	KD029	1164.10
15	KD030	1344.90
16	KD035	1020.70
17	KD036	1269.4
18	KD037	1581.51
19	KD038	1171.80
20	KD039	1249.60
21	KD040	893.70
22	KD054	1186.0
23	KD055	1182.10
24	KD056	1247.60
25	KD057	1006.0
26	KD058	1235.1
27	KD059	1328.50
28	KD060	1026.50
29	KD061	935.20
30	KD067	940.90
31	KD068	910.90
32	KD076	1269.01
33	KD077	1289.90
34	KD078	1196.10
35	KD079	1311.0
36	KD082	168.09

Single Line Diagram:

