WIND POWER PROJECT AT JAIBHIM BY SIIL

Document Prepared By Infinite Solutions

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1 PROJECT DETAILS

1.1 Summary Description of the Project

Serum Institute of India (SIIL) is a manufacturer of immune-biologicals, including vaccines in India. It was incorporated in the year 1984. The company is managed by the Poonawalla group. Today, Serum Institute of India Ltd. has established itself as the world's largest producer of Measles and DTP group of vaccines.

With the growing concerns for the environment, Serum Institute of India Ltd. (SIIL) has undertaken measures to reduce the GHG emissions by conceptualizing and installation wind power project in Maharashtra with efficient utilization of the available wind energy. Initially, it was decided that 18 WTGs of 2.1 MW each would be set up as part of this project activity. However, during project implementation, only 16 WTGs were commissioned. The generated electricity is wheeled to substation through a 33 kV overhead line. The generated electricity will displace equivalent electricity that may have been produced majorly from conventional fuels (generally, fossil fuels). The projects are located at village Jaibhim, Dhule District of Maharashtra State in India.

The project will be utilizing wind energy for generating clean electricity for captive use, sale to third party (directly or through power exchange), or sale to grid which would have otherwise been generated through fossil fuel dominated power plants, contributing to reduction in specific emissions (emissions of pollutant) including GHG emissions and also reducing its dependence on fossil fuels for energy requirements.

In the pre-project scenario, the project proponent used the electricity from the NEWNE grid for its internal power consumption. Thus, the project displaces the electricity from the grid and hence, the electricity grid has been taken as the baseline to the project activity. Emission reductions will be claimed on the net electrical energy that is generated for captive use or sold to third party/grid.

The project leads to an annual emission reductions of 52,898 tCO_2e per annum. The first WTG under this project has stated commissioning since 11-March-2011 and has been under operation since then except for regular shutdowns considering O&M requirements.
The project was registered at UNFCCC (Ref. No. 6456) on 28-Nov-2012 and the details of the same can be viewed on https://cdm.unfccc.int/Projects/DB/LRQA%20Ltd1340102581.62/view

1.2 Sectoral Scope and Project Type

Sectoral Scope	**:**	01 Energy Industries (renewable-'non renewable)
Project Type	**:**	Type 1 Renewable Energy Projects
Project Category	**:**	ACM0002 version 12.3.0
Tool	**:**	Tool for the demonstration and assessment of additionality (Version 06.0.0, EB 65) Tool to calculate the emission factor for an electricity system (Version 02.2.1, EB 63)

1.3 Project Proponent

Organization name	Serum Institute of India Limited
Contact person	Mr. Satish Deshpande
Title	Group Director (Accounts & Audit)
Address	Sarosh Bhavan, Dr. Ambedkar Road, Pune
Telephone	+91-20-26100324
Email	shd@seruminstitute.com

1.4 Other Entities Involved in the Project

Organization name	Infinite Solutions
Role in the project	Carbon Advisory services
Contact person	Mr. Jimmy Sah
Title	General Manager - Sustainability
Address	611, Chetak Centre Main, RNT Marg, Indore
Telephone	+91 9644130430
Email	jimmy@infisolutions.org

1.5 Project Start Date

11-March-2011, being the date of commissioning of first WTG installed under the project activity.

1.6 Project Crediting Period

Crediting Period: 10 years 0 months (renewable twice)
Start Date of Crediting Period: 11-March-2011
End Date of Crediting Period: 10-March-2021

The project proponent is undertaking the same project activity under CDM however VCU's shall be claimed only till the day before the start date of crediting period under CDM. The Project

Proponent confirms that the Project is also registered under CDM[1] on 28/11/2012 and they will claim emissions reductions from the Project only in one mechanism for a particular period to avoid double counting.

All days considered under this monitoring period are not part of Project's CDM monitoring period, which start from 01/01/2013.

1.7 Project Scale and Estimated GHG Emission Reductions or Removals

Project Scale	
Project	Project activity falls under this category as estimated GHG emission reduction are below 300,000 tones of CO2e per year as shown in below table.
Large project	Not applicable.

Year	Estimated GHG emission reductions or removals (tCO_2e)
Year 1	52,898
Year 2	52,898
Year 3	52,898
Year 4	52,898
Year 5	52,898
Year 6	52,898
Year 7	52,898
Year 8	52,898
Year 9	52,898
Year 10	52,898
Total estimated ERs	528,980
Total number of crediting years	10
Average annual ERs	52,898

[1] https://cdm.unfccc.int/Projects/DB/LRQA%20Ltd1340102581.62/view

1.8 Description of the Project Activity

Please refer section A.4.2 of the registered PDD for technical specification and Section B.5 for date of Commissioning. The PDD can be found at this link.
https://cdm.unfccc.int/Projects/DB/LRQA%20Ltd1340102581.62/view

1.9 Project Location

District : Dhule

State : Maharashtra

Host Party : India

The unique location information of the WTG is provided in the table below. The WTG numbers indicated in the table below are unique identification number provided by the state utility.

Location No.	Village	District	Latitude	Longitude
JAI-02	Runmali	Dhule	21^0 7' 48"	74^0 16' 3"
JAI-03	Runmali	Dhule	21^0 7' 36"	74^0 16' 4"
JAI-04	Vaskhedi	Dhule	21^0 7' 20"	74^0 15' 58"
JAI-05	Jaitane	Dhule	21^0 7' 41"	74^0 18' 15"
JAI-07	Runmali	Dhule	21^0 8' 16"	74^0 18' 24"
JAI-08	Vajdare	Dhule	21^0 8' 43"	74^0 18' 31"
JAI-09	Akhade	Dhule	21^0 7' 54"	74^0 20' 54"
JAI-11	Jaitane	Dhule	21^0 7' 24"	74^0 20' 49"
JAI-18	Shivajinagar	Dhule	21^0 5' 42"	74^0 20' 15"
JAI-19	Shivajinagar	Dhule	21^0 5' 26"	74^0 20' 11"
JAI-21	Shivajinagar	Dhule	21^0 5' 20"	74^0 19' 39"
JAI-22	Shivajinagar	Dhule	21^0 5' 29"	74^0 18' 59"
JAI-23	Bhamer	Dhule	21^0 5' 41"	74^0 19' 11"
JAI-27	Bhamer	Dhule	21^0 5' 10"	74^0 18' 30"
JAI-28	Bhamer	Dhule	21^0 5' 0"	74^0 17' 45"
JAI-29	Bhamer	Dhule	21^0 5' 17"	74^0 17' 39"

1.10 Conditions Prior to Project Initiation

This is a Greenfield project. The project activity replaces the carbon intensive grid electricity. Thereby reducing the dependence on fossil fuel based generation units and as there are no associated emissions with this project it contributes to the reduction of green house gases (GHG) emissions. Please refer section A.1 and B.4 of the registered PDD. The PDD can be found at this web link mentioned below:

https://cdm.unfccc.int/Projects/DB/LRQA%20Ltd1340102581.62/view

1.11 Compliance with Laws, Statutes and Other Regulatory Frameworks

The project activity is not mandated by any local or national laws. Please refer section B.5 of the UNFCCC registered CDM project with Ref No: 6456

1.12 Ownership and Other Programs

1.12.1 Right of Use

For the ownership details of the project any of the following may be referred to:

For, Serum Institute of India Limited: The right of use is demonstrated based on the below documents which confirms the ownership with SIL.

- Commissioning certificates
- Power purchase agreement

1.12.2 Emissions Trading Programs and Other Binding Limits

India is Non-annex1 country and there is no compliance with an emission trading program or to meet binding limits on GHG emissions for this project activity.

1.12.3 Other Forms of Environmental Credit

The project does has not claimed any other form of Environmental credits. Further, the project activity generates Carbon Credits under Clean Development Mechanism (Ref.No:6456) from 01/01/2013. However the VCUs that are claimed are from the date of commissioning till 31/12/2012.

1.12.4 Participation under Other GHG Programs

This is registered CDM project. The reference no. for the project is 6456 and it was registered on 28/11/2012. Please refer to the registered PDD. The web link for the same is mentioned below: https://cdm.unfccc.int/Projects/DB/LRQA%20Ltd1340102581.62/view

1.12.5 Projects Rejected by Other GHG Programs

This project has not been rejected by any other GHG program. It is registered CDM project and the emission reductions are being claimed for the pre-registration period

1.13 Additional Information Relevant to the Project

Eligibility Criteria

This is not a grouped project hence the criteria is not applicable.

Leakage Management

No leakage emissions are considered for this Project activity since no energy generating equipment is transferred from another activity and/or the existing equipment is transferred to another activity. Please refer section B.6.1. of the registered PDD. The PDD can be found at web link mentioned below:

https://cdm.unfccc.int/Projects/DB/LRQA%20Ltd1340102581.62/view

Commercially Sensitive Information

There is no such information which is deemed as commercially sensitive.

Further Information

Not Applicable

2 APPLICATION OF METHODOLOGY

2.1 Title and Reference of Methodology

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

Reference: ACM0002, Version 12.3.0, EB 66

The methodology also refers to the latest approved versions of:

"Tool to calculate the emission factor for an electricity system", Version 02.2.1, EB 63

"Tool for the demonstration and assessment of additionality", Version 06, EB 65

2.2 Applicability of Methodology

The adopted baseline methodology has been chosen for the project activity based on the fulfilment of the applicability conditions as described below:

Sr. No.	Applicability Conditions as per ACM0002	Applicability to this Project Activity
1	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 project activity involves the installation of a new wind energy based power plant in Maharashtra of 33.6 MW capacity and no renewable power plant was operated prior to the implementation of the project activity (greenfield plant). Hence, this applicability condition is met.
2	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-ofriver	The project activity is the installation of 33.6 MW wind energy based power plant in

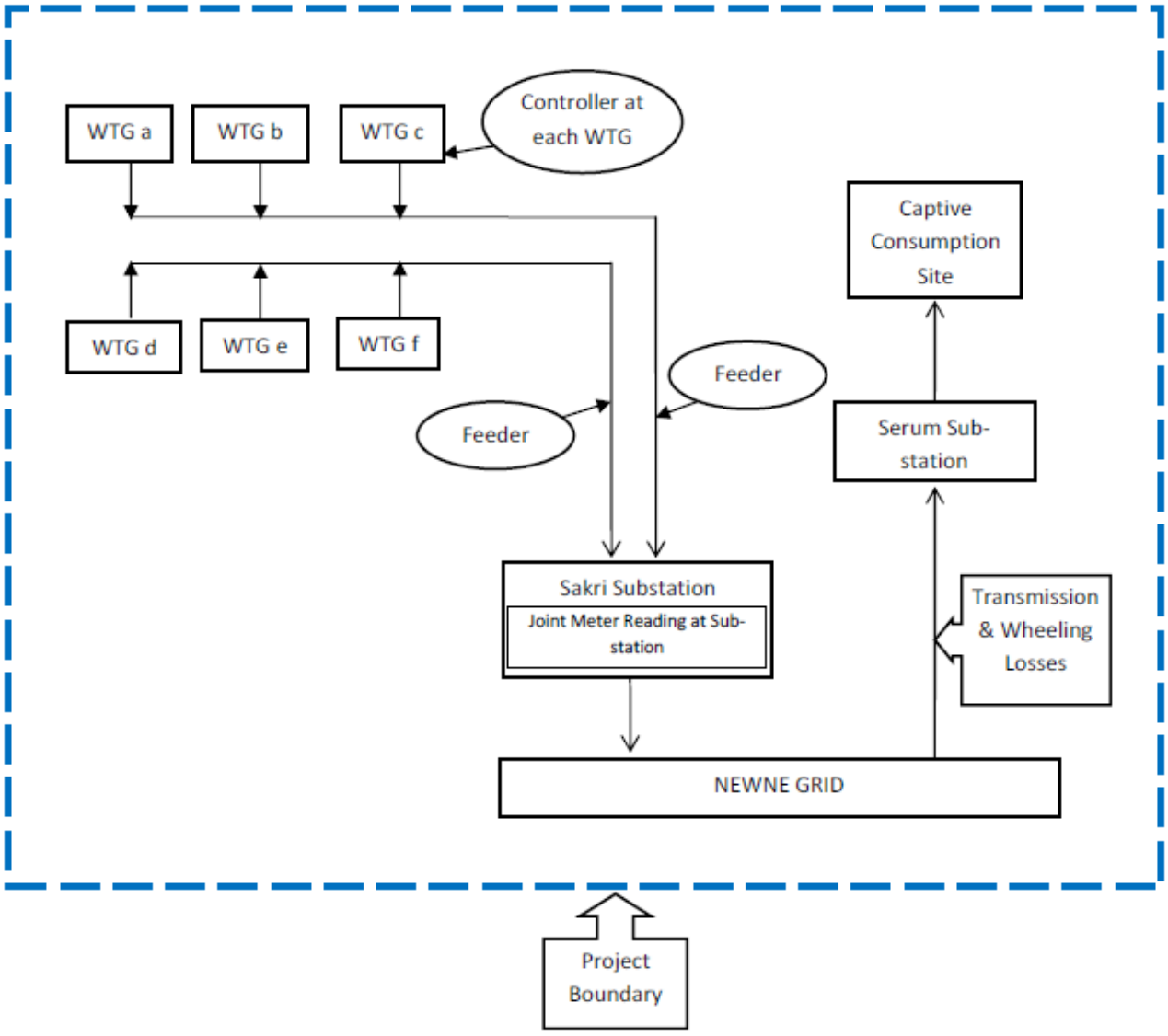
	reservoir or an accumulation reservoir), wind power plant/unit, geothermal power plant/unit, solar power plant/unit, wave power plant/unit or tidal power plant/unit	Maharashtra. Hence, this applicability condition is met.
3	In the case of capacity additions, retrofits or replacements (except for capacity addition projects for which the electricity generation of the existing power plant(s) or unit(s) is not affected : 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 addition 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 project activity is a Greenfield setup and does not involve capacity additions, retrofits or replacements. Hence, this criterion is not applicable.
4	In case of hydro power plants, at least 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 the reservoirs; • The project activity is implemented in an existing single or multiple reservoirs, where the volume of any of the reservoir is increased and the power density of each of reservoir, as per definitions given in the Project Emissions section, is greater than 4 W/m^2 after the implementation of the project activity; • The project activity results in a single or multiple new reservoirs and the power density of each reservoir, as per definitions given in the Project Emissions section, is greater than 4 W/m^2 after the implementation of the project activity.	The project activity is not a hydro power project. Hence, this applicability criterion is not relevant to the project activity.
5	In case of hydro power plants using multiple reservoirs where the power density of any of the reservoirs is lower than 4 W/m^2 after the implementation of the project activity all of the following conditions must apply: • The power density calculated for the entire project activity using equation 5 is greater than 4 W/m^2; • All reservoirs and hydro power plants are located at the same river and where are designed together to function as an integrated project that collectively constitutes the generation capacity of the combined power plant; • The water flow between the multiple reservoirs is not used by any other hydropower unit which is not a part of the project activity; • The total installed capacity of the power units, which are driven using water from the reservoirs with a power density lower than 4 W/m^2, is lower than 15MW; • The total installed capacity of the power units, which are driven using water from reservoirs with power density lower than 4 W/m^2, is less than 10% of the total installed capacity of the project activity from multiple reservoirs.	This is not a hydro power plant. Hence, this applicability criterion is irrelevant.
6	This methodology is not applicable for 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 continued use of fossil fuels at the site	The wind-mills are being newly installed at the project sites There is no fuel-switch from fossil fuel to renewable energy source in the proposed project activity. Hence, this criterion is not applicable.

7	This methodology is not applicable for Biomass fired power plants	The project activity does not use Biomass fired power plant. Hence, this condition is not relevant to the proposed wind project activity.
8	This methodology is not applicable for Hydro power plants that result in new reservoirs or in the increase in existing reservoirs where the power density of the reservoir is less than 4 W/m^2	The project activity is not a hydro power project. Hence, this applicability criterion is not relevant to the project activity.
9	In the case of retrofits, replacements, or capacity additions, this methodology is only applicable if the most plausible baseline scenario, as a result of the identification of baseline scenario, is the continuation of the current situation, i.e. to use the power generation equipment that was already in use prior to the implementation of the project activity and undertaking business as usual maintenance	The project activity is a Greenfield setup and does not involve capacity additions, retrofits or replacements. Hence, this criterion is not applicable

2.3 Project Boundary

As per the **Approved consolidated baseline and monitoring methodology ACM0002**, the project boundary is "*The spatial extent of the project boundary includes the project power plant and all power plants connected physically to the electricity system that the CDM project power plant is connected to.*"

The project boundary includes the electricity generation equipment at the site and the transport through the grid to the consumption site/grid. Hence, project boundary is considered within these terminal points. The project boundary, as per monitoring layouts involving the project activity, is portrayed as follows:



As per the approved methodology, ACM0002, Version 12.3.0, following gases and emission sources has been included in the project boundary.

Source		GHGs	Included?	Justification/Explanation
Baseline scenario	CO2 emissions from electricity generation in fossil fuel fired power plants that is displaced due to the project activity	CO_2	Yes	Main emission source
		CH_4	No	Minor emission source
		N_2O	No	Minor emission source
Project scenario	For geothermal power plants, fugitive emissions of CH4 and CO2 from non-condensable gases contained in geothermal steam.	CO_2	No	The present project activity is a greenfield wind power project. Hence, not relevant
		CH_4	No	
		N_2O	No	
	CO2 emissions from combustion of fossil fuels for electricity generation in solar thermal power plants and geothermal power plants	CO_2	No	The present project activity is a greenfield wind power project. Hence, not relevant
		CH_4	No	
		N_2O	No	
	For hydro power plants, emissions of CH4 from the reservoir.	CO_2	No	The present project activity is a greenfield wind power project. Hence, not relevant
		CH_4	No	
		N_2O	No	

2.4 Baseline Scenario

Identification of the baseline scenario

The project activity is the installation of a new wind power plant. This project is not a modification/ retrofit of any existing electricity generation facility. Hence, in accordance to the approved methodology ACM0002, Version 12.3.0, the baseline scenario for new installation facility is described as:

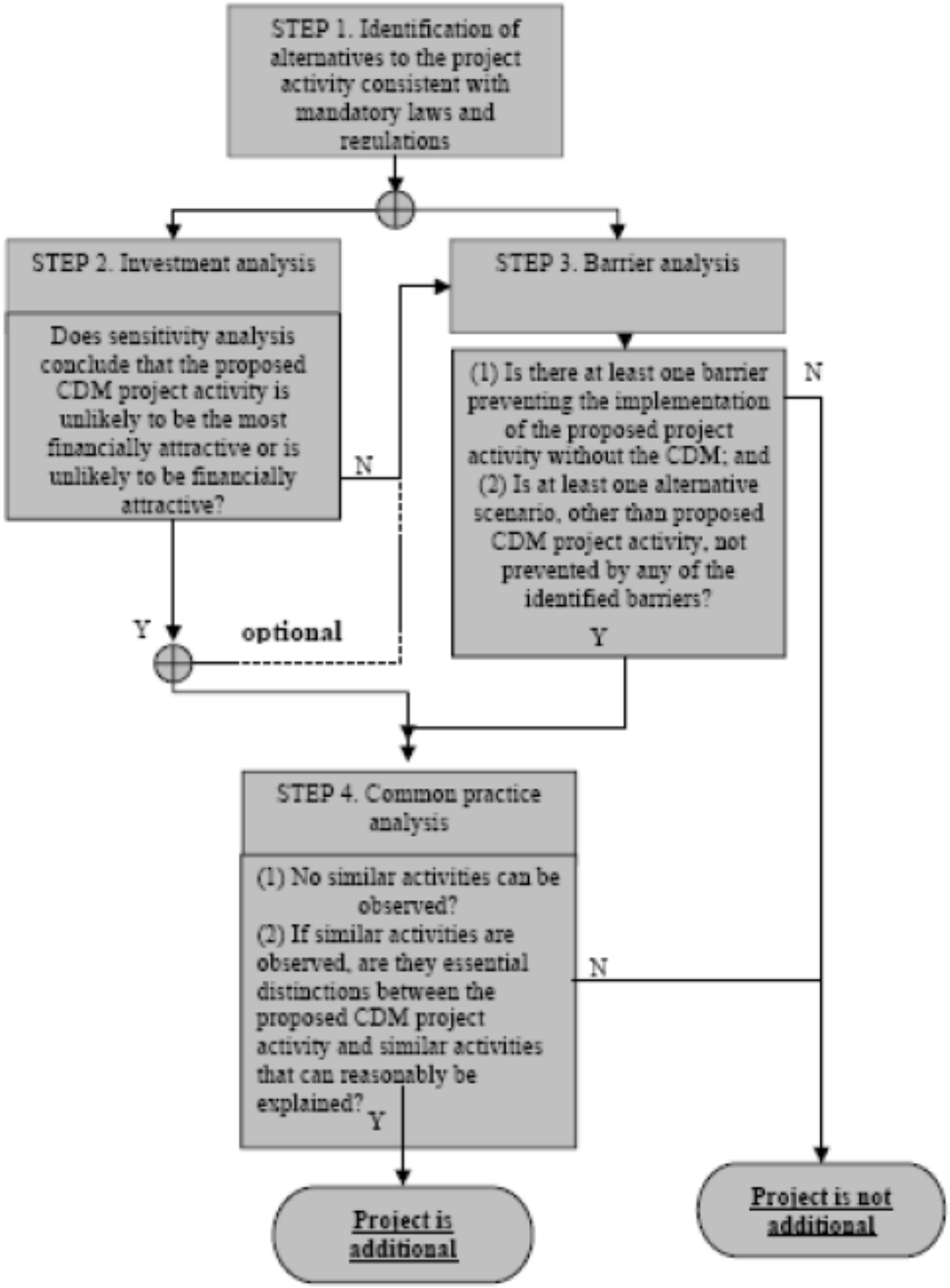
"*Electricity delivered to the grid by the project would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in the "Tool to calculate the emission factor for an electricity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

2.5 Additionality

The project activity has been conceived as a CDM project since its inception. SIIL has taken CDM revenue right from the onset of this wind project. The evidence of the same can be verified by the Designated Operational Entity (DOE) at the time of project validation.

The additionality of the proposed project activity has been demonstrated below in accordance with the "Tool for the demonstration and assessment of additionality, Version 6 and as described

in the following flow chart. This is followed by the descriptions of baseline and project scenarios and how emission reductions would occur in the project activity. The steps as per the additionality tool are provided in the figure below:



Steps	Additionality Requirements	Status of

		Additionality Check
1. Identification of alternatives to the project activity consistent with mandatory laws and regulations		
Sub-step 1(a): Define alternatives to the project activity Sub-step 1(b): Consistency with mandatory laws and regulations	SIIL has set up a 33.6 MW wind power project in order to generate electricity and utilize it for captive purposes, sale to third party or grid. As per approved methodology ACM 0002 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"."* Further, the project activity conforms to all the applicable laws and regulations in India: Power generation using wind energy is not a legal requirement or a mandatory option. There are state and sectoral policies, framed primarily to encourage wind power projects. These policies have also been drafted realizing the extent of risks involved in the projects and to attract private investments. The Indian Electricity Act, 2003 (May 2007 Amendment) does not influence the choice of fuel used for power generation. There is no legal requirement on the choice of a particular technology for power generation.	The additionality check has crossed Step 1 and may proceed to Step 2 (Investment Analysis) followed by Step 3 (Barrier Analysis) and Step 4 (Common Practice Analysis). In the project case, Step 2 has been used for additionality check, followed by Step 3 and 4.
Step 2: Investment Analysis		
Step 2 (a): Determine appropriate analysis method	The project proponent proposes to save revenue by generating electricity that would have otherwise been supplied by the state electricity board. Hence a simple cost analysis is not applicable in the present situation. Amongst the other two options, Investment Comparison Option and Benchmark analysis, the benchmark analysis has been adopted. Here, the Internal Rate of Return (IRR) on the equity for the project activity serves as a benchmark to assess the financial attractiveness of the project activity.	The additionality check has crossed Step 2(a). and can proceed to Step 2(b)
Step 2(b): Option III: Apply benchmark analysis	This is the first project activity being undertaken by SIIL with the motive of utilizing the wind power produced for captive purpose, sale to third party or grid. Initially, it was decided that 18 WTGs of 2.1 MW each would be set up as part of this project activity. An agreement for the same was also entered into; however, during project implementation, only 16 WTGs will be commissioned. At the time of investment decision, there was no precedence of an investment made by SIIL in renewable energy based power generation. Further, since the project involved 100% equity, SIIL	

consecutively sought an equity returns based benchmark applicable to independent power producers in the country implementing similar projects.

An investment analysis of the project activity was conducted with equity Internal Rate of Return (IRR) as the financial indicator. IRR is one of the known financial indicators used by banks, lending institutions and project developers for decision making. The benchmark IRR for the project has been chosen as 19.75%. The value has been arrived at following the Capital Asset Pricing Model.

$R_i = R_f + \beta * (R_m – R_f)$
where,

R_i	Market based returns on equity
R_f	Risk-free Return at the time of decision making
β	Average of Beta value among 9 power sector companies for 3 year period from 01/04/2007 - 31/03/2010
R_m	Risk Premium

For the present project activity, the Reserve Bank of India's Yield to Maturity rate has been adopted as the risk-free rate of return which stood at 8.2672 % at the time of decision making[2].

The Beta value has been conservatively taken to be the average of the 3 year beta values of the following companies which are listed on the BSE-500:

1. CESC Ltd.
2. Gujarat Industries Power Co. Ltd.
3. KSK Energy Ventures Ltd.
4. Neyveli Lignite Corpn.
5. BF Utilities
6. Reliance Infrastructure Ltd.
7. Tata Power Co. Ltd.
8. Torrent Power Ltd.
9. NTPC

The average Beta value for this period is 1.0801

The risk premium value has been arrived at by calculating the Compound Annual Growth Rate for the BSE-500 since its base year (1999) on a base value of 1000. At the time of decision making, the BSE-500 had a low of 6906.52. Hence, the risk premium value is

= Rm = {(6906.52/1000)^(1/11.16) – 1} = 18.90%
wherein, 11.16 years has been the gap between the base year and date of decision making.

Hence, Ri = 8.2672 + 1.0801 * (18.90 – 8.2672) = 19.75%

[2] http://www.rbi.org.in/scripts/BS_ViewBulletin.aspx?Id=11067

Step 2 (c): Calculation and comparison of financial indicators

The following assumptions have been made for conducting the financial analysis:
(Note: 1 Lakh INR= 100,000 INR)

Capacity of the wind project	37.8 MW	Quotes provided by WTG provider
No. and capacity of machines	18 Nos. X 2.1 MW	Quotes provided by WTG provider
Net Annual Generation	36 Lakh kWh/WTG	Quotes provided by WTG provider
Transmission Losses	4.85%	MERC Order
Wheeling Losses	6%	MERC Order
Net Annual Consumption incl. of above loss factors	32.198 Lakh kWh/WTG	Calculated
Annual O&M Costs	INR 21 Lakh/WTG	Quotes provided by WTG provider
% Escalation in O&M charges p.a.	5%	Quotes provided by WTG provider
Estimated Savings per unit	INR 5.39/kWh	Calculated
Tax holiday u/s 80IA available up to	15 years	Income Tax Law
Total Project Cost	INR 21600 Lakh	Calculated as per the Supplier' Quotation
Residual Value	10% of WTG cost	Assumed
Salvage value	Residual value + land cost	Calculated
Funding	Equity 100 % Debt 0 %	
Book Depreciation Rate	5.28%	Companies Act
IT Depreciation Rate	80%	IT Act
CER Price	12 €/tCo2e	Assumed
Exchange Rate for Euros	61.47 INR/€	As on 21/03/2010 @ oanda.com
Corporate Tax Rate	33.22%	IT Act (FY 010-11)

The Equity IRR works out to 10.71% % keeping the above data in consideration without CDM Revenues.

Change in Project Design:

During the project life based on the changes in the regulatory guidelines the PP has entered into Third party contract as well as supplied electricity to the Grid, apart from

captive use. This change leads to change in the project design and accordingly change IRR has been assessed below.

There are 4 possible scenario for the PP to offload power generated by the wind mills:
1. Captive use: The captive price per unit is based on the latest HT tariff applicable. i.e. INR 7.01/kWh
2. Sale to Grid: The tariff for sale to grid for 15 WTGs is INR 2.86 and INR 3.04 for 1 WTG based on the MERC tariff order.
3. Sale to Third party : The price calculations are submitted to the DOE the average price is always sold at a discount to the HT tariff applicable. Currently the HT tariff is INR 7.01.
4. Sale through power exchange: The Average price for trading through power exchange is INR 3.27 from 2011 to 2015 as available on IEX India website.

The HT tariff applicable at the time of decision making was 5.39, which was revised to INR 7.01 over a period of time. Thus even if we apply the price of INR 7.01 (maximum price) for the entire project life the IRR comes to 16.69% which is lower than the benchmark of 19.75%.

The IRR values for the above 4 scenarios are as follows;

Scenario	Tariff (INR/kWh)	Losses Applied*	IRR (%)
Captive use	7.01	6% + 4.85%	16.69%
Sale to Grid	2.87 **	0%	1.28%
Sale to Third party	7.01 #	6% + 4.85%	16.69%
Sale through power exchange	3.27 ##	0%	3.31%

* Losses include Wheeling and Transmission loss
** Weighted average Tariff based on INR 2.86 per kWh for 15 WTG and INR 3.04 per kWh for 1 WTG.
# This is the applicable HT tariff thus maximum value that can be received by the PP for sale to third party.
This is an average historical price as mentioned on the IEX website, the applicable charges are not considered to ensure conservative calculations.

Thus the additionality is not impacted by the Design changes made for the project activity.

Step 2 (d): Sensitivity Analysis

The project activity has been found sensitive to the following parameters for which the equity IRR without CDM revenues have been calculated:

Parameter Varied for IRR	**Sensitivity**

w/o CDM	10%	-10%
Generation	12.67%	8.71%
O&M	10.44%	10.97%
Tariff	12.69%	8.69%
Capital Cost	9.19%	12.50%

The purpose of the sensitivity analysis is to demonstrate the sensitivity of the return on project due to uncertainty in the plant load factor and project costs as well as the uncertainty in the charges of the power which would have otherwise been sourced from the grid. Even though the power tariff has been calculated on a weighted average basis utilizing previous three years power cost data, the robustness of the investment analysis was further demonstrated by using an escalation margin of 3.06% which has been calculated as the Compounded Average Growth Rate (CAGR) of power tariff applicable to the project proponent over a period of the past five years3. Even so, the equity IRR does not cross the benchmark. Also, including a sensitivity of 10% on this escalated tariff does not make the equity IRR to cross the benchmark and the candidate project activity retains its additionality.
As can be seen from the above analysis there is significant risk associated with the project activity that impacts the viability of the project activity.

Thus the project activity is not the most financially attractive option.

Step 4: Common Practice Analysis		
a) Analyze other activities similar to proposed project activity	As per the approved methodological tool, common practice analysis includes: *"Projects are considered similar if they are in the same country/region and/or rely on a broadly similar technology, are of a similar scale, and take place in a comparable environment with respect to regulatory framework, investment climate, access to technology, access to financing, etc. Other CDM project activities (registered project activities and project activities which have been published on the UNFCCC website for global stakeholder consultation as part of the validation process) are not to be included in this analysis"* In the context of the present project activity, the following parameters are defined in line with paragraphs 5 – 10 of this approved methodological tool: ***Measure***: As per paragraph 6, the project activity falls under the following measure: *"(b) Switch of technology with or without change of energy source (including energy efficiency improvement as well as use of renewable energies);"* ***Output***: As per paragraph 7, "power generation" may be considered to be the output in the context of the project	

	activity. Further as per Step 1 of paragraph 47 of the same tool, the applicable output range will be 18.9MW to 56.7 MW, i.e. ±50% of installed capacity of the project activity (37.8 MW) ***Different technologies*** in the context of the project activity: a) Energy source/fuel: In this case, the source of energy is wind power b) Feed Stock: This criterion is irrelevant in the context of the project activity as no feed stock is involved c) Size of installation: Since the installed capacity of the project activity is higher than 15 MW, the installation size shall be considered as "Large" d) Investment climate: i. Access to technology: Access to the wind power generation technology is fairly same across the host country ii. Subsidies or other financial cash flows: Though not applicable in the case of wind power, subsidies are regulated by the Ministry of New & Renewable Energy, India for the entire host country iii. Promotional policies: Though not applicable in the case of wind power, subsidies are regulated by the Ministry of New & Renewable Energy, India for the entire host country iv. Legal regulation: As per the Electricity Act 2003, the state electricity regulatory commissions are responsible for formulating legislations for various renewable energy power projects coming up in the respective state. In light of this, it may be appropriate to consider the pre-2003 era of the Indian power sector as a different investment climate altogether. Since such regulations vary from state-to-state, the same renewable energy power project will be subjected to different regulations depending upon its location. Hence, in this case, project activities with similar legal regulation are those commissioned post- 2003 in the state of Maharashtra. e) Other features: No additional aspects of variance are observed for similar project activities ***Applicable geographical area***: As per paragraph 5, the host country is to be considered as the default geographical area. Thus, as per paragraph 47 of the methodological tool, *Step 1: Calculate applicable output range as +/-50% of the design output or capacity of the proposed project activity* The applicable output range is 18.9 MW to 56.7 MW (i.e. +/-50% of 37.8MW). *Step 2: In the applicable geographical area, identify all plants that deliver the same output or capacity, within the*	

applicable output range calculated in Step 1, as the proposed project activity and have started commercial operation before the start date of the project. Note their number Nall. Registered CDM project activities shall not be included in this step

In this step, all the plants in India delivering power in the applicable output range of 18.9 MW to 37.8 MW have been considered. Further, all the CDM registered project activities and project activities undergoing validation have been excluded.

Technologies	**Total number of projects in the capacity range**	**N_{all}**
Hydroelectric	44	44
Thermal	8	8
Nuclear	0	0
Wind	54	18
Biomass & Bagasse	84	71
Total (N_{all})		141

Step 3: Within plants identified in Step 2, identify those that apply technologies different that the technology applied in the proposed project activity. Note their number N_{diff}.

In this step, those project activities that apply technologies different from that of the project activity (as defined above "Different technologies") have been identified.

Technologies	**N_{diff}**
Hydroelectric	44
Thermal	8
Nuclear	0
Wind	17
Biomass & Bagasse	71
Total (N_{diff}	140

Step 4: Calculate factor $F=1-N_{diff}/N_{all}$ representing the share of plants using technology similar to the technology used in the proposed project activity in all plants that deliver the same output or capacity as the proposed project activity

In this step, the factor F is evaluated as below:
$F = 1 – (N_{diff}/N_{all}) = 1- (140/141) = 0.0071$

Also, $N_{all} – N_{diff} = 141-140 = 1$

Thus, the results of the analysis are as follows:
a) $F < 0.2$
b) $N_{all} – N_{diff} =1$

Since both the conditions of paragraph 47 of the approved methodological tool are not fulfilled, the present project activity is not a "common practice" within a sector in the

	applicable geographical area.	
Step 4b: Discuss any similar options that are occurring:	Thus, it is observed that all similar projects activities have applied for CDM revenues. Also, it is evident that large scale wind projects are not a common practice in the region. In view of this, the project activity is not a common practice project, the project is additional and not the same as baseline scenario and would not have occurred without the CDM. The approval and registration of the proposed project activity as a CDM project would lead to additional revenue thereby improving the returns from the project activity alleviating investment and regulatory policy risk. The successful registration also provides an incentive for other proponents to invest in wind power projects. Thus the CDM revenue acts as a risk mitigation tool in overcoming barriers.	

A brief chronological sequence of the project activity is as follows:

Sl. No.	Event	Date
1.	Board Approval for project	06/04/2010
2.	Intimation to UNFCCC & DNA (MoEF)	01/07/2010
3.	Signing Supply Agreement	05/08/2010
4.	Stakeholders' Consultation	26/10/2010
5.	Appointment of DOE	24/03/2011
6.	All mandatory clearances	16/03/2011
7.	Commissioning	06/09/2011

2.6 Methodology Deviations

Not Applicable

3 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

3.1 Baseline Emissions

Not Applicable

3.2 Project Emissions

Not Applicable

3.3 Leakage

Not Applicable

3.4 Net GHG Emission Reductions and Removals

Not Applicable

4 MONITORING

4.1 Data and Parameters Available at Validation

Not Applicable

4.2 Data and Parameters Monitored

Not Applicable

4.3 Monitoring Plan

Not Applicable

5 ENVIRONMENTAL IMPACT

Not Applicable

6 STAKEHOLDER COMMENTS

Not Applicable