

52.50 MW WIND ENERGY FARM AT MOKLA RAJASTHAN BY HZL



Document Prepared By (SUKANTA DAS- LEAD AUDITOR/ TECHNICAL EXPERT)

LGAI Technological Center S.A.

Ctra. Acceso a la facultad de Medicina, s/n, Campus UAB

E – 08193 Bellaterra (Barcelona) – Spain

Tel: +34 935 672 008

Fax: +34 935 672 001

www.appluscertification.com

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Prepared By	LGAI Technological Center S.A. (Applus+ Certification) Ctra. Acceso a la facultad de Medicina, s/n, Campus UAB E – 08193 Bellaterra (Barcelona) – Spain Tel.:+34 935 672 008 Fax.+34 935 672 001

Contact	www.appluscertification.com
	Tel.:+34 935 672 008
	Fax.+34 935 672 001
	www.appluscertification.com
Approved By	Juan Sendin Caballero, BU Managing Director (Applus+ Certification)
Work Carried Out By	Mr. Sukanta Das-Lead Auditor/Technical expert

Summary:

Verification purpose: The project activity involves installation and operation of twenty five Suzlon make 2.1 MW Wind Turbine Generators (WTGs) by Hindustan Zinc Limited (HZL) in the state of Rajhsthan.. The cumulative capacity of the project activity is 52.5 MW. The electricity generated from the project activity will be exported to regional Grid.

The technology employed by the project activity converts kinetic energy in wind to mechanical energy and mechanical energy to electrical energy using wind turbine generators (WTGs). In this process, there are no greenhouse gas emissions or burning of any fossil fuels. The electricity is generated through sustainable means without causing any negative effect to the environment and therefore the technology is environmentally safe and sound.

The project activity helps to reduce the supply demand gap in the state and also helps in contributing to the sustainable development by using Wind energy as the source of power generation and reduction of GHG Emissions.

The project uses Suzlon Technology. The total emission reductions for the current monitoring period i.e.01-Dec-2012 to 31-Dec-2016 (inclusive of both days) are 284,783 tCO₂e.

This is the second monitoring under VCS and covers the activity from 01/12/2012 to 31/12/2016 (inclusive of both dates). Project activity has Renewable crediting period of 21 years for the CDM project. VCS crediting period is 15/02/2011 to 14/02/2021 (first crediting period) and it will be renewed twice till end date of CDM crediting period.

Start date of crediting period for VCS verification: 15/02/2011 (Date of commissioning of first WTG)

The GHG credits from 01-Dec-2012 to 31-Dec-2016 will be claimed under VCS only. An undertaking

dated 28/09/2018 from the project participant confirms that project will not claim any other scheme benefits for the concerned monitoring period.

A risk based approach has been followed to perform this verification activity. In the course of verification, 07 Corrective Action requests (CAR), 00 Clarification Requests (CLs) and 00 Forward action requests (FARs) were raised and successfully closed. 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 DOE with sufficient evidence to verify the fulfilment of the stated criteria of VCS.

As per Para 3.6.1, sub para (2), project has undergone deviation in the monitoring plan from the registered CDM PDD. The Monitoring plan described in the CDM registered PDD includes parameters like X, Y, A and B. However, these parameters do not be utilized in the calculation of the emission reductions, as these are calculated from the JMR and break up energy sheet of $EG_{\text{export,y}}$, $EG_{\text{import,y}}$ and the difference between the two, viz., $EG_{\text{facility,y}}$. So that these parameters have been removed from the data and parameters monitored. A monthly meter reading taken jointly by state utility and PP representative is recorded in the JMR. The net electricity exported to the grid is the difference of export and the import measured through the meter. The metered export and import of electricity in the JMR is apportioned among the various project developers based on the electricity generated at the WTG-Controller. The apportioned metered net electricity (export – import) corresponding to WTGs owned by a particular developer is then issued separately in a JMR prepared by the O&M Service provider. The invoices rise on the basis of JMR and after cross verification the payment issued by DISCOM. These values are used in ER calculation which can be cross verified from invoices. Moreover, the change of the monitoring practice onsite from the registered PDD do not have any impact on methodology, additionality or the appropriateness of the baseline scenario, and the project remains in compliance with the applied methodology and VCS requirements. Thus the deviation is acceptable to the assessment team.

LGAI Technological Center S.A. (Applus+ Certification) (Hereafter referred as Applus+ Certification) has been appointed by “Hindustan Zinc Limited” to perform the 2nd periodic verification of the “52.50 MW WIND ENERGY FARM AT MOKLA RAJASTHAN BY HZL” under VCS standard and guideline version 3.7. 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 12.3.0”
- the project's monitoring plan is assessed against “ACM0002, Version 12.3.0”

- 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 and standard version 3.7
- CDM Validation and Verification Standard version 01 for the project activity
- CDM Project Standard version 01 for the project activity
- CDM Project Cycle Procedure version 01 for the project activity
- VCS standard v3.7
- VCS program guideline v3.7

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).

The scope of the verification is the independent and objective review of the Monitoring report (MR). The MR is reviewed against the relevant criteria (see above) 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 version 01 for the project activity, review against registered PD and Final Validation report, CDM Project Standard version 01 for the project activity, CDM Project Cycle Procedure version 01 for the project activity and VCS program guideline and standard version 3.7.

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 site visit or document verifications. The entire documents checked/WTGs 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 “Hindustan Zinc Limited” to perform the 2nd periodic verification of the “52.50 MW WIND ENERGY FARM AT MOKLA RAJASTHAN BY HZL” under VCS standard and guideline version 3.7. The objective of this verification activity is to have an independent third party for the assessment of the project design, Validation report, Monitoring report and 1st periodic 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 12.3.0”
- the project's monitoring plan is assessed against “ACM0002, Version 12.3.0”
- 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 and standard version 3.7
- CDM Validation and Verification Standard version 01 for the project activity
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- VCS standard v3.7
- VCS program guideline v3.7

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 of the verification is the independent and objective review of the Monitoring report (MR). The MR is reviewed against the relevant criteria (see 1.1) 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 version 01 for the project activity, review against registered PD and Final Validation report, CDM Project Standard version 01 for the project activity, CDM Project Cycle Procedure version 01 for the project activity and VCS program guideline and standard version 3.7.

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.

1.3 Level of Assurance

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 site visit or document verifications. The entire documents checked/WTGs verification conducted to arrive at positive verification conclusions.

1.4 Summary Description of the Project

The project activity involves installation and operation of twenty five Suzlon make 2.1 MW Wind Turbine Generators (WTGs) by Hindustan Zinc Limited (HZL) in the state of Rajasthan. The cumulative capacity of the project activity is 52.5 MW. The electricity generated from the project activity will be exported to regional Grid.

The technology employed by the project activity converts kinetic energy in wind to mechanical energy and mechanical energy to electrical energy using wind turbine generators (WEGs). In this process, there are no greenhouse gas emissions or burning of any fossil fuels. The electricity is generated through sustainable means without causing any negative effect to the environment and therefore the technology is environmentally safe and sound.

Wind turbines produce electricity by using the natural power of wind to drive a generator. Wind has considerable amount of kinetic energy when blowing at high speeds. When this kinetic energy passes through the blades of the wind turbines, it is converted into mechanical energy and rotates the wind blades. When the wind blades rotate, the connected generator also rotates, thereby producing electricity. The WEGs generate 3-phase power at 400V, which is stepped up to 33 KV. The project can operate in the frequency range of 46–54 Hz and in the voltage range of 400 V $\pm$ 20%.

The timeline for Commission of the project activity is also checked by the assessment team. Assessment team checked the Commission of all the WTGs via the commissioning Certificates and found correct. The project is implemented as per the description in the registered PD. No event observed during the current monitoring period which can alter or deviate from the methodology requirement. The details are as below:

LOCATION No	Date of commissioning	Connected Load (MW)	Phase
MK-49,63,100,101,168	15/02/2011	10.5 MW	Ph I
MK-18,19,20,38,53,64,65,87,88, 218, 219, 220	13/03/2011	25.2 MW	Ph I

MK-162	16/08/2011	2.1 MW	Ph II
MK- 32,33,34,35	01/09/2011	8.4 MW	Ph II
MK 24,25	22/09/2011	4.2 MW	Ph II
MK 182	30/09/2011	2.1 MW	Ph II

There was no activity at the site prior to implementation of the project activity (Greenfield). The electricity generated by the project is exported to the Indian grid. The project activity will therefore displace an equivalent amount of electricity which would have otherwise been generated by fossil fuel dominant electricity grid. Since Wind power is Greenhouse Gas (GHG) emissions free, the power generated will prevent the anthropogenic gas emissions generated by fossil fuel based thermal power stations comprising coal, diesel, furnace oil and gas.

Assessment team confirms following during the verification site visit:

1. Start date of the project activity is 15/02/2011 as mentioned in the registered VCS PD
2. An undertaking letter dated 28/09/2018 has been submitted by PP for double counting with any other GHG program. PP also has given a written declaration that project has not claimed other form of GHG credit for the concerned monitoring period. Assessment team also checked that the projects are not registered under the REC mechanism of India and the same can be cross-checked at <https://recregistryindia.nic.in>. PP has given a written declaration that the credit claimed under VCS for the current monitoring period is not claimed under any other GHG mechanism.
3. Assessment team confirms that this is the second monitoring under VCS and covers the activity from 01/12/2012 to 31/12/2016 (inclusive of both dates). Project activity has Renewable crediting period of 21 years for the CDM project.
VCS crediting period is 15/02/2011 to 14/02/2021 (first crediting period) and it will be renewed twice till end date of CDM crediting period.
Start date of crediting period for VCS verification: 15/02/2011 (Date of commissioning of first WTG)
The GHG credits from 01-Dec-2012 to 31-Dec-2016 will be claimed under VCS only. At any point of time during the crediting period, the project proponent will abide by the "Double Counting
4. Assessment team checked and found that the Project proponent of the project activity is as below for the current monitoring period:

Organization name	Hindustan Zinc Limited
Contact person	Mr. V. Jayaraman

Title	VP & Head (EOHS)
Address	CPP-CLZS Chanderiya Lead Zinc Smelter, Putholi Chittorgarh-312021, Rajasthan INDIA
Telephone	91-1472-257950
Email	v.jayaraman@vedanta.co.in

5. Assessment team also checked the details of other entity and found correct. The details are as below:

Organization name	EKI Energy Services Limited
Role in the project	Project Consultant
Contact person	Mr. Manish Dabkara
Title	MD & CEO
Address	Office No. 201, EnKing Embassy, Plot No. 48, Scheme No. 78, Part II, Vijay Nagar INDORE – 452010, India.
Telephone	-
Email	manish@enkingint.org

6. The quantified emission reduction calculation for the monitoring period is correct and conservative. Assessment team also compared actual VER with the estimated VER and found that the actual VER is 19% lower than the estimated emission reduction which is due to Low PLF attained by the WTGs for the current monitoring period.

The details calculation is as follows:

Start Date of Monitoring Period	01-Dec-12
End Date of Monitoring Period	31-Dec-16
Number of operational Days for Current Monitoring Period	1,492
Annual (365 Days) estimation as per Registered PD	85,863
ER Estimation for Current Monitoring Period	350,980
Actual ER for Current Monitoring Period	284,783
% Variation in Actual Vs Estimated ER	-19%

2 VERIFICATION PROCESS

2.1 Method and Criteria

Verification Scope: 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 12.3.0. 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 and guideline version 3.7, including the approved baseline and monitoring methodology ACM0002 version 12.3.0. The verification was based on the requirements in the CDM Validation and Verification Standard (VVS version 01 for the project activity), CDM project standard version 01 for the project activity, CDM project cycle procedure version 01 for the project activity and VCS program guideline and standard version 3.7

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.

Verification Process: The project assessment is based on the “Clean Development Mechanism Validation and Verification Standard version 01 for the project activity and VCS standard and program guideline version 3.7 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
Mr. Sukanta Das	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 1 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 site visit is conducted by Applus+ Certification to perform interviews, telephone conferences, and physical site inspection with project stakeholders to confirm selected information and to resolve issues identified in the document review. The detail is provided in this report.

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 final MR Version 02 submitted by PP on 29/09/2018 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 details of the document observed during the verification process are listed below in Appendix 1 of this report

2.3 Interviews

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Solanki	Ratan	PP Representative	26/09/2018	Implementation of the project and monitoring. Baseline emission calculation, achieved emission reduction for the monitoring period, monitoring process followed onsite	Mr. Sukanta Das
2	Singh	Sohan	Villager	26/09/2018	Local Stakeholder Consultations	Mr. Sukanta Das
2	Prasad	Ram	Villager	26/09/2018	Local Stakeholder Consultations	Mr. Sukanta Das

2.4 Site Inspections

Duration of on-site inspection: 26/09/2018				
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. Assessment team also had a discussion with Local stakeholders and checked grievance register placed onsite as per the continuous improvement measure of PP for the Local villagers.	The detail address of the power plant is as below: The project activity consists of twenty five 2.1 MW wind turbines in the state of Rajasthan	26/09/2018	Mr. Sukanta Das

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 Version 2 submitted by PP on 29/09/2018 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	01	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
Establishment and description of baseline scenario	00	00	00
Demonstration of additionality	00	00	00
Emission reductions	00	01	00
Calibration details	00	01	
Monitoring plan	00	00	00
No Net harm assessment	00	01	
Local stakeholder consultation	00	01	
Others (please specify)-Matter related to breakdown details	00	02	00
PP declaration – Related to participation in other GHG program for the monitoring period			
Total	00	07	00

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

2.5.1 Forward Action Requests

This is 2nd periodic verification of the project activity and no FAR raised from previous 1st verification.

2.6 Eligibility for Validation Activities

This section is not applicable for present verification.

3 VALIDATION FINDINGS

3.1 Participation under Other GHG Programs

This section is not applicable for present verification.

3.2 Methodology Deviations

This section is not applicable for present verification.

3.3 Project Description Deviations

As per Para 3.6.1, sub para (2), project has undergone deviation in the monitoring plan from the registered CDM PDD. The Monitoring plan described in the CDM registered PDD includes parameters like X, Y, A and B. However, these parameters do not be utilized in the calculation of the emission reductions, as these are calculated from the JMR and break up energy sheet of $EG_{export,y}$, $EG_{import,y}$ and the difference between the two, viz., $EG_{facility,y}$. So that these parameters have been removed from the data and parameters monitored. A monthly meter reading taken jointly by state utility and PP representative is recorded in the JMR. The net electricity exported to the grid is the difference of export and the import measured through the meter. The metered export and import of electricity in the JMR is apportioned among the various project developers based on the electricity generated at the WTG-Controller. The apportioned metered net electricity (export – import) corresponding to WTGs owned by a

particular developer is then issued separately in a JMR prepared by the O&M Service provider. The invoices rise on the basis of JMR and after cross verification the payment issued by DISCOM. These values are used in ER calculation which can be cross verified from invoices. Moreover, the change of the monitoring practice onsite from the registered PDD do not have any impact on methodology, additionality or the appropriateness of the baseline scenario, and the project remains in compliance with the applied methodology and VCS requirements. Thus the deviation is acceptable to the assessment team.

3.4 Grouped Project

This is not a grouped project.

4 VERIFICATION FINDINGS

4.1 Project Implementation Status

During the verification site visit it was concluded that the project is implemented as per the requirement of the registered PD and Final Validation report. During the current monitoring period it was observed that no unforeseen incident/event evolved which can impact the operation of the project activity. The project undergone continuous operation and only scheduled maintenance is observed as per the manufactures specification which is acceptable to the assessment team.

CAR 01 is however raised regarding details of the Feeder location of the individual project location and CAR 02 is raised for the details of downtime/breakdown records.

Feeder details are provided which is confirmed by the assessment team during the verification site visit and also from the individual joint meter statement by state electricity board (third party, Govt source) in where the feeder details are mentioned. The Feeder details are included in the MR and thus the CAR is closed.

Breakdown log sheets for individual power project i.e. WTGs breakdown log sheets is submitted by PP. There was no breakdown during the monitoring period. Scheduled maintenance was carried out as per the instruction of the manufacturer and the same is acceptable to the assessment team. CAR 02 is thus closed.

Project location is confirmed by the assessment team during the site visit. Assessment team also checked with the GPS meter regarding the latitude and longitude of the project site and confirm that the details as mentioned in the registered PD is correct. The detail is as below:

Serial No.	Phase	WEG No.	Latitude	Longitude
1	Phase- I	MK018	N27°09'20.6"	E70°42'01.9"
2		MK019	N27°09'14.0"	E70°42'19.6"
3		MK020	N27°09'07.3"	E70°42'37.3"
4		MK038	N27°10'04.2"	E70°41'51.2"
5		MK053	N27°10'23.9"	E70°40'58.7"
6		MK049	N27°10'24.2"	E70°40'58.1"

7		MK063	N27°11'21.3"	E70°40'12.2"
8		MK064	N27°11'14.4"	E70°40'30.5"
9		MK065	N27°11'07.8"	E70°40'48.1"
10		MK087	N27°10'30.1"	E70°44'50.0"
11		MK088	N27°10'40.7"	E70°44'35.9"
12		MK100	N27°12'12.3"	E70°39'44.1"
13		MK101	N27°12'18.9"	E70°39'26.3"
14		MK168	N27°13'58.5"	E70°39'31.5"
15		MK218	N27°14'48.8"	E70°40'37.5"
16		MK219	N27°14'56.9"	E70°40'19.7"
17		MK220	N27°15'03.0"	E70°40'01.9"
18	Phase- II	MK024	N27°08'27.5"	E70°44'23.3"
19		MK025	N27°08'23.6"	E70°44'44.9"
20		MK032	N27°08'35.8"	E70°45'40.1"
21		MK033	N27°08'42.5"	E70°45'22.4"
22		MK034	N27°08'49.1"	E70°45'04.8"
23		MK035	N27°08'57.0"	E70°44'49.4"
24		MK162	N27°13'18.4"	E70°40'18.2"
25		MK019	N27°13'48.7"	E70°41'42.1"

Assessment team also checked the Technical details of the WTGs installed onsite. The same is checked during the onsite visit from the number plate capacity of each WTGs and also cross checked from the technical manual of the Manufactures. The detail is as below:

WTG (S88, 2.1 MW, 50 Hz) TECHNICAL DATA

Rated capacity: 2100 kW

Rotor diameter: 88 m

Hub height: 80 m

Rotor with Pitch Control

Type: Upwind rotor with active pitch control

Number of blades: 3

Swept area: 6082 m²

Blade material: The rotor blades are made of high grade GRP and manufactured by using Resin Infusing Moldings (RIM) technology

Rotor speed: 15.47 rpm

Tip speed: 71 m/s

Generator: Type: Single fed Induction Generator with slip-rings, variable rotor resistance with SUZLON-FLEXI-SLIP control system.

Hub: Cast spherical hub

Bearings: High tensile double-row ball-bearing

Braking System: 3 independent Aero Brakes with power back up supply.

Yaw Control: Active through adjustment gears, friction damping

Tower: Steel Tubular, 77.5 m height

Assessment team checked the commissioning certificate and confirmed that the date of Commission for the WTGs are correct.

The assessment team confirmed that there is no proposed or actual change to the project design during this monitoring period. The project design as mentioned in the registered PD is implemented however there is change in Monitoring practice which is described earlier in this report and the same is acceptable to the assessment team as the deviation in monitoring practice do not have any impact on Baseline, additionality, Monitoring and applicability of the applied methodology.

All required monitoring equipment's and procedures as mentioned in the registered PD are available and implemented in an appropriate manner.

The organisational role and responsibility as mentioned in the registered PD is followed onsite. All the monitoring equipment was calibrated as per the specified interval in the registered PD. However, the delay is observed in Calibration for the current monitoring period. The error factor is applied appropriately to calculate the emission reduction conservatively. All the emergency preparedness as mentioned in the registered PD is followed onsite and no discrepancies were found regarding the same.

It was also observed during the verification process that project is not rejected by any other GHG program around the world. CAR 05 however is raised for the same. Please refer Appendix 2 of this report for the detail closure of the CAR.

Assessment team would like to clarify that the project is registered under CDM. The present monitoring period is 01-Dec-2012 to 31-Dec-2016 and no credit is claimed from other mechanism in the present monitoring period except from VCS therefore avoiding any double counting. A written declaration is also checked by the assessment team which confirms that PP will not claim any GHG emission for the present monitoring period from any other mechanism.

It was also observed during the verification process is that project is not rejected by any other GHG program around the world. The project is registered by VCS board and the registered PD and registered

FVR is used to assess the present 2nd periodic verification. The following web sites were checked to confirm the same:

1. www.v-c-s.org

Assessment team hereby also confirms from the declaration made by PP the projects are not registered under the REC mechanism of India and the same is cross-checked at <https://recregistryindia.nic.in>. Moreover as per state tariff policy the project is not eligible to receive REC benefits as it is selling power to State electricity grid.

The assessment team observed that the project is in line with the registered PD, FVR and approved methodology and thus no clarification/deviation is sought.

4.2 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	CAR 03 was raised during the verification process and closed successfully. Please refer Appendix 2 of this report for the detail closure of the CAR
Conclusion	The baseline Emissions for a given year is calculated by multiplying the energy baseline (EB) with the regional grid emission factor. Formula Used:- $BE_y = EF_{CO_2,grid,y} \times EG_{BL,y}$ Where, BE_y baseline emissions, tCO₂e EG_{BL,y} Net Quantity of Electricity exported to the facility EF_{CO₂,grid,y} grid emission factor, i.e. 0.9487 t CO₂/MWh (it has been fixed ex-ante) EG_{BL,y} = EG_{y,Export} – EG_{y,Import} <u>Ex ante Parameters:</u> EF_{CO₂,grid,y}, EF_{grid,BM,y}, EF_{grid,OM,y} were mentioned as ex-ante fixed parameter. Assessment team checked the values, source of data, choice of data, purpose of the data mentioned in the MR from the registered PD and confirms that the similar approach was considered for the current monitoring period also. The values for EF_{CO₂,grid,y} = 0.9487 tCO₂/MWh- Assessment team Confirmed that the value is as per the registered PD EF_{grid,BM,y} = 0.8123 tCO₂/MWh- Assessment team Confirmed that the value is as per the registered PD EF_{grid,OM,y} = 0.9962 tCO₂/MWh- Assessment team Confirmed that the value is as

	per the registered PD 1. $EF_{grid,OM,y}$: Operating Margin emissions factor for grid connected power generation in year y calculated using the latest version of "Tool to calculate the emission factor for an electricity system". $EF_{grid,OM,y}$ is computed using the Simple Operating margin CO2 emission factor. Simple Operating margin CO2 emission factor is calculated from the weighted average CO2 emissions per unit net electricity generation of all power plants serving the system, not including low-cost / must-run. This is in agreement with the guidance provided in the Tool to calculate the emission factor for an electricity system. The value is considered from CEA version 06 and registered PD. Assessment team checked the registered PD and found that value considered for emission reduction calculation in this present monitoring period is sourced from the registered PD. Thus assessment team conclude that the emission reduction calculation for the present monitoring period is conservative and correct. 2. $EF_{grid,BM,y}$: Build Margin emissions factor for grid connected power generation in year y calculated using the latest version of "Tool to calculate the emission factor". Build margin emission factor is the generation-weighted average emission factor of all power plants m during the most recent year y for which generation data is available. The value is considered from CEA version 06 and registered PD. Assessment team checked the registered PD and found that value considered for emission reduction calculation in this present monitoring period is sourced from the registered PD. Thus assessment team conclude that the emission reduction calculation for the present monitoring period is conservative and correct. 3. $EF_{CO_2,grid,y}$: Combined Margin emissions factor for grid connected power generation in year y calculated using the latest version of "Tool to calculate the emission factor for an electricity system". Combined Margin is computed using the official data sources and is in-line with the guidance provided in the tool. The value is considered from CEA version 06 and registered PD. Assessment team checked the registered PD and found that value considered for emission reduction calculation in this present monitoring period is sourced from the registered PD. Thus assessment team conclude that the emission reduction calculation for the present monitoring period is conservative and correct. The value for $EF_{CO_2,grid,y}$, $EF_{grid,BM,y}$, $EF_{grid,OM,y}$ were considered from the CO2 baseline database (Version 06) published by Central Electricity Authority (CEA). The default value as mentioned in the registered PD and MR are same. The value of combined margin in India is being given by CEA and thus assessment team conclude that the value is correct and appropriate. The default value in turn is used for baseline calculation as per the formula given in the registered PD for the current monitoring period. <u>Ex-post parameter:</u> As per the registered monitoring plan and requirement of the registered methodology following parameters needs to be monitored:
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	EG_{PJ,y}: Net electricity generation supplied by the project plant/unit to the grid in year y The parameter is a calculated using the difference of export and import value measured from the electricity meter. The source of data of the parameter is Measured by the meter and as noted in the Monthly energy statement provided by the Suzlon signed by State Nodal agency. Net electricity supplied is calculated based on the difference between calculated values of “export” and calculated value “import” on the (RVPN /DISCOM)energy meter at the common evacuation point as prescribed in the PPA (Power Purchase agreement) for metering at 220 kV. The meter reading is taken during a fixed billing cycle of every month and representative of electricity board and Operation and maintenance personal onsite present during the process. Assessment team checked all the values of the electricity exported and electricity imported from the Monthly energy statement issued by the O&M personal signed by (RVPN /DISCOM) authority. The electricity meters are under the custody of the electricity board and calibrated by electricity board as per their standard procedures. The meters are calibrated in line with Indian grid code regulations for such installations. The invoice is raised by PP based on the Net electricity exported to the grid (based on the difference of export and import) which is as per the requirement of the applied methodology and registered PD. The apportioned metered net electricity (export – import) corresponding to WTGs owned by a particular developer is then issued separately in a share certificate/Monthly Statement which is further used for ER calculation in the current monitoring period. EG_{y,export}: Sum of electricity exported by all 25 WEGs of project activity connected to substation of the state utility Assessment team noted that the Main meter installed at the substation measure the total electricity exported to the grid continuously. A monthly meter reading taken jointly by state utility and PP representative (O&M contractor). The meter is a bi-directional meter measuring both the export and the import The metered export of electricity is apportioned among the various project developers based on the electricity generated at the WTG-Controller (LCS readings). The apportioned export electricity corresponding to WTGs owned by a particular developer is then issued separately in a share certificate/Monthly statement. PP has no control over this calculation. There is also a check meter installed at the substation to measure the total electricity exported to the grid continuously, in case of the failure of the main meter, the readings are monitored from the check meter in a similar way as that for the main meter. The Value of the export for individual month as mentioned in the Monthly statement for the project is than use to Calculate the Net electricity supplied to the grid from the project activity. EG_{y,import}: Sum of electricity imported by all 25 WEGs of project activity connected to substation of the state utility
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Assessment team noted that the Main meter installed at the substation measure the total electricity exported to the grid continuously. A monthly meter reading taken jointly by state utility and PP representative (O&M contractor). The meter is a bi-directional meter measuring both the export and the import. The metered import of electricity is apportioned among the various project developers based on the electricity generated at the WTG-Controller (LCS readings). The apportioned import electricity corresponding to WTGs owned by a particular developer is then issued separately in a share certificate/Monthly statement. PP has no control over this calculation. There is also a check meter installed at the substation to measure the total electricity imported from the grid continuously, in case of the failure of the main meter, the readings are monitored from the check meter in a similar way as that for the main meter. The Value of the import for individual month as mentioned in the Monthly statement for the project is then used to Calculate the Net electricity supplied to the grid from the project activity.

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

$$BE_y = EF_{CO_2,grid,y} \times EG_{BL,y}$$

Where,

BE_y baseline emissions, tCO₂e

EG_{BL,y} Net Quantity of Electricity exported to the facility

EF_{CO₂,grid,y} grid emission factor, i.e. 0.9487 t CO₂/MWh (it has been fixed ex-ante)

$$EG_{BL,y} = EG_{y,Export} - EG_{y,Import}$$

$$BE_y = 300,183.04 \times 0.9487 = 284,783 \text{ tCO}_2\text{e}$$

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

Leakage emission is not applicable as per the registered PDD.

As per the applied methodology, emission reductions are calculated as follows:

$$ER_y = BE_y - PE_y$$

$$= 284,783 \text{ tCO}_2\text{e} - 0 = 284,783 \text{ tCO}_2\text{e} \text{ (rounded down)}$$

Where:

ER_y = Emission reductions in year y (tCO₂e/yr)

BE_y = Baseline emissions in year y (tCO₂e/yr)

	PE_y = Project emissions in year y (tCO₂e/yr)=0 Hence, ER_y= BE_y
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4.3 Quality of Evidence to Determine GHG Emission Reductions and Removals

Means verification	of	The verification team checked the Calibration details of the monitoring meters with the calibration certificates.
Findings		CAR 04 was raised during the verification process. The description of the CAR and its closure is described below in Appendix 2 of this report
Conclusion		The metering arrangement is bi-directional energy meters (main and check) at the State Electricity Board (SEB) substation. These meters record several parameters including electricity exported & imported. These electricity meters are being used by state electricity board for Share certificate statements. Assessment team found that Since metering arrangement, monitoring practice, accuracy class, calibration interval is under control of state electricity board, the PP does not have all calibration certificates available with them. As per the registered monitoring plan, the energy meters have to be calibrated annually. It is to be noted here that due to delay in calibration, error factor has been applied on import values to retain conservativeness for the month of Dec 2013, Jan 2014 and from Dec 2015 to July 2016. The details of the Calibration is presented in Appendix 5 Assessment team confirms that all the energy meters (both main and check meter) installed at the substation are of accuracy class of 0.2s and are calibrated as per the national standards followed by the electricity board, but they are calibrated at least once in a year. There were delay in calibration and appropriate error factor is applied for the same for the concerned month. The calibration of the energy meters installed at HT side of the transformer were carried out by Meter and testing division of the electricity board which is 3rd party organization and the same is acceptable to the assessment team. The Meter and testing division of the electricity board is accredited by NABL (National Accreditation Board for Laboratory, Govt of India) to carry out the testing of the meters which is as per the national regulation and thus traceability of the Calibration is also confirmed by the assessment team.

4.4 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 SAFEGUARDS

5.1 No Net Harm

No potential environment or socio-economic matter was found during the site visit. The project is renewable energy project and thus no negative impact observed onsite. CAR 06 is raised during the process and please refer Appendix 2 for the closure of the CAR.

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. This report clearly mentioned that 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 notification¹ wind project falls under White Category and are practically non-polluting.

However, assessment team still conducted the No net harm assessment for some of the parameters and the result is described below.

SL.NO	Indicator	Assessment team opinion
1	Air quality	The project generates clean energy which replaces the fossil fuel intensive electricity generation. Also report on “Developmental Impacts and Sustainable Governance Aspects of Renewable Energy Projects” prepared by MNRE dated September 2013. This report clearly mentioned that Wind plant operations do not result in direct air pollution. Adequate measures were taken to mitigate the envisaged impacts like spraying water on the road side to reduce dust level, etc. This was confirmed by the local stakeholders. Therefore, it is validated that mitigation measures were robustly implemented on ground for air quality issues project will have a positive impact on air quality.
3	Soil condition	There are negligible impacts envisaged during operation of the project activity. For mitigating the impacts

¹ http://envfor.nic.in/sites/default/files/Latest_118_Final_Directions.pdf

		during construction, various mitigation measures were taken which is validated from the plant records of PP and the interview with local villagers. The top soil excavated during construction, was stockpiled and used for compaction. The roads were not paved and soling was done with excavated earth & rock material, so land disturbance could be minimized. It was also confirmed that, the vegetation done at site helps for soil erosion. The same is confirmed during the stakeholder meetings during onsite visit. Therefore, it can be concluded that the project has no effect on soil conditions during its operation because it has no waste coming out.
4	Biodiversity	During the validation site visit it was observed that the condition of ground vegetation will be gradually improved; No rare species has been found in the around area. The project site is not on the migration route of migratory bird. As Such Wind plant do not have any obstruction in the path of migratory birds. With the implementation of Project, the greening water will be increased significantly; the biodiversity in the vicinity will be improved with the vegetation improvement. No negative impact envisaged.
5	Employment Generation	The project activity employed local population as skilled workers as

		well as security guards which were envisaged during the validation site visit. The personnel employed by the project activity are also provided trainings and exposed to various awareness programs therefore a positive indicator has been accepted.
6	Livelihood of the poor	The project is associated with infrastructure development like roads in the nearby areas and promoting economic activities like grants to local school and communities temples etc. Also, project employed local villagers as guards for the security of power project. Positive impact envisaged. .

5.2 Local Stakeholder Consultation

All the stakeholders are happy with the implementation and operation of the project activity and no negative comments envisaged for the project activity. There was no change in technical project description from the registered VCS PD. Assessment team confirmed the same during the verification site visit. However CAR 07 is raised during the verification process. Please refer Appendix 2 for the detail closure of the CAR. Also, as best practice method PP also placed a grievance register onsite to record any grievance from the stakeholders during and after the implementation of the project activity. Assessment team checked the grievance register maintained onsite and no negative comments were observed for the project activity. Local people are happy as the project generated employment opportunities and thus the living standards in and around the vicinity of the project is increased and thus assessment team confirms that local stakeholders have no issue with this project activity after implementation and continuous operation.

The interaction with some of the stakeholders during the site visit are presented below:

Name of the stakeholder	Sohan Singh
Occupation	Villager
DOE QUESTION: Did PP promised employment opportunity? Answer: Yes, PP told us that employment will be generated and the locals will be given priority. DOE also like to conclude that during the site visit it was observed that local people were employed for security and operation related work like water spraying, vegetation improvement and other unskilled work. DOE also found that skilled local persons were also employed by the organization for the operation and maintenance of the power plant.	

Name of the stakeholder	Ram Prasad
Occupation	Villager
DOE questions: Did the power plant discharge any harmful pollutants? Answer: NO the plant does not discharge any harmful pollutants. DOE questions: Did the power plant destroy any crop fields?	

Answer: The plant is implemented in barren land and there were no any fertile land or crop which is damaged.

6 VERIFICATION CONCLUSION

Applus+ Certification has been engaged by Hindustan Zinc Limited to perform the 2nd periodical verification of the “52.50 MW WIND ENERGY FARM AT MOKLA RAJASTHAN BY HZL”

The management of Hindustan Zinc Limited is 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 12.3.0

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. 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.

Verification period: 01-Dec-2012 to 31-Dec-2016 (inclusive of both days)

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

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
2012	3,215	0	3,215
2013	70,048	0	70,048
2014	73,338	0	73,338
2015	73,697	0	73,697
2016	64,485	0	64,485
Total	284,783	0	284,783

No.	Author	Title	References to the document	Provider
1	NA	Commissioning certificates of the WTGs implemented in the project site.	NA	Project participant
2	NA	Contract of the project participant with the DOE	Contract document signed between PP and DOE	Project participant
3	NA	Technical specifications of WTGs generators from manufacturers	Manufacturer technical specifications	Project participant
4	NA	Registered PD dated 11/09/2012 version 3.2 https://www.vcsprojectdatabase.org/#/project_details/1134	NA	Project participant
5	NA	Registered Final Validation report 26/09/2012 version 01 Final Verification report (1st periodic)-dated 08/01/2014 version 01 https://www.vcsprojectdatabase.org/#/project_details/1134	NA	Project participant
6	NA	Emission Calculation sheet version 01 Emission Calculation sheet version 02	ER sheet Dated 12/09/2018 ER sheet Dated 29/09/2018	Project participant
7	NA	The operational lifetime of the project activity from the manufacturer=(Technical specefications)	Manufacturer technical specifications	Project participant
8	NA	RBI: Reserve Bank of India www.rbi.org.in	Reference link is provided.	Independent Search

		Ministry of Environment and forest: www.envfor.nic.in UNFCCC www.cdm.unfccc.int CEA: Central electricity authority www.cea.nic.in Income tax act 1961 http://law.incometaxindia.gov.in/DIT/ VCS: Verified Carbon Standard www.v-c-s.org		
09	NA	Tools/ guidelines used in the project activity • Tool to determine the remaining lifetime of the project activity in line with Annex 15 EB 50 • Tool to calculate the emission factor for an electricity system (Version 02.2.1) • Tool for the demonstration and assessment of additionality (Version 06.0.0) • Glossary of CDM terms version 07 • VCS verification report template version 03	UNFCCC CDM/VCS web site	UNFCCC
10	NA	Share reports/Monthly statement for the complete monitoring period	Share reports/Monthly statement for the complete monitoring period	PP
11	NA	MR version 01 MR version 02	12/09/2018 29/09/2018	PP

12	NA	Invoices for the complete monitoring period	Invoice	PP
13	NA	Break down details of the complete monitoring period	Log sheet	PP
14	NA	Declaration regarding no participation in other GHG program for the concerned monitoring period	Declaration dated 28/09/2018	PP

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

CAR ID	01	Date: 28/09/2018
Description of CAR		
During the site visit and subsequent document review it was observed that the details of feeder wise location of the Wind turbines is missing in the MR. Corrective action is sought in the respective section of the MR. The details implementation of the project activity timeline is missing in the MR. Supporting documents such as Commissioning certificates, Power purchase agreement and O&M agreements are missing. The technical details supporting documents are not submitted to the assessment team. Corrective action is sought for the same.		
Project participant response		Date: 29/09/2018
Feeder wise location of the WTG is mentioned in MR Version 02. The detailed information of the project implementation timeline is mentioned in the MR Version 02. The technical specifications of the project activity have been sourced from the Commissioning Certificate of the project and the same has been submitted to the Verification team.		
Documentation provided by project participant		
MR Version 02 Commissioning Certificate of project		
DOE assessment		Date: 05/10/2018
Following are the Observation of the DOE:		

1. Feeder number details are now added in the revised MR Version 02. CAR is thus closed.
2. The detailed information of the timeline is now incorporated in the MR. CAR is thus closed.
3. The technical information is now submitted to the DOE for cross check. The same is checked and found correct. CAR is thus closed.

CAR ID	02	Date: 28/09/2018
Description of CAR		
The breakdown details of the Wind turbines are missing in the MR. However, the supporting document regarding the breakdown details are not provided to the assessment team. Corrective action is sought in this regard.		
Project participant response		Date: 29/09/2018
The breakdown details of the Wind project is mentioned in MR Version 02		
Documentation provided by project participant		
MR Version 02		
Breakdown details		
DOE assessment		Date: 05/10/2018
The breakdown log details are checked and found correct. Power Plant undergone scheduled maintenance as per the manufacturers specification and no unforeseen incident found for the monitoring period. CAR is thus closed.		

CAR ID	03	Date: 28/09/2018
Description of CAR		
The JMR sheets and Invoice for the complete monitoring period is missing. Emission reduction value is thus reserved and will further be analysis on the submission of the documents.		
The comparison of actual VER and estimated VER is also missing in the MR.		
Corrective action is sought.		
Project participant response		Date: 29/09/2018

The JMR and Invoice for the complete monitoring period has been submitted with MR version 02

The comparison of Actual vs Estimated VER is presented in MR Version 02

Documentation provided by project participant

1. *JMR and Invoice for complete Monitoring Period*
2. *MR Version 02*
3. *ER Sheet Version 02*

DOE assessment

Date: 05/10/2018

Following are the observation of the DOE:

1. The JMR and invoice for the complete monitoring period is checked and found correct. ER calculation is thus found correct.
2. The actual vs estimated comparison is now presented in the revised MR Version 02. CAR is thus closed.

CAR ID	04	Date: 28/09/2018
Description of CAR		
The calibration certificates for the complete monitoring period are missing. The details are also missing in the MR. Corrective action sought for the same		
Project participant response		Date: 29/09/2018
Calibration Certificates of the entire Monitoring Period is submitted with MR Version 02 and details has been updated in revised MR Version 02.		
Documentation provided by project participant		
1. <i>Calibration Certificates</i> 2. <i>MR Version 02</i>		
DOE assessment		Date: 05/10/2018
The calibration Certificate for the entire monitoring period is checked and found correct. As per the registered PD the calibration frequency is once in year. However, there were delay in calibration and thus error factor is applied accordingly. CAR is thus closed.		

CAR ID	05	Date: 28/09/2018
Description of CAR		
As per section 1.9 of the VCS MR, the project is not participated in other GHG program and has not intended to pursue credits from other GHG program for the concerned monitoring period. Supporting documents and details regarding the same is missing in the MR. Also, PP needs to justify whether REC benefits is taken for the present Monitoring period covered under VCS. Corrective action is sought for the same.		
Project participant response		Date: 29/09/2018
The project has been registered with UNFCCC however for the same Monitoring Period, PP is not going to claim Emission Reduction other than VCS and a declaration dated 28th Sept 2018 has been submitted for the same. Also it can be crosschecked that PP is not claiming REC benefits, the same can be verified with the REC accreditation body of India².		
Documentation provided by project participant		
1. Declaration by the PP 2. MR Version 02		
DOE assessment		Date: 05/10/2018
The project is registered with UN however PP is not claiming any CERs for the VCS monitoring period applied. The same is checked by the assessment team during the interview with PP and also with the declaration dated 28th September 2018. PP is also not claiming any REC benefits for the concerned monitoring period. The same is also checked by the assessment team from the official web site of REC. CAR is thus closed.		

CAR ID	06	Date: 28/09/2018
Description of CAR		
During the document review it is observed that “No net Harm” details are missing in the MR. Moreover, supporting documents are not shared with DOE. Corrective action is sought in this regard in the respective section of the MR.		
Project participant response		Date: 29/09/2018
The project activity does not cause any harm to the local ecology. It primarily requires the installation of		

² https://recregistryindia.nic.in/index.php/general/publics/accredited_regens_pdf

the wind turbines, interfacing the generators with the State Electricity Board by setting up HT transmission lines and installation of other accessories. However, there are no negative impacts on air, water, soil quality and ambience are envisaged due to the project activity.

Also as per the Central Pollution Control Board of India notification³ wind projects falls under White Category and are practically non-polluting.

Documentation provided by project participant

MR Version 02

DOE assessment

Date: 05/10/2018

As per the Central Pollution Control Board of India notification⁴ wind projects falls under White Category and are practically non-polluting. However, DOE still done the assessment and the result is presented in the concerned section of the FVR. Assessment team found being a renewable project the project has positive impact on environment and also have positive social impact like it helped people getting job in the nearby area. CAR is thus closed.

CAR ID	07	Date: 28/09/2018
Description of CAR		
During the document review it is observed that "Local Stakeholder" consultation details are missing in the MR. Moreover, supporting documents are not shared with DOE. Corrective action is sought in this regard in the respective section of the MR.		
Project participant response		Date: 29/09/2018
The project proponents organized stakeholders meeting in order to take into account the concerns of the nearby villagers regarding the project implementation, at the time of validation of the project activity. As a part of continuous feedback from stakeholders, there were no major comments or protest raised by the stakeholders and they were totally in support for setting up of these kinds of projects in the region. The PP also placed a grievance register onsite in where the stakeholder can put down his/her complain and the same if found genuine will be addressed immediately.		
Documentation provided by project participant		
MR Version 02		
DOE assessment		Date: 05/10/2018

³ http://envfor.nic.in/sites/default/files/Latest_118_Final_Directions.pdf

⁴ http://envfor.nic.in/sites/default/files/Latest_118_Final_Directions.pdf

The project is now undergoing 2nd Verification and the stakeholders meeting was done at the time of validation. However, as a Continuous measure to improve stakeholder's wellbeing in the nearby area PP has place grievance register onsite to collect any negative or positive feedback from them. Assessment team checked the register and found that no such negative instances were recorded on the contrary local people are happy with the implementation of the project as it has improved their standard of Living and also impacted their livelihood in a positive manner. Local people were also getting Job from the implementation of the project activity which otherwise was not available and basically people were involved in labour work in the agricultural field. The result of the agricultural job is that people are not getting continuous financial support as agriculture here in India is whether specific. However the income is now continuous after getting placement in the projects and people are happy because of the same. CAR is thus closed.

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 DOE or outsourced entity)	Involvement in			
						Desk review	On-site inspection	Interview(s)	Verification findings
1.	Lead Auditor/Technical Expert	OR	Das	Sukanta	TQC-Outsourced entity	Yes	Yes	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 DOE or outsourced entity)
1.	Technical reviewer (TR)	EI	Shen	Simon	Applus+ Certification
2.	Approver	IR	Sendin	Juan	Applus+ Certification B.U. Managing Director

Short CVs of the Team:

1. Mr. Sukanta DAS, has done M. SC in (Electronics and Photonics) and M. Tech in (Energy technology) from Tezpur Central University/ Indian Institute of technology Bombay in India. He is a certified lead auditor for ISO 14001 EMS LA and ISO 9001 QMS LA from International registry for Certified Auditors (IRCA) and Certified Lean Management practitioner from Quality Council of India (QCI). He has more than Nine (9) years of working experience at TUV NoRD/ Re-consult/CRA/APPLUS certifications under various categories of projects stating from Renewable to waste to supercritical projects. He was JI/ CDM Lead Assessor in TUV NoRD and was involved in more than 100 CDM validation and verifications activities in Gold Standard, VCS, CDM projects as a team leader/technical reviewer / validator / verifier covering the sectoral scope 1, 13 technical areas 1.2/1.1/13.1. Currently he is associated with True Quality Certifications Private Limited and is empanelled with APPLUS+ certification to carry out GHG audits.
2. Meng (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 3.5 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 ₂	Carbon dioxide
CO ₂ 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
RBI	Reserve Bank Of India
PP	Project Participant

APPENDIX 5: CALIBRATION DETAILS OF THE METERS

Meter Details	Meter Sr. No.	Calibration in Previous MP	Calibration Done	Validity	Calibration done	Validity	Calibration Done	Validity	Calibration Done	Validity
220 KV Line 1 Main	9166170	13-03-2012	12-12-2012	11-12-2013	21-01-2014	20-01-2015	28-12-2014	27-12-2015	20-07-2016	19-07-2017
220 KV Line 1 Back Up	9166172	13-03-2012	12-12-2012	11-12-2013	21-01-2014	20-01-2015	28-12-2014	27-12-2015	20-07-2016	19-07-2017
220 KV Line 2 Main	MSB 60428	13-03-2012	17-12-2012	16-12-2013	21-01-2014	20-01-2015	28-12-2014	27-12-2015	20-07-2016	19-07-2017
220 KV Line 2 Back Up	MSB 60429	13-03-2012	17-12-2012	16-12-2013	21-01-2014	20-01-2015	28-12-2014	27-12-2015	20-07-2016	19-07-2017
SEL 74 (main)	RJB69748	16-03-2012	16-12-2012	15-12-2013	21-01-2014	20-01-2015	28-12-2014	27-12-2015	20-07-2016	19-07-2017
SEL 74 (back)	RJB69747	16-03-2012	16-12-2012	15-12-2013	21-01-2014	20-01-2015	28-12-2014	27-12-2015	20-07-2016	19-07-2017
SEL 75 Main	MSB10288	16-03-2012	15-12-2012	14-12-2013	21-01-2014	20-01-2015	28-12-2014	27-12-2015	19-07-2016	18-07-2017
SEL 75 Back	MSB10287	16-03-2012	15-12-2012	14-12-2013	21-01-2014	20-01-2015	28-12-2014	27-12-2015	19-07-2016	18-07-2017
SEL 86 Main	MSB10290	16-03-2012	15-12-2012	14-12-2013	21-01-2014	20-01-2015	28-12-2014	27-12-2015	19-07-2016	18-07-2017

SEL 86 Back	MSB10291	16-03-2012	15-12-2012	14-12-2013	21-01-2014	20-01-2015	28-12-2014	27-12-2015	19-07-2016	18-07-2017
SEL 90 Main	RJB69756	16-03-2012	15-12-2012	14-12-2013	22-01-2014	21-01-2015	27-12-2014	26-12-2015	20-07-2016	19-07-2017
SEL90 backup	RJB69757	16-03-2012	15-12-2012	14-12-2013	22-01-2014	21-01-2015	27-12-2014	26-12-2015	20-07-2016	19-07-2017
SEL91 Main	RJB69759	16-03-2012	15-12-2012	14-12-2013	23-01-2014	22-01-2015	27-12-2014	26-12-2015	20-07-2016	19-07-2017
SEL91 Backup	RJB69760	16-03-2012	15-12-2012	14-12-2013	23-01-2014	22-01-2015	27-12-2014	26-12-2015	20-07-2016	19-07-2017
SEL 92 Main	RJB69751	16-03-2012	15-12-2012	14-12-2013	23-01-2014	22-01-2015	29-12-2014	28-12-2015	19-07-2016	19-07-2017
SEL 92 Back up	RJB 69753	16-03-2012	15-12-2012	14-12-2013	23-01-2014	22-01-2015	29-12-2014	28-12-2015	19-07-2016	19-07-2017
SEL 99 Main	RJB69754	16-03-2012	15-12-2012	14-12-2013	22-01-2014	21-01-2015	29-12-2014	28-12-2015	20-07-2016	19-07-2017
SEL 99 backup	RJB 69755	16-03-2012	15-12-2012	14-12-2013	22-01-2014	21-01-2015	29-12-2014	28-12-2015	20-07-2016	19-07-2017
SEL 103 Main	RJB 72832	16-03-2012	15-12-2012	14-12-2013	21-01-2014	20-01-2015	29-12-2014	28-12-2015	20-07-2016	19-07-2017
SEL 103 backup	RJB 72831	16-03-2012	15-12-2012	14-12-2013	21-01-2014	20-01-2015	29-12-2014	28-12-2015	20-07-2016	19-07-2017
SEL 104 Main	RJB 72833	16-03-2012	15-12-2012	14-12-2013	23-01-2014	22-01-2015	29-12-2014	28-12-2015	19-07-2016	18-07-2017

SEL 104 backup	RJB 72834	16-03-2012	15-12-2012	14-12-2013	23-01-2014	22-01-2015	29-12-2014	28-12-2015	19-07-2016	18-07-2017
SEL 105 Main	RJB 72524	16-03-2012	15-12-2012	14-12-2013	21-01-2014	20-01-2015	29-12-2014	28-12-2015	19-07-2016	18-07-2017
SEL 105 Backup	RJB 72525	16-03-2012	15-12-2012	14-12-2013	21-01-2014	20-01-2015	29-12-2014	28-12-2015	19-07-2016	18-07-2017
SEL 113 Main	RJB 73569	16-03-2012	15-12-2012	14-12-2013	22-01-2014	21-01-2015	29-12-2014	28-12-2015	19-07-2016	18-07-2017
SEL 113 back up	RJB73570	16-03-2012	15-12-2012	14-12-2013	22-01-2014	21-01-2015	29-12-2014	28-12-2015	19-07-2016	18-07-2017
SEL 114 Main	RJB 73571	16-03-2012	15-12-2012	14-12-2013	22-01-2014	21-01-2015	29-12-2014	28-12-2015	19-07-2016	18-07-2017
SEL 114 Backup	RJB 73572	16-03-2012	15-12-2012	14-12-2013	22-01-2014	21-01-2015	29-12-2014	28-12-2015	19-07-2016	18-07-2017

Assessment team found that since metering arrangement, monitoring practice, accuracy class, calibration interval is under control of state electricity board, the PP does not have all calibration certificates available with them.

Also it is to be noted that as per the registered monitoring plan, the energy meters has to be calibrated annually. It is to be noted here that due to delay in calibration, error factor has been applied on import values to retain conservativeness for the month of Dec 2013, Jan 2014 and from Dec 2015 to July 2016.