




**Validation report form for renewal of crediting period for
CDM project activities
(Version 03.0)**

Complete this form in accordance with the instructions attached at the end of this form.

BASIC INFORMATION

Title and UNFCCC reference number of the project activity	Wind Power Project at Tadas, Karnataka (UNFCCC number-9376 ¹)
Number and duration of the next crediting period	Second renewable crediting period 31/12/2019 to 30/12/2026
Version number of the validation report	02
Completion date of the validation report	05/05/2020
Version number of PDD to which this report applies	11
Project participants	M/s ReNew Wind Energy (Karnataka) Private Limited
Host Party	India
Applied methodologies and standardized baselines	ACM0002 "Grid-connected electricity generation from renewable sources" Version 20.0.
Mandatory sectoral scopes	01
Conditional sectoral scopes, if applicable	NA
Estimated amount of annual average GHG emission reductions or GHG removals by sinks in the next crediting period	89,075 tCO ₂ e
Name and UNFCCC reference number of the DOE	LGAI Technological Center, S.A. (Applus+ Certification) UNFCCC Ref. No.: E-0032
Name, position and signature of the approver of the validation report	Mr. Juan Sendín Caballero Applus+ Certification Business Unit Managing Director Signature: 

¹ <https://cdm.unfccc.int/Projects/DB/RINA1356708962.81/view>

SECTION A. Executive summary

M/s ReNew Wind Energy (Karnataka) Private Limited envisages setting up 63 numbers of Enercon make E-53, 800 kW Wind Turbine Generators (WTGs) by ReNew Wind Energy (Karnataka) Private Limited (RNWEKPL) at Tadas in Haveri & Darwada district of Karnataka, India. The total installed capacity of the project activity is 50.4 MW and Enercon (India) Limited is the supplier of WTGs for this project activity. The project activity is expected to generate 94,570 MWh of electricity per year. The net electricity generated from this project activity will be supplied to individual customers in the Southern grid (Now Indian grid) through open access sale for first 10 years of operation to improve the financial viability of project. The model of power sale is group captive model. From 11 years onwards it is assumed that power will be sold to grid under preferential tariff till entire lifetime of project activity.

This project will generate clean energy by installing wind turbines in Karnataka. The development of the project activity would reduce the Green House Gas (GHG) emissions produced by the Indian (erstwhile Southern grid) grid generation mix.

These turbines are supplied by Enercon. The technology for the same is environmentally safe and sound and there is no technology transfer to the host party involved in the same. Lifetime of the WTGs is expected to be 25 years as per data shared by the technology supplier.

The project activity is a grid connected renewable energy project that supplies electricity to the Indian grid, thus it comes under the Sectoral scope Sectoral Scope : 1 Energy industries (renewable / non-renewable sources). The estimated ERs of the project activity are 89,075 tCO₂e.

Validation Scope: M/s ReNew Wind Energy (Karnataka) Private Limited has contracted Applus+ Certification to conduct the validation of the renewal of the crediting period of the project activity. The scope is defined as an independent and objective review of the project design document (PDD) for the renewal of the crediting period. The PDD 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, including the approved baseline and monitoring methodology ACM0002 “Consolidated baseline methodology for grid-connected electricity generation from renewable sources” Version 20.0. The validation of the renewal of the crediting period was based on the requirements in the CDM validation and verification standard for project activities, version 02 and renewal of crediting period in accordance with requirements of CDM methodological tool “TOOL11 – Assessment of the validity of the original / current baseline and update of the baseline at the renewal of the crediting period” – version 03.0.1.

The validation 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 project design document.

Validation Process: The project assessment is based on the “CDM validation and verification standard for project activities, version 02 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 CDM project activity are appointed.

Once the project is made available for the global stakeholder consultation process, the members of the assessment team carried out:

- I A desk review of the project design documentation for renewal of crediting period;
- II Follow-up interviews with project stakeholders;
- III The resolution of outstanding issues and the issuance of the final validation report and opinion.

The prepared validation report and other supporting documents then undergo an internal quality control at the HQ (Accredited office) before being submitted to the CDM-EB.

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 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
Dr. Atul Takarkhede	LA/TE	YES	YES	YES	YES
Mr. Simon Shen	TR	YES	YES	YES	NA

The complete list of CVs is included as Appendix 2 of this report.

Document review

The Project Design Document submitted by the Client was reviewed against the approved methodology 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 like 3rd party Government documents has been done. A complete list of all documents and evidence material reviewed is included in Appendix 3 of this report.

Follow-up interviews

Applus+ Certification have conducted remote audit and used verification techniques & advanced communication technology solutions to verify information and compliance with applicable requirements to the extent possible, to ensure the completeness and credibility of the audit to confirm selected information and to resolve issues identified in the document review. The detail is provided in section C.2 and C.3 of this report.

Resolution of Clarification and Corrective Action Request

The objective of this phase of the validation 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 project design. 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 validation process, the concerns raised and responses given are summarized in Appendix 4 below.

The final PDD version 11 submitted by PP on 30/04/2020 serves as the basis for the final assessment presented. Additional changes to the project during the validation process are not considered to be significant with respect to the main CDM objectives. The two CDM 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 validation of the final documentation including the validation 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 validation opinion and relevant documents are submitted to the EB through the UNFCCC web-platform.

Conclusion

Applus+ Certification has performed a validation of the renewal of the crediting period of the “Wind Power Project at Tadas, Karnataka”. The validation was performed on the basis of UNFCCC criteria and host country criteria, as well as criteria, e.g. ACM0002 “Grid-connected electricity generation from renewable sources” Version 20.0, given to provide for consistent project operations, monitoring and reporting.

The review of the project design documentation for the renewal of the crediting period and the subsequent follow-up interviews have provided Applus+ Certification with sufficient evidence to determine the fulfillment of stated criteria. In our opinion, the project meets all relevant UNFCCC requirements for the CDM and all relevant host country criteria. The project will hence be recommended by Applus+ Certification for the renewal of the crediting period with the UNFCCC.

Applus+ Certification has received a confirmation from the host Party that the project activity assists it in achieving sustainable development.

By displacing fossil fuel-based electricity with electricity generated from a renewable source, the project results in reductions of CO₂ emissions that are real, measurable and give long-term benefits to the mitigation of climate change. An analysis of the positive list of renewable project demonstrates that the proposed project activity is not a likely baseline scenario. Emission reductions attributable to the project are hence additional to any that would occur in the absence of the project activity. Given that the project is implemented as designed, the project is likely to achieve the estimated amount of annual emission reductions of 89,075 tCO₂e.

The validation has been performed following the requirements of the latest version of the CDM validation and verification standard for project activities, version 02 and on the basis of the contractual agreement. The single purpose of this report is its use during the registration process as part of the CDM/ UNFCCC project cycle.

SECTION B. Validation team, technical reviewer and approver

B.1. Validation 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/document review	On-site inspection	Interview(s)	Validation findings
1.	Lead Auditor/ Technical Expert	OR	Takarkehede	Atul	True Quality Certifications Private Limited- Outsourced entity	YES	YES	YES	YES

B.2. Technical reviewer and approver of the validation report for RCP

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	EI	Shen	Simon	Applus+ Certification
2.	Approver	IR	Sendín Caballero	Juan	Applus+ Certification

SECTION C. Means of validation**C.1. Desk/document review**

The details of the document observed during desk review /validation process are listed below in Appendix 3 of this report.

C.2. On-site inspection

Duration of on-site inspection: 21/04/2020 (Telephonic interviews & skype video)					
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.	Telephonic interviews & document review	21/04/2020 (Telephonic interviews)	Atul Takarkhede	

C.3. Interviews

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Angadi	Sunil	Site Incharge	21/04/2020 (Telephonic & skype video)	- Project Implementation - Operation and Maintenance - Calibrations etc.	Atul Takarkhede
2.	Rajpoot	Pankaj	EKI Consultants	21/04/2020 (Telephonic & skype video)	- General aspects - CDM aspects - EF calculation - ER calculation	

There is no pre-project information that is relevant to the requirements for registration of the project activity and which may not be traceable after the registration, being project is already implemented as per the registered CDM PDD. To validate the implementation of project activity, onsite operation & maintenance, monitoring & management practices; assessment team has conducted telephonic interviews with onsite in-charge and also had a detail discussion with the project participant and reviewed third party statutory documents i.e. Commissioning certificates, Power Purchase Agreement, Sample JMRs, Sample Invoice (for cross check of Net electricity supplied to the grid as per registered PDD and approved methodology) etc. After telephonic interviews with concerned onsite persons, document reviews; assessment team concluded that the project activity is still implemented and operated in-line with the registered CDM PDD. There is no change in the project design or operation and monitoring practices at site which can alter the applicability or additionality of the project activity. Assessment team therefore of the opinion that project is implemented as described in the registered PDD for first crediting period and no change is envisaged for the proposed second crediting period.

C.4. Sampling approach

The assessment team did not apply any sampling approach for the project activity. The site visit was conducted remotely and reviewed documents for implementation of the project activity as mentioned in the PDD.

C.5. Clarification requests (CLs), corrective action requests (CARs) and forward action requests (FARs) raised

Area of validation findings	No. of CL	No. of CAR	No. of FAR
Compliance with PDD form	00	02	00
Application and selection of methodologies and standardized baselines	00	00	00
Validity of original baseline or its update	00	01	00
Estimated emission reductions or net anthropogenic removals	00	01	00
Validity of monitoring plan	00	00	00
Crediting period	00	00	00
Project participants	00	01	00
Post-registration changes	00	00	00
Others (please specify)	00	00	00
Total	00	05	00

SECTION D. Validation findings

D.1. Compliance with PDD form

Means of validation	Assessment team checked the PDD version 11.0 forms supplied by the project participant and found that the latest form applicable in the UNFCCC web site is used for the presentation of the PDD.
Findings	CAR 01 & CAR 02 was raised during the validation process and closed successfully. Please refer Appendix 4 for the detail closure of the CAR
Conclusion	<p>Assessment team also checked the commissioning certificates^{/2/} and found the same to be correct. The actual commissioning date checked from the 3rd party Government documents i.e. HUBLI ELECTRICITY SUPPLY COMPANY LIMITED and found to be accurate^{/2/}.</p> <p>The latest version of the PDD template (CDM-PDD-FORM – version 11) available at the UNFCCC website has been used^{/5/}. The issues found were all addressed.</p> <p>It has been filled out in accordance with the instructions.</p> <p>No post registration changes is envisaged for the second CP as the project is implemented as per the registered PDD^{/5/} of 1st CP and in continuous operation apart from scheduled maintenance^{/11/} (as per manufacturer specification) and thus there is no scenario observed which can alter the requirement of the methodology^{/7/}. The project activity complies with the applicability criteria of the large scale CDM Project activity category. There is no change in installed capacity of the project as mentioned in registered PDD for 1st CP^{/3/}. The same is checked by the assessment team during telephonic interviews of onsite personnels^{/12/}, document review^{/2/, /10/, /11/} and found correct.</p>

D.2. Application and selection of methodologies and standardized baselines

Means of validation	<p>The assessment team has validated the documentation referred to in the revised PDD for renewable of crediting period and verified the documentation content for verifying the justification of the applicability of the methodology ACM0002 “Grid-connected electricity generation from renewable sources” Version 20.0 and confirmed that the documentation referred to in the PDD is correctly quoted and interpreted. The assessment team has also cross-checked the information provided in the registered PDD of 1st CP with the documentation other than from the PDD based on the local and sectoral knowledge of the assessment team.</p> <p>Following documentation has been reviewed by the assessment team:</p> <ul style="list-style-type: none"> - Site visit (Remote audit) - Interview with the concerned person mentioned in this report - Technical detail analysis of the power plant from the documents submitted by the manufacturer. - Commissioning certificates of the turbines <p>The assessment of the project's compliance with the applicability criteria of</p>
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	ACM0002 "Consolidated baseline methodology for grid-connected electricity generation from renewable sources" Version 20.0 are documented in detail in section B.2 of the PDD.	
Findings	Applicability criteria were explained properly as per the requirement of the applied approved methodology for the present crediting period. No CAR raised in this Section.	
Conclusion	The applied baseline methodology is justified as it has been demonstrated that the proposed project activity is:	
	Applicability Criterion	Project Case
	<p>1. This methodology is applicable to grid-connected renewable energy power generation project activities that:</p> <ul style="list-style-type: none"> (a) Install a Greenfield power plant; (b) Involve a capacity addition to (an) existing plant(s); (c) Involve a retrofit of (an) existing operating plants/units; (d) Involve a rehabilitation of (an) existing plant(s)/unit(s); or (e) Involve a replacement of (an) existing plant(s)/unit(s) 	<p>The project activity is a Renewable Energy Project i.e. Wind Power Project which falls under applicability criteria option 1 (a) i.e., "Install a Greenfield power plant". Hence the project activity meets the given applicability criterion.</p>
	<p>2. The methodology is applicable under the following conditions:</p> <ul style="list-style-type: none"> (a) The project activity may include renewable energy power plant/unit of one of the following types: hydro power plant/unit with or without reservoir, wind power plant/unit, geothermal power plant/unit, solar power plant/unit, wave power plant/unit or tidal power plant/unit; (b) In the case of capacity additions, retrofits, rehabilitations or replacements (except for wind, solar, wave or tidal power capacity addition projects the existing plant/unit started commercial operation prior to the start of a minimum historical reference period of five years, used for the calculation of baseline emissions and defined in the baseline emission section, and no capacity expansion, retrofit, or rehabilitation of the plant/unit has been undertaken between the start of this minimum historical reference period and the implementation of the project 	<p>The option (a) of applicability criteria 2 is applicable as project is renewable energy wind power project.</p>

	activity.	
	<p>3. In case of hydro power plants, one of the following conditions shall apply:²</p> <ul style="list-style-type: none"> (a) The project activity is implemented in existing single or multiple reservoirs, with no change in the volume of any of the reservoirs; or (b) The project activity is implemented in existing single or multiple reservoirs, where the volume of the reservoir(s) is increased and the power density calculated using equation (3), is greater than 4 W/m²; or (c) The project activity results in new single or multiple reservoirs and the power density, calculated using equation (3), is greater than 4 W/m²; or (d) The project activity is an integrated hydro power project involving multiple reservoirs, where the power density for any of the reservoirs, calculated using equation (3), is lower than or equal to 4 W/m², all of the following conditions shall apply: <ul style="list-style-type: none"> (i) The power density calculated using the total installed capacity of the integrated project, as per equation (4), is greater than 4 W/m²; (ii) Water flow between reservoirs is not used by any other hydropower unit which is not a part of the project activity; (iii) Installed capacity of the power plant(s) with power density lower than or equal to 4 W/m² shall be: <ul style="list-style-type: none"> a. Lower than or equal to 15 MW; and b. Less than 10 per cent of the total installed capacity of integrated hydro power project. 	Not applicable as the project is installation of new wind based electricity generation plant.

² Project participants wishing to undertake a hydroelectric project activity that result in a new reservoir or an increase in the volume of an existing reservoir, in particular where reservoirs have no significant vegetative biomass in the catchments area, may request a revision to the approved consolidated methodology.

	<p>4. In the case of integrated hydro power projects, project proponent shall:</p> <p>(a) Demonstrate that water flow from upstream power plants/units spill directly to the downstream reservoir and that collectively constitute to the generation capacity of the integrated hydro power project; or</p> <p>(b) Provide an analysis of the water balance covering the water fed to power units, with all possible combinations of reservoirs and without the construction of reservoirs. The purpose of water balance is to demonstrate the requirement of specific combination of reservoirs constructed under CDM project activity for the optimization of power output. This demonstration has to be carried out in the specific scenario of water availability in different seasons to optimize the water flow at the inlet of power units. Therefore this water balance will take into account seasonal flows from river, tributaries (if any), and rainfall for minimum five years prior to implementation of CDM project activity.</p>	The project is wind power project and thus the criterion is not applicable to this project activity.
	<p>5. The methodology is not applicable to:</p> <p>(a) Project activities that involve switching from fossil fuels to renewable energy sources at the site of the project activity, since in this case the baseline may be the continued use of fossil fuels at the site;</p> <p>(b) Biomass fired power plants/units.</p>	<p>(a) The project activity is Greenfield and there is no switching of fossil fuel to renewable energy. Hence the criteria is not applicable to the project activity</p> <p>(b) The project is not a biomass fired power plant. Hence the criteria is not applicable to the project activity.</p>
	<p>6. In the case of retrofits, rehabilitations, replacements, or capacity additions, this methodology is only applicable if the most plausible baseline scenario, as a result of the identification of baseline scenario, is "the continuation of the current situation, that is to use the power generation equipment that was already in use prior to the implementation of the</p>	Not applicable, the wind project is a Green field project activity and this project is not the enhancement or up gradation project.

	project activity and undertaking business as usual maintenance”.	
	7. In addition, the applicability conditions included in the tools referred to below apply. ³	Tool to calculate the emission factor for an electricity system - Version 07.0 (EB 100, Annex 04) have been applied appropriately.
	Assessment team confirms that the application of the baseline methodology is transparent and conservative and confirms that the chosen baseline and monitoring methodology i.e. ACM0002 “Consolidated baseline methodology for grid-connected electricity generation from renewable sources” Version 20.0. is applicable to the project activity ^{7/} .	

D.3. Validity of original baseline or its update

Means of validation	The baseline scenario as depicted in the PDD version 11 is checked during the validation interviews and also during the interview with the plant official.
Findings	The baseline is selected as per the requirement of the approved methodology ACM0002 “Grid-connected electricity generation from renewable sources” Version 20.0. for the present Crediting period. However, CAR 03 was raised during the validation process and closed successfully.
Conclusion	<p>Assessment team referred “Methodological tool (EB 66, Annex 47) “Assessment of the validity of the original / current baseline and update of the baseline at the renewal of the crediting period^{9/}.” (Version 03.0.1)” and CDM validation and verification standard for project activities, version 02” to check the originality of the baseline. Following are the observation of the assessment team regarding selected baseline for the project activity in this present second renewable crediting period:</p> <p><u>Step 1.1 (EB 66, Annex 47): Assess compliance of the current baseline with relevant mandatory national and/or sectoral policies</u></p> <p>The baseline for the project activity is the electricity delivered to the grid by the project activity which would have otherwise been generated by the operation of grid connected power plants and by the addition of new generation sources into the grid. The project activity is claiming the emission reductions from the net exported electricity to the grid only. In absence of project activity this quantity of electricity would have been generated from the electricity grid mix (mainly fossil fuel). The Government of India enacted the Electricity Act in the year 2003 to harmonize and rationalize the provisions in the then existing laws. The Act consolidated the laws relating to generation, transmission, distribution, trading and use of electricity. With the Enactment of the act, the then existing laws viz, The Indian Electricity Act 1910, The Electricity Supply Act, 1948 and The Electricity Regulatory Commissions Act, 1998 were repealed. The Electricity Act 2003 was in force at the time of the completion of the baseline study during first crediting period.</p> <p>The baseline remains unchanged for the present, second crediting period since there is no policy been revised and/or is currently in force as well, therefore the baseline scenario is still in compliance with all the relevant mandatory national and/or sectoral policies.</p> <p><u>Step 1.2 (EB 66, Annex 47) : Assess the impact of circumstances</u></p> <p>There are no new circumstances that can impact the original baseline. The baseline emission factor value is however updated based on the current data available for the grid.</p>

³ The condition in the “Combined tool to identify the baseline scenario and demonstrate additionality” that all potential alternative scenarios to the proposed project activity must be available options to project participants; does not apply to this methodology, as this methodology only refers to some steps of this tool.

Step 1.3 (EB 66, Annex 47): Assess whether the continuation of the use of current baseline equipment(s) or an investment is the most likely scenario for the crediting period for which renewal is requested

As per the “Tool to determine the remaining lifetime of equipment”, the remaining lifetime of the equipment is the time for which the existing equipment can continue to operate before it has to be replaced/discarded. As per this Tool, Project participant can use one of the following options to determine the remaining lifetime of the equipment:

- (a) Use manufacturer’s information on the technical lifetime of equipment and compare to the date of first commissioning;
- (b) Obtain an expert evaluation;
- (c) Use default value

The project activity started commercial operation in the year 07/12/2012 (Commissioning of first set of WTGs) and since commissioning, the project activity is running satisfactorily. As per Manufacturer specification and Registered PDD, the technical lifetime of WTGs is 25 years (As per 1st CP). Thus the remaining lifetime of equipment’s exceeds the crediting period for which renewal is requested. Thus as per manufacturers information, the remaining lifetime of equipment is exceeds crediting period as per option 1 of Tool to determine the remaining lifetime of the Equipment.

The below conditions are fulfilled. (i)The equipment has been operated and maintained according to the recommendations of the equipment supplier; (ii) There are no periodic replacement schedules or scheduled replacement practices specific to the industrial facility, that require early replacement of equipment before the expiry of the technical lifetime; and (iii) The equipment has no design fault or defect and did not have any industrial accident due to which the equipment cannot operate at rated performance levels.

An per option (a), evaluating the remaining lifetime for the type of equipment has been approached and requested to determine the remaining lifetime of the equipment. The assessment of remaining life time of the equipment’s had been done and confirmed that the remaining technical lifetime of the equipment of the project activity exceeds the crediting period for which renewal is requested. As the remaining technical lifetime of the equipment is not less than the end of the crediting period or which renewal is requested, the current baseline holds good for this crediting period too.

Step 1.4(EB 66, Annex 47): Assessment of the validity of the data and parameters

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

The project chosen **ex-ante default value i.e. Emission Factor**. As per the Guidance given in Tool the emission factor is updated as follows:

1. The operating margin is calculated as per the latest version of CEA “CO₂ Baseline Database” (Version 15) available to the project participant^{8/}. The operating margin calculation is checked by the assessment team and found correct.
2. The build margin is considered from CEA “CO₂ Baseline Database” (Version 15) as per “Tool to calculate the emission factor for electricity system” version 07. The value considered is checked by the assessment

	<p>team and found correct.</p> <p>3. The Combined margin calculation is carried out as per “Tool to calculate the emission factor for electricity system” version 07. The value considered is checked by the assessment team and found correct.</p> <p>The emission factor is fixed ex-ante and thus will be used for the complete second renewable crediting period and for entire verification conducted under second renewable crediting period.</p> <p>Application of Steps 1.1, 1.2, 1.3 and 1.4 confirmed that the current baseline is valid for the Second crediting period but data and parameters needs to be updated. Therefore step 2 is used</p> <p>Step 2.1: Update the current baseline This step is applicable since the Steps 1.1, 1.2, 1.3 and/or 1.4 showed that the current baseline needs to be updated. As evident from the explanation provided above the baseline scenario remains unchanged.</p> <p>Updated the baseline emissions based on the latest approved version of the methodology applicable to the project activity for the subsequent crediting period, without reassessing the baseline scenario.</p> <p>Step 2.2: Update the data and parameters The updated Data and/or parameter are followed for estimating the baseline emissions</p> <p>Hence as per ACM0002 “Grid-connected electricity generation from renewable sources” Version 20.0. (latest Methodology), the baseline of the project is as follows:</p> <p><i>Project activity is the installation of a Greenfield power plant, the baseline scenario is electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in the “Tool to calculate the emission factor for an electricity system”.</i></p> <p>The above selected baseline is correct and thus applicable to the project activity and in line with approved methodology for the applied renewable of crediting period.</p>
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D.4. Estimated emission reductions or net anthropogenic removals

Means of validation	The emission reduction sheet, CEA database Version 15.0 (Latest applicable) and PDD version 11 is checked by the assessment team.
Findings	CAR 04 was raised and closed successfully.
Conclusion	<p>The baseline emissions as discussed in section B.6.1 will include emissions that would have occurred in the absence of the project activity. The emission reduction calculation has been done as per the ACM0002 “Grid-connected electricity generation from renewable sources” Version 20.0.^{7/}.</p> <p><u>Baseline Emission (BE_y):</u></p> <p>$BE_y = EG_{PJ,y} \times EF_{grid,CM,y}$ Where</p> <p>BE_y = Baseline emissions in year y (tCO₂/yr) $EG_{PJ,y}$ = Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CDM project activity in year y (MWh/yr) $EF_{grid,CM,y}$ = Combined margin CO₂ emission factor for grid connected power generation in year y calculated using the latest version of the “Tool to calculate the emission factor for an electricity system” (tCO₂/MWh)</p>

However, inline with the para 44 of the ACM0002 “Grid-connected electricity generation from renewable sources” Version 20.0.^{7/}, the project activity is the installation of a Greenfield power plant, hence:

$$EG_{PJ,y} = EG_{facility,y}$$

$EG_{BL,y} = EG_{facility,y}$ is Calculated as Installed Capacity x PLF x Operating hours.

PP has estimated the baseline energy generation considering the capacity of the project activity, yearly generation hour and plant load factor. Validation team assessed the technical specification of the promoters of the project activity, Commissioning certificate and found that installed capacity of this project activity is correct^{2/}.

Baseline emission factor is calculated as combined margin, consisting of a combination of operating margin (OM) and build margin (BM) factors according to the procedure prescribed in the “Tool to calculate the emission factor for an electricity system” version 07.0 which is sourced from CEA “CO₂ Baseline Database” Version 15.0, Govt. of India and forms the part of emission reduction calculation^{8/}. The baseline emission factor calculation is checked by the validation team and found that the calculation is transparent and conservative.

$$BE_y = 94,570 \times 0.9419 = 89,075 \text{ tCO}_2\text{e}$$

Project Emissions:

As per the latest applied methodology for Wind power project $PE_y = 0$.

Leakage Emissions:

As per the Methodology requirement Leakage emission is not applicable for renewable project.

Emission Reductions:

The project activity reduces carbon dioxide emissions through displacement of grid electricity generation with predominantly fossil fuel based power plants by renewable electricity. The emission reduction (ER_y) due to project activity during a given year y is calculated as the difference between baseline emissions (BE_y), project emissions (PE_y) as per the formulae given below:

$$ER_y = BE_y - PE_y$$

$$ER_y = 89,075 - 0 \text{ tCO}_2\text{e}$$

$$ER_y = 89,075 \text{ (Rounded Down)}$$

D.5. Validity of monitoring plan

Means of validation	Assessment team checked the monitoring practice onsite and also checked the requirement of ACM0002 “Consolidated baseline methodology for grid-connected electricity generation from renewable sources” Version 20.0 and procedure mentioned in the registered PDD of 1 st CP.
Findings	No finding raised on the section
Conclusion	<p><u>Parameters determined ex-ante:</u></p> <ol style="list-style-type: none"> 1. $EF_{grid,OM,y} = (0.9622 \text{ tCO}_2/\text{MWh})$ = 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 version 07.” $EF_{grid,OM,y}$ is computed using the Simple Operating margin CO₂ emission factor. Simple Operating margin CO₂ emission factor is calculated from 3-year generation weighted average using data for the years 2015-16, 2016-17 & 2017-18 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 "CO₂ Baseline Database" Version 15^{8/}.** The value is fixed ex-ante for the entire duration of 2nd crediting period. As the value is sourced from CEA (publicly available document) no further analysis is required.

2. **EF_{grid,BM,y} = (0.8811 tCO₂/MWh)** Build Margin emissions factor for grid connected power generation in year y calculated using the latest version of "Tool to calculate the emission factor version 07 for an electricity system. 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 "CO₂ Baseline Database" Version 15^{8/}.** The value is fixed ex-ante for the entire duration of 2nd crediting period. As the value is sourced from CEA (publicly available document) no further analysis is required
3. **EF_{grid,CM,y} := (0.9419 tCO₂/MWh)** 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 version 07." 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 "CO₂ Baseline Database" Version 15^{8/}.** The combined margin emissions factor is calculated as follows:

$$EF_{grid,CM,y} = EF_{grid,OM,y} * W_{OM} + EF_{grid,BM,y} * W_{BM}$$

Where:

EF_{grid,BM,y} = Build margin CO₂ emission factor in year y (tCO₂/MWh)

EF_{grid,OM,y} = Operating margin CO₂ emission factor in year y (tCO₂/MWh)

W_{OM} = Weighting of operating margin emissions factor (%) = 75%

W_{BM} = Weighting of build margin emissions factor (%) = 25%

The above weighing is as per "Tool to calculate the emission factor for an electricity system", version 07.0.0 for other projects (Wind in this case) and for second crediting period. The value is fixed ex-ante for the entire duration of second crediting period. As the value is sourced from CEA (publicly available document) no further analysis is required.

Parameters determined ex-post:

EG_{facility,y} = Quantity of net electricity generation supplied by the project plant/unit to the grid in year *y*

The net electricity supplied to grid is a calculated value and would be determined as the difference between the electricity exported to the grid and the electricity imported from the grid by the project activity and transmission losses mentioned in the Form B. Thus,

$$\text{Net export } (EG_{facility,y}) = EG_{export,y} - (EG_{export,y} * \text{Transmission loss \%}) - 115\% EG_{import,y}$$

The value for the parameter will be sourced from the primary source i.e. Joint Meter Readings (JMR/Form B) by Hubli Electricity Supply Company Limited. The monthly energy meter reading is duly signed by both O&M personal and state electricity board official. The primary source will be used for emission reduction calculation for the entire duration of second CP. The practice is as per the first CP registered PDD^{3/} and approved methodology. The Quantity of net electricity supplied to the grid as a result of the implementation of the CDM project activity in year *y* is the difference between the measured quantities of the grid electricity export, import & transmission losses. The electricity export and import will be measured continuously using energy meter installed at the site and the readings will be recorded in the presence of the HUBLI ELECTRICITY SUPPLY COMPANY LIMITED and the PP on the first day of every month. The PP will prepare invoices on a monthly basis based on the quantity of net electricity supplied to the grid. The

	<p>monthly data will be considered for calculating the annual net electricity exported to the grid by the project activity during the year y.</p> <p>Accepted industry standard: National standard as described in the Power Purchase Agreement.</p> <p>Measurement equipment: Energy meters</p> <p>Calibration frequency: once in 5 years</p> <p>Accuracy of the meters: 0.2 class</p> <p>Measurement interval: continuous measurement, monthly recording</p> <p>The energy meters installed are microprocessor based ABT compliant tri-vector meter. The meters will be calibrated once in 5 years. The data will be archived electronically for a minimum of two years after the end of the crediting period or the last issuance of CERs for this project activity, whichever occurs later.</p> <p>EG_{export,y}: The quantity of electricity supplied by the project plant/unit to the grid in year y</p> <p>The electricity exported by the project activity is monitored through the installed set of energy meters (main and check) at the substation of the project activity. Monthly readings are taken jointly by the representative of State Electricity Board and site in charge of Project Proponent and a statement is prepared and signed by the representatives of both parties.</p> <p>EG_{import,y}: The quantity of electricity imported by the project plant/unit from the grid in year y</p> <p>The electricity imported by the project activity is monitored through the installed set of energy meters (main and check) at the substation of the project activity. Monthly readings are taken jointly by the representative of State Electricity Board and site in charge of Project Proponent and a statement is prepared and signed by the representatives of both parties.</p> <p>EG_{WTG}: Daily electricity generation at the WTG controller</p> <p>Controllers meter readings of individual WTGs monitored at the Central Monitoring Station (CMS). All WTGs are connected to CMS through SCADA software.</p>
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D.6. Crediting period

Means of validation	The crediting period is checked as per UN home page (reference number : 9376 and discussion with Client.
Findings	No finding raised on this section.
Conclusion	This is second renewable crediting period and the duration is 7-year renewable (second CP duration: 31/12/2019 to 30/12/2026).

D.7. Project participants

Means of validation	The project participant names were checked from UN homepage https://cdm.unfccc.int/Projects/DB/RINA1356708962.81/view		
Findings	CAR 05 was raised and closed successfully.		
Conclusion	Following are the details of PP (host country). The same is correct and in line with PDD registered under first Crediting period ^{3/} as well as MOC obtained from UN home page. The details are true for the second Crediting period as well.		
	Parties involved	Project participants	Indicate if the Party involved wishes to be considered as project participant (Yes/No)
	India (Host)	M/s ReNew Wind Energy (Karnataka) Private Limited - Private Entity	No

D.8. Post-registration changes

Type of post-registration changes (PRCs)	Confirmation (Y/N)	Validation report for PRCs	
		Version	Completion date
Temporary deviations from the registered monitoring plan, applied methodologies, standardized baselines or other methodological regulatory documents ⁴	N	NA	NA
Corrections	N	NA	NA
Change to the start date of the crediting period	N	NA	NA
Inclusion of a monitoring plan	N	NA	NA
Permanent changes to the registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines, or other methodological regulatory documents	N	NA	NA
Changes to the project design	N	NA	NA
Changes specific to afforestation and reforestation project activities	N	NA	NA

SECTION E. Internal quality control

As final step of a validation of the final documentation including the Renewable crediting period validation 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.

SECTION F. Validation opinion

Applus+ Certification has performed validation of the renewal of the crediting period of the project activity "Wind Power Project at Tadas, Karnataka". The validation of the renewal of the crediting period was performed on the basis of UNFCCC criteria and host country criteria, as well as criteria, e.g. ACM0002 "Consolidated baseline methodology for grid-connected electricity generation from renewable sources" Version 20.0, given to provide for consistent project operations, monitoring and reporting.

The review of the project design documentation for renewal of crediting period and the subsequent follow-up interviews have provided Applus+ Certification with sufficient evidence to determine the fulfillment of stated criteria. In our opinion, the project meets all relevant UNFCCC requirements for the CDM and all relevant host country criteria. The project will hence be recommended by Applus+ Certification for the renewal of the crediting period with the UNFCCC.

Applus+ Certification has received a confirmation from the host Party that the project activity assists it in achieving sustainable development.

By displacing fossil fuel-based electricity with electricity generated from a renewable source, the project results in reductions of CO₂ emissions that are real, measurable and give long-term benefits to the mitigation of climate change. An analysis of the positive list of renewable project demonstrates that the proposed project activity is not a likely baseline scenario. Emission reductions attributable to the project are hence additional to any that would occur in the absence of the project activity. Given that the project is implemented as designed, the project is likely to achieve the estimated amount of annual emission reductions of 89,075 tCO₂e.

Applus+ Certification's validation approach is based on the understanding of the risks associated with reporting the project activity, estimates of GHG emission data and the controls to be implemented to mitigate these. Applus+ Certification planned and performed the validation by obtaining evidence, other information and explanations that Applus+ Certification considered necessary & achieved reasonable assurance that the estimated GHG emission reductions are fairly to be achieved.

⁴ Other standards, methodologies, methodological tools and guidelines (to be) applied in accordance with the applied(selected) methodologies are collectively referred to as the other (applied) methodological regulatory documents).

The validation of the renewal of the crediting period has been performed following the requirements of the latest version of the CDM validation and verification standard for project activities, version 02 and on the basis of the contractual agreement. The single purpose of this report is its use during the registration process as part of the CDM/UNFCCC project cycle.

Appendix 1. 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
CMS	Central Monitoring system
CP	Crediting period
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
ER	External Resource
EIA	Environmental Impact Assessment
ER	Emission Reductions
FAR	Forward Action Request
GHG	Greenhouse gas(es)
GWP	Global Warming potential
IR	Internal Resource
HESCL	Hubli Electricity Supply Company Limited
OR	Outside resource
OEM	Original Equipment manufacturer
OM	Operating Margin
PP	Project Participant

Appendix 2. Competence of team members and technical reviewers

1. Dr. Atul Takarkhede counts with 9 years of experience in field of Environmental Auditing, consulting and accreditation. He is an Expert in ISO 9001-14001, CO2/GHG Reporting, Carbon Foot Print, Energy, Water and Waste Management Reporting for organizations environmental performance. His professional portfolio is mainly related with carrying out EIA, conducting QA/QC of EIA Reports; Conducting Environmental/water Audits; NABET requirements appliance. Furthermore, he counts with solid experience on CDM-VCS-GS consultancy and auditing. He has Ph.D. (Environmental Science) from Institute of Science, RTM Nagpur University, Nagpur, and he has already published different technical reports related to environmental science.
2. 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 3.5 years.

Appendix 3 Documents reviewed or referenced

No.	Author	Title	References to the document	Provider
1.	Applus	Contract of the project participant with the DOE	Contract document signed between PP and DOE	Project participant
2.	HUBLI ELECTRICITY SUPPLY COMPANY LIMITED	Commissioning Certificates for WTGs	Commissioning phasewise dated 07/12/2012, 24/12/2012, 04/01/2013, 28/01/2013, 08/02/2013, 13/03/2013, 30/03/2013, 16/04/2013, 03/05/2013	Project participant
3.	PP	Registered CDM PDD for first crediting period	Version 09 dated 03/09/2015	UNFCCC
4.	RINA	Validation Report for first crediting period (Report No. 012-IQ-27-MD)	Version 1.2 dated 28/12/2012	UNFCCC
5.	PP	Draft Updated PDD for Renewal of Crediting Period Final updated PDD for Renewal of Crediting Period	Version 10 dated 11/11/2019 Version 11 dated 30/04/2020	Project participant
6.	PP	Estimated Emission reduction calculation sheet Estimated Emission reduction calculation sheet	Version 01 dated 22/04/2020 Version 02 dated 30/04/2020	Project participant
7.	UNFCCC	ACM0002 "Consolidated baseline methodology for grid-connected electricity generation from renewable sources" Version 20.0.	UNFCCC CDM web site	UNFCCC
8.	NA	Ministry of Environment and forest: www.envfor.nic.in UNFCCC www.cdm.unfccc.int CEA: Central electricity authority www.cea.nic.in	Reference link is provided.	Independent Search
9.	UNFCCC	Tools/ guidelines used in the project activity: <ul style="list-style-type: none"> • Clarification on national and/or sectoral policies Para 27 EB 55. • Tool to determine the remaining lifetime of the project activity in line with Annex 15 EB 50. • Tool to calculate project or leakage CO₂ emissions from fossil fuel combustion, Version 3. • Tool to calculate the emission factor 	UNFCCC CDM web site	UNFCCC

		for an electricity system version 07. • Assessment of the validity of the original / current baseline and update of the baseline at the renewal of the crediting period.” (Version 03.0.1).		
10.	HUBLI ELECTRICITY SUPPLY COMPANY LIMITED & PP	Power Purchase Agreements for the project activity	NA	Project participant
11.	HUBLI ELECTRICITY SUPPLY COMPANY LIMITED	Sample JMRs for the project activity	NA	Project participant
12.	NA	Telephonic & Skype interviews with PP and onsite personnels	21/04/2020	NA

Appendix 4. Clarification requests, corrective action requests and forward action requests

Table 1. CL from this validation

CL ID	xx	Section no.	Date: DD/MM/YYYY
Description of CL			
Project participant response			Date: DD/MM/YYYY
Documentation provided by project participant			
DOE assessment			Date: DD/MM/YYYY

Table 2. CAR from this validation

CAR ID	01	Section no.	D.1	Date : 21/04/2020
Description of CAR				
Following inconsistencies were observed in the revised PDD:				
1. Date of registered PDD of 1 st crediting period not traceable in track change mode in the PDD submitted for renewal of crediting period.				
2. Updated PDD in track changes is not traceable for the section updated for RCP from validated registered PDD. Corrections requested.				
3. Further, PP requested to submit commissioning certificates, Sample JMRs and PPA for the project activity.				
Project participant response				Date : 22/04/2020
1. Date of registered PDD of 1 st crediting period is now traceable in track change mode in the PDD submitted for renewal of crediting period.				
2. Changes carried out in the track change mode in the updated PDD are now traceable with the registered PDD and is now in-line with the guidelines.				
3. Commissioning Certificates, PPA and Sample JMRs have been submitted to the assessment team.				
Documentation provided by project participant				

1. Commissioning Certificates
2. PPA
3. JMRs
DOE assessment
Date: 23/04/2020
1. PP has submitted revised updated PDD for crediting period renewal in track change with clear traceability of dates from registered PDD version to latest one. CAR closed.
2. Updated PDD is now submitted in track changes & updations/revisions are traceable. CAR closed.
3. PP has submitted commissioning certificates for all the WTGs involved in the project activity. Further, PP has also submitted PPAs for the projects activities and sample JMRs. Thus CAR closed.

CAR ID	02	Section no.	D.1	Date : 21/04/2020
Description of CAR				
Details of PRC-9376-002 applicable for project activity is missing in the revised PDD. Correction requested.				
Project participant response				Date : 22/04/2020
1. The desired details of PRC-9376-002 has now been incorporated in the revised PDD.				
Documentation provided by project participant				
1. Project Design Documents Version 11				
DOE assessment				Date: 23/04/2020
Details of the PRC are now included in the revised PDD in the relevant sections appropriately. CAR closed.				

CAR ID	03	Section no.	D.3	Date : 21/04/2020
Description of CAR				
Project boundary diagram showing project activity connected to Sothorn grid however, currently it is Indian Grid. Corrections requested.				
Project participant response				Date : 22/04/2020
The required correction has been made in the Project boundary diagram and NEWNE Grid has updated and changed to Indian Grid accordingly.				
Documentation provided by project participant				
Project Design Documents Version 11				
DOE assessment				Date: 23/04/2020
Updated PDD is now revised appropriately for Reference to the grid connected. CAR closed.				

CAR ID	04	Section no.	D.4	Date : 21/04/2020
Description of CAR				
Correlation between $EG_{PJ,Y}$ and $EG_{facility,y}$ is missing in the PDD.				
Project participant response				Date : 22/04/2020
According to the Methodology used (ACM0002 Version 19), The Quantity of net electricity generation that is produced and fed into the grid is represented as $EG_{PJ,y}$. However in the registered PDD the same had been represented as $EG_{facility,y}$. So in order to maintain the consistency $EG_{facility,y}$ has been used in the PPD Version 9. The same clarification has been incorporated in the PDD Version 11 section B.6.3.				
Documentation provided by project participant				
Project Design Documents Version 11				
DOE assessment				Date: 23/04/2020
Appropriate corrections have done in Section B.6.1 of the PDD and being greenfield project $EG_{PJ,Y} = EG_{facility,y}$ as per the applied methodology. CAR closed.				

CAR ID	05	Section no.	D.7	Date : 21/04/2020
Description of CAR				
PP requested to submit updated MOC for the project activity if applicable.				
Project participant response				Date : 22/04/2020
There has been no change in the MOC since the last crediting period. Hence the latest MoC can be referred from the webpage of the project activity. https://cdm.unfccc.int/Projects/DB/RINA1356708962.81/view				

Documentation provided by project participant	
CDM 9376: Wind Power Project at Tadas, Karnataka Web-link: https://cdm.unfccc.int/Projects/DB/RINA1356708962.81/view	
DOE assessment	Date: 23/04/2020
Since the MOC available on UNFCCC project webpage is still valid, new MOC not required. CAR closed.	

Table 3. FAR from this validation

FAR ID	Xx	Section no.		Date: DD/MM/YYYY
Description of FAR				
Project participant response				Date: DD/MM/YYYY
Documentation provided by project participant				
DOE assessment				Date: DD/MM/YYYY

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Document information

<i>Version</i>	<i>Date</i>	<i>Description</i>
03.0	31 May 2019	Revision to: <ul style="list-style-type: none">• Ensure consistency with version 02.0 of the “CDM validation and verification standard for project activities” (CDM-EB93-A05-STAN) and version 02.0 of the “CDM project cycle procedure for project activities” (CDM-EB93-A06-PROC);• Make editorial improvements.
02.0	31 October 2017	Revision to align with the requirements of the “CDM validation and verification standard for project activities” (version 01.0).
01.0	23 March 2015	Initial publication.
Decision Class: Regulatory Document Type: Form Business Function: Renewal of crediting period Keywords: crediting period, project activities, validation report		