

KALANDONGER WIND POWER PROJECT IN RAJASTHAN

Document Prepared By M/s Bindu Vayu Urja Private Limited

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Table of Contents

1	Project Details	3
1.1	Summary Description of the Project.....	3
1.2	Sectoral Scope and Project Type:.....	3
1.3	Project Proponent	3
1.4	Other Entities Involved in the Project.....	4
1.5	Project Start Date	5
1.6	Project Crediting Period	5
1.7	Project Scale and Estimated GHG Emission Reductions or Removals.....	5
1.8	Description of the Project Activity.....	6
1.9	Project Location.....	6
1.10	Conditions Prior to Project Initiation	8
1.11	Ownership and Other Programs	8
1.11.1	Right of Use.....	8
1.11.2	Emissions Trading Programs and Other Binding Limits	8
1.11.3	Participation under Other GHG Programs	8
1.11.4	Other Forms of Environmental Credit	9
1.11.5	Projects Rejected by Other GHG Programs	9
1.12	Additional Information Relevant to the Project.....	9
2	Application of Methodology	10
2.1	Title and Reference of Methodology	10
2.2	Applicability of Methodology.....	10
2.3	Project Boundary.....	11
2.4	Baseline Scenario	12
2.5	Additionality	12
2.6	Methodology Deviations	12
3	Quantification of GHG Emission Reductions and Removals	12
3.1	Baseline Emissions	12
3.2	Project Emissions.....	13
3.3	Leakage.....	13
3.4	Summary of GHG Emission Reductions and Removals.....	13
4	Monitoring	14
4.1	Data and Parameters Available at Validation	14
4.2	Data and Parameters Monitored	15
4.3	Description of the Monitoring Plan	16
5	Environmental Impact.....	17
6	Stakeholder Comments.....	17

PROJECT DETAILS

1.1 Summary Description of the 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:

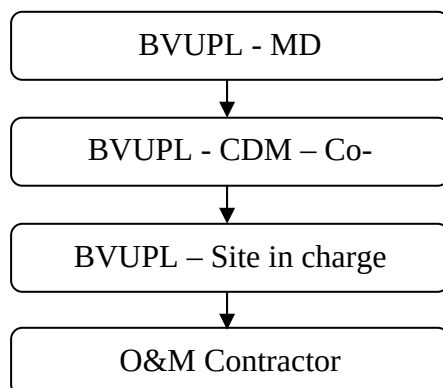
As per the categorisation by UNFCCC, the project activity falls under: "Consolidated baseline methodology for grid-connected electricity generation from renewable sources" Sectoral Scope 1

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

Not applicable

1.5 Project Start Date

The project start date for this project is said to be 18th February 2012. This is the day on which the first machine was commissioned.

1.6 Project Crediting Period

The project is registered under Clean Development Mechanism (CDM) of UNFCCC with 10 years crediting period (Reference No: 9342). 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.

1.7 Project Scale and Estimated GHG Emission Reductions or Removals

The project is a large scale project that involves setting up of 75.6 MW of wind power

Years	Estimated GHG emission reductions or removals (tCO ₂ e)
Year 1	126817
Year 2	126817
Year 3	126817
Year 4	126817
Year 5	126817
Year 6	126817
Year 7	126817
Year 8	126817
Year 9	126817
Year 10	126817
Total estimated ERs	1268170
Total number of crediting years	10 Years (fixed)
Average annual ERs	126817

1.8 Description of the Project Activity

The project activity envisages implementation of 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 will be 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 proponent plans to avail CDM benefits for the project.

The project activity is in line with the sustainable development priorities of the country. The electricity generated from the wind farm will be exported to the NEWNE grid and sold to the state electricity utility, thereby marginally contributing to reducing the energy demand supply gap in the state of Rajasthan.

Technology

The project uses Suzlon's wind energy technology. The project activity implements S95 model 2100kW WTGs.

Emission Reductions from anthropogenic sources:

The wind power generated from the project site will be displacing the electricity generated from thermal power stations feeding into NEWNE grid and will be replacing the usage of diesel generators for meeting the power demand during shortage periods. Since wind power is Green House Gas (GHG) emissions free, the power generated will prevent the anthropogenic GHG emissions generated by the fossil fuel based thermal power stations comprising coal, diesel, furnace oil and gas. The estimation of GHG reductions by this project is limited to carbon dioxide (CO₂) only.

1.9 Project Location

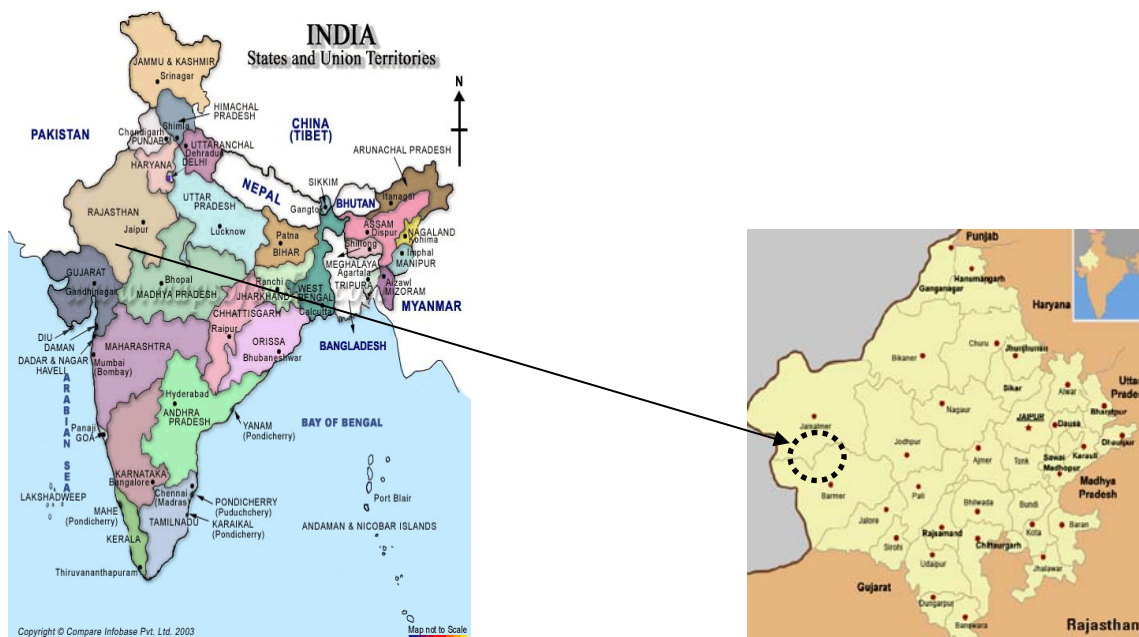
The project activity is located at Kaladonger, Rajasthan State, India. The geo- coordinates of the project location is as follows:

The location of WTGs is as given below

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:



1.10 Conditions Prior to Project Initiation

The project is a Greenfield wind power project and does not involve generation of GHG emissions for the purpose of their subsequent reduction, removal or destruction.

1.11 Ownership and Other Programs

1.11.1 Right of Use

The project activity comprises of 36 WEGs with a capacity of 2.1 MW each owned by M/s Bindu Vayu Urja Private Limited (BVUPL).

1.11.2 Emissions Trading Programs and Other Binding Limits

Net GHG emission reductions or removals generated by the project will not be used for compliance with an emissions trading program or to meet binding limits on GHG emissions. Letter of Approval issued by National CDM Authority, Ministry of Environment and Forests (MOEF) which is the Designated National Authority of India is submitted as the evidence.

1.11.3 Participation under Other GHG Programs

The project is undergoing registration 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 and ends on 30th December 2022.

¹ <http://cdm.unfccc.int/Projects/DB/RWTUV1356681143.52/view>

1.11.4 Other Forms of Environmental Credit

The project neither has nor intends to generate any other form of GHG-related environmental credit for GHG emission reductions or removals claimed under the VCS Program. Approvals accorded by Rajasthan Renewable Energy Corporation are submitted as documentary evidences.

1.11.5 Projects Rejected by Other GHG Programs

No, the project activity is not rejected by other GHG programs

1.12 Additional Information Relevant to the Project

Eligibility Criteria

Not applicable to the project activity.

Leakage Management

Not applicable to the project activity.

Commercially Sensitive Information

No commercially sensitive information has been excluded from the public version of the project description

Further Information

Contribution to sustainable development:

Ministry of Environment and Forests, has stipulated economic, social, environment and technological well-being as the four indicators of sustainable development. The project contributes to sustainable development using the following ways.

Social wellbeing: The project would help in generating employment opportunities during the construction and operation phases. The project activity will lead to development in infrastructure in the region like development of roads and also may promote business with improved power generation. The project proponent will contribute 2% of net revenue realised from sale of CERS towards community development initiatives.

Economic wellbeing: The project is a clean technology investment in the region, which would not have been taken place in the absence of the CDM benefits. The project activity will also help to reduce the demand supply gap in the state.

The project activity will generate power using zero emissions wind based power generation which helps to reduce GHG emissions and specific pollutants like SO_x, NO_x, and SPM associated with the conventional thermal power generation facilities.

Technological wellbeing: The successful operation of project activity would lead to promotion of wind based power generation and would encourage other entrepreneurs to participate in similar projects

2 APPLICATION OF METHODOLOGY

2.1 Title and Reference of Methodology

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

2.2 Applicability of Methodology

The following steps will show the applicability of the project under this methodology.

Applicability criteria	Applicability status
This methodology is applicable to grid-connected renewable power generation project activities that (a) install a new power plant at a site where no renewable power plant was operated prior to the implementation of the project activity (Greenfield plant); (b) involve a capacity addition; (c) involve a retrofit of (an) existing plant(s); or (d) involve a replacement of (an) existing plant(s).	The proposed project activity is a Greenfield, NEWNE grid-connected renewable power plant. Therefore, it confirms to the said criteria
The project activity is the installation, capacity addition, retrofit or replacement of a power plant/unit of one of the following types: hydro power plant/unit (either with a run-of-river reservoir or an accumulation reservoir), wind power plant/unit, geothermal power plant/unit, solar power plant/unit, wave power plant/unit or tidal power plant/unit	The project activity is the installation of a new grid connected renewable wind power project. Thus, it meets the first applicability condition
In the case of capacity additions, retrofits or replacements (except for wind, solar, wave or tidal power capacity addition projects which use Option 2: on page 11 to calculate the parameter EGPJ,y): the existing plant started commercial operation prior to the start of a minimum historical reference period of five years, used for the calculation of baseline emissions and defined in the baseline emission section, and no capacity expansion or retrofit of the plant has been undertaken between the start of this minimum historical reference period and the implementation of the project activity	The proposed project activity is the installation of a new wind power plant/unit. Therefore, the said criteria is not applicable
In case of hydro power plants, one of the following conditions must apply: - The project activity is implemented in an existing single or multiple reservoirs, with no change in the volume of any of reservoirs; or - The project activity is implemented in an existing single or multiple reservoirs, where	The proposed project activity is the installation of a wind power plant/unit. Therefore, the said criteria is not applicable

the volume of any of reservoirs is increased and the power density of each reservoir, as per definitions given in the Project Emissions section, is greater than 4 W/m²; or • The project activity results in new single or multiple reservoirs and the power density of each reservoir, as per definitions given in the Project Emissions section, is greater than 4 W/m². In case of hydro power plants using multiple reservoirs where the power density of any of the reservoirs is lower than 4 W/m² all the following conditions must apply: • The power density calculated for the entire project activity using equation 5 is greater than 4W/m²; • Multiple reservoirs and hydro power plants located at the same river and where are designed together to function as an integrated project¹ that collectively constitute the generation capacity of the combined power plant; • Water flow between multiple reservoirs is not used by any other hydropower unit which is not a part of the project activity; • Total installed capacity of the power units, which are driven using water from the reservoirs with power density lower than 4 W/m², is lower than 15MW; • Total installed capacity of the power units, which are driven using water from reservoirs with power density lower than 4 W/m², is less than 10% of the total installed capacity of the project activity from multiple reservoirs.	
The methodology is not applicable to the following: • Project activities that involve switching from fossil fuels to renewable energy sources at the site of the project activity, since in this case the baseline may be the continued use of fossil fuels at the site; • Biomass fired power plants; • Hydro power plant that result in new single reservoir or in the increase in existing single reservoir where the power density of the power plant is less than 4 W/m².	The proposed project activity is the installation of a wind power plant/unit. Therefore, the said criteria is not applicable

2.3 Project Boundary

Source		Gas	Included?	Justification/Explanation
Baseline	CO ₂ emissions from electricity generation in fossil fuel fired power plants that is displaced due to the project activity	CO ₂	Yes	Major emission source
		CH ₄	No	Minor Emission Source
Project	Grid Connected wind power based electricity generation	CO ₂	No	Electricity generation by using WEGs does not generate any emissions
		CH ₄	No	
		N ₂ O	No	
		Other	No	

2.4 Baseline Scenario

As per ACM0002 version 12.3.0, If the project activity is the installation of a new grid-connected renewable power plant/unit, the baseline scenario is the following:

Electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in the "Tool to calculate the emission factor for an electricity system".

As per methodology, "Baseline emissions include only CO₂ emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity. The methodology assumes that all project electricity generation above baseline levels would have been generated by existing grid-connected power plants and the addition of new grid-connected power plants".

The baseline case is in compliance with all applicable legal and regulatory requirements.

2.5 Additionality

The project activity is requesting registration under CDM and proved to be additional.

2.6 Methodology Deviations

There is no methodology deviation

3 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

3.1 Baseline Emissions

Baseline emissions include only CO₂ emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity. The methodology assumes that all project electricity generation above baseline levels would have been generated by existing grid-connected power plants and the addition of new grid-connected power plants. The baseline emissions are to be calculated as follows:

$$BE_y = EGP_{J,y} * EF_{grid,CM,y}$$

Where:

BE_y = Baseline emissions in year y (tCO₂)

$EGP_{J,y}$ = Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CDM project activity in year y (MWh/yr)

$EF_{grid,CM,y}$ = Combined margin CO₂ emission factor for grid connected power generation in year y calculated using the latest version of the "Tool to calculate the emission factor for an electricity system" (tCO₂/MWh)

3.2 Project Emissions

The project activity involves in harnessing wind power. So the emissions from the project are zero.

3.3 Leakage

No leakage emissions have been considered and hence the leakage emission is zero.

3.4 Summary of GHG Emission Reductions and Removals

Years	Estimated baseline emissions or removals (tCO ₂ e)	Estimated project emissions or removals (tCO ₂ e)	Estimated leakage emissions (tCO ₂ e)	Estimated net GHG emission reductions or removals (tCO ₂ e)
Year 1	126817	0	0	126817
Year 2	126817	0	0	126817
Year 3	126817	0	0	126817
Year 4	126817	0	0	126817
Year 5	126817	0	0	126817
Year 6	126817	0	0	126817
Year 7	126817	0	0	126817
Year 8	126817	0	0	126817
Year 9	126817	0	0	126817
Year 10	126817	0	0	126817
Total	1268170	0	0	1268170

4 MONITORING

4.1 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
Justification of choice of data or description of measurement methods and procedures applied:	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
Justification of choice of data or description of measurement methods and procedures applied:	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
Justification of choice of data or description of measurement methods and procedures applied:	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.

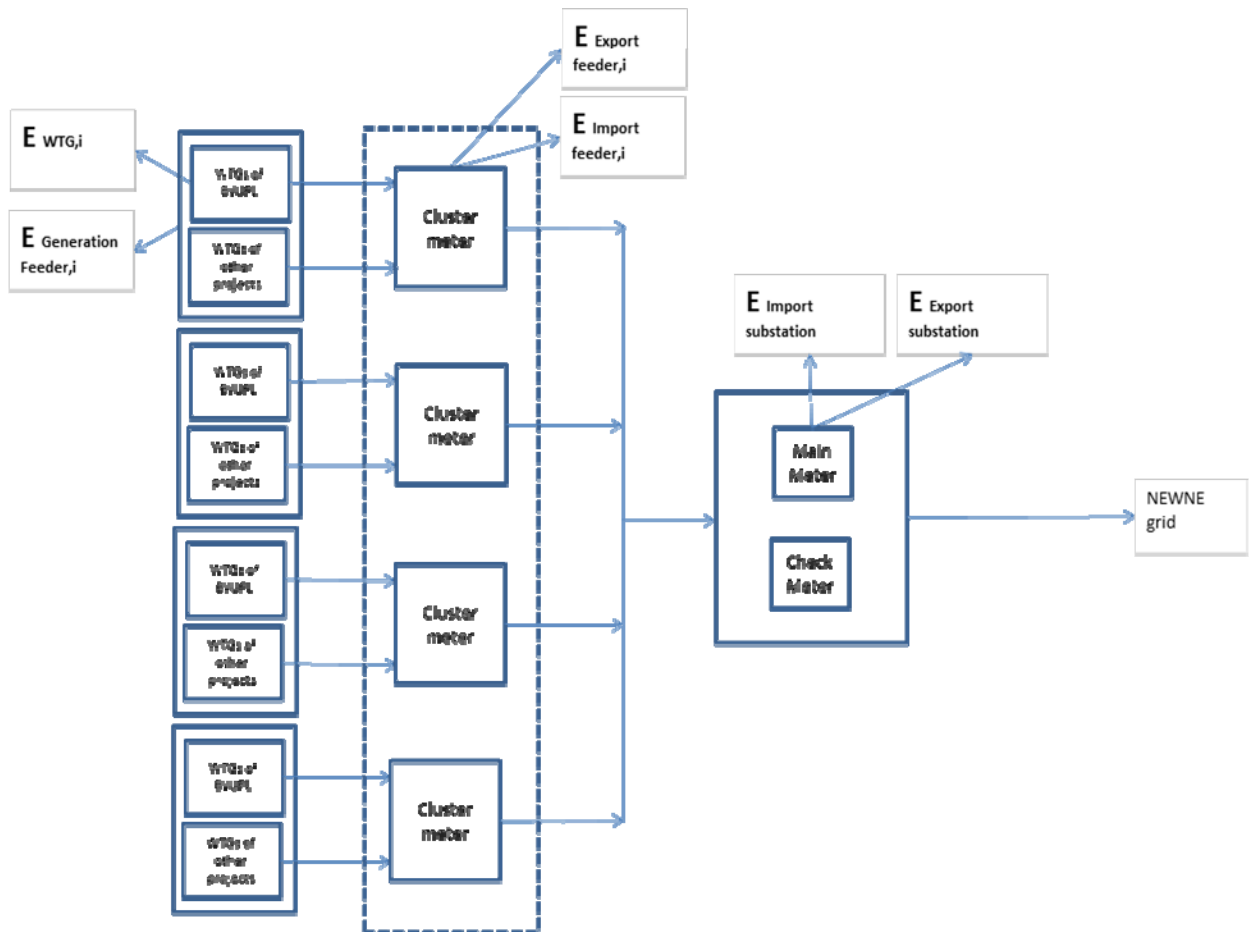
4.2 Data and Parameters Monitored

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:	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
Frequency of monitoring/recording:	Monthly recording of electricity export and import.
Value applied:	133113
Monitoring equipment:	Energy meters of accuracy class 0.2s
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. The meter(s) shall be calibrated and maintained by the state utility as per their own schedule, and this frequency of meter calibration is not within the control of the Project Proponent
Calculation method:	-
Any comment:	-

4.3 Description of the Monitoring Plan

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.

A schematic diagram indicating the metering system is provided below:



5 ENVIRONMENTAL IMPACT

As per the prevailing Ministry of Environment and Forest laws, the Schedule 1 of Ministry of Environment and Forests (Government of India) notification dated 14 September (2006), 38 activities are required to undertake environmental impact assessment studies. Environmental Impact Assessment study is not required for wind mill project as there is no negative environmental impact due to the project activity and wind energy is one of the cleanest sources of energy

6 STAKEHOLDER COMMENTS

According to the feedback received from the stakeholders which included farmers, laborers etc., due to the erection of wind farms, the socio-economic situation in the area and the village people's living standard has been improved.

It was emphasized by the stakeholders that the project has not only provided employment but also significantly contributed to the infrastructure development likes puccha roads.

The stakeholders also expressed satisfaction that the project would help alleviating the power deficit currently being faced by the region.