



# Verified Carbon Standard

## 29.70 MW WIND POWER PROJECT IN KARNATAKA, INDIA



Document Prepared By

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

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### Summary:

**Verification purpose:** LGAI Technological Center S.A. (Applus+ Certification) (Hereafter referred as Applus+ Certification) has been appointed by “Acciona Wind Energy Pvt. Ltd. (AWEPL)” to perform the 2nd periodic verification of the “29.70 MW WIND POWER PROJECT IN KARNATAKA, INDIA” (VCS ID 0051). The main purpose of this verification activity is to have an independent third party for the assessment of the project design, monitoring report to ensure a thorough assessment of the proposed project activity against the applicable CDM and VCS requirements.

The project activity by Acciona Wind Energy Pvt. Ltd. (AWEPL) through various WTGs involves the generation of electricity through wind power plant with a combined capacity of 29.7 MW in the state of Karnataka, India. This is a greenfield project activity and supply the generated electricity to the National power grid i.e., Indian Grid. Thus, project activity has reduced the dependence on fossil fuel-powered power plants by substituting carbon-intensive energy with the clean renewable wind energy. As per the baseline scenario, “Electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants that are fossil fuel fired power plants”. The baseline scenario is the same as the scenario existing prior to the implementation of the project activity.

Start date of the project activity is the 06-June-2008 which is the date of commissioning of first phase of WTGs of the 29.7 MW wind power project. The project activity is a voluntary action and each WTGs is the project proponent of their project activity. Acciona Wind Energy Pvt. Ltd. (AWEPL) is parent company of these WTGs. The monitoring period for this VCS verification is 01-January-2018 to 31-May-2018 (including both days) and the project activity achieved 20,539 tCO<sub>2e</sub> emission reductions during this monitoring period thereon displaced 22,086 MWh amount of electricity from the generation-mix of power plants connected to the Indian Grid, which is mainly dominated by thermal/fossil fuel-based power plant.

The scope of the verification is the independent and objective review of the Monitoring Report (MR). The MR is reviewed against the relevant criteria and decisions by the CDM Executive Board and VCS executive board, including the approved baseline and monitoring methodology. The verification was based on the guidance given in the CDM validation and verification standard for project activities, version 03.0, review against registered PD and Final Validation report, VCS program guideline version 4.2 and VCS Standard version 4.3.

A risk-based approach has been followed to perform this verification activity. In the course of verification, 02 Corrective Action request (CAR) and 00 Clarification Requests (CLs) were raised and

successfully closed. No FAR was raised during this verification. The review of the Monitoring report and additional documents related to baseline and monitoring methodology; the subsequent background investigation, follow-up interviews and PP have provided LGAI Technological Center S.A. (Applus+ Certification) with sufficient evidence to verify the fulfilment of the stated criteria of VCS.

The assessment team has employed a risk-based approach to assess the completeness and accuracy of the claims and conservativeness of the assumptions in the MR. The main focus of the assessment team is to identify the significant risks for the project implementation and the generation of VERs. The verification is not meant to provide any consulting towards the project participants. However, stated requests for clarifications and/or corrective actions may have provided input for improvement of the monitoring report combined.

The only purpose of the verification is its usage during the issuance process as part of the VCS project cycle. Therefore, LGAI Technological Center S.A. (Applus+ Certification) can't be held liable by any party for decisions made or not made based on the verification opinion, which will go beyond that purpose.

The verification has been planned and organized to achieve a Reasonable Level of assurance as per the requirement of VCS. No sampling procedure applied for document verifications. The entire documents checked/verification conducted to arrive at positive verification conclusions.

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# 1 INTRODUCTION

## 1.1 Objective

LGAI Technological Center S.A. (Applus+ Certification) (Hereafter referred as Applus+ Certification) has been appointed by “Acciona Wind Energy Pvt. Ltd. (AWEPL)” to perform the 2nd periodic verification of the “29.70 MW WIND POWER PROJECT IN KARNATAKA, INDIA” under guideline version 4.2 and VCS standard version 4.3. The objective of this verification activity is to have an independent third party for the assessment of the project design, Monitoring Report and Final Verification report and to ensure a thorough assessment of the proposed project activity against the applicable CDM and VCS requirements. In particular;

- the project's baseline is assessed against “ACM0002 version 06”
- the project’s monitoring plan is assessed against “ACM0002 version 06”
- the projects compliance with the requirements of Article 12 of the Kyoto Protocol, the CDM Modalities and Procedures as agreed in the Marrakech Accords under decision 3/CMP.1, the annexes to this decision, subsequent decisions and guidance made by COP/MOP & CDM Executive Board and other relevant rules, including the Host Country legislation and sustainability criteria along with VCS guideline version 4.2 and standard version 4.3
- CDM validation and verification standard for project activities, Version 03.0
- 
- VCS program guideline v4.2
- VCS standard v4.3

Verification is a requirement for all VCS projects and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of verified emission reductions (VERs).

## 1.2 Scope and Criteria

The scope is defined as an independent and objective review of the Monitoring report (MR) prepared as per the registered PD and registered approved methodology ACM0002 version 06. The MR is reviewed against the criteria stated in Article 12 of the Kyoto Protocol, the CDM modalities and procedures as agreed in the Marrakech Accords and the relevant decisions by the CDM Executive Board and VCS standard version 4.3 and guideline version 4.2, including the approved baseline and monitoring methodology ACM0002 version 06. The verification was based on the requirements in the CDM validation and verification standard for project activities, Version 03.0, and VCS program guideline version 4.2 and VCS Standard version 4.3

The verification is not meant to provide any consulting towards the project participants. However, stated requests for clarifications and/or corrective actions may have provided input for improvement of the Monitoring report. In line with Guidelines for Application of materiality in verifications, the verification team has conducted a complete verification of all the

information presented in the monitoring report and data monitored as presented in the emission reduction calculation spread sheet. It follows the paper trail back to the raw data such as meter reading records and invoices. There are no material errors, overestimation of ER, omission or misstatement. Verification team conducted remote visit to verify equipment's & technical details and metering/monitoring arrangement. The verification team has reviewed all the documents like commissioning certificates, technical specification, O&M practices, JMR, invoices, training records, grievance registers etc.

### 1.3 Level of Assurance

Applus+ Certification has planned and performed the verification by obtaining evidence and other information and explanations that assessment team considers necessary to give reasonable assurance that reported estimated GHG emission reductions are fairly stated. All documentary evidences were checked by the assessment team.

In our opinion, the estimated GHG emissions reductions were calculated correctly on the basis of the approved baseline and monitoring methodology ACM0002 version 06" and the VCS standard.

### 1.4 Summary Description of the Project

The project activity by Acciona Wind Energy Pvt. Ltd. (AWEPL) through various WTGs involves the generation of electricity through wind WTGs with a combined capacity of 29.7 MW in the state of Karnataka India. This is a greenfield project activity and supply the generated electricity to the National power grid i.e. Indian Grid. The monitoring period for this VCS verification is 01-January-2018 to 31-May-2018 (including both days) and the project activity achieved 20,539 tCO<sub>2</sub>e emission reductions during this monitoring period thereon displaced 22,086 MWh amount of electricity from the generation-mix of power plants connected to the Indian Grid, which is mainly dominated by thermal/fossil fuel-based power plant.

The project is a voluntary action being undertaken by each project owner of the project activity. Acciona Wind Energy Pvt. Ltd. (AWEPL) is acting as the other entity for this project activity.

Verification team confirmed the capacity by verifying commissioning certificates and also verified during remote audit interviews with PP. The details of interconnection with grid of wind plants and commissioning details are given in Section 4.3 of this report.

The technical specifications of wind plants confirmed with technical specifications from technology supplier and are provided in Sec. 4.3 of this report.

These are the WTGs of Acciona Wind Energy Pvt. Ltd. (AWEPL) and the projects are promoted by each WTGs. The electricity meters are of a precision of 0.2s. The details of meters such as make, Sr, No., calibration frequency etc. are provided in Appendix 5 of this report.

Assessment team checked the Commissioning of project activity during desk review visit and confirmed with the commissioning Certificates and found correct. The project is implemented as per the description in the registered PD. The project undergone scheduled maintenance for the monitoring period and No event observed during the current monitoring period which can alter or deviate from the methodology requirement.

## 2 VERIFICATIONPROCESS

### 2.1 Method and Criteria

**Verification Process:** The project assessment is based on the “CDM validation and verification standard for project activities, Version 03.0 and “VCS standard version 4.3, program guideline version 4.2” and is conducted using standard auditing techniques to assess the correctness of the information provided by the project participants. Before the assessment begins, members of the team covering the technical scope(s), sectoral scope(s), and relevant host country experience for evaluating the VCS project activity are appointed.

Once the project is received by the assessment team, the members of the assessment team carried out: -

1. A desk review of the Monitoring report against the registered PD and final validation report;
2. Follow-up interviews with project participant;
3. The resolution of outstanding issues and the issuance of the final verification report and opinion.

The prepared verification report and other supporting documents then undergo an internal quality control at the HQ (Accredited office) before being submitted to the VCS executive board.

In order to ensure transparency, assumptions must be clear and stated explicitly and background material must also be referenced. Applus+ Certification has developed a specific checklist customized for the project. The checklist demonstrates, in a transparent manner, the

project criteria (requirements), discussion on each criterion by the assessment team, and the results from validating the identified criteria.

### **Appointment of the assessment team**

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	Role	SS Coverage	TA Coverage	Financial aspect	Host country experience
Pankaj Kumar	LA/TE	YES	YES	NA	YES
Mr. Simon Shen	TR	YES	YES	NA	NA

The detail regarding the assessment team is provided below in this report as Appendix 3

### **Document review**

The Monitoring report version 01 submitted by the PP was reviewed against the approved methodology, registered PD, final validation report and other relevant criteria to verify the correctness, credibility, and interpretation of the presented information. Furthermore, a cross-check between information provided and information from other sources has been done. A complete list of all documents and evidence material reviewed is included in this report below in Appendix 1.

### **Follow-up interviews**

A remote audit was conducted by LGAI Technological Center S.A. (Applus+ Certification) who performed interviews, telephone conferences with project stakeholders to confirm selected information and to resolve issues identified in the document review. The detail is provided in this report in the below sections.

### **Resolution of Clarification and Corrective Action Request**

The objective of this phase of the Verification was to resolve the requests for corrective actions and clarification and any other outstanding issues which need to be clarified for Applus+ Certification positive conclusion on the Monitoring report. The Corrective Action Requests and Clarification Requests raised by Applus+ Certification were resolved during communications between the Client and Applus+ Certification to guarantee the transparency of the verification process, the concerns raised and responses given are summarized below in the Appendix 2.

The revised final MR V02 dated 25-November-2021 submitted by PP serves as the basis for the final assessment presented. Additional changes to the project during the verification process are not considered to be significant with respect to the main CDM/VCS objectives. The two CDM/VCS main objectives are the reduction of anthropogenic GHG emissions and the contribution of sustainable development to the host country.

### **Internal quality control**

As final step of a verification of the final documentation including the verification report and the checklist have to undergo an internal quality control by the technical review committee, i.e. each report has to be finally approved either by the head of the technical review committee or the deputy. In case one of these two persons is part of the assessment team approval can only be given by the other one to avoid any conflict of Interest.

After confirmation of the PP the positive verification opinion and relevant documents are submitted to the VCS board through the VCS web-platform.

## 2.2 Document Review

The verification is performed primarily as a document review of the approved VCS PD and registered CDM PDD, previous MR and Verification report and associated documents as stated in detail in appendix 1 of this document. The cross checks between information provided in the Monitoring report, CDM PDD, 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.

## 2.3 Interviews

A remote audit was conducted for the project activity on 11-November-2021. Remote audit was conducted due to ongoing COVID-19 pandemic situation in the entire state of India. Taking into account the rules of relevant national and local authorities (local to the VVB offices as well as to locality of the site visits), World Health Organization (WHO) recommendations, policies of the VVB and other relevant travel restrictions and guidance (for example, a requirement to self-isolate upon return). Moreover, The VCS Program does not explicitly mandate site visits as part of the validation and verification process, only that VVBs must achieve a reasonable level of assurance on all validations and verifications (per Section 4.1.2 of the VCS Standard, v4.3).

The VVB has taken alternative measures to reach reasonable level of assurance and conducted remote audit through Skype/Telephone with site personal & consultant (refer section 2.3) with the PP representative. This is also in line with the COVID-19 travel guidance for projects of VERRA.

Technical details & metering/monitoring arrangement verified through photographs/name plates and calibration certificates shared by PP. All the documents were cross checked to ensure conservative estimation of emission reduction.

During the remote audit, the PP representatives were questioned about the implementation of the project activity. Several topics like the verification of commissioning date of meters, the generation, recording, and monitoring of the data and the error accountability were discussed. To cross check the information provided by PP, various documents like technical specifications, commissioning certificates, PPA, JMR sheets, invoice, calibration certificates, etc. were also verified. The names of the persons interviewed during remote audit through skype & telephonic interview is given below;

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Krishanlal Sapra	Rajnish	PP Acciona Wind Energy Pvt. Ltd ( AWEPL)	-11- November -2021	Project Implementation, JMR & invoicing procedure, calibration, grievance mechanism, Management practices, data storage, QA/QC	Pankaj Kumar
2.	Krishna	Vamsi	Kosher Climate		GHG calculations, MR and ER preparation, Data collection, data storage, QA/QC	
3.	Nandyappa	B.	Local Stakeholder		Grievance redressal, Ongoing communication with stakeholders	

## 2.4 Site Inspections

Remote Audit: 11-November-2021				
No.	Activity performed on-site	Site location	Date	Team member
1.	Assessment team checked the implementation of the project, Baseline emission, Emission reduction calculation, technical description of the project and Monitoring. Assessment team also checked that whether the monitoring plan as described in the VCS PD is actually practised onsite. Also, assessment team checked any change in host country criteria which may affect the baseline of the project activity.	Karnataka, India	11-November-2021	Pankaj Kumar

## 2.5 Resolution of Findings

The objective of this phase of the Verification was to resolve the requests for corrective actions and clarification and any other outstanding issues from validation which need to be clarified for Applus+ Certification's positive conclusion on the Monitoring report. The Corrective Action Requests and Clarification Requests raised by Applus+ Certification were resolved during communications between the Client and Applus+ Certification to guarantee the transparency of the verification process, the concerns raised and responses given are summarized below in the Appendix 2.

The final MR submitted by PP serves as the basis for the final assessment presented. Additional changes to the project during the verification process are not considered to be significant with respect to the main CDM/VCS objectives. The two CDM/VCS main objectives are the reduction of anthropogenic GHG emissions and the contribution of sustainable development to the host country.

Areas of validation and verification findings	No. of CL	No. of CAR	No. of FAR
Project design document and Monitoring report	00	00	00
Description of project activity	00	00	00
Application of selected baseline and monitoring methodology and selected standardized baseline			
Applicability of methodology and standardized baseline	00	00	00
Deviation from methodology	00	00	00
Clarification on applicability of methodology, tool and/or standardized baseline	00	00	00
Project boundary	00	00	00

Areas of validation and verification findings	No. of CL	No. of CAR	No. of FAR
Establishment and description of baseline scenario	00	00	00
Demonstration of additionality	00	00	00
Emission reductions	00	00	00
Calibration details	00	00	00
Monitoring plan	00	00	00
No Net harm assessment	00	00	00
Local stakeholder consultation (Ongoing)	00	01	00
Others (Grievance report)	00	01	00
<b>Total</b>	<b>00</b>	<b>02</b>	<b>00</b>

The list of findings and the resolution is presented in Appendix 2 of this report.

### 2.5.1 Forward Action Requests

This is 2<sup>nd</sup> periodic verification of the project activity and no FAR was raised from validation or previous verification.

## 2.6 Eligibility for Validation Activities

This section is not applicable for present verification, as Applus+ Certification holds the accreditation for Validation of projects under this Sectoral Scope.

# 3 VALIDATION FINDINGS

## 3.1 Participation under Other GHG Programs

The project is also registered under CDM (UN reference number is 1949) which is confirmed from CDM registry. However, this monitoring period does not overlap with any of the CDM monitoring period. PP also provided undertaking that PP will not claim CERs for the current monitoring period under CDM in the future.

It is also confirmed that the project not applied under any other GHG program other than CDM & VCS. PP has submitted an undertaking regarding no participation in any other GHG mechanism. Furthermore, VVB has checked the websites of other programs like Gold Standard, International REC registry & REC Registry of India and confirms that the project with same WTG, installed capacity and locations are not listed.

## 3.2 Methodology Deviations

This section is not applicable for present verification as no methodology deviation sought during this verification

### 3.3 Project Description Deviations

No deviations occurred to monitoring plan or methodology in this project activity.

### 3.4 Grouped Project

This is not a grouped project. Thus, this section is not applicable.

## 4 VERIFICATION FINDINGS

### 4.1 Project Implementation Status

During the remote audit, it was concluded that the project is implemented as per the instruction of the registered VCS PD, and same is also verified from the commissioning certificates. During the current monitoring period it was observed that no unforeseen situation evolved which can impact the operation of the project activity. Breakdown summary is submitted by PP for the wind plants. Scheduled maintenance was carried out as per the instruction of the manufacturer and the same is acceptable to the assessment team.

The total installed capacity of the project is 29.70 MW; which involves 18 No's of 1.65 MW WTGs in Karnataka by Acciona Wind Energy Pvt. Ltd. (AWEPL) respectively. The technical parameters/specification have been verified by the assessment team through interview with site personal, the nameplates and technical specifications from manufacturer. The details of interconnection with grid of wind plants and commissioning details are given below;

Sl. No	Site Name	WTG ID	Commissioning Date
01	Arasinagundi site	30166, 30167, 30168, 30169, 30170, 30171, 30172, 30173	06/06/2008
02	Anaburu Site	30436, 30437, 30438, 30439, 30440, 30441, 30442, 30443, 30444, 30445	29/09/2008

The assessment team interviewed the plant site personals during remote audit in order to verify the status of the project implementation of the monitoring plan.

The assessment team also confirmed that the monitoring system for emission reduction calculation was in place and in accordance with the registered VCS PD.

During the current monitoring duration, no events have been found that can change the design of project.

The details of the WTGs for the project and their location of installation are mentioned in the table below:

No	WTG ID	Latitude (°N)	Longitude (°E)
1	30166 (AG-01)	14.47483843	76.34994999
2	30167 (AG-02)	14.47622071	76.34911615
3	30168 (AG-03)	14.47770168	76.34873595
4	30169 (AG-04)	14.47905862	76.34792056
5	30170 (AG-05)	14.4804490	76.34716652
6	30171 (AG-06)	14.48224514	76.34583481
7	30172 (AG-07)	14.48371893	76.34587135
8	30173 (AG-08)	14.48534657	76.34559676
9	30436 (AN-01)	14.5839420	76.39723901
10	30437 (AN-02)	14.58197308	76.39601927
11	30438 (AN-03)	14.57905375	76.39291931
12	30439 (AN-04)	14.57716689	76.39296658
13	30440 (AN-05)	14.57508726	76.39244188
14	30441 (AN-06)	14.57290476	76.39131367
15	30442 (AN-07)	14.57003982	76.39328443
16	30443 (AN-08)	14.56706873	76.39135659
17	30444 (AN-09)	14.56497052	76.39054455
18	30445 (AN-10)	14.56267174	76.39003996

Capacity of the projects and date of commissioning verified with commissioning certificates and technical specifications provided by technology supplier.

Assessment team checked the technical details of the project activity from the manufactures specification and the detail are as follow:

#### **Wind WTGs Project Technology Details –**

The project activity aims to harness wind energy through installation of WTGs project with total installed capacity of 29.70 MW.

The technical specification of 1.65 MW of Vestas which makes V82 model Wind Turbine Generators (WTGs) have been verified during remote audit & through the technical specification provided by the supplier and commissioning certificates. The same is provided in table below:

Technical specifications of the WTGs installed are provided below.

Description	Specifications
Tower/Rotor Height	78 Meter
Rotor Diameter	82 Meter
Installed electrical output	1,650 kW
Cut-in wind speed	3.5 m/s.
Rated wind speed	7.5 m/s.
Cut-out wind speed	20 m/s. (10 minute average)
Rotor swept area	5,281 sq. meters.
Rotational speed	14,4 rpm
Rotor material Blades Material	Carbon fibre/epoxy/wood/glass
Regulation	Active Stall
Generator	1-speed, water cooled.
Rated output	1,650 kW
Rotational speed at rated power	1,012 rpm
Operating voltage	3 x 690 V
Frequency	50 Hz
Insulation class	F/B
Cooling system	Oil cooler/Radiator: Cooling capacity 37.5 kW Water cooler/Radiator: Cooling capacity 46.2 kW
Gear Box	1. step planet, 2. step helical
Manufacturer	Vestas
Gear ratio	1:70,2
Nominal load Gearbox Mechanical power	1,800 kW
Yaw Drive System	Planetary gear motor.
Yaw bearing	Ball bearing, internal gearing.

Aerodynamic brake	Hydraulic disc brake
Mechanical brake	Hydraulic disc brake
Control unit	SCADA

Assessment team concludes the following:

- a) The implementation status of project activity was found to be in compliance with registered PD.
- b) VVB has conducted the remote audit/desk review and document verification to confirm the implementation status of the project.
- c) The commissioning date of the project activity was found to be accurately and consistently recorded.
- d) The actual operation of project activity was found to be in compliance with the flow diagram provided in registered PD.
- e) The emission reductions achieved during the current monitoring period are 20,539 tCO<sub>2</sub>e.

The project activity contributes to the sustainable development by utilising wind energy for generating electricity which otherwise would have been generated through fossil fuels. Thereby reduction in usage of non-renewable sources used to generate energy.

Further the GHG emission reductions generated by the project activity has not been included by any other an emissions trading program or any other mechanism that includes GHG allowance trading. Also, the project has not received any other form of environmental credit and has not been participated/rejected under any other GHG programs.

Sustainable Development- The project will contribute to the sustainable development in the following ways:

1. Environmental: Since the project activity leads to cleaner production of energy, it is leading to displacement of fossil fuel-based energy. Since the project activity leads to lesser GHG emission it results in better air quality
2. Social Well being : Setting up of the project activity has created new job openings hence is supporting employment of the local people around and improved rural infrastructure near to the project area
3. Economical Well being: Project activity has resulted into spurt in economic activities thereby improved the living standard of the population staying close to the project area and overall improvement in employment opportunity and commercial activities
4. Technological Well being : Project activity has played a vital role in the promotion of clean technology like wind for energy generation which is environmentally safe and sound and green source of energy.

Further the project has been implemented as described in the Project Description. No CAR was raised.

## 4.2 Safeguards

### 4.2.1 No Net Harm

No potential environment or socio-economic matter was found during the documents review of VCS PD and grievance register etc. The project is renewable energy project and thus no negative impact observed due to project activity.

The project activity promotes environmental and socio-economic well-being as it results in zero GHG emissions due to installation and operation of clean, renewable energy technology for electricity generation. The report on “Developmental Impacts and Sustainable Governance Aspects of Renewable Energy Projects” prepared by MNRE dated September 2013<sup>1</sup>. This report clearly mentioned that solar/Wind power project activity operations do not result in direct air pollution, noise pollution. Moreover, also as per the Central Pollution Control Board of India notification<sup>2</sup> solar/wind project falls under White Category and are practically non-polluting.

### 4.2.2 Local Stakeholder Consultation

Local stakeholder consultation has been conducted at the time of project registration. For ongoing stakeholder’s communication, PP have maintained grievance register at the site office. All the stakeholders are happy with the implementation and operation of the project activity and no negative comments envisaged for the project activity. Complaint/suggestion/feedback register is maintained at site as a part of ongoing communication with stakeholders in line with clause 3.16.17 of VCS Standard, ver. 4.3 and appropriate actions taken time to time by PP.CAR

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<sup>1</sup> <https://smartnet.niua.org/sites/default/files/resources/report-on-developmental-impacts-of-RE.pdf>

<sup>2</sup> [http://envfor.nic.in/sites/default/files/Latest\\_118\\_Final\\_Directions.pdf](http://envfor.nic.in/sites/default/files/Latest_118_Final_Directions.pdf)

O2 raised regarding on going communication with stakeholders and the same is closed after giving response by PP. Refer Annexure 2 for the detail.

Assessment team checked the grievance register provided by PP and found that local stakeholders can anytime lodge their grievances if any in the register over the operational life time of the project. During current monitoring period no grievance was received. Thus, assessment team is of the opinion that the ongoing stakeholder mechanism is adequate and appropriate.

### 4.3 AFOLU-Specific Safeguards

This section is not applicable as this project activity is a non-AFOLU project activity.

### 4.4 Accuracy of GHG Emission Reduction and Removal Calculations

Means of verification	The verification team assessed whether the data and calculations of GHG emission reductions achieved resulting from the VCS PD. The verification team has checked whether calculations of baseline GHG emissions, project GHG emissions and leakage GHG emissions have been carried out in accordance with the formulae and methods described in the monitoring plan of the VCS PD.
Findings	NO CAR was raised during the monitoring period.
Conclusion	<p><b>Ex-ante Parameter:</b></p> <p><b>EF<sub>OM,y</sub></b>= Operating margin emission factor for southern regional grid. The value applied is 1.004 tCO<sub>2</sub>/MWh.</p> <p><b>EF<sub>BM,y</sub></b>= Build margin emission factor for southern regional grid. The value applied is 0.711 tCO<sub>2</sub>/MWh.</p> <p><b>EF<sub>y</sub></b>= Combined margin CO<sub>2</sub> emission factor for southern regional grid. The value applied is 0.93 tCO<sub>2</sub>/MWh.</p> <p><b>Baseline Emissions:</b></p> <p>The baseline Emissions for a given year is calculated by multiplying the energy baseline with the grid emission factor. The grid in this case would be the 'Indian Grid'</p> <p>Formula Used: -</p> $BE_y = EG_{PJ,y} \times EF_{grid,CM,y}$ <p>The project activity is greenfield plant and in accordance with the para 44 of methodology ACM0002 version 06,</p> <p><b>BE<sub>y</sub> = EG<sub>PJ,y</sub> X EF<sub>grid,CM,y</sub></b></p> <p>BE<sub>y</sub> = Baseline emissions in a year y (tCO<sub>2</sub>)</p> <p>EG<sub>p,j,y</sub> or EG<sub>y</sub> = Quantity of net electricity supplied to the grid as a result of the implementation of the CDM project activity in year y (MWh)</p>

$$EG_{P,J,y} = EG_y$$

$$EF_{CO_2,grid,y} = CO_2 \text{ emission factor of the grid in year } y \text{ (tCO}_2\text{/MWh)}$$

**Ex-post parameter:**

As per the registered monitoring plan and requirement of the registered methodology following parameters needs to be monitored:

**EG<sub>y</sub>** (Net electricity supplied to BESCO facility using KPTCL network)

The verification team has checked the entire monthly JMR reports/State Energy Accounting/Regional Energy Account for net electricity generated & supplied to the grid and crosschecked same with the invoices raised by PP towards State Utilities for the monitoring period. All values are found correct. All the parameters are monitored and recorded as per the monitoring plan in the MR.

Energy Meter Details of two sites provided below

Details	Main Meter	Check
<b>Arasinagundi site</b>		
Meter Number	13191099	11071509
Accuracy	0.2%	0.2%
<b>Anabaru site</b>		
Meter Number	16196539	14193209
Accuracy	0.2%	0.2%

The verification team has crosschecked the revised emission reduction sheet and monitoring report data with the JMR sheet and invoice and found all the values are matching.

The net electricity supplied the grid by the project activity during the monitoring period is 22,086 MWh (after applying 0.2% error for calibration non-validity period).

Baseline emission factor is calculated as combined margin, consisting of a combination of operating margin (OM) and build margin (BM) factors.

BE<sub>y</sub> baseline emissions, tCO<sub>2</sub>e

$$BE_y = 22,086 \text{ MWh} \times 0.93 \text{ tCO}_2\text{e/MWh}$$

$$= 20,539 \text{ tCO}_2\text{e (round down values)}$$

As per applied methodology ACM0002 version 06 and the VCS PD, project emission is considered zero as the project activity involved Wind power generation.

Leakage: As per applied methodology ACM0002 version 06 and VCS PD Leakage emissions are not considered for the project activity.

$$\text{Hence, } ER_y = BE_y - PE_y = 20,539 - 0 = 20,539 \text{ tCO}_2\text{e (round down values)}$$

	Verification team confirms that the monitoring has been carried out in accordance with the monitoring plan contained in the registered VCS PD. Assessment team confirmed that the GHG emission reductions and removals have been quantified correctly in line with the registered VCS PD.
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#### 4.5 Quality of Evidence to Determine GHG Emission Reductions and Removals

<b>Means of verification</b>	The verification team checked the Calibration details of the monitoring meters with the calibration certificates.
<b>Findings</b>	NO CAR was raised during the monitoring period.
<b>Conclusion</b>	<p>The metering arrangement is bi-directional energy meters (Main and Check) of accuracy class 0.2s at the State Electricity Board (SEB) sub-station. These electricity meters are being used by state electricity board for Share certificate statements. These meters record several parameters including electricity exported &amp; imported. These electricity meters are being used by state electricity board for monthly generation reports. The details like make, Serial number, Calibration dates etc are provided in Appendix 5 of this report.</p> <p>Verification team confirms that all the energy meters (main and check meter) installed at the substation are of accuracy class of 0.2s and are calibrated as per the calibration frequency mentioned in monitoring plan in VCS PD i.e. The calibration frequency of meters is once in a quarter.</p> <p>Considering the dates of meter calibration, it has been observed that there have been delays in calibration for the following periods.</p> <ul style="list-style-type: none"> <li>• 12-April 2018 to 31-May-2018</li> </ul> <p>Hence, permissible error factor of 0.2% has been applied on the electricity export and import values for the months of April-2018 and May-2018. The monitored net electricity generation during the monitoring period is 22,102 MWh and after applying error for the April 2018 &amp; May 2018 months, the adjusted value is calculated to be 22,086 MWh. The calculation is verified and found to be correct.</p> <p>All the meters are of same accuracy class i.e. 0.2s as per the requirement of the registered PD.</p> <p>The calculation of net electricity supplied to grid is under purview of state electricity board and PP does not have control on it. Calibration details of the monitoring meters checked with calibration certificates submitted by PP and found that calibration frequency of meters are being complied with and calibrated on a quarterly basis in line with PPA signed with BESCO. Calibration certificates by BESCO checked by VVB and confirmed as appropriate.</p> <p>The break down log is checked and there is no major breakdown during the monitoring period. No unforced error observed. No sampling procedure</p>

	<p>applied for monitoring of the data parameter and entire documents were checked by the assessment team to arrive at positive verification conclusions. The monitoring plan is followed at the project site. The monitoring meters were calibrated in line with the registered monitoring plan.</p> <p>Comparison of actual and estimate emission reductions achieved:                  Assessment team checked the calculation of estimated VER vs. Actual VER. As per the registered VCS PD the amount of VERs annually is 88,240.11 tCO<sub>2e</sub>. The days involved in present monitoring period are 151. Therefore, on pro-rata basis, the estimated VERs for the monitoring period is 36,505 tCO<sub>2e</sub>. Actual VERs obtained for the monitoring period is 20,539 tCO<sub>2e</sub> and thus the actual VER is 43.7% lower than the estimated VER. Thus, assessment team concluded that the evidences are sufficient in quantity, and appropriate for the quality, to determine the GHG reductions and removals.</p>
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#### 4.6 Non-Permanence Risk Analysis

No.	Risk that could lead to material errors, omissions or misstatements	Assessment of the risk		Response to the risk in the verification plan and/or sampling plan
		Risk level	Justification	
NA	NA	NA	NA	NA

## 5 VERIFICATION CONCLUSION

Applus+ Certification has been engaged by Acciona Wind Energy Pvt. Ltd. (AWEPL) to perform the 2<sup>nd</sup> periodical verification of the “29.70 MW WIND POWER PROJECT IN KARNATAKA, INDIA”.

The project participants are responsible for the preparation of the GHG emissions data and the reported GHG emissions reductions on the basis set out within the project’s monitoring plan in the registered VCS PD and the applied methodology ACM0002 version 06

Our verification approach was based on the requirements as defined under the Kyoto Protocol, Marrakesh accord, as well as those defined by the CDM Executive Board. Our approach is risk-based, drawing on an understanding of the risks associated with reporting GHG emissions data and the controls in place to mitigate these. Further, the verification has been planned and organized to achieve a Reasonable Level of assurance as per the requirement of VCS. No sampling procedure applied for document verifications. The entire documents checked/Power plant verification conducted to arrive at positive verification conclusions. The verification team can confirm that:

- the project is operated as planned and described in the project document;
- the monitoring plan is as per the applied methodology;
- the monitoring process in Monitoring Report is as per the PD
- the development and maintenance of records and reporting procedures are in accordance with the monitoring plan;
- the installed equipment being essential for generating emission reduction runs reliably and is calibrated appropriately;
- the monitoring system is in place and generates GHG emission reductions data;
- the GHG emission reductions are calculated without material misstatements.
- A Reasonable Level of assurance was achieved as planned, during verification process.
- Verification period: 01-January-2018 to 31-May-2018

Verified GHG emission reductions and removals in the above verification period:

Year	Baseline emissions or removals (tCO <sub>2</sub> e) <sup>3</sup>	Project emissions or removals (tCO <sub>2</sub> e)	Leakage emissions (tCO <sub>2</sub> e)	Net GHG emission reductions or removals (tCO <sub>2</sub> e)
2018 (01-Jan-2018 to 31-May-2018)	20,539	0	0	20,539
<b>Total</b>	<b>20,539</b>	<b>0</b>	<b>0</b>	<b>20,539</b>

<sup>3</sup>Rounddown values

# APPENDIX 1: DOCUMENTS REVIEWED OR REFERENCED (VERIFICATION)

No.	Author	Title	References to the document	Provider
1.	NA	Commissioning certificates of the WTGs		PP
2.	NA	Contract of the project participant with the VVB	Contract document signed between PP and VVB	PP
3.	NA	The operational lifetime of the project activity from the manufacturer = (Technical specifications)	Manufacturer technical specifications	PP
4.	NA	Registered PD VCS webpage for the project, VCS ID 051; <a href="https://registry.verra.org/app/projectDetail/VCS/51">https://registry.verra.org/app/projectDetail/VCS/51</a>	NA	PP
5.	NA	Calibration Certificates of energy meters	NA	PP
6.	NA	MR version 01 MR version 02 MR Version 02.1	05-October-2021 25-November-2021 25-July-2022	PP
7.	NA	Emission reduction sheet version 01 Emission reduction sheet version 02	05-October-2021 25-November-2021	PP
8.	NA	O & M Agreement	-	PP
9.	NA	Power Purchase Agreements (PPAs)	-	PP
10.	NA	Tools/ guidelines used in the project activity <ul style="list-style-type: none"> <li>• Glossary of CDM terms version 07</li> <li>• VCS standard Version 4.3</li> <li>• VCS Program Guide 4.2</li> <li>• VCS verification report template version 4.1</li> </ul>	UNFCCC CDM/VCS web site	UNFCCC
11.	NA	Monthly statement- JMR & invoices for the complete monitoring period	-	PP
12.	NA	Declaration regarding no participation in other GHG program for the concerned monitoring period	25-July-2021	PP
13.	NA	Breakdown details for the monitoring period	-	PP
14.	NA	Employment records for plant persons	-	PP
15.	NA	Grievance Register maintained at site	-	PP
16.	UNFCCC	CDM validation and verification standard for project activities, Version 03.0	-	UNFCCC
17.	NA	Validation & previous Verification Report	-	PP
18.	NA	Breakdown details of the power plant	-	PP
19.	NA	Registered CDM PDD, version 02	January 2008	UNFCCC
20.	NA	Approved VCS Project Description	-	VERRA

# APPENDIX 2: CORRECTIVE ACTION REQUESTS, CLARIFICATION REQUESTS AND FORWARD ACTION REQUESTS (CAR/CL/FAR)

**Table 1. Remaining FAR from validation and/or previous verification**

<b>FAR ID</b>	XX	<b>Section no.</b>	E.2	<b>Date : DD/MM/YYYY</b>
<b>Description of FAR</b>				
There is no FAR from the validation/previous verification of the project activity				
<b>Project participant response</b>				<b>Date : DD/MM/YYYY</b>
NA				
<b>Documentation provided by project participant</b>				
NA				
<b>VVB assessment</b>				<b>Date: DD/MM/YYYY</b>
NA				

**Table 2. CL from this verification**

<b>CL ID</b>	XX	<b>Section no.</b>	NA	<b>Date : DD-Month-YYYY</b>
<b>Description of CL</b>				
NA				
<b>Project participant response</b>				<b>Date : DD-Month-YYYY</b>
NA				
<b>Documentation provided by project participant</b>				
NA				
<b>VVB assessment</b>				<b>Date: DD-Month-YYYY</b>
NA				

**Table 3. CAR from this verification**

<b>CAR ID</b>	01	<b>Section no.</b>	4.1	<b>Date: 24/11/2021</b>
<b>Description of CAR</b>				
<ol style="list-style-type: none"> <li>PP is requested to submit an undertaking for no any double accounting for current monitoring period and for project activity is participated in other GHG program other than VCS.</li> <li>In sec. 1.11, name of host country DNA is incorrect.</li> </ol>				
<b>Project participant response</b>				<b>Date: 25/11/2021</b>
<ol style="list-style-type: none"> <li>Undertaking letter confirming no double accounting for current monitoring period is submitted now.</li> <li>In sec. 1.11, name of host country DNA is corrected now.</li> </ol>				
<b>Documentation provided by project participant</b>				
<i>Undertaking letter</i> <i>Revised MR</i>				

<b>VVB assessment</b>	<b>Date: 27/11/2021</b>
1. PP has now submitted undertaking document for double counting for current monitoring period to the VVB team. Hence, <b>Comment closed</b> . 2. PP has now corrected the name of the host country's DNA in section 1.11 of MR ver 02, dated 25/11/2021, which is checked by the VVB and found correct. Hence, <b>Comment closed</b> .	

<b>CAR ID</b>	02	<b>Section no.</b>	4.2.2	<b>Date: 24/11/2021</b>
<b>Description of CAR</b>				
Details of ongoing stakeholders' consultation mechanism is provided in section 2.2 of the MR inline with VCS guidelines to complete MR. However, PP also requested to submit records of ongoing local stakeholder consultation including grievance register etc.				
<b>Project participant response</b>				<b>Date: 25/11/2021</b>
<i>The grievance form kept at site and grievance register are submitted now. NO grievances received during the monitoring period</i>				
<b>Documentation provided by project participant</b>				
<i>Grievance form &amp; Grievance register</i>				
<b>VVB assessment</b>				<b>Date: 27/11/2021</b>
PP has now submitted grievance register to the VVB team. Hence, <b>Comment closed</b> .				

**Table 4. FAR from this verification**

<b>FAR ID</b>	XX	<b>Section No.</b>		<b>Date : DD-Month-YYYY</b>
<b>Description of FAR</b>				
There is no FAR from this verification				
<b>Project participant response</b>				<b>Date : DD-Month-YYYY</b>
NA				
<b>Documentation provided by project participant</b>				
NA				
<b>VVB assessment</b>				<b>Date: DD-Month-YYYY</b>
NA				

# APPENDIX 3: COMPETENCE OF TEAM MEMBERS AND TECHNICAL REVIEWERS

## Verification team member

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of VVB or outsourced entity)	Involvement in			
						Desk review	On-site inspection	Interview(s)	Verification findings
1.	Lead Auditor/Technical Expert	OR	Kumar	Pankaj	TQC-Outsourced entity	Yes	No	Yes	Yes

## Technical reviewer and approver of the verification and certification report

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of VVB or outsourced entity)
1.	Technical reviewer (TR) / Technical Expert (TE)	EI	Shen	Simon	Applus+ Certification
2.	Approver	IR	Calle de Miguel	Agustin	Applus+ Certification

## Short CVs of the Team:

1. **Pankaj Kumar** worked as team leader – Bihar for South Asia Climate Proofing and Growth Development (CPGD) – Climate Change Innovation Programme (CCIP) supported by DFID that seeks to mainstream climate change resilience into planning and budgeting at the national and sub-national level in India, Pakistan, Nepal, and Afghanistan. Pankaj Kumar has worked previously with IL&FS Infrastructure Development Corporation and BUIDCO (Bihar Urban Infrastructure Development Corporation), Govt. Of Bihar as Environmental Specialist for WB & ADB funded projects. Prior to this, he worked with Carbon Check (UNFCCC accredited DoE), Johannesburg, RSA as Team Leader for validation, verification of around 100 GHG projects in Asia, Africa, USA, Asia Pacific & Americas. Pankaj is accredited Lead Auditor, Validator, Verifier and Technical Expert for Sectoral Scope/Technical Area – 1.1, 1.2, 3.1 & 13.1 by UNFCCC DoE (Designated Operational Entity), APPLUS, Spain. He is also member of task force on climate change & human health, Health Department, GoB and on roster of UNICEF’s WASH experts.

He is an experienced, qualified and result oriented Environment Professional having more than 14 yrs. Of relevant experience in Climate Change (Mitigation & Adaptation), Environmental Due

Diligence, Disaster Risk Reduction, Validation and Verification of GHG project under CDM, Verified Carbon Standard, Gold Standard & Social Carbon Standard, Brazil. He provides technical support for environmental investigative, consultative and remedial projects involving air, water and soil, Waste management, EIA, Environmental Compliance, ISO 14001, OHSAS 18001, GHG accounting (ISO 14064) and Carbon foot printing Pankaj Kumar is Masters in Environment Management from Forest Research Institute (University), I.C.F.R.E, Dehradun, which is Centre of Excellence in South East Asia for Forestry education & research and PGDEL from National Law School of India University, Bangalore (India).

2. **Mr. Simon Shen** (Mr. Simon Shen (Master Degree in Thermal Energy Engineering, Bachelor Degree in Environmental Engineering) is a Lead Auditor appointed by Applus+ LGAI 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+ LGAI, he had been worked for TÜV SÜD as a GHG Validator/Assessment team and ISO 9001/14001 Lead Auditor for 5 years

## APPENDIX 4: ABBREVIATIONS

Abbreviations	Full texts
BM	Build Margin
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER	Certified Emission Reduction(s)
CEA	Central Electricity Authority
CL	Clarification request
CM	Combined Margin
CMS	Central Monitoring system
CO <sub>2</sub>	Carbon dioxide
CO <sub>2</sub> e	Carbon dioxide equivalent
DNA	Designated National Authority
DOE	Designated Operational Entity
DR	Document Review
EF	Emission Factor
EIA	Environmental Impact Assessment
ER	Emission Reductions
FAR	Forward Action Request
GHG	Greenhouse gas(es)
GWP	Global Warming potential
PP	Project Participant

## APPENDIX 5: CALIBRATION DETAILS OF THE METERS

Calibration tests for all the energy meters (Both Main and Check meter) of two sites have been conducted in the same dates during the current monitoring period. Calibration dates for the current monitoring period are provided below:

<b>Meter</b>	<b>Calibration date</b>	<b>Validity</b>
ARA Main meter: 13191099	24/10/2017	24/01/2018
ARA Check Meter: 11071509	12/01/2018	12/04/2018
ANA Main Meter: 16196539	11/07/2018	11/10/2018
ANA Check Meter: 14193209		

Considering the dates of meter calibration, it has been observed that there have been delays in calibration for the following periods.

- 12-April 2018 to 31-May-2018

Hence, permissible error factor of 0.2% has been applied on the electricity export and import values for the months of April-2018 and May-2018.

The monitored net electricity generation during the monitoring period is 22,102 MWh and after applying 0.2% error for the April 2018 & May 2018 months, the adjusted value is calculated to be 22,086 MWh. The calculation is verified and found to be correct.