GAP VALIDATION OF "WIND POWER PROJECT AT JAIBHIM BY SIIL"

Document Prepared By

EPIC Sustainability

EPIC Sustainability Services Private Limited

Project Title	Wind power project at Jaibhim by SIIL
Version	01.1
Report ID	ESSPL/VCS/2016/024

Report Title	Gap Validation of "Wind power project at Jaibhim by SIIL"
Client	**Serum Institute of India Limited (owner)** **Infinite Solutions (focal point)**
Pages	31
Date of Issue	*10th June 2016*
Prepared By	EPIC Sustainability Services Pvt. Ltd.
Contact	41, Anugraha, 1st Cross, Sundarnagar, Near BEL Circle, Bangalore-560054, Karnataka, India
Approved By	Mr. K. Sudheendra (Head-Operations)
Work Carried Out By	Mr. A. Prabu Das (Lead Auditor) Dr. R. Madhukar (Technical Reviewer)

Summary:

EPIC Sustainability Services has been contracted by M/s. **Serum Institute of India Limited,** the project proponent, to carry out the Gap validation of the CDM project UNFCC No. 6456 - "Wind power project at Jaibhim by SIIL", with regard to the relevant requirements of VCS programme guidelines and standard (VCS standard version 3.5, VCS Validation and Verification Manual version 3.1 & VCS program guide version 3.5). Relevant requirements of the UNFCCC for CDM project activities, as well as criteria for consistent project operations, monitoring and reporting has been applied for validation.

The baseline and monitoring methodology ACM0002, Version 12.3.0 "Consolidated baseline methodology for grid-connected electricity generation from renewable sources", an approved methodology of UNFCCC CDM program is applied. The proposed project activity involves the installation of Wind turbines in the state of Maharashtra, India. The total installed capacity of the project is 33.60 MW; which involves installation and operation of 16 Wind Turbine Generators (WTGs) located at village Jaibhim, Dhule District of Maharashtra State in India.

Thus the project activity displaces equivalent amount of electricity that would otherwise be generated in the fossil fuel dominated grid and leads to an estimated annual GHG emission reductions of 52,898 tCO2e and a total of 5,28,980 tCO2e during the crediting period of 10 years.

A risk based approach has been followed to perform this validation. In the course of validation, 03 Clarification Requests (CLs) were raised and successfully closed. The review of the project design documentation and additional documents related to baseline and monitoring methodology; the subsequent background investigation, follow-up interviews and stakeholders have provided EPIC Sustainability Services with sufficient evidence to validate the fulfilment of the stated criteria.

In detail the conclusions can be summarised as follows:
- The project is in line with all relevant host country criteria (India) and all relevant VCS and UNFCCC requirements for CDM
- The project additionality is sufficiently justified in the PD.
- The monitoring plan is transparent and adequate.
- The calculation of the emission reductions is carried out in a transparent and conservative manner, so that the calculated emission reductions of 5,28,980 tCO2e are most likely to be achieved within the 10 years crediting period.

The conclusions of this report show, that the project, as it was described in the project documentation, is in line with all criteria applicable for the gap validation. This validation is based on the information made available to EPIC and the engagement conditions are detailed in this report. Hence, EPIC cannot be held liable by any party for decisions made or not made based on this report.

Table of Contents

CONTENTS

1 INTRODUCTION

1.1 Objective

EPIC Sustainability Services has been contracted by Serum Institute of India Limited, the project proponent (PP), to undertake the Gap validation of the CDM registered renewable energy project comprising wind technology "Wind power project at Jaibhim by SIIL".

The purpose of this validation is to have an independent third party assessment of whether the project activity conforms to the qualification criteria set out in the VCS Version 3.5 standard to attain real, measurable, additional and permanent emission reductions.

The validation statement/opinion is a written assurance that the project complies with all the applicable VCS requirements and has the ability to generate the emission reductions stated over the project's crediting period.

The validation followed the requirements of the current version of the VCS Standard Version 3.5/1/ and VCS program guide 3.5/2/ to ensure the quality and consistency of the validation work and the report.

1.2 Scope and Criteria

The scope of validation was an independent and objective review of the project's VCS PD. In particular, the specific objectives of the validation work involve:

- To verify that the project activity meets the requirements of VCS Standard Version 3.5, VCS Validation and Verification Manual version 3.1 and VCS program guide 3.5 including additionality, proof of title and compliance with local laws
- To assess whether the baseline and monitoring plan are in conformance with the applied methodology from the VCS approved GHG program
- To certify that the information presented are completed, consistent, transparent and free of omission or material error

The information in the PD is reviewed against the criteria of VCS Standard 3.5, the VCS program guide 3.5 and the applied consolidated baseline and monitoring CDM methodology ACM002, version 12.3/3/. EPIC has performed validation based on a risk based approach focusing mainly on the significant risks to meet the qualification criteria and the ability to generate Verified Carbon Units (VCUs).

The work carried out by EPIC is free from any conflict of interest.

1.3 Level of Assurance

In line with VCS standard requirements and as per ISO 14064-3:2006 paragraph A.2.3.2, a "reasonable level of assurance" is defined for the validation of the project. This implies that, based on the process and procedures conducted, review of the VCS-PD and supporting evidences made available to the verifier and information collected through performing interviews and during the on-site assessment , EPIC confirms that the information in the Project document.

- is materially correct and is a fair representation of the project information, and
- is prepared in accordance with VCS requirements,
- is prepared based on the approved methodology

The validation work is carried out as per this requirement and details are presented in the Validation statement in section 2 below.

1.4 Summary Description of the Project

The proposed project activity involves the installation of Wind Power Projects. The total installed capacity of the project is 33.60 MW; which involves the new implementation of 16 WTGs of capacity at village Jaibhim, Dhule District of Maharashtra State in India.

The project is a Green field project which results in an estimated annual average GHG emission reduction of 52,898 tonnes of CO2.

2 VALIDATION PROCESS

2.1 Method and Criteria

The verification process consists of the following phases:

i) a document review of the project design documents, monitoring reports and preparation of verification protocol;

ii) on-site visit to the project activity and interviews with project developer and project consultant; and

iii) resolution of outstanding issues and the issuance of final verification report and opinion

In order to ensure transparency, a verification protocol was prepared for the project according to the VVS version 9.0 verification requirements and VCS Standard version 3.5. The verification protocol serves the following purposes:

- it organizes, details and clarifies the requirements that a CDM or VCS project is expected to meet;
- it ensures a transparent validation process where the validator will document how a particular requirement has been validated and the result of the validation.

The completed validation protocol is enclosed in Appendix of this report.
During the verification, non-fulfilment of the verification protocol criteria or identified risks to the fulfilment of project objectives were raised as either CAR or CR. Corrective Action Requests (CAR) were issued, where:

i) mistakes had been made that directly impacted on the project results; or

ii) CDM and VCS requirements had not been met; or

iii) there was a risk that the project would not be accepted as a CDM project or that emission reductions will not be certified.

The Clarification Requests (CR) were issued where additional information was needed to clarify issues, and Forward Action Requests (FAR) for issues relating to project implementation that required review during the first verification of the project activity.

The following team members were involved in identifying the following:

Name	Qualification	Role	Components reviewed
Mr. A. Prabu Das	TA 1.2 – renewables	Lead Auditor	Completeness check, desk review, onsite inspection, Interview with project representatives, issuance of findings, report preparation
Dr.R. Madhukar	TA 1.2 – renewables	Technical Reviewer	Technical review

2.2 Document Review

During the document review, EPIC has applied standard auditing techniques to assess the quality of information provided. On receipt of the project description from the PP, the completeness check of information made available as per VCS Version 3.5 requirements was reviewed. A desk review was further carried out to assess the following:

- The project details as per VCS PD template
- Appropriateness of methodology applied
- Compliance with relevant laws and regulations
- Correctness of application of baseline and monitoring methodology
- Demonstration of additionality
- Monitoring plan
- Stakeholder comments
- Proof of title
-Other external documents like grid emission factor, etc. where applicable.

The VCS PD version 01 dated 29th January 2016 /5/ was initially reviewed and EPIC requested the PP to present the supporting information and documents and such additional information and documents that were also reviewed by EPIC. The documents reviewed by EPIC are listed below. Through the process of the verification, the revised VCS PD and the supporting documents were evaluated to confirm the actions taken by the PP to the CARs and CLs issued by EPIC. EPIC reviewed the final version of the VCS PD version 03 dated 06th June 2016 /5/ to confirm that all changes agreed have been incorporated.

Further, prior to the Opening meeting with the PP in the site visit, it was verified by the validation team that the project was listed in the VCS pipeline in line with the requirements.

http://www.vcsprojectdatabase.org/#/pipeline_details/PL1525

The appendix B contains the details of the documentation reviewed during the verification

2.3 Interviews

The details of the on-site assessment conducted by validation team on 01-02 March 2016 are as follows:

Name	Organization	Topic
Mr. Chetan Wagh	Serum Institute of India Limited	• Project implementation and management • Site tour • Confirmation of technical specifications of the WTG and Solar panels • Baseline discussion • Additionality discussion • Data management and reporting systems • Data verification • QA/QC, management systems, calibration, training • Data archiving • Environmental and social issues

		•Local stakeholder consultation process and discussion
Mr. Prashant Desde	Suzlon	O & M aspects and site management
Mr Sumeet Singhvi, Manager, Operations	Infinite Solutions	• Confirmation of the project activity design • Baseline discussion

2.4 Site Inspections

EPIC has conducted on-site inspection in order to confirm all physical features of the project activity proposed in the VCS PD are in place.

An on-site assessment was conducted on 01-02 March *2016* as a part of validation activity which involved:

- Implementation of project activity
- Technical detail of project activity
- Statutory clearances
- Sustainability criteria
- Local stakeholders meeting process
- Baseline determination and additionality
- Monitoring plan.

2.5 Resolution of Findings

Based on the site inspection and review of documents and records including the monitoring plan, issues that need to be further elaborated upon, researched or added in order that the project activity meets the VCS Standard 3.5requirements and can achieve credible emission reductions is identified, discussed and to be resolved by the project proponent.

A Corrective Action Request (CAR) is raised if the VVB identifies a material discrepancy or non-conformance that the project proponent must address.

A Clarification request (CL) is raised if the project reporting lacks transparency and further information is needed to determine if a material discrepancy is present.
On receipt of response and revised PD from the project proponent, the adequacy of compliance with VCS and the methodology requirements is checked. Closure of comments raised occurs only if the response provided and corrections made fully comply with the stated requirements of the VCS Version 3.5 VCS standard and the methodology applied.

During the course of validation, 03 CLs were raised and closed successfully. The list of CARs/CLs/FARs raised and the response provided, the mean of validation, reasons for their closure and references to correction in the PD are provided in Appendix A of this report.

2.6 Forward Action Requests

A Forward Action Request (FAR) is issued when certain issues related to project implementation should be reviewed during the first verification. This, however, has no impact upon the completion of the current validation activity.

No FAR has been raised during the validation of the project activity.

3 VALIDATION FINDINGS

3.1 Project Details

Project type, technologies and measures implemented, and eligibility of the project:

According to the VCS version 3.5 Guidelines and the list of Sectoral Scopes of the UNFCCC, the project is applicable under the following activity categories:

According to Annex A of the Kyoto Protocol, the project is applicable under the sectoral scope 1 - Energy Industries (renewable/ non-renewable sources).

The proposed project activity involves the installation of Wind Power Projects. The total installed capacity of the project is 33.6 MW; which involves operation of 16 Wind Turbine Generators (WTGs) with capacity of 1.2 MW each located at Jaibhim village, Dhule district in Maharashtra**.** The electricity generated by WTGs is used for captive consumption. The project is a Green field project which results in an estimated annual average GHG emission reduction of 52,898 tonnes of CO2.

Wind Power Project Technology Details

The technology employed, converts wind energy to electrical energy. In wind power generation, energy of wind is converted into mechanical energy and subsequently into electrical energy. The technology is an environment friendly technology since there are no GHG emissions associated with the electricity generation.

The project activity comprises a total of 16 WTG's of Suzlon with Model No. S88 2.1. the technical specifications were verified from the product brochure/17/ submitted. The project activity WTGs have been commissioned.

The purpose of the project activity is to generate energy electricity by the utilization of wind velocity and selling the generated energy to the respective Grid. The project activity will generate greenhouse gas (GHG) emission reductions by avoiding CO_2e emissions which otherwise would have been generated by the operation of grid connected power plants and by the addition of new sources. Hence the project is anticipated to fulfil VCS conditions.

Project proponent and other entities involved in the project:

Project proponents for this project activity is ***Serum Institute of India Limited***

Project start date:

The earliest date of commissioning/6/ amongst the WTGs is 11-March-2011 and hence this is the start date of the project activity.

Project crediting period:

The crediting period of the project activity is for 10 years and this may be renewed at most twice. The 01st crediting period is from 11/03/2011 to 10/03/2021.

Project scale and estimated GHG emission reductions or removals:

The estimated annual emission reductions for the project activity are 52,898 tCO_2e which is less than 300,000 tCO_2e. Hence the category is applicable under "Project".

Project Location:

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

Conditions prior to project initiation*:*

The project is a green field project. The same was confirmed during the on-site visits and through review of purchase orders, commissioning certificates and power purchase/Supply agreements.

Project compliance with applicable laws, statutes and other regulatory frameworks:

There is no such compliance requirement with an emission trading program or any binding limits on GHG emissions for the project activity in India (host country) as it is a non annex 1 country. The project is a voluntary initiative by the PP and has not been implemented to meet any local / national laws or regulatory compliances.

The project has obtained valid consents for the installation and operation from the state nodal agencies and is in compliance with local laws and regulations.

Ownership and other programs:

Right of use:

The Project comprises of 16 WTGs of individual capacity 2.1 MW each implemented by ***Serum Institute of India Limited***. The ownership of the project activity and documents showing proof of title and ownership of the emission reductions are as follows:

- Certificate of Incorporation /10/
- Purchase order of WTGs /7/
- Commissioning certificate of the WTGs /6/
- Power Purchase/Supply Agreement with respective State Electricity Board /9/
- Validated CDM PDD version 09 dated 31/10/2012 /13/
- CDM Validation report version 2.8 dated 08/11/2012 /14/

Further *Serum Institute of India Limited* has appointed **Infinite solutions** also indicated as Other participating entity in the VCS PD, with the scope to act as focal point for the VCS project activities and implementation which has been verified from the document submitted /20/.

Emissions trading programs and other binding limits:

It was verified from the information provided by PP that this project is CDM project registered on 28/11/2012. The project details were verified from the weblink at UNFCCC (project ID : 6456) https://cdm.unfccc.int/Projects/DB/LRQA%20Ltd1340102581.62/view
PP has given a declaration that the net GHG emission reductions generated by the project activity will not be used for compliance with any other emissions trading program or to meet binding limits on GHG emissions. Further, the project activity generates Carbon Credits under Clean Development Mechanism from 01/01/2013. However the VCUs that are claimed are from the date of commissioning till 31/12/2012 only.

Participation under other GHG programs:

PP has given a declaration[/12/] that the project activity has been registered as CDM project generating credits from 01/01/2013. Validation team has cross checked the same with other GHG regimes(Gold standard) and national criteria (REC) and found project is not listed in any of other programs.

Other forms of environmental credit sought or received:

PP has given a declaration[/12/] that the project proponent hereby corroborates that the project activity has not created or sought or received any other form of environmental credit except under CDM and the validation team verified the same.

Rejection by other GHG programs:

PP has given a declaration[/12/] that the project proponent hereby corroborates that the project activity has not been rejected by any other GHG program

Eligibility criteria for grouped projects:

The project activity is not a grouped project.

Commercially sensitive information:

PP has stated in the VCS PD section 1.13 that there is no such commercially sensitive information.

Any further information:

The description contained in the VCS PD of the project activity provides the reader with a clear understanding of the precise nature of the project activity and the technical aspects of its implementation. The project description was verified by EPIC by assessment of the PD and the on site visit and review of the supporting documents listed in section Appendix B. As a result, EPIC confirms that the project description of the project contained in the VCS PD to be complete and accurate. The VCS PD complies with the relevant forms and guidance for completing the VCS PD.

3.2 Application of Methodology

3.2.1 Title and Reference

CDM approved methodology has been applied for the project activity.

Title: Grid-connected electricity generation from renewable sources

Type: I – Renewable energy project

Category ACM0002: Version 12.3.0 “Consolidated baseline methodology for grid-connected electricity generation from renewable sources

Sectoral Scope: 01 Energy industries (renewable / non- renewable sources)

Tools referenced in the applied methodology:

“Tool to calculate the emission factor for an electricity system”, Version 02.2.1, EB 63[/15/]

“Tool for the demonstration and assessment of additionality”, Version 06, EB 65[/16/]

3.2.2 Applicability

Applicability of the applied methodology ACM002, *Version 12.3.0* is discussed below:

Applicability condition	Justification of the project activity	Conclusion
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.	The proposed activity is a, Greenfield project, which involves the installation of a new Grid – connected renewable power generation facility comprising of Wind. From the on-site visit to the project sites and review of the commissioning certificates/06/ and Power Purchase/Supply Agreements/09/, it was confirmed that the project activity is a new wind energy unit supplying electricity to the NEWNE grid (greenfield). Therefore, the project activity complies with condition 1 (a).
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 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 33.6 MW wind energy based power plant in Maharashtra. Hence, this applicability condition is met.	The proposed activity is a, Greenfield project, which involves the installation of a new Grid – connected renewable power generation facility comprising of WTGs.
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	The project activity is a Greenfield setup and does not involve capacity additions, retrofits or replacements. Hence, this criterion is not applicable.	The proposed activity is a, Greenfield project, which involves the installation of a new Grid – connected renewable power generation facility comprising of Wind. From the on-site visit to the project sites and review of the purchase orders/07/, commissioning certificates/06/ and Power Purchase / Supply Agreements/09/, it was confirmed that the

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		project activity is a new wind energy unit supplying electricity to the NEWNE grid (greenfield) and does not involve any capacity addition / retrofit / replacement of an existing plant.
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.	It was confirmed from the onsite visit and through review of purchase orders/07/ and commissioning certificates/06/ that the project activity is a wind power plant and not a hydro power plant. Therefore, this criterion is not relevant to the project activity.
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;	This is not a hydro power plant. Hence, this applicability criterion is irrelevant.	It was confirmed from the onsite visit and through review of purchase orders/07/ and commissioning certificates/06/ that the project activity is a wind power plant and not a hydro power plant. Therefore, this criterion is not relevant to the project activity.

• 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 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.	The proposed project activity is not fuel switch project from fossil fuels to renewable energy sources, biomass fired power plants and the hydro power plant that result in new reservoir. From the on-site visit to the project sites and the commissioning certificates/06/ it was confirmed that the project activity is a new installation of a wind energy project
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.	As this is a wind power generation activity, this condition is not applicable.

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.	As this is a wind power generation activity, this condition is not applicable.
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	The project activity is a Greenfield setup and does not involve capacity additions, retrofits or replacements as verified from the purchase orders and commissioning certificates. Hence this condition is not applicable.

Therefore, all the validation team concludes that all the applicability criteria of the methodology have been fulfilled by the project.

3.2.3 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 generated electricity will be delivered to the NEWNE grid through the connected sub-station. The project activity falls under NEWNE grid and the baseline for NEWNE grid as the grid system boundary for the project activity is in line with the methodology.

The project activity is a renewable energy project and hence there are no emissions like CO_2 and CH_4 as such due to the implementation of the project activity (project emissions). The CO_2e emissions from electricity generation in fossil fuel fired power plants installed under NEWNE grid that are displaced due to the project activity is considered as baseline emissions. The project boundary was found to be in accordance with the requirements of the applied methodology which was confirmed during the on-site visit.
Thus, the validation team concludes that the PD correctly describes the project boundary, including the physical delineation of the proposed CDM project activity and the information on each GHG source, sink and reservoir thereby complying with VVS requirement.

3.2.4 Baseline Scenario

According to the approved baseline and monitoring methodology "ACM0002", Version 12.3.0 "Consolidated baseline methodology for grid-connected electricity generation from renewable sources, the following is the baseline scenario for a new grid-connected renewable power plant/units: "the baseline scenario is 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".

Project activity involves generation of electricity using WTGs power plant and selling it to southern grid/supply through southern grid as confirmed through the application for the execution of Power Purchase/Supply Agreements/09/ between the project owners and the discom. In the absence of this project activity, same amount of electricity would have been generated by the operation of existing/proposed grid connected fossil fuel based power plants. (The pre-project scenario for the captive case was also verified it to be grid connected). The same was cross checked and confirmed by referring the CO2 Baseline Database for the Indian Power Sector, User Guide (Central Electricity Authority (CEA) of India- CO2 Baseline Database for the Indian Power Sector, Version 06, dated March 1, 2011) issued by Central Electricity Authority. The CEA data base used by the PP is accepted by the team as this is the latest version available at the time of submission of PD to DOE as per the "tool to calculate the emission factor for an electricity system" /15/.

3.2.5 Additionality

According to the approved baseline and monitoring methodology "ACM0002", the additionality of the project has been established applying the tool "Tool for the demonstration and assessment of additionality, Version 6. The project proponent has stated the start date of the project activity as 11-March-2011 and submitted the commissioning certificate which is checked by the assessment team and found to be in order. The same is in line with VCS guideline and thus accepted by the assessment team.

As per the requirement of VCS the project needs to be intimated to the VCS board before the start of the validation process. The project is listed in the link http://www.vcsprojectdatabase.org/#/pipeline_details/PL1525 in VCS Project pipeline.

Identification of Alternatives:

According to the approved baseline methodology ACM0002 "Grid-connected electricity generation from renewable sources", version 16 the baseline scenario is "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" and since it is prescribed in the approved methodology no further analysis is requires as per CDM-VVS. The project proponent has justified the selection of the baseline scenario in line with the applied methodology and the same is deemed reasonable.

Investment analysis

Choice of approach

The PP has chosen to apply investment analysis to demonstrate the additionality of the project activity using the benchmark analysis method. PP has identified post tax equity IRR as the most suitable financial indicator. The project cannot apply simple cost analysis since the project brings revenue from the sale of electricity; also investment comparison analysis cannot be applied as the alternative to the project activity is the electricity generated by new and existing grid connected power plants. Therefore, referring paragraph 19 of the investment analysis guideline /19/ "if the alternative to the project activity is the supply of electricity from grid

this is not to be considered an investment and a benchmark approach is considered appropriate". Since the project proponent is demonstrating the financial unattractiveness of the project and the project cost involves both equity and debt, equity IRR is considered appropriate indicator and accepted by the validation team.

Benchmark selection

As per paragraph 12 of the Guidelines on investment analysis, required/expected returns on equity are appropriate benchmarks for an equity IRR.

Following is stated in para 15 of Guidelines on the Assessment of Investment Analysis, version 05, *'If the benchmark is based on parameters that are standard in the market, the cost of equity should be determined either by: (a) selecting the values provided in Appendix A; or by (b) calculating the cost of equity using best financial practices, based on data sources which can be clearly validated by the DOE, while properly justifying all underlying factors. The values in the table in Appendix A may also be used, as a simple default option, if a company internal benchmark is used.'*

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.

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 making1.

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:

- CESC Ltd.
- Gujarat Industries Power Co. Ltd.
- KSK Energy Ventures Ltd.
- Neyveli Lignite Corpn.
- BF Utilities
- Reliance Infrastructure Ltd.
- Tata Power Co. Ltd.
- Torrent Power Ltd.
- 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%

Hence, Ri = 8.2672 + 1.0801 * (18.90 – 8.2672) = 19.75%. The validation team has verified that the benchmark is arrived based on commonly used financial models as per requirements of the additionality guideline and the same has been followed in the PDD of the registered CDM project.

Choice of financial Indicator

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

PP has chosen post-tax equity IRR as the financial indicator for proving the additionality. The validation team assessed the timing of availability of the input values such as capacity, number of machines, project cost, O&M cost and its escalation, tariff, Tax Depreciation rate, Book depreciation rate and Income tax rate, and found that the values were readily available to the investors during the investment decision meeting in which the investor took the investment decision. Table below provides the explanation and justification for the applied values for the project activity. Further the worksheets[/18/] are provided by the PP which reflect the calculations.

The following parameters were verified from the worksheets for both the estimated costs and the appropriateness of the source documents provided. The similar calculation was also provided in the validated CDM PDD.

Parameter	Value	Source
Capacity of the wind project	37.8 MW	Quotes provided by WTG provider[/04/]
No. and capacity of machines	18 Nos. X 2.1 MW	Quotes provided by WTG provider[/04/]
Net Annual Generation	36 Lakh kWh/WTG	Quotes provided by WTG provider[/04/]
Transmission Losses	4.85%	MERC Order[/11/]
Wheeling Losses	6%	MERC Order [/11/]
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[/04/]
% Escalation in O&M charges p.a.	5%	Quotes provided by WTG provider[/04/]
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[/04/]
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 post-tax equity IRR was calculated to be 10.71%. Based on the information verified, the validation team was able to confirm that the input parameters used in the investment analysis are reasonable and adequately represent the economic situation of the project activity at the time of the investment decision.

Sensitivity analysis

To substantiate the robustness of the results obtained above, the sensitivity analysis has been conducted. In accordance with para 20 of the investment guidance in EB 62, Annex 5, the PP has conducted a sensitivity analysis on the financials by varying the parameters which have a bearing of 20% or more on either the project costs or the project revenues and has tabulated the results. The scenarios considered for the purpose of sensitivity analysis are +10% increase and -10% decrease in annual generation, project cost, tariff and O & M cost.

The results of sensitivity analysis clearly demonstrate that in all probable scenarios, the project activity is lower than the benchmark. (i.e. the project is unable to acquire returns equal to that of benchmark). These results of sensitivity analysis were evaluated and were found to be correct; they indicate robustness of the parameters used for the investment analysis. The revenues of project activity would be insufficient to justify the required investment and it is observed that with the benefits of VCS the project is avourable option to invest.

The results of sensitivity analysis are as follows:

Parameter Varied for IRR w/o CDM	**Sensitivity**	
	10%	**-10%**
Generation	12.67%	8.71%
O&M	10.44%	10.97%
Tariff	12.69%	8.69%
Capital Cost	9.19%	12.50%

All the input parameters applied in the IRR calculations were found to be suitable and accurate; these were crosschecked with the supporting documents and publically available sources. Thus the financial returns of the proposed VCS project activity would be insufficient to justify the required investment and it is observed that only with the benefits of VCS the project is a favourable option. Hence, the project is concluded to be strongly additional and VCS revenue is considered imperative to bridge the gap between the equity IRR and the benchmark. Based on the evaluation it was evidenced that the returns from the project without the revenue from VCS are less than the benchmark. Hence, it is confirmed that revenue from VCS was considered essential for the project activity. In this context, the project activity is considered additional and all the requirements of VVS/1/ is satisfied.

Common practice analysis

The PP has conducted the common practice analysis as per the requirements of "Tool for the demonstration and assessment of additionality Version 07 and the latest "Guidelines on Common Practice, Version 02.0" has been followed for the project activity. In line with the guidance, the PP has selected the India (host country) as the default applicable geographical area for the assessment of common practice. Further, the PP has selected the step-wise approach given in the Guidelines on Common Practice, Version 02.0; to carry out the common practice analysis.

As per the Step 1 of the guidelines, the applicable output range as ± 50% of the design output range (18.9MW to 56.7 MW, i.e. ±50% of installed capacity of the project activity (37.8 MW)

In the step 2, PP has identified the plants that deliver the output in the range of 18.9MW to 56.7 MW in the host country India. The geographical scope has been identified as host country India. This is the default option which is in accordance with paragraph 1 of the Guidelines on Common Practice, Version 02.0. In accordance with the guidelines, the wind power plants that have started commercial operation before the start date, which is 11/03/2011, were identified. The PP has correctly excluded the power plants that are registered or are under validation. Validation team confirms from its host country expertise that the comprehensive list of all power plants used for Nall is correct and valid. The PP has not considered other type of power plants that are different from wind power plants owing to its different energy/fuel source. Not considering other power plants results in conservative F factor due to lower denominator (Nall) and does not impact Nall – Ndiff, as the all the projects considered except wind power plants, are considered as plants with different technologies and included under Ndiff.

In step 3, the PP has identify those that are neither registered CDM project activities, project activities submitted for registration, nor project activities undergoing validation and diffentiated with the total projects identified in the above step 2. That is the identified number for Nall = 0. In step 4, the PP has identified those that apply technologies that are different to the technology applied in the proposed project activity. The different projects were identified as 0. The PP has followed paragraph 4 (d) of the "Guidelines on common practice", version 02. The paragraph 4 states that "Different technologies are technologies that deliver the same output and differ by at least one of the following (as appropriate in the context of the measure applied in the proposed VCS project activity and applicable geographical area):

(d) Investment climate on the date of the investment decision, inter alia:
(i) Access to technology;
(ii) Subsidies or other financial flows;
(iii) Promotional policies;
(iv) Legal regulations;"

In step 5, the PP has calculated F factor as less than 0.2 and Nall – Ndiff = 1. The project is not a common practice in India as F factor is less than 0.2. Thus, in view of the guidance given in the Tool for the demonstration and assessment of additionality Version 06, the validation team confirms that the analysis has been performed as per the step 4 of the "Tool for the demonstration and assessment of additionality" Version 6 and in line with the "Guidelines on Common Practice, Version 02.0".

The team based on the assessment has been able to confirm that the project activity can be regarded as not a common practice in the host country India.

Conclusion

EPIC can confirm that all data, rationales, assumptions, justifications and documentation provided by the project participants to support demonstration of additionality are credible and reliable.

By assessing the evidences presented and cross-checking the information contained in, the validation team considers the reasonings for the proposed project additionality demonstration is credible and reasonable i.e. the proposed project has the ability to reduce anthropogenic emissions of greenhouse gases by sources below those that would have occurred in the absence of the registered CDM project activity.

3.2.6 Quantification of GHG Emission Reductions and Removals

Baseline emissions (Bey):

As per ACM0002 Version 12.3, baseline emissions due to the project activity are calculated as follows:

Baseline Emissions = EFGrid,CM,y x EGPJ,y
Where,
EGPJ,y: EGFacility,y, quantity of net electricity generation supplied by the project plant/unit to the grid in year y (MWh)

Calculation of EGPJ,y

The amount of electricity supplied by project to grid is estimated to be 55,759 MWh/ year . This value is calculated based on the estimated PLF for the individual sub-projects. For expost, the value shall be monitored in calibrated energy meter and as recorded in monthly generation report issued by state utility/service provider. The same can be cross checked from the invoice copy raised to DISCOM.

Calculation of EF_{OM}: The simple OM emission factor have been calculated using the Simple OM method as the low-cost/must run resources constitute less than 50% (for year 2007-08, 2008-09 and 2009-10). The ex-ante vintage data has been used for the OM calculation of the project. The latest available data vintage at the time of PD submission to DoE is taken for the EF calculations. EFOM for the most recent three years (2007-08, 2008-09 and 2009-10) and the weighted average is calculated to be 0.9942 tCO2e/MWh. The calculated EFOM is fixed ex-ante and will not be reviewed in the crediting period of the project activity.

Calculation of EF_{BM}: BM is calculated ex-ante based on the average emission intensity of 20% most recent capacity additions in the grid based on the net generation for the year 2011 Consequently, the Build Margin emission factor is calculated to be 0.8123 /MWh. This is as per the "Tool to calculate the emission factor for an electricity system", Version 2.2.1 and has been sourced from the Calculated from CEA database, Version 06 (Valid on 1st March 2011). The validation team accepted the same as this follows the latest version of the database available to the project participant at the time of submission of PD for validation. So, the validation team is of the opinion that all the assumptions and data used by the PP discussed in the PD are appropriate and conservative and same has been cross checked with the references and the sources provided by the PP in the PD. The baseline emission estimated is 52,898 tCO2/yr.

Determination of Efgrid,CM,y: CM (combined margin) emission factor for NEWNE grid of India has been calculated on the basis of sum of 75% of OM (operating margin) and 25% of BM (build margin).

Efgrid,CM, y = 0.75 * Efgrid,OM,y + 0.25* Efgrid,BM,y

The CM emission factor is calculated as 0.9487 tCO2e/MWh for southern grid as per the "Tool to calculate the emission factor for an electricity system", Version 2.2.1 and has been sourced from the Calculated from CEA database, Version 6 /20/.

Project emissions

As per ACM0002, for most renewable power generation project activities, Pey = 0. However, some project activities may involve project emissions that can be significant. These emissions shall be accounted for, by using the following equation:

$$PE_y = PE_{FF,y} + PE_{GP,y} + PE_{HP,y}$$

Where,

Pey = Project emissions in year y (tCO2e)
PEFF,y = Project emissions from fossil fuel consumption in year y (tCO2)
PEGP,y = Project emissions from the operation of geothermal power plants due to the release of non-condensable gases in year y (tCO2e)
PEHP,y = Project emissions from reservoirs of hydro power plants in year y (tCO2e)
As the project activity is a wind energy and solar based power generation, the project emissions are not applicable to the project activity. Hence, Pey = 0

Leakage

As per ACM0002, no leakage emissions are considered. The main emissions potentially giving rise to leakage in the context of electric sector projects are emissions arising due to activities such as power plant construction and upstream emissions from fossil fuel use (e.g. extraction, processing, transport). These emissions sources are neglected. Therefore, Ley = 0.

Emission Reductions

As per equation ACM0002, the emission reductions are calculated as follows:

Ery = 52,898- 0 = 52,898tCO2e

PP has calculated the emission reductions using the above equation and is estimated to be 52,898 tCO2e per annum. The calculation of the emission reductions has been ensured by the validation team based on the latest CER calculation sheet/19/

The validation team did not find any additional uncertainty associated with the calculation of emission reductions other than those inherent with the applied methodology and default emission factors used.
Validation team confirms that:
• All relevant assumptions and data are listed in the project description, including their references and sources.
• All data and parameter values used in the project description are considered reasonable in the context of the project.
• All estimates of the baseline emissions can be replicated using the data and parameter values provided in the project description.

Validation team is able to confirm that the methodology and relevant tools have been applied correctly to calculate baseline emissions, project emissions, leakage and net GHG emission reductions and removals.

3.2.7 Methodology Deviations

The project does not seek any methodology deviations.

3.2.8 Monitoring Plan

The approved baseline and monitoring methodology “ACM0002” has been applied. The monitoring plan is in accordance with the monitoring methodology; the monitoring plan will give opportunity for real measurement of achieved emission reductions. The monitoring plan provides detailed information related to the collection and archiving of all relevant data needed to:

- Estimate or measure emissions occurring from GHG sources, sinks and reservoirs
- Determine the baseline emissions
- Determine the project emissions

The monitoring plan as per ACM002, version 12.3 has been clearly described in the validated CDM PDD. EPIC confirms that the monitoring arrangements described in the monitoring plan are feasible within the

project design, and the means of implementation of the monitoring plan are sufficient to ensure the emission reductions achieved by/resulting from the proposed CDM project activity can be reported ex post and verified.

Parameters Determined at validation (Ex-ante)

The following parameters are determined ex-ante and mentioned in section 4.1 of the PD:

Data / Parameter	Unit	Value	Assessment
Ef_y (Combined Margin of the NEWNE Grid)	tCO_2/MWh	0.9487	Project participant has used the official published data on operating and build margin emission factors. The version of the data used is as it is the latest applicable version as indicated in the validated CDM PDD. This data is published by Central Electricity Authority, CEA (version 06) who is the sole authority for the publication of such data in India. CEA has published a database of carbon dioxide emission factors for the power sector in India based on detailed authenticated information obtained from CEA on all operating power stations in the country. Project participant has applied weightage factors for the OM and BM [75% & 25% respectively] as specified in the tool to arrive at the emission factor for the combined margin. Validation team has checked the emission factor calculations from CEA database version 06 and the value of Ef_y, is found to be correct. The validation team agrees to this emission factor since it is based on the official background data published by CEA. EPIC confirms that the database is an official publication of Ministry of Power, Government of India. The calculation and assumptions were verified by the validation team and found to be correct and appropriate.
$Ef_{grid,BM,y}$ (Build Margin of the NEWNE Grid)	tCO_2/MWh	0.8123	Project participant has used the official published data on operating and build margin emission factors. The version of the data used is as it is the latest applicable version as indicated in the validated CDM PDD. This data is published by Central Electricity Authority, CEA (version 6) who is the sole authority for the publication of such data in India. CEA has published a database of carbon dioxide emission factors for the power sector in India based on detailed authenticated information obtained from CEA on all operating power stations in the country. Validation team has checked the emission factor calculations from CEA database version 6 and the value of EF_{BM} is found to be correct. The validation team agrees to this emission factor since it is based on the official background data published by
$Ef_{grid,OM,y}$ (Generation	tCO_2/MWh	0.9942	

Weighted Operational Margin of the NEWNE Grid)			CEA. EPIC confirms that the database is an official publication of Ministry of Power, Government of India. The calculation and assumptions were verified by the validation team and found to be correct and appropriate.

Parameters to be monitored (ex-post)

Monitoring of the project activity involves all the parameters necessary for calculation of GHG emission reduction by the proposed project activity. These parameters are mentioned in section 4.2 of the PD. The parameters, which are to be monitored include:

Parameter	**Assessment**
Quantity of net electricity generation supplied by the project plant/unit to the grid in year *y* **Eg**$_{facility,y}$ (MWh/year)	The electricity generated will be evacuated to NEWNE grid at substation / project site and it will be measured by a main energy meter and check meter which are installed at the grid interconnection point. The WTGs of Dhule are centrally connected & monitored by a Central Monitoring System (CMS) located at Dhule and maintained by Suzlon. The captured data from the CMS is then directly uploaded to the Customer Relationship Management (CRM) system, which is an Oracle based database. From the CRM, the daily generation reports are made available to SIIL on the customized website of the respective O&M service providers. The CRM manager is responsible for the monitoring of the WTGs and communicating results to SIIL. SIIL has the overall responsibility for collating the monitored data received from all the two locations. Two feeders of 22.5 MW each are dedicated for Suzlon -16 WTGs (10 nos on one feeder and 6 on the other) at the Sakri switchyard (33/132 KV) . The WTGs are connected through a 33 KV overhead line up to Sakri Switchyard. At the MSEDCL sub-station, the total export & import to these feeders is monitored using main & the check meters, which are electronic tri-vector meters. The total export at this meter is arrived at by multiplying the monthly meter reading to the multiplying factor of the meter concerned. The monthly meter reading is arrived at as the difference between the current meter reading and the previous meter reading. The period between these two readings is usually a period of 30 days which may vary. In a similar fashion, total import at this meter is also calculated. Hence, net electricity export is calculated as the difference between total export and total import at the meter. Further the apportioning formula (for export value of each WTG) was also verified to be correctly stated. Project participant has chosen renewal crediting period of 10 years. Continuous monitoring will be carried out by energy meters. Continuous measurements and monthly recording will be carried out. The details match with the information provided

	in the validated CDM PDD.

Electricity meter of accuracy class not inferior to 0.2s shall be used. Main electricity meters at sub-station will be calibrated as per the norms of the state utility; and the calibration will be incompliance with the national standards/regulation (as per MSEDCL testing procedures annually). The accuracy class of the energy meter is as per the CEA notification and hence complies with the International Standards. Calibration records shall be maintained by state utility/01/, which is in compliance with clause 14 (3) of the national regulations. The O & M of the project activity will be done by the technology supplier who has dedicated trained personnel to carry out the day to day operation and maintenance of the project activity so as to monitor the quantity of electricity supplied to the grid.

The operational and management structure implemented together by PP and the technology supplier as indicated in the validated CDM PDD was verified.

EPIC confirms that the monitoring plan mentioned in the PD is in accordance with the requirements mentioned in the monitoring methodology and the local regulatory requirements of the state utility, as well the monitoring arrangements described in the monitoring plan are feasible within the project design. EPIC is of the opinion that the monitoring plan will give opportunity for real measurement of achieved emissions reductions for 2 years after the crediting period.

The validation team based on local and sectoral expertise deemed acceptable the relevant monitoring equipment along with their accuracy class and calibration frequency. Detailed responsibilities and authorities for project management, monitoring procedures, calibration procedures and QA/QC procedures have been presented and were verified during follow up interviews. The detailed monitoring practice is considered appropriate and the implementation of these will enable subsequent verification of the project's emission reductions.

3.3 Non-Permanence Risk Analysis

The Project is not an AFOLU (Agriculture, Forestry and Other Land Use) project and therefore no surveys are required. Hence this is not applicable.

3.4 Environmental Impact

No significant adverse environmental impact is expected due to project activity, since the project is a renewable energy (wind energy and solar) project with no project emissions. Further, as per the Schedule 1 of the EIA notification dated 1/12/2009[2] and latest notification dated 24/12/2013[3], given by the Ministry of Environment and Forests under the Environment (Protection) Act 1986, the proposed Project activity does not fall under the list of activities requiring EIA as the environmental impacts for such project are not considered as significant by the host Party. The validation has verified all the statutory clearances and commissioning certificates/06/. The validation team concludes that all the clearances obtained are in accordance with the procedures required by the host party and no significant environmental impacts are expected from the project activity.

3.5 Comments by Stakeholders

[2] http://moef.nic.in/downloads/rules-and-regulations/3067.pdf

[3] http://envfor.nic.in/sites/default/files/ia-24122013.pdf

The project proponent organized the local stakeholder consultation to get their comments / feedbacks and suggestions of the project activity. Details of Stakeholders' consultation meeting/08/ and invitation by the individual sub-projects are detailed below and are verified to be in line with details in the validated CDM PDD.

Project Promoters' Name	Invitation Date	Meeting Date	Location of the LSM
Serum Institute of India Limited	4-5 days in advance	26/10/2010	Jaibhim village at project site

Local community, local village administration, local vendors, representatives of the technology supplier, representatives of project participant, and representatives of individual sub-projects were present at the meeting. The validation team has cross checked the attendance list of stakeholders and also interviewed some of the local stakeholders during site visit to confirm the consistency of the information provided in the PD.

A summary of comments has been provided by PP and it is found that no adverse comment was received for the project activity. This has also been verified by the validation team during site visit at the WTGs and Solar site. Further, the interviews confirmed that there was no adverse comment about the project and this project will lead to employment generation and better environmental conditions. EPIC considers the local stakeholder consultation carried out adequately and can confirm that the process is credible.

4 VALIDATION CONCLUSION

M/s. /s. **Serum Institute of India Limited** has contracted EPIC Sustainability Services Private Limited (EPIC) to undertake Gap validation of the CDM registered project: "Wind power project at Jaibhim by SIIL", with regard to the relevant requirements of VCS programme guidelines and standard (VCS standard version 3.5, VCS Validation and Verification Manual version 3.1 & VCS program guide version 3.5). Relevant requirements of the UNFCCC for CDM project activities, as well as criteria for consistent project operations, monitoring and reporting has been applied for validation.

EPIC has reviewed the project description documents and subsequently carried out site visit interviews to confirm the fulfilment of stated criteria. The project intends to reduce GHG emissions by displacing fossil fuels (for the heat generated to meet captive requirements). A risk based approach has been followed to perform this validation. In the course of the draft validation 02 Clarification Request (CLs) were raised and successfully closed. The project activity has applied the baseline and monitoring methodology, ACM0002, Version 12.3.0 "Consolidated baseline methodology for grid-connected electricity generation from renewable sources, which is an approved methodology under the CDM programme and is acceptable under VCS Version 3. The baseline has been determined in accordance with the stated approved baseline methodology. Analysis of the proposed project activity reveals that the emission reductions resulting from the project activity are real, measurable and give long term benefits and are additional to what would have occurred in the absence of the project activity. The total emission reductions from the project activity are estimated to be 5,28,980 tCO2e over the 10 years crediting period. The emission reductions forecast has been checked and is deemed likely that the stated amount is achieved given that the underlying assumptions do not change.

The monitoring plan makes sufficient provision for monitoring relevant project and baseline emission indicators. Responsibilities and authorities for project management, monitoring and reporting and QA/QC procedures have also been addressed. Based on the information provided by the project developer, it is EPIC's opinion that the "Wind power project at Jaibhim by SIIL" in India as described in the VCS PD, Version 03 dated 10/06/2016, meets all relevant VCS Standard ver 3.5 requirement and correctly applied CDM simplified baseline and monitoring methodology ACM002, version 12.3.0.

EPIC Sustainability Service's validation opinion is purely based on the information made available to us by the project proponent during the course of validation and hence cannot guarantee the accuracy or correctness of the information. Keeping this in mind, no party can hold EPIC liable for any decisions made or not made in this report.

Prepared by	Approved by :
	
Mr. A. Prabu Das	Mr. K. Sudheendra
(Lead Auditor)	(Head Operations)

APPENDIX A: RESOLUTION OF FINDINGS

Correction Action Request (CAR) or Clarification Request (CR) or Forward Action Request (FAR)	Reference to Table 1 & 2	Response from project participant	Validation team conclusion
CL 01 While this section indicates various options avaialbe to PP for sale of electricity, the additionality analysis does not indicate the IRR at all possible options	Section 1.1	The analysis of the options have been included under additionality section	*The revised PD indicated the various options for sale of electricity and impact on IRR from which it was further verified that the most conservative option was used to establish additionality.*
CL 02 It was verified that the project is CDM registered. Following this, could it be clarified on the reason no declaration by PP was provided on the aspect of claiming emission reductions for both regimes resulting in double counting.	Section 1.12.3, Section 1.12.4	Declaration is now submitted as per the requirements	*The declaration submitted is sufficient to resolve the clarification raised*
CL 03 Clarify the reason with supporting documents for adding Infinite solution as PP in Section 1.3 of the PD.	Section 1.3	PP has appointed infinite solution to act as focal point as per the communication agreement submitted. The revised PD is submitted to indicate the same	*The communications agreement designating infinite solutions as the focal point has been reviewed and the documents satisfies the requirements.*

APPENDIX B: The following table outlines the documentation reviewed during the validation:

Reference	Details of supporting documents
1	VCS Standard Version 3.5
2	VCS program guide 3.5
3	CDM methodology ACM0002, version 12.3.0
4	Quotation submitted by supplier (Suzlon)
5	VCS PD version 01 dated 29th January 2016 VCS PD version 03 dated 10th June 2016
6	Certificate of commissioning of the WTGs
7	Purchase order of WTGs
8	Stakeholder consultation meeting documents
9	Power Purchase/Supply Agreement with respective State Electricity Board
10	Certificate of Incorporation
11	State Regulatory tariff orders (MERC)
12	Declaration by PP for meeting VCS validation requirements
13	Validated CDM PDD version 09 dated 31/10/2012
14	CDM Validation report version 2.8 dated 08/11/2012
15	Tool to calculate the emission factor for an electricity system Version 2.2.1 EB 63
16	Tool for the demonstration and assessment of additionality

17	Suzlon-S88-2.1MW-product-brochure
18	IRR financial calculation sheets
19	CER calculation sheet
20	CEA Database version 06
21	Communications agreement between SIIL and Infinite Solutions