


VALIDATION REPORT FOR THE RENEWAL OF THE CREDITING PERIOD GRID CONNECTED BUNDLED WIND POWER PROJECT IN GUJARAT MANAGED BY ENERCON (INDIA) LIMITED



Document Prepared By: LGAI Technological Center, S.A. (Applus+ Certification)

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Prepared By	 LGAI Technological Center, S.A. (Applus+ Certification)
Contact	Ronda Font del Carme, s/n Campus UAB E – 08193 Bellaterra (Barcelona) – Spain

	Tel.: +34 935 672 008 www.appluscertification.com
Approved By	Juan Sendín Caballero Applus+ Certification BU Managing Director
Work Carried Out By	Vivek Kumar Ahirwar, as Lead Auditor and Ravi Kant Soni as Auditor in training Technical Reviewer: Simon Shen

Summary:

LGAI Technological Center, S.A. (hereafter referred to as Applus+ Certification) has been contracted by Wind World (India) Ltd. (WWIL) (Project proponent) to conduct validation of the renewal of the crediting period of the Project - "Grid connected bundled wind power project in Gujarat managed by Enercon (India) Limited", with regard to the relevant requirements of VCS programme guidelines and standard (VCS standard version 3.7, & VCS program guide version 3.7). 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 purpose of this project activity is to generate electricity using renewable sources (wind) and export it to Indian grid, thereby displacing the grid generated electricity. Thus, the project aims to displace electricity produced by fossil fuel power plants harnessing wind energy. The energy produced is supplied to the Indian grid. Therefore the project reduces greenhouse gas emissions and thereby contributes to sustainable development.

A risk based approach has been followed to perform this verification. In the course of the validation 03 Corrective Action Requests (CARs), 01 Clarification Requests (CRs) were successfully closed. No Forward Action Request (FAR) were raised during the validation.

Project activity was operational during the first crediting period from 01/02/2007 to 31/01/2017. Operation of the project will remain the same for the second crediting period from 01/02/2017 to 31/01/2027.

The review of the project design documentation and additional documents related to baseline and monitoring methodology and subsequent background investigation have provided Applus+ Certification with sufficient evidence to validate the fulfilment of the stated criteria.

The assessment team is able to conclude that:

- i. A reasonable level of assurance has been applied.
- ii. All data and information used for ex-ante calculation of emission reductions is correctly applied.
- iii. The project is in line with all relevant host country legislation.
- iv. The project additionality is not required to be reassessed, however it is sufficiently justified in the VCS-PD.
- v. The monitoring plan is in accordance with the approved methodology, transparent and adequate.
- vi. Project deviations have sufficiently been addressed and justified.
- vii. The calculation of the baseline emission reductions is carried out in a transparent and conservative manner, so that the calculated emission reductions of 295,620 tCO_{2e} are most likely to be achieved within the 10 year renewable crediting period.
- viii. The conclusions of this validation report show, that the project, as it was described in the updated project documentation, is in line with all criteria applicable for the validation against the VCS Version 3.7 standard without any qualifications or limitations.

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1 INTRODUCTION

1.1 Objective

Applus+ Certification has been contracted by Wind World (India) Ltd to perform an independent validation of renewable crediting period of the VCS project title “Grid connected bundled wind power project in Gujarat managed by Enercon (India) Limited” (VCS ID 370). In particular the project's baseline, the monitoring plan (MP), and the project's compliance with

- The applicable requirements of the VCS programme Version 3.7;
- The requirements of the applied methodology;
- Relevant legal and regulatory requirements, including the host country legislation

To be validated in order to confirm that the revised project design as documented is sound and reasonable and meets the stated requirements and identified criteria.

Particularly, *inter alia*, the validity of project's baseline and regulatory surplus are validated in order to confirm the compliance as outlined under paragraph 3.8.5 for the renewal crediting period. Validation is seen as necessary to provide assurance to stakeholders on the quality of the project and its intended generation of Verified Carbon Units (VCUs) / Emission reductions.

1.2 Scope and Criteria

The validation assessment was carried out in accordance with the requirements of VCS standard version 3.7 and included an assessment but not limited to, of the following:

Demonstration of the regulatory surplus, in reference to the additionality of the project, in accordance with the clause 4.6.3 VCS standard version 3.7.

Validity of the original baseline scenario reviewing the following criteria:

- Evaluation of the impact of new relevant national and/or sectoral policies and circumstances on the validity of the baseline scenario.
- Assessment of the GHG emissions associated with original baseline scenario using the latest version of the CDM Tool to assess the validity of the original/ current baseline.
- If the original baseline scenario is no longer valid, whether current baseline scenario is established in accordance with the VCS rules.
- The project description, containing updated information with respect to the baseline, the estimated GHG emission reductions or removals and the monitoring plan, submitted for validation is based upon the latest approved version of the methodology or its replacement.
- The updated project description is validated in accordance with the VCS rules.

The validation is not meant to provide any consulting to the project participants. However, stated requests for clarifications and/or corrective actions may provide input for improvement of the project design.

1.3 Level of Assurance

The validation has been planned and organized to achieve a

Reasonable level of assurance

Limited level of assurance.

1.4 Summary Description of the Project

The project activity involves electricity generation by wind electric convertors and supplying the generated electricity to the Indian Grid. The project being a renewable energy generation activity, it leads to removal of fossil fuel dominated electricity generation. The project activity results in reductions of greenhouse gas (GHG) emissions that are real, measurable, and verifiable and also plays beneficial role in the mitigation of climate change.

The project activity consists of 19 WTGs (800 kW capacity each, E-48 Model), making the total installed capacity to be 15.2 MW at the Khirsara of Rajkot district and Okha Madhi, Jodhpar, Methan, Bhupat Ambardi and Seth Vadala of Jamnagar District in state of Gujarat.

Location of the project was verified through Google Map (<https://www.gps-coordinates.net/>) and found consistent with the data provided in the registered PD /06/. The WTGs generate 3-phase power at 400 V ($\pm 12.5\%$) in the frequency range of 47.5 – 51.5 Hz. It is further stepped up to 33 kV for further distribution by the state utility. This information was verified during physical site visit and found to be in line with the details provided in the registered PD /06/.

The WTGs have been commissioned between 01/02/2007 and 08/04/2008. The same was verified against the registered VCS PD/06/, revised PDD /10/ and commissioning certificates/12/.

2 VALIDATION PROCESS

2.1 Method and Criteria

The validation process is undertaken by validation team that involves the following:

- i. The desk review of documents and evidences submitted by the project proponent in context of the reference VCS rules and guidelines,
- ii. Interview or interactions with the representative of the project proponent,
- iii. Reporting audit findings with respect to clarifications and non-conformities and the closure of the findings, as appropriate and
- iv. Preparing a draft validation report
- v. Resolution of outstanding issues and the issuance of final validation report and opinion

In order to ensure transparency, a validation protocol was prepared for the project according to the VVS for PAs version 1.0 verification requirements and VCS Standard version 3.7.

The Clarification Requests (CR) were issued where additional information was needed to clarify issues, and Forward Action Requests (FAR) to be raised for issues relating to project implementation that required review during the first verification of the project activity. No FAR has been raised during the validation of project activity.

The validation process includes the following steps and same is described in the subsequent sub-sections.

2.2 Document Review

The validation team has conducted the validation using the VCS Standard Version 3.7 and the ACM0002 version 17 methodology as the reference criteria.

The validation team had done the completeness check of updated VCS PD submitted by the PP as per the VCS standard Version 3.7 requirements was reviewed. Furthermore a desk review was also carried out to assess the following:

- i. Information of project details in compliance with VCS PD template
- ii. Appropriateness of methodology ACM0002 version 17 applied to the project activity
- iii. Compliance with relevant laws and regulations
- iv. Correctness of application of baseline and monitoring methodology
- v. Monitoring plan described in the updated VCS PD
- vi. Proof of listing of project ownership
- vii. Calculation of grid emission factor, etc. where applicable.

The validation is performed primarily as a document review of the registered VCS PD/06/, updated VCS PD/10/, VCS validation report/07/ and previous verification report /08/. The assessment team also reviewed the documents related to project design like commissioning certificates/12/, and PPA/13/.

The assessment is performed by a validation team using a protocol. The cross checks between information provided in the updated VCS PD and information from sources other than those used, if available, the team's sectoral or local expertise and, if necessary, independent background investigations. The details of the documentation reviewed during the validation are provided under appendix 1 of this report.

2.3 Interviews

The validation team has carried out interviews in order to verify the information included in the project documentation and to gain additional information regarding the compliance of the project with the VCS requirements. Before and during the on-site visit, the validation team has interviewed the representatives of the PP to confirm selected information and to clarify issues identified during the document review. Representatives of the Wind World (India) Ltd were also interviewed. The names and designations of the personnel interviewed are mentioned in section 2.4 below.

The main topics covered during the interview are as follows:

- General Aspects of the project
- Project Implementation
- Equipment and operation
- Staff Training procedures
- Calibration procedures
- Monitoring & Measuring System
- Data collection, recording and archiving procedure
- QA/QC procedures
- VCS documentation
- Emission reduction calculations

2.4 Site Inspections

As part of the validation, an on-site inspection has been performed by the assessment team. The site visit was carried out on 21/02/2018. During the site visit representatives of the PP and WWIL (O&M contractor) were interviewed; i.e. personnel responsible for monitoring of the project activity, data collection and management, and QA/QC procedure. The details of the people interviewed and the topics discussed are mentioned in the table below:

Location: Khirsara, Okhamadhi, Jodhpar, Methan, Bhupat Ambardi and Seth Vadala of Rajkot and Jamnagar District, Gujarat, India	Date: 21/02/2018
Coverage	Source of Information / Persons Interviewed
Project implementation, start date as per the VCS requirements. Electricity Generation Records (monthly energy statements, Invoices) Reliability & accuracy of readings considered for emission reduction calculations, Calibration procedure	Mr. Deepjyoti Borah Mr. Abhay Kardani
Monitoring and measuring system <ul style="list-style-type: none"> • Collection of measurements • Observations of established practices • Data Verification of monitoring parameters 	Mr. Kishore Vasara Mr. Mangesh Ghagare
QA/QC procedures, data management, internal audits to maintain data quality & reliability, maintenance Practices Consideration of monitoring period, monitoring methodology, project documentation and emission reduction calculations	Mr. Pravin J

2.5 Resolution of Findings

As an outcome of the validation process, the team can raise different types of findings:

A Clarification Request (CR) is raised if information is insufficient or not clear enough to determine whether the applicable VCS requirements have been met

Where a non-conformance arises the team leader shall raise a Corrective Action Request (CAR). A CAR is issued, where:

- The project participants have made mistakes that will influence the ability of the project activity to achieve real, measurable additional emission reductions;
- The VCS requirements have not been met;
- There is a risk that emission reductions cannot be monitored or calculated.

FAR (Forward Action Request):

- A Forward Action Request (FAR) will be issued when certain issues related to project implementation should be reviewed during the first verification.

The validation process may be halted until this information has been made available to the team leader's satisfaction. Failure to address a CL may result in a CAR. Information or clarifications provided as a result of a CR may also lead to a CAR.

During the validation process, 01 CR and 03 CARs were raised and resolved satisfactorily. The list of CARs/CRs/FARs raised and the response provided, the mean of validation, reasons for

their closure and references to correction in the relevant documents are provided in Appendix 3 of this report.

2.5.1 Forward Action Requests

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:

Same as described in the registered VCS PD and updated PD.

The following project deviation was taken and accepted during the first crediting period:

1. As required by the monitoring plan of the PD, the two parameters EG_{Export} and EG_{Import} are not monitored specifically for the WEG included in this project due to unavailability of data (however EG_{Export} and EG_{Import} are monitored by the energy meters at Bhogat and Sadodar for the WEGs included in this project and WEGs not being part of this project). As per the registered VCS PD, EG_y is to be calculated as difference of electricity export to the grid and import from the grid. But in practice, the value of EG_y , i.e. the net electricity supplied to the grid, by each WEG owner, is sourced directly from the monthly share certificates issued by GETCO. This is due to the fact that the share certificates issued by GETCO indicate only the net electricity supplied by the individual WEGs connected to the energy meters at Bhogat and Sadodar, after due apportioning as per the procedure detailed in the VCS PD and do not contain values of electricity exported to the grid and electricity imported from the grid.
2. As per the registered PD, calibration frequency of energy meters is annual, whereas the frequency followed is once in three years. Since the meter calibration is out of the project participant's control and also referring to the clarification provided by GETCO to the project participant /22/, that "All the meters at the power evacuation sites are calibrated and tested once in a period of three years", hence this deviation was accepted and approved by VCS board.

The above two deviations will be valid during the second crediting period and do not impact the applicability of the methodology, additionality or the appropriateness of the baseline scenario, the project remains in compliance with the applied methodology.

Project proponent and other entities involved in the project-

Name of the project proponent is changed as Wind World (India) Limited as a replacement of Enercon (India) Limited from 01/01/2013 onwards. The assessment has verified this through the "Name change consent issued by Government of India" /21/, found to be satisfactory, hence

accepted. Remaining information about the project proponent is same as mentioned in the registered VCS PD/06/.

Project start date-

Start date of project activity is 01/02/2007, which was the date on which project has begun generating emission reductions. Same as mentioned in the registered VCS PD.

Project crediting period-

As per the registered PD, crediting period was considered from 01/02/2007 to 31/01/2017 which can be renewed twice for the duration of ten year each. However the project technical life is 20 years, hence only once the crediting period can be renewed.

The first crediting period considered was 01/02/2007 to 31/01/2017 and the second crediting period is from 01/02/2017 to 31/01/2027.

Project scale and estimated GHG emission reductions or removals-

The estimated annual emission reductions for the project activity are 29,562 tCO₂e which is less than 300,000 tCO₂e. Hence the category is applicable under "Project".

Project location-

Same as in registered PD/06/.

Conditions prior to project initiation-

Same as in registered PD/06/.

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

The project is a voluntary initiative by the project proponent and has not been implemented to meet any local / national laws or regulatory compliances. The project activity is in compliance with current laws and regulations and there are no legal and/or regulatory requirements that prevent the project implementation. Also the validation team has confirmed that 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 has obtained valid consents for the installation and operation from the state nodal agencies/19 & 20/ and is in compliance with local laws and regulations.

Ownership and other programs-

Right of use

Same as in the registered PD. In addition the validation team reviewed the PPA/13/, commissioning certificates/12/.

Emissions trading programs and other binding limits-

The project is not participating in other emission trading programs. The letter of undertaking/18/ has been furnished by project participant confirming that net GHG emission reductions or removals generated by the project will not be used for compliance with an emissions trading program or to meet binding limits on GHG emissions.

Other forms of environmental credit sought or received and eligible to be sought or received:

The project is registered under the VCS (ID 370) and not listed under REC mechanism/16/ as verified from https://www.recregistryindia.nic.in/index.php/general/publics/registered_regens.

Participation under other GHG programs:

The project initially registered under VCS, later on this project registered under Gold Standard and GS VERs issuance has taken place for monitoring period from 01/04/2013 to 31/01/2017 (end date of first crediting period under VCS).

Project ID: 370

Rejection by other GHG programs:

The project has not been rejected by other GHG programs.

Additional information relevant to the project, including:

- ***Eligibility criteria for grouped projects***

The project activity is not a grouped project, hence not applicable to the project activity.

- ***Leakage management for AFOLU projects***

Not applicable to the project activity.

- ***Commercially sensitive information***

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

Conclusion:

In view of the assessment of updated VCS PD/10/ and supporting documents as listed in Appendix 2 of this report, the validation team is able to confirm that 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. Consequently, Applus+ Certification confirms that the project description of the project contained in the updated VCS PD/10/ 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

The project activity was registered using “Consolidated baseline methodology for grid-connected electricity generation from renewable sources”, ACM0002, version 09.

For the renewal of the crediting period, the PP updated the applied methodology from version 09 to 17.0.

Since the new version of the methodology refers to the “Tool to calculate the emission factor for an electricity system”. Thus, the following methodological tool is being applied:

Tool to calculate the emission factor for an electricity system, version 05 (EB 87, Annex 09)

(<http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v5.0.pdf>)

Assessment team has checked the UNFCCC website it is confirmed that the selection of the applied methodology and methodological tool has been done correctly in line with the applicable requirements for the RCP.

3.2.2 Applicability

Project activity was initially registered applying the methodology ACM0002 version 09 in the registered VCS PD and the methodology is still applicable.

All applicability conditions of the latest version of the methodology (ACM0002 version 17) are met. Thus the methodology is deemed fully applicable for the new crediting period and no request for deviation with regards to the applicability of the methodology is required. All applicability conditions are completely and correctly included in the revised PD.

Sr.No	Criteria	Means of verification	Conclusion
1	<p>This methodology is applicable to grid-connected renewable power generation project activities that:</p> <ul style="list-style-type: none"> • install a Greenfield power plant; • involve a capacity addition to (an) existing plant(s); • involve a retrofit of (an) existing operating plants/units; • involve a rehabilitation of (an) existing plant(s)/unit(s) or • involve a replacement of (an) existing plant(s)/unit(s). 	<p>Project activity is Greenfield wind power project, supplying electricity to national grid. This is verified through the PPA/13/, commissioning certificates/12/.</p>	Criteria fulfilled
2	<p>The project activity may include renewable energy power plant/unit of one of the following types: hydro power plant/unit</p>	<p>The proposed project activity is an installation of a new</p>	Criteria fulfilled

	with or without reservoir, wind power plant/unit, geothermal power plant/unit, solar power plant/unit, wave power plant/unit or tidal power plant/unit;	grid connected wind Power plant and hence this condition is met.	
3	In the case of capacity additions, retrofits, rehabilitations or replacements (except for wind, solar, wave or tidal power capacity addition projects the existing plant/unit started commercial operation prior to the start of a minimum historical reference period of five years, used for the calculation of baseline emissions and defined in the baseline emission section, and no capacity expansion, retrofit, or rehabilitation of the plant/unit has been undertaken between the start of this minimum historical reference period and the implementation of the project activity	Project activity is neither involving capacity addition nor retrofits /12/.	Criteria not relevant to the project activity.
4	In case of hydro power plants: <ul style="list-style-type: none"> • The project activity is implemented in existing single or multiple reservoirs, with no change in the volume of any of the reservoirs; or • The project activity is implemented in existing single or multiple reservoirs, where the volume of the reservoir(s) is increased and the power density calculated using equation (3), is greater than 4 W/m²; or • The project activity results in new single or multiple reservoirs and the power density, calculated using equation (3), is greater than 4 W/m². 	The project activity is a grid connected wind power project and not a hydro power plant. Therefore, these criteria are not applicable for the project activity.	Criteria not relevant to the project activity.
5	<ul style="list-style-type: none"> • The project activity is an integrated hydro power project involving multiple reservoirs, where the power density for any of the reservoirs, calculated using equation (3), is lower than or equal to 4 W/m², all of the following conditions shall apply: <ol style="list-style-type: none"> (i) The power density calculated using the total installed capacity of the integrated project, as per equation (4), is greater than 4 W/m²; (ii) Water flow between reservoirs is not used by any other hydropower unit which is not a part of the 	The project activity is a grid connected wind power project and not a hydro power plant. Therefore, these criteria are not applicable for the project activity.	Criteria not relevant to the project activity.

	<p>project activity;</p> <p>(iii) Installed capacity of the power plant(s) with power density lower than or equal to 4 W/m² shall be:</p> <ul style="list-style-type: none"> ➤ Lower than or equal to 15 MW; and ➤ Less than 10 per cent of the total installed capacity of integrated hydro power project. 		
6	<p>In the case of integrated hydro power projects, project proponent shall: Demonstrate that water flow from upstream power plants/units spill directly to the downstream reservoir and that collectively constitute to the generation capacity of the integrated hydro power project; or</p> <p>Provide an analysis of the water balance covering the water fed to power units, with all possible combinations of reservoirs and without the construction of reservoirs. The purpose of water balance is to demonstrate the requirement of specific combination of reservoirs constructed under CDM project activity for the optimization of power output. This demonstration has to be carried out in the specific scenario of water availability in different seasons to optimize the water flow at the inlet of power units. Therefore this water balance will take into account Seasonal flows from river, tributaries (if any), and rainfall for minimum five years prior to implementation of CDM project activity.</p>	<p>The project activity is a grid connected wind power project and not a hydro power plant. Therefore, these criteria are not applicable for the project activity.</p>	<p>Criteria not relevant to the project activity.</p>
7	<p>The methodology is not applicable to the following:</p> <ul style="list-style-type: none"> a) Project activities that involve switching from fossil fuels to renewable energy sources at the site of the project activity, since in this case the baseline may be the continued use of fossil fuels at the site; b) Biomass fired power plants; 	<p>Project activity is Greenfield wind power project/12/.</p>	<p>Criteria are not relevant to the project activity.</p>
8	<p>In the case of retrofits, replacements, or</p>	<p>Project activity is</p>	<p>Criteria not</p>

	<p>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”.</p>	<p>Greenfield wind power project./12/,/13/.</p>	<p>relevant to the project activity.</p>
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The project activity is in line with the applicability criteria of the applied baseline methodology ACM0002 version 17.

Similarly, the applicability of the used tool to calculate the emission factor for an electricity system was assessed and the assessment team concluded it is appropriate to the project activity, since according to the tool:

“This tool may be applied to estimate the OM, BM and/or CM when calculating baseline emissions for a project activity that substitutes grid electricity that is where a project activity supplies electricity to a grid or a project activity that results in savings of electricity that would have been provided by the grid (e.g. demand-side energy efficiency projects).”

In view of the above consideration, the assessment team is able to conclude that the used methodology and tool is applicable for the project activity.

3.2.3 Project Boundary

The project boundary is given by the applied methodology, ACM0002, version 17.0:

“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.”

Regarding the GHG sources, as per the used methodology:

“Baseline emissions include only CO2 emissions from electricity generation in power plants that are displaced due to the project activity.”

“For most renewable energy project activities, PEy = 0.”

The above is correctly justified and included in the revised PD, specific for the project activity.

The assessment team is able to conclude that the project boundary and selected sources are applied as per the methodology and the applicable VCS criteria.

3.2.4 Baseline Scenario

The project activity involves the installation of a newly built and grid-connected renewable power plant that exports the generated electricity to the Indian grid system in India, hence, according to the applied methodology ACM0002, version 17.0, the baseline scenario is determined properly as:

“The baseline scenario is that the 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 into the grid.”

This is correctly included in the revised PD.

According to VCS Standard, v3.7, paragraph 3.8.5-2) the validity of the original baseline scenario shall be demonstrated when renewing the project crediting period, by means of impacts of new relevant national and/or sectoral policies and actual circumstances.

Paragraph 3.8.5, Clause (2-a) *“The validity of the original baseline scenario shall be assessed. Such assessment shall include an evaluation of the impact of new relevant national and/or sectoral policies and circumstances on the validity of the baseline scenario”.*

VVB assessment:

Relevant mandatory national (ref: <http://www.cercind.gov.in/>) & sectoral policies in Gujarat state (ref: <http://www.geda.gujarat.gov.in/>), tariff orders (ref: <http://www.gercin.org/>), and confirmed that there are no national or local laws or regulations that entail the installation of wind power project in Gujarat Thus it can be concluded that original baseline scenario will remain valid for next crediting period.

Paragraph 3.8.5, Clause (2-b) *“Where it is determined that the original baseline scenario is still valid, the GHG emissions associated with the original baseline scenario shall be reassessed using the latest version of the CDM Tool to assess the validity of the original/ current baseline and to update the baseline at the renewal of a crediting period”.*

VVB assessment:

The project participant has included the assessment of the validity of the original baseline in line with UNFCCC in section 2.4 of the revised VCS PD, including the assessment of original baseline as per the **“Tool to assess the validity of the original/ current baseline and to update the baseline at the renewal of a crediting period, Version 3.0.1”**, which has been concluded to be still valid and applicable for the project.

The tool consists of two steps. The first step provides an approach to evaluate whether the current baseline is still valid for the next crediting period. The second step provides an approach to update the baseline in case that the current baseline is not valid anymore for the next crediting period.

Step 1: Assess the validity of the current baseline for the next crediting period

Step 1.1: Assess compliance of the current baseline with relevant mandatory national and/or sectoral policies

As verified above (Para 3.8.5 2-a), there are no national or local laws or regulations that entail the installation of wind power project in Gujarat. Hence it can be concluded that current baseline is in compliance with relevant mandatory national and sectoral policies.

Step 1.2: Assess the impact of circumstances

As per the registered PD, the project activity is wind power project, supplying the generated electricity to the Indian Grid. Hence grid was considered as appropriate and correct baseline. There is no change observed in this regard and it can be concluded that the conditions used to determine the baseline emissions in the previous crediting period are still valid.

Complete assessment on the current operation of grid-connected power plants and addition of new generation sources is provided in the revised PD; from which it can be concluded that in the actual baseline scenario it is still predominant the installed capacity based on fossil fuel sources.

Step 1.3: Assess whether the continuation of use of current baseline equipment(s) or an investment is the most likely scenario for the crediting period for which renewal is requested.

The lifetime of WTGs installed for the project activity is 20 years /06/; hence an investment is not the most likely scenario for the renewal crediting period under consideration.

Step 1.4: Assessment of the validity of the data and parameter

“Where emission factors, values or emission benchmarks are used and determined only once for the crediting period, they should be updated, except if the emission factors, values or emission benchmarks are based on the historical situation at the site of the project activity prior to the implementation of the project and cannot be updated because the historical situation does not exist anymore as a result of the CDM project activity”.

In the registered PD, the grid emission factor was calculated as per the combined margin approach described in the methodology ACM0002 version 09. The grid emission factor has been calculated as the weighted average of OM & BM; and has been fixed ex-ante for the entire crediting period.

The OM and BM was obtained from a publicly available source i.e. “CEA CO2 Baseline Database” Version 4.0 latest version published by Central Electricity Authority, Ministry of Power (Government of India) at the time of validation.

Considering the guidance provided under this step, calculation of emission factor and baseline emissions are updated for the next crediting period as per step 2.

Step 2: Update the current baseline and the data and parameters

“Update the current baseline emissions for the subsequent crediting period, without reassessing the baseline scenario, based on the latest approved version of the methodology applicable to the project activity. The procedure should be applied in the context of the sectoral policies and circumstances that are applicable at the time of request for renewal of the crediting period”.

As demonstrated above the reassessment of baseline scenario is not required. However the as per the latest version of applied methodology ACM0002 version 17, data and parameters are updated as following:

As referred in the methodology ACM0002 v17 recommends the latest version of the “Tool to calculate the emission factor for an electricity system” (version 05.0) is used for calculation of emission factor and consequently the baseline emissions.

The Project proponent has adopted the combined margin approach for determination of the grid emission factor as per Tool to calculate the emission factor of an electricity system’ Version 5.0. The PP opted for combined margin emission factor ($EF_{grid,CM,y}$) for the project activity and it has been estimated ex-ante as 0.9653 tCO₂/MWh for Indian electricity grid in India. It will remain fixed throughout the crediting period for the project activity as opted by PP. The combined margin emission factor is obtained from the three years generation weighed average of the operating margin emission factor and the latest year build margin emission factors by applying suitable weights (i.e. 75 % to operating margin emission factor ($EF_{grid,OM,y}$) and 25 % to build margin emission factor ($EF_{grid,BM,y}$)) as referred to the EF tool version 5.0.

The simple operating margin value of 0.9843 tCO₂/MWh and build margin value of 0.9083 tCO₂/MWh for Indian electricity grid in India have been referred from CO₂ baseline database published by Central Electricity Authority, Govt. Of India, version 12 /15/. This is the latest available CO₂ baseline database at the time of the VCS PD submission for validation of the project activity. This is found to be appropriate and it is accepted.

It is worthy to note that there is no change in baseline scenario, however updated baseline calculations are provided in section 3.2.6 of this report.

The assessment team is able to conclude that:

- Assumptions and data used in the identification of the baseline scenario are justified appropriately, supported by evidence and can be deemed reasonable.
- Documentary evidence used in determining the baseline scenario is relevant, and correctly quoted and interpreted in the project description.
- Relevant national and/or sectoral policies and circumstances have been considered and are listed in the project description.
- The procedures for identifying the baseline scenario have been correctly followed and the identified scenario reasonably represents what would have occurred in the absence of the project.

Finally it can be concluded that the identified baseline scenario is justified and according to the VCS Standard v. 3.7 and the “Tool for the assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period v3.0.1.

3.2.5 **Additionality**

In accordance with the paragraph 3.8.5 clause 1 of VCS standard v 3.7, “A full reassessment of additionality is not required when renewing the project crediting period. However, regulatory surplus shall be demonstrated in accordance with Section 4.6.3) and the project description shall be updated accordingly”.

As per the above guidelines, the assessment team has reviewed the sectoral and national policies implemented for the wind power projects in host country India.

Latest regulatory requirements for the project activity were checked through the official website of the Ministry of New and Renewable Energy, a nodal ministry of Government of India for the matters relating to new and renewable energy/19/ and state policies/20/.

In view of the above assessment, it can be concluded that the proposed project is not mandated by any law, statute or other regulatory framework, or for UNFCCC non-Annex I countries, any systematically enforced law, statute or other regulatory framework and hence continued to be voluntary.

3.2.6 **Quantification of GHG Emission Reductions and Removals**

The approach followed for calculation of emission reductions is same as described in the registered VCS PD. In accordance with paragraph 3.8.5(2-d), the GHG emission reductions are calculated applying the updated version of methodology ACM0002 version 17.

As per the paragraph 44 of the methodology:

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

$$BE_y = EG_{PJ,y} \times EF_{grid,CM,y}$$

Where:

BE_y = Baseline emissions in year y (t CO₂)

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

$EG_{PJ,y} = EG_{facility,y}$ (for Greenfield projects paragraph 47 ACM0002)

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

As reported in section 3.2.4 of this report, combined margin emission factor ($EF_{grid,CM,y}$) is calculated using the “Tool to calculate the emission factor for an electricity system” version 05 and value obtained as 0.9653 tCO₂/MWh.

Value of $EG_{facility,y}$ is estimated to be 30,625 MWh per year, which is same as in the registered VCS PD. Hence baseline emission reductions as follows:

$$BE_y = 30,625 \text{ MWh} \times 0.9653 \text{ tCO}_2/\text{MWh}$$

$$BE_y = 29,562 \text{ tCO}_2$$

Estimation of Project Emissions (PE_y):

As per the paragraph 36 of applied methodology ACM0002 version 17, for the most renewable energy project activities, $PE_y = 0$. However, some project activities may involve project emissions that can be significant. These emissions shall be accounted for as project emissions by using the following equation:

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

Where:

PE_y = Project emissions in year y (t CO₂e/yr)

$PE_{EF,y}$ = Project emissions from fossil fuel consumption in year y (t CO₂/yr)

$PE_{GP,y}$ = Project emissions from the operation of dry, flash steam or binary geothermal power plants in year y (t CO₂e/yr)

$PE_{HP,y}$ = Project emissions from water reservoirs of hydro power plants in year y (t CO₂e/yr)

Since the project activity involves the generation of electricity using wind power only, hence the mentioned equation is not applicable for the project activity, hence $PE_y = 0$.

Estimation of Leakage Emissions (LE_y):

As per the applied methodology ACM0002 version 17, no leakage emissions are considered, thus leakage emissions are zero ($LE_y = 0$).

Estimation of GHG emission reductions:

Emission reductions are calculated as follows:

$$ER_y = BE_y - LE_y - PE_y,$$

where

ER_y = Emission reductions in year y (tCO₂)

BE_y = Baseline Emissions in year y (tCO₂)

LE_y = Project emissions in year y (tCO₂)

PE_y = Leakage emissions in year y (tCO₂)

ER_y = 29,562–0–0

=29,562 tCO₂ per year

Hence total emission reductions estimated for the entire crediting period would be as 295,620 tCO₂.

Conclusion:

The assessment team is able to conclude that the calculation of emission reductions is done as per the applied methodology. Changes due to the upgraded version of the methodology and the re-assessment of the baseline have been considered suitably. The calculation of the emission reductions provided in the in the ER spread sheet/09/ and the corresponding calculation in the relevant section of the updated PD/10/ have been checked and found to be satisfactory. The estimation of emission reductions for the second crediting period is deemed plausible and conservative.

All relevant assumptions and data are listed in the project description, including their references and sources, being CEA database version 12/15/, the main source of data for the emission factor calculation.

All estimates of the baseline emissions can be replicated using the data and parameter values provided in the project description.

The emission reductions were calculated in accordance with the methodology and tool.

3.2.7 Methodology Deviations

No methodology deviations identified.

3.2.8 Monitoring Plan

Data and Parameters available at validation stage:

Emission factor for Indian grid is the only parameter that is recalculated and will be fixed during the second crediting period. The assessment team has checked the approach used to calculate of the EF and confirmed that the same is in accordance with the "Tool to calculate the emission factor for an electricity system" version 5.0 and the "Tool to assess the validity of the original/current baseline and to update the baseline at the renewal of a crediting period", version 03.0.1, hence accepted.

Value of emission factor verified as 0.9653 tCO_{2e}/MWh for the second crediting period.

Data and Parameters to be monitored:

Same as mentioned in the registered PD/06/ except the project deviations approved by the VCS board (refer section 3.1 of this report for further details)

Remaining aspects of monitoring plan like monitoring procedure, calibration procedure, data recording, monitoring role and responsibility and QA/QC procedure will remain same as mentioned in the registered PD.

The updated PD has been reviewed to check that the procedure for data uncertainty, emergency preparedness, roles and responsibility, operational and management structure are mention in the PD. The monitoring plan completely describes all measures to be implemented for monitoring all parameters required. Based on the above discussion, the assessment team confirm that:

- The monitoring plan included in the PD is based on the approved methodology ACM0002 version 17.0 which has been applied to the VCS project activity
- The monitoring arrangements described in the monitoring plan are feasible within the project design
- The PP has the ability to implement the monitoring plan as per the PD.

3.3 Non-Permanence Risk Analysis

Not applicable, non-permanence risks were not identified.

4 SAFEGUARDS**4.1 No Net Harm**

There is no negative impact to any socio economic conditions of the region due to the project activity. As per the notifications issued by Ministry of Environment and Forest dated 01/12/2009/17/ (ref: <http://moef.nic.in/downloads/rules-and-regulations/3067.pdf>), Environmental Impact Assessment for the wind projects is not required to be done. This project activity will not involve any negative environmental or socio-economic impacts, as the WTGs are installed for generation of power using wind which is a clean source of energy. Hence no mitigation measures are required.

4.2 Environmental Impact

The project proponent has mentioned in the PD/06/ that the present project activity does not require EIA to be carried out because as per the schedule 1 of Ministry of Environment and Forest notification dated 14/09/2006/17/ <http://envfor.nic.in/legis/eia/so1533.pdf> and further notification number 3067 from MoEF dated 01/12/2009/17/ <http://moef.nic.in/downloads/rules-and-regulations/3067.pdf> , activities are required to undertake environmental impact assessment studies. The proposed project activity does not fall under the listed categories and hence not required an EIA to be done.

The environmental impacts need not to be further assessed during the renewal of the crediting period.

4.3 Local Stakeholder Consultation

Not applicable since this is validation for renewal of crediting period. It is not obligatory to have a new stakeholders' consultation meeting while renewing the crediting period.

4.4 Public Comments

Not applicable

5 VALIDATION CONCLUSION

Wind World (India) Limited has contracted the LGAI Technological Center, S.A. (also referred to as Applus+ Certification) for validation of the renewal of the crediting period of the Project - "Grid connected bundled wind power project in Gujarat managed by Enercon (India) Limited" (VCS ID-370)", with regard to the relevant requirements of VCS programme guidelines and standard (VCS standard version 3.7, & VCS program guide version 3.7).and the information provided by the project proponent related to the project design, operation, monitoring and reporting.

Applus+ Certification has reviewed the project description documents and subsequently carried out site visit interviews to confirm the fulfilment of stated criteria.

The purpose of this project activity is to generate electricity using renewable sources (wind) and export it to Gujarat state electricity grid which is part of the Indian electricity grid, thereby displacing the grid generated electricity.

A risk-based approach has been followed to perform this validation. In the course of the validation 01 Clarification Requests (CRs) 03 Corrective Action Requests (CARs) were raised and successfully closed. .

The project activity has applied the baseline and monitoring methodology, ACM0002: Grid-connected electricity generation from renewable sources, Version 17.0, which is an approved methodology under the CDM programme and is acceptable under VCS Version 3.7. The baseline has been determined in accordance with the stated approved baseline methodology.

As summary the validation team able to conclude that:

- The project is in line with all relevant host country criteria (India) and all relevant VCS version 3.7 program guidelines requirements.
- A reasonable level of assurance has been applied.
- The project additionality is not required to be reassessed, however it is sufficiently justified in the VCS-PD.
- The monitoring plan is transparent and adequate and in line with applied monitoring methodology of ACM0002, version 17.

- The calculation of the project emission reductions is carried out in a transparent and conservative manner, so that the calculated emission reductions of 29,562 tCO₂e/year are most likely to be achieved within the 10 year renewable 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 validation as outlined under VCS version 3.7, without any qualifications or limitations.

Signed on behalf of the Verification Body by Authorized Signatory

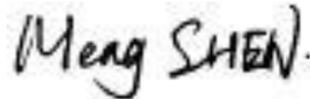
LGAI Technological Center, S.A. (Applus+ Certification)

Date:

Date:

Signature:

Signature:



Team Leader

Technical Reviewer

Name: Vivek Kumar Ahirwar

Name: Simon (Meng) Shen

APPENDIX 1: Abbreviations

BEF	Baseline Emission Factor
BM	Build Margin
CAR	Corrective Action Request
CEA	Central Electricity Authority
CERC	Central Electricity Regulatory Commission
CL	Clarification Request
CMP	Conference of Parties Serving as Meeting of Parties
CO2	Carbon dioxide
DISCOM	Distribution Company
EB	Executive Board
EPC	Engineering, Procurement and Construction
FAR	Forward Action Request
GHG	Green House Gas
GEDA	Gujarat Energy Development Agency
GETCO	Gujarat Energy Transmission Corporation Limited
GOI	Government of India
GUVNL	Gujarat Urja Vikas Nigam Limited
ISO	International Standards Organization
JMR	Joint Meter Reading
kW	Kilowatt
kWh	Kilowatt hour
MFR	Multi-Function Relay
MR	Monitoring Report
MW	Megawatt
MWh	Megawatt-hour
O&M	Operation and Maintenance
PD	Project Description
PLF	Plant Load Factor
PP	Project Proponent
PPA	Power Purchase Agreement
CMS	Central Monitoring System
QA/QC	Quality Assurance and Quality Control
RCP	Renewal Crediting Period
UNFCCC	United Nations Framework Convention on Climate Change
WEC	Wind Energy Converter
WTG	Wind Turbine Generator
WEG	Wind Energy Generator
VCS	Voluntary Carbon Standard
VCSA	Voluntary Carbon Standard Association
VCS PD	VCS Project Description
VCUs	Voluntary Carbon Units
WWIL	Wind World India Limited

APPENDIX 2: Document Reference

No.	Author	Title	References to the document	Provider
1	VCS Board	VCS Standard	Version 3.7, dated 21/06/2017	Others
2	UNFCCC	Program Guidelines; VCSA Rules; and VCS Guidance Document	Dated 21/06/2017	Others
3	UNFCCC	Standard: CDM VVS for PAs	Version 1.0	Others
4	UNFCCC	Baseline and monitoring methodology ACM0002	Version 17	Others
5	UNFCCC	Tool to calculate the emission factor for an electricity system	Version 5.0(EB 87,annex 09)	Others
6	PP	Registered Project Description	Version 04, dated 14/11/2009	Others
7	TUV Nord	VCS validation report	Report No: 53609508-08/665, dated 16/11/2009	Others
8	ESPL	Latest Verification report (monitoring period , 01/05/2016 to 31/01/2017)	Version 02 , dated 08/12/2017	Others
9	PP	Revised Emission Reductions Calculation Spread sheet	-	PP
10	PP	Revised PD(final)	version 1.1 ,dated 10/03/2018	PP
11	VCS Board & GS registry	VCS web page http://www.vcsprojectdatabase.org/#/project_details/370 GS project webpage https://mer.markit.com/br-reg/public/project.jsp?project_id=103000000004011	-	Others
12	State Utility (GEDA)	Commissioning Certificates for all the WTGs involved in the project activity	-	PP
13	State Utility (GUVNL)	Power Purchase Agreement between Entities involved (other investors) and GUVNL.	-	PP
14	PP	Local stakeholder documents – Minutes of meeting, attendance sheet, invitation letters,	Dated 25/10/2007	Others
15	CEA	CO ₂ baseline database published (in May 2017) by Central Electricity Authority, Govt. Of India, available at http://www.cea.nic.in/tpeandce.html	Version 12	Others
16	CERC	Detailed procedure on REC mechanism by Central Electricity Regulatory Commission (http://www.nerlhc.org/Docs/Order_	Dated 20/03/2018	Others

		for Detailed Procedure 01-06-2010.pdf) REC registry(https://www.recregistryindia.nic.in/index.php/general/publics/accruited_regens)		
17	MoEF	SCHEDULE (Page no 10) of the notification S.O. 1533 (E) published by the Ministry of Environment and Forests (MoEF), Government of India Schedule of the notification S.O. 3067 published by the Ministry of Environment and Forests (MoEF), Government of India http://www.moef.nic.in/legis/env_clr.htm	Dated 14/09/2006 Dated 01/12/2009	Others
18	PP	Declaration by project proponent stating no intention of creating and trading of another form of environmental credits out of VERs would be created from this project	-	Others
19	Government of India	Official website of the Ministry of New and Renewable Energy, a nodal ministry of Government of India for the matters relating to new and renewable energy (ref: http://mnre.gov.in/schemes/grid-connected/solar-thermal-2/)	Last assessed on Dated 20/03/2018	Others
20	Government of Gujarat	i. Sectoral policies in Gujarat state (http://www.geda.gujarat.gov.in/) ii. (http://www.gercin.org/)	Last assessed on Dated 20/03/2018	Others
21	Ministry of Corporate Affairs, GOI	Name change consent issued by Government of India	Dated 01/01/2013	PP
22	GUVNL	Letter issued by confirming the calibration frequency as once in 3 years,	Dated 10/02/2010 (Ref: GUVNL/Com/CFM(IPP)/GETCO:290)	PP

APPENDIX 3: Resolution of Findings
Table 1. Remaining FAR from validation and/or previous verification

FAR ID	NA	Section no.	NA	Date :DD/MM/YYYY
Description of FAR				
No FAR remaining from validation or previous verification.				
Project participant response				Date :DD/MM/YYYY
NA				
Documentation provided by project participant				
NA				
DOE assessment				Date : DD/MM/YYYY

Table 2. CR from this validation

CR ID	01	Section no.	3.1	Date : 22/02/2018
Description of CR				
The project activity was initially registered under VCS, later on registered in GS (on 29/04/2014) and carbon credits issued till 31/01/2017 (end date of first CP under VCS).In view of this information please clarify if the project is completely deregistered from GS program and also submit the relevant evidences.				
Project participant response				Date : 10/03/2018
Since the crediting period of project activity under GS ended on 31/01/2017 and hence no further issuance can take place in future. PP requested VCS board for crediting period renewal with a start date of 1 Feb 2017 for 10 years. The VCS board has accepted PP's request and sent approval email on 14-12-2017. PP has submitted copy of email to DOE.				
Documentation provided by project participant				
Email dated 14-12-2017 from VCS Board				
DOE assessment				Date : 20/03/2018
Crediting period of the project activity under GS is ended on 31/01/2017 and the project activity can be taken up under revalidation (renewal crediting period).The email communication with VCS board in this regard is verified and found to be satisfactory. CR #1 is closed.				

Table 3. CAR from this validation

CAR ID	01	Section no.	1.4	Date :22/02/2018
Description of CAR				
<ol style="list-style-type: none"> Please clarify why the estimated annual average & total GHG emission reductions and removals are not reported under section 1.1 of the revised PD, in line with the template guidance. As per the registered PD, Enercon (India) Limited is the project proponent, however revised PD mentions the same as WWIL. 				
Project participant response				Date :10/03/2018
<ol style="list-style-type: none"> PP has revised VCS PD and provided annual estimate average & total GHG emission reductions and removals under section 1.1 of the revised PD. With effect from 01/01/2013, name of Enercon (India) Limited has been changed to 'Wind World (India) Limited' Therefore, PP has revised the name of project proponent in revised PD. 				
Documentation provided by project participant				
<i>Project Description Version 1.1</i>				
DOE assessment				Date : 20/03/2018
Estimated annual average & total GHG emission reductions and removals are reported under section 1.1 of the revised PD. Name of the project proponent is changed as "Wind World (India) Limited" from 01/01/2013, the same is verified through the fresh incorporation certificate issued by Government of India, hence accepted. CAR #1 is closed.				

CAR ID	02	Section no.	3.1	Date: 22/02/2018
Description of CAR				
Project is also registered under GS ,however this information is not provided in section 1.12.4 of the PD.				
Project participant response				Date: 10/03/2018
Since the crediting period of project activity under GS ended on 31/01/2017 and hence no further issuance can take place in future. Therefore, PP has applied the project for renewable of crediting period. PP has revised section 1.12.4 of VCS PD.				
Documentation provided by project participant				
<i>Project Description Version 1.1</i>				
DOE assessment				Date: 20/03/2018
The project proponent has added the information's about registration of the project activity under GS, found to be correct, hence accepted. CAR #2 is closed.				

CAR ID	03	Section no.	3.2	Date: 22/02/2018
Description of CAR				
It is not clear whether the parameter "Net electricity supplied to the grid by the Project" is calculated using apportioning procedure or as per the formula as mentioned in section 4.2 of the PD. Details of the monitoring equipment's(energy meters) installed at site are not provided in the PD.				
Project participant response				Date: 10/03/2018
The parameter "Net electricity supplied to the grid by the Project" is calculated using apportioning procedure as per the formula as mentioned in section 4.3 of the VCS PD. Details of the monitoring equipment's(energy meters) installed at site are now provided in the revised VCS PD.				
Documentation provided by project participant				
<i>Project Description Version 1.1</i>				
DOE assessment				Date: 20/03/2018
The project proponent has updated the description of the monitoring parameter "Net electricity supplied to the grid by the Project" in the revised PD, found to be satisfactory. Details of energy meters installed for project activity are provided in the revised PD, found consistent with the same verified during the site visit. CAR #3 is closed				

Table 4. FAR from this validation

FAR ID	-	Section No.	-	Date: DD/MM/YYYY
Description of FAR				
NA				
Project participant response				Date: N/A
N/A				
Documentation provided by project participant				
N/A				
DOE assessment				Date: N/A
N/A				

APPENDIX 4: Competency Statements

According to the sectoral scope / technical area and experience in the sectoral or national business environment, Applus+ Certification has composed a project assessment team in accordance with the appointment rules in the internal Quality Management System of Applus+ Certification.

The composition of audit team shall be approved by the Applus+ Certification ensuring that the required skills are covered by the team.

The four qualification levels for team members that are assigned by formal appointment rules are as presented below:

- Lead Auditor (LA).
- Auditor (A) / Auditor in Training (AiT).
- Technical Expert (TE).
- Technical Reviewer (TR).

The sectoral scope / technical area knowledge linked to the applied methodology/ies shall be covered by the assessment team.

Name	Qualification	Coverage of scope	Coverage of technical Area	Financial aspect	Host country Experience	Attendance to the On-Site Assessment
Vivek Kumar Ahirwar	Lead Auditor (LA)	Yes (1)	Yes (1.2)	N/A	Yes	Yes
Vivek Kumar Ahirwar	Technical Expert (TE)	Yes (1)	Yes (1.2)	N/A	Yes	Yes
Ravi Kant Soni	Auditor in Training (AiT)	Yes (1)	Yes (1.2)	N/A	Yes	Yes
Simon Shen	Technical Reviewer (TR)	Yes (1)	Yes (1.2)	N/A	N/A	N/A

The curricula vitae of the DOE's team members are provided below:

Vivek Kumar Ahirwar is a BEE-Certified Energy Auditor by Govt of India with over eight years of relevant experience in energy efficiency, energy audit, thermal and electrical energy generation technology from renewable source and energy conservation in energy intensive industries, designated consumers and commercial buildings, implementation of energy conservation building codes, research, process and green building projects. He is a certified lead auditor for ISO 14001 EMS and 14064. He has experience under various categories of projects stating from renewable to waste to supercritical projects and WCD. He has successfully audited more than 100 GHG (CDM/VCS/GS) projects in different states across the India. He has done Mater in Technology (Energy Management) from a premier institute, School of Energy

& Environmental Studies, DAVV, Indore (M.P.), India and Bachelor of Engineering (Mechanical Engineering) from Govt. Engineering college, Rewa, RGPV, India.

Ravi Kant Soni is a certified lead auditor for Lead Auditor ISO 14001:2004&Lead Auditor ISO 14064:2006 GHG Inventory and verification. He has more than 10 years of work experience across Climate Change, Environmental Management & Monitoring, Health & Safety Management, and Statutory Compliance. He was involved in more than 100 CDM validation and verifications activities and Gold Standard, VER projects as a team leader/technical reviewer / validator / verifier covering the sectoral scope 1 technical area 1.2. He has done Mater in Technology (Energy Management) from a premier institute, School of Energy & Environmental Studies, DAVV, Indore (M.P.), India and Bachelor of Engineering (Mechanical Engineering) from M.I.T.S Gwalior Jiwaji University Gwalior, India

Simon Shen (Master Degree in Thermal Energy Engineering, Bachelor Degree in Environmental Engineering) is a Lead Auditor appointed by Applus+ Certification for the GHG project assessment. He is based in Shanghai. He has several years of work experience in environmental protection field. Before he joined Applus+ Certification, he had been worked for TÜV SÜD as a GHG Validator/Verifier and ISO 9001/14001 Lead Auditor for 3.5 years.