



Validation report form for renewal of crediting period for CDM project activities
(Version 01.0)

Complete this form in accordance with the "Attachment: Instructions for filling out the validation report form for renewal of crediting period for CDM project activities" at the end of this form.

VALIDATION REPORT FOR RENEWAL OF CREDITING PERIOD (RCP)

Title of the project activity: 13.75 MW wind power project in Davangere, Karnataka, India

Reference number of the project activity: 3700¹

Number and duration of the next crediting period: 2nd CP: 7th Jan 2018 to 6th of Jan 2025

Version number of the validation report for RCP: 01

Completion date of the validation report for RCP: 08/06/2017

Version number of PDD to which this report applies : 03

Project participant(s) : Sargam Retails Private Limited (SRPL)

Host Party: India

Sectoral scope(s), selected methodology(ies), and where applicable, selected standardized baseline(s) : Sectoral Scope 1: Energy Industries (renewable - /non-renewable sources), Methodology: - AMS-I.D "Grid connected renewable electricity generation" (EB 81, Version 18)

Estimated annual average GHG emission reductions or net anthropogenic GHG removals in the next crediting period : 27,922tCO_{2e}

Name of DOE : 

LGAI Technological Center, S.A. (LGAI Tech. Center S.A)

Name, position and signature of the approver of the validation report for RCP :

Juan Sendín Caballero

B.U. Systems Certification Area Manager

¹ <https://cdm.unfccc.int/Projects/DB/SGS-UKL1273659698.37/view>

SECTION A. Executive summary

The project activity is an initiative by Sargam Retails Private Limited (SRPL), towards clean electricity generation using wind energy resources in the state of Karnataka. SRPL is engaged in Trading and Marketing Packaged Tea & Tobacco.

The project activity leads to the installation of 10 Wind Turbine Generators (WTGs) of total generating capacity of 13.75 MW (5 number of Suzlon make S 82 WTGs each having generating capacity of 1500 kW & 5 number of Suzlon make S 64 WTGs each having generating capacity of 1250 kW). There locations are in Davangere district of Karnataka state of India.

The main purpose of the project activity is to generate electrical energy through sustainable means using wind power resources, to utilize the generated output for supply to Karnataka Power Transmission Company Limited (KPTCL) and to contribute to climate change mitigation efforts. This renewable energy produced will partially contribute to the electricity provided by the KPTCL.

The project is utilizing wind energy for generating electricity which otherwise would have been generated through alternate fuels (most likely - fossil fuel) based power plants thus, contributing to reduction in specific emissions (emissions of pollutant) including GHG emissions. Being a renewable

resource, using wind energy to generate electricity contributes to resource conservation. SRPL will be developing this project keeping in consideration the funding available under the Clean Development Mechanism (CDM) of the United Nations Framework Convention on Climate Change. The project activity is also responsible for sustainable economic growth and conservation of environment through use of wind as a renewable source. The Project activity would generate 13.75 MW of electricity with efficient utilization of the available wind energy through adoption of the latest, efficient and modern technology. The generated electricity will displace equivalent electricity (generated from fossil sources) that may have been supplied to KPTCL.

The estimate of annual average and total GHG emission reductions for the chosen crediting period is 27,922 t CO_{2e} per year and 195,454 t CO_{2e} for 7 years of crediting period.

Validation Scope: The scope is defined as an independent and objective review of the project design document (PDD). 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 AMS.I.D, version 18. The validation was based on the requirements in the Validation and Verification Standard (VVS version 09)

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.

Once Applus+ LGAI receives the initial PDD version 09, it performed desk review for the same.

Validation Process: The project assessment is based on the "Clean Development Mechanism Validation and Verification Standard version 09.0 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 Renewable crediting project activity are appointed.

Once the project is made available to the DOE, the members of the assessment team carried out:

- I A desk review of the project design documentation;
- 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 Renewable crediting period validation report and other supporting documents then undergo an internal quality control at the HQ (Accredited office) before being submitted to the CDM-EB for Request for registration in case of positive validation opinion.

In order to ensure transparency, assumptions must be clear and stated explicitly and background material must also be referenced. Applus+ LGAI 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.

The renewable crediting period validation checklist consists of three tables. The different columns in these tables are described in the tables below

Validation Checklist Table 1: Mandatory Requirements			
Requirement	Reference	Conclusion	Cross reference
The requirements which the project must meet.	Gives reference to the legislation or agreement where the requirement is found.	This is either acceptable based on evidence provided (OK), or a Corrective Action Request (CAR) of risk or non-compliance with stated requirements. The corrective action requests are numbered and presented to the client in the validation report.	Used to refer to the relevant checklist questions in Table 2 to show how the specific requirement is validated. This is to ensure a transparent validation process.

Validation Checklist Table 2: Requirement checklist				
Checklist Question	Reference	Comment	Draft Conclusion	Final Conclusion
The various requirements in Table 2 are linked to checklist questions the project should meet. The checklist is organized in several different sections. Each section is then further subdivided. The lowest level constitutes a checklist question.	Gives reference to documents where the answer to the checklist question or item is found.	The section is used to elaborate and discuss the checklist question and/or the conformance to the question. It is further used to explain the conclusions reached.	Conclusions are presented based on the assessment of the first PDD version. This is either acceptable based on evidence provided (OK), or a Corrective Action Request (CAR) due to non-compliance with the checklist question (See below). Clarification is used when the validation team has identified a need for further clarification. Forward action request to highlight issues related to project implementation that requires review during	Conclusions are presented in the same manner based on the assessment of the final PDD version and further documents including assumptions presented in the documentation.

			the first verification.	
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Validation Checklist Table 3: Resolution of Corrective Action and Clarification Requests			
Draft report clarifications and corrective action requests	Ref. to checklist question in table 1&2	Summary of project owner response	Validation conclusion
If the conclusions from the draft Validation are either a Corrective Action Request or a Clarification Request, these should be listed in this section.	Reference to the checklist question number in Table 1&2 where the Corrective Action Request or Clarification Request is explained.	The responses given by the Client or other project participants during the communications with the validation team should be summarized in this section.	This section should summarize the validation team's responses and final conclusions. The conclusions should also be included in Table 2, under "Final Conclusion".

Appointment of the assessment team

According to the sectoral scopes / technical area and experiences in the sectoral or national business environment, Applus+ LGAI has composed a project validation team in accordance with the appointment rules in Applus+ LGAI. The composition of assessment team has to be approved by the Applus+ LGAI ensuring that the required skills are covered by the team. The four qualification levels for team members that are assigned by formal appointment rules as below:

- Leader Auditor (LA)
- Auditor (A)
- Auditor Trainee (T)
- Technical Experts (E)
- Internal Technical Review (ITR)

It is required that the sectoral scope / technical area related to the methodology has to be covered by the assessment team.

The detail regarding the assessment team is provided below in section B.1 and B.2 of this report

Document review

The Project Design Document for the present renewable crediting period submitted by the Client was reviewed against the approved current methodology AMS.I.D version 18 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 Appendix 3 of this report.

Follow-up interviews

A site visit is conducted by Applus+ LGAI performed 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 section C.2 and C.3 of this report

Resolution of Clarification and Corrective Action Request

The objective of this phase of the validation for renewable crediting period was to resolve the requests for corrective actions and clarification and any other outstanding issues which need to be

clarified for Applus+ LGAI's positive conclusion on the project design document. The Corrective Action Requests and Clarification Requests raised by Applus+ LGAI were resolved during communications between the Client and Applus+ LGAI to guarantee the transparency of the validation process, the concerns raised and responses given are summarized in Appendix 4 below.

The final PDD version 03 submitted by PP on 27/04/2017 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 for renewable crediting period. 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 for renewable crediting period 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 (if positive) and relevant documents are submitted to the EB through the UNFCCC dedicated web-platform

Conclusion

Applus+ LGAI has performed a validation of the renewable crediting period for the project entitled "13.75 MW wind power project in Davangere, Karnataka, India". The validation for renewable crediting period was performed on the basis of UNFCCC criteria and host country criteria, as well as criteria, e.g. AMS.I.D version 18, given to provide for consistent project operations, baseline, monitoring and reporting.

The review of the project design documentation for renewable crediting period and the subsequent follow-up interviews have provided Applus+ LGAI 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+ LGAI for registration with the UNFCCC.

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 investment and technological barriers 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 27,922tCO_{2e}.

The validation has been performed following the requirements of the latest version of the CDM VVS version 09 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 review	On-site inspection	Interview(s)	Validation findings
1.	Team Leader -TL	ER	DAS	SUKANTA	True Quality Certifications private Limited, Outsource entity	Y	Y	Y	Y
	Technical Expert-TE	ER	DAS	SUKANTA	True Quality Certifications private Limited ,Outsource entity	Y	Y	Y	Y

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-TR	IR	Vega	Natalia Rodrigo	Applus+ LGAI

SECTION C. Means of validation**C.1. Desk 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:30/05/2017				
No.	Activity performed on-site	Site location	Date	Team member
1.	Assessment team checked the implementation of the project, Baseline emission, and Emission reduction calculation, technical description of the project and Monitoring for the renewable crediting period assessment.	Davangere	30/05/2017	Mr. Sukanta Das

C.3. Interviews

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Bankar	Kailas	DGM renewable power project	30/05/2017	Monitoring and Implementation of the project and day to day operations of the power plant.	Mr. Sukanta Das
2	Sonawane	Amol	PP representative	30/05/2017	Implementation of the project, monitoring , continuation of baseline scenario, and emission reduction calculations	Mr. Sukanta Das

C.4. Clarification requests, corrective action requests and forward action requests raised

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

SECTION D. Validation findings**D.1. Compliance with PDD form**

Means of validation	Assessment team checked the PDD version 8.0 forms supplied by the project participant and found that the latest form applicable in the UNFCCC web site is used for the completion of the PDD.
Findings	The technical specification documentation was not submitted during the validation. Based on this CAR 1 was raised during the validation process and closed successfully. Please refer Appendix 4 of this report for the detail closure of the CAR.
Conclusion	<p>The PDD mentions all the criteria as detailed out in PDD form version 8.0 properly and found correct by the assessment team.</p> <p>The project activity is an initiative by Sargam Retails Private Limited (SRPL), towards clean electricity generation using wind energy resources in the state of Karnataka. SRPL is engaged in Trading and Marketing Packaged Tea & Tobacco.</p>

	<p>The project activity leads to the installation of 10 Wind Turbine Generators (WTGs) of total generating capacity of 13.75 MW (5 number of Suzlon make S 82 WTGs each having generating capacity of 1500 kW & 5 number of Suzlon make S 64 WTGs each having generating capacity of 1250 kW). There locations are in Davangere district of Karnataka state of India.</p> <p>The main purpose of the project activity is to generate electrical energy through sustainable means using wind power resources, to utilize the generated output for supply to Karnataka Power Transmission Company Limited (KPTCL) and to contribute to climate change mitigation efforts. This renewable energy produced will partially contribute to the electricity provided by the KPTCL.</p> <p>The project is utilizing wind energy for generating electricity which otherwise would have been generated through alternate fuels (most likely - fossil fuel) based power plants thus, contributing to reduction in specific emissions (emissions of pollutant) including GHG emissions. Being a renewable resource, using wind energy to generate electricity contributes to resource conservation. SRPL will be developing this project keeping in consideration the funding available under the Clean Development Mechanism (CDM) of the United Nations Framework Convention on Climate Change. The project activity is also responsible for sustainable economic growth and conservation of environment through use of wind as a renewable source. The Project activity would generate 13.75 MW of electricity with efficient utilization of the available wind energy through adoption of the latest, efficient and modern technology. The generated electricity will displace equivalent electricity (generated from fossil sources) that may have been supplied to KPTCL.</p> <p>The technical details were checked by the assessment team from the details available from the manufacturers (2nd party) of the Wind turbine. (http://www.suzlon.com/)</p> <p>Project activity is of combined capacity of 13.5 MW. As per the glossary of CDM terms version 09, the capacity of the project is below 15 MW type I small scale project activity and thus acceptable to the assessment team. The technology being employed is well proven, safe & sound. No technology transfer to host party is there due to project activity. The project activity will remain in the cap of type I project activity throughout the 2nd crediting period.</p> <p>The assessment team also checked commissioning certificates issued by the (3rd party) to cross check the combined capacity.</p>
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D.2. Application of baseline and monitoring methodology and standardized baseline

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 AMS.I.D version 18 and confirmed that the documentation referred to in the PDD is correctly quoted and interpreted. The assessment team has also crosschecked the information provided in the registered PDD with the documentation other than from the PDD based on the local and sectoral knowledge of the assessment team. Following documentation has been reviewed by the assessment team:</p> <ul style="list-style-type: none"> - Site visit - 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 AMS.I.D version 18 are documented in detail in section B.2 of the PDD.</p>
Findings	<p>Applicability criteria were explained properly as per the requirement of the applied approved methodology for the present crediting period. No NC was raised during the validation process.</p>
Conclusion	<p>The applied baseline methodology is justified as it has been demonstrated that the proposed project activity is:</p>

	<p>- Applicability 1: The project activity is a Renewable Energy Project i.e. Wind Power Project which falls under applicability criteria option 1(a) for 13.5 MW capacity i.e., "Supplying electricity to a national or a regional grid". Hence the project activity meets the given applicability criterion.</p> <p>-Applicability 2: The 1st option (for 13.5 MW capacity) of Table 2 of AMS I.D. Version 18, EB 61 is applicable (please refer footnote) as project supplies electricity to national grid.</p> <p>-Applicability 3: The project is installation of new Wind based electricity generation plants (not addition to existing system). Option (a) is applicable of the method is applicable.</p> <p>-Applicability 4: The project is Wind power project and thus the criterion is not applicable to this project activity.</p> <p>-Applicability 5: The project activity is a 13.5 MW Wind electricity generation. Unit does not co-fire fossil fuels. Hence the criterion is not applicable to the project activity.</p> <p>- Applicability 6: The Project activity is a renewable Wind energy project and is not a combined heat and power system. Hence the criteria is not applicable to the project activity</p> <p>-Applicability 7: The project activity is Greenfield and there is no existing power generation facility at the site. Hence the criteria is not applicable to the project activity</p> <p>-Applicability 8: The Wind project is a Green field project activity and this project is not the enhancement or up gradation project. Hence the criteria are not applicable to the project activity.</p> <p>-Applicability 9: The Project activity is a renewable Wind power project and is not a landfill gas, waste gas, wastewater treatment and agro-industries projects or recovered methane emissions project. Hence the criteria is not applicable to the project activity</p> <p>- Applicability 10: The Project activity is a renewable Wind power project and is not a biomass project. Hence the criteria are not applicable to the project activity.</p> <p>Applicability conditions of "Tool to calculate the emission factor for an electricity system"</p> <p>-The condition is applicable. OM, BM and CM are estimated using the tool under section B.6.1 for calculating baseline emissions.</p> <p>- The project activity is grid connected, this condition is applicable and the emission factor has been calculated accordingly.</p> <p>- The project activity is located in India, a non-Annex I country. Therefore, this criterion is not applicable for the project activity.</p> <p>- The project activity is a grid connected wind power project and not a hydro power plant. Therefore, this criterion is not applicable for the project activity.</p> <p>Applus+ LGAI confirms that the application of the baseline methodology is transparent and conservative, and confirms that the chosen baseline and monitoring methodology i.e. AMS.I.D version 18 is applicable to the project activity.</p>
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D.3. Validity of original baseline or its update

Means of validation	The baseline scenario as depicted in the PDD version 03 is checked during the
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	validation site visit and also during the interview with the plant official.
Findings	The baseline is selected as per the requirement of the approved methodology AMS.I.D version 18 for the present Crediting period. No NC was raised during the validation process.
Conclusion	<p>Assessment team referred “Methodological tool (EB 66, Annex 47) and VVS version 09” 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 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 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 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 value will be updated based on the current data available for the grid.</p> <p><u>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</u></p> <p>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:</p> <ul style="list-style-type: none"> (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 <p>The project activity is commissioned on for 1.5 MW x 05 Number on 31/03/2009, 1.25 MW x 04 Number on 31/03/2009 and 1.25 MW x 01 Number on 29/05/2009 and since commissioning, the project activity is running satisfactorily. As per Manufacturer specification, the technical lifetime of Turbines is 25 years. Thus considering the start of operation of project activity, the technical lifetime is up to 2034 which is well before the end date of 2nd crediting period. Thus the remaining lifetime of equipments exceeds the crediting period for which renewal is requested.</p> <p>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</p>

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 equipments had been done and confirmed that the remaining technical lifetime of the equipment of the project activity is 18 years which 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 (EB 66, Annex 47) the emission factor is updated as follows:

1. The operating margin is calculated as per the latest version of CEA (Version 11) available to the project participant. The operating margin calculation is checked by the assessment team and found correct.
2. The build margin is considered from CEA database version 11, value as per Para 70 (a) “Tool to calculate the emission factor for electricity system” version 05. The value considered is checked by the assessment team and found correct
3. The Combined margin calculation is carried out as per Para 84 (a) “Tool to calculate the emission factor for electricity system” version 05. The value considered is checked by the assessment team and found correct

The emission factor is fixed ex-ante and thus will be used for the complete 2nd renewable crediting period and for entire verification conducted under 2nd renewable crediting period.

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

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.

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.

Step 2.2: Update the data and parameters

The updated Data and/or parameter are followed for estimating the baseline emissions

Hence as per AMS.I.D version 18 (latest Methodology), the baseline of the project is as follows:

	<p>Para 22: Baseline emissions include only CO₂ emissions from electricity generation in power plants that are displaced due to the project activity. The methodology assumes that all project electricity generation above baseline levels would have been generated by existing grid-connected power plants and the addition of new grid-connected power plants</p> <p>The above selected baseline is correct and thus applicable to the project activity and in line with approved methodology.</p>
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D.4. Estimated GHG emission reductions or net anthropogenic GHG removals

Means of validation	The emission reduction sheet, CEA database and PDD version 03 is checked by the assessment team.
Findings	Assessment team raised CL1 during the validation process and closed successfully. Please refer Appendix 4 of this report for detail analysis and closure.
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 AMS-I.D., Version 18.0</p> <p><u>Baseline Emission (BE_y):</u></p> $BE_y = EG_{PJ,y} \times EF_{grid,y} \text{-----}(1)$ <p>Where BE_y = Baseline Emissions in year y; (tCO₂) EG_{pj,y}= Quantity of net electricity supplied to the grid as a result of the implementation of the CDM project activity in year y (MWh) EF_{grid, y} = Grid emission factor (MWh/tCO₂)</p> <p>PP has estimated the baseline energy generation considering the capacity of the project activity, yearly generation hour and plant load factor. The project activity involves installation of 13.5MW grid connected power plant in the state of Karnataka. Validation team assessed the technical specification of the promoters of the project activity, Power purchase agreement and found that installed capacity of this project activity is correct.</p> <p>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 5.0 which is sourced from CEA, Govt. of India and forms the part of emission reduction calculation. The baseline emission factor calculation is checked by the validation team and found that the calculation is transparent and conservative.</p> <p><u>Project Emissions:</u></p> <p>As per applied methodology only emission associated with the fossil fuel combustion, emission from operation of geo-thermal power plants due to release of non-condensable gases, emission from water reservoir of Hydro should be accounted for the project emission. Since the project activity is a wind power project.</p> <p>Hence PE_y= 0</p> <p><u>Leakage Emissions:</u></p> <p>As per the Methodology requirement project emission for the project activity is zero.</p> <p><u>Emission Reductions:</u></p> <p>The project activity reduces carbon dioxide emissions through displacement of grid electricity generation with predominantly fossil fuel based power plants² by</p>

²http://www.cea.nic.in/power_sec_reports/general_review/0304/tables.pdf

	<p>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) and emissions due to leakage (LE_y), as per the formulae given below:</p> $ER_y = BE_y - PE_y - LE_y$ <p>Where,</p> <p>BE_y = Baseline emissions in the year y in tCO_{2e}</p> <p>PE_y = Project emissions in the year y.</p> <p>LE_y = Emissions due to leakage in the year y.</p>
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D.5. Validity of monitoring plan

Means of validation	Assessment team checked the monitoring practice onsite and also checked the requirement of AMS.I.D version 18
Findings	No NC raised for the Monitoring plan during the validation for 2 nd CP renewable
Conclusion	<p><u>Parameters determined ex-post:</u></p> <ol style="list-style-type: none"> 1. $EG_{Net\ Exported}^3$: Net electricity supplied to the grid by the project activity: The primary source of data for emission reduction calculation is Credit report Sheets. (KPTCL/ BESCO Form B2⁴)/ Invoice (whichever is conservative). Data will be archived electronically and on paper. The Net electricity supplied to the grid by the project activity will be calculated as a difference of electricity exported to the grid, electricity imported from the grid and the transmission losses obtained from credit reports provided by KPTCL/BESCO as per below equation: $(EG_{Net\ Exported} \text{ (calculated separately for both sets of WTGs of PP)} = EG_{Exported} - EG_{Import} - EG_{Transmission\ Losses}).$ <p>Net electricity supplied to the grid as mentioned in Form B will be cross-checked with the invoices⁵ raised by the PP for the project activity. Whichever is the conservative value will be considered for emission reduction calculation during verification of the project activity. Archived data will be kept during the crediting period plus 2 years or the last issuance of CERs for this project activity, whichever occurs later.</p> 2. $EG_{Exported}^6$: Electricity exported by the WTGs of the project activity: The primary source of data for this parameter is Credit report Sheets. (KPTCL/ BESCO Form B). The parameter is monitored by Bi-directional Tri-vector meters (main and check meter at 33 kV metering point) will be used for monitoring of electricity exported by WTGs of the project activity. The meters are of 0.2s accuracy class. Electricity exported is in kWh. However

³The symbols $EG_{Net\ Exported}$ and E_{Gy} belongs to the same parameter that is Net Electricity supplied to grid by the project activity. In the registered PDD, symbol E_{Gy} has been invariably used in other sections (Refer B.4, B.6.1 and B.6.3) for the baseline emission estimation.

⁴Form B consists of a set of documents which is issued by KPTCL/BESCO which consists of data such as the import and export of electricity by group of WTGs of the project activity at a site at 33 kV metering point, export and import of electricity at the 33/220 kV KPTCL sub-station from all the WTGs (PP and on PP) connected to the substation, Transmission losses and its calculation (i.e. calculation of percentage line losses for a month) done by BESCO.

⁵The values of Export, import and transmission losses can be cross checked from the invoice. However as per the provision of the State utility an increase of 115% has to be applied on the import value for billing purpose. This results in a higher import value than that in the credit note thus resulting in a lesser value of the net electricity supplied to the grid in the invoice.

⁶In case of apportioning of electricity for any month (When billing cycle and crediting period years or monitoring period not matches) as per the procedures provided under "Apportioning Procedure" of monitoring plan (B.7.3), $EG_{Exported}$ (i.e. Sum of G for each group of WTGs of the project activity) and G for any month are same only .

for the calculation purpose electricity exported is converted in MWh. The meters used for the monitoring of this parameter shall be tested/ calibrated on quarterly basis as per article 7.5 of the PPA.

3. **EG_{import}:** Electricity imported from the grid by the WTGs of the project activity: The primary source of date for this parameter is Credit report Sheets. (KPTCL/ BESCO Form B). The parameter is monitored by Bi-directional Tri-vector meters (main and check meter at 33 kV metering point) will be used for monitoring of electricity exported by WTGs of the project activity. The meters are of 0.2s accuracy class. Electricity exported is in kWh. However for the calculation purpose electricity exported is converted in MWh. The meters used for the monitoring of this parameter shall be tested/ calibrated on quarterly basis as per article 7.5 of the PPA.
4. **EG_{Transmission Losses}:** Electricity Losses in Transmission: The primary source of date for this parameter is Credit report Sheets. (KPTCL/ BESCO Form B). Assessment team confirms that this is a calculated parameter, based on the measurement results of the meters installed at 33 kV metering point and 220 kV sub-station. Bi-directional Tri-vector meters (main and check meter at 33 kV metering point and 220 kV sub-station (SS)) will be used for monitoring of electricity. The meters will be of 0.2s accuracy class

Calculation Procedure EG_{Transmission Losses}

$Z = \% \text{ of line losses}$

$X = \text{Total exported electricity from all the metering points connected to the sub-station (as measured at 33 kV metering point of all the WTGs (PP + non PP) connected to the SS) hence } X = X_1 + X_2 + X_3 + \dots + X_n$

$Y = \text{Total exported electricity as measured at Sub-station Bulk meter (i.e. main and check meter at 220 kV SS).}$

$$Z = [(X - Y) / X] * 100$$

$$EG_{\text{Transmission Losses}} = Z * EG_{\text{Exported}}$$

Electricity Loss in Transmission is in kWh. However for the calculation purpose electricity loss in transmission is converted in MWh.

This % transmission loss calculation as explained above is done by the state utility based on measured parameters and transparently provided in the FORM B. However, PP has no control over this calculation. Nonetheless, this calculation is transparently mentioned in the FORM B and can be verified any time during the verification. The data will be kept for two years after the end of the crediting period or the last issuance of CERs for this project activity, whichever occurs later.

5. **EG_{Controller}:** Electricity generated at Controller (MCS)⁷: The parameter is monitored through inbuilt control panel meters of the WTGs. The data is continuously measured at each WTG by inbuilt control panel meter and recorded at CMS. This value will only be used for deriving the apportioning ratio. The data will be archived in electronic form up to two years after the completion of crediting period or last issuance whichever is later.

The responsibilities and authorities of project management, data handling and recording, measurement methods and QA/QC procedure have been systematically

⁷This parameter shall only be used when it is required to apportion the electricity in a particular month. This is required as billing cycle and crediting period years or monitoring period may not match

	established and formalized and the same was verified during the site visit
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D.6. Crediting period

Means of validation	The crediting period is checked as per UN home page and discussion with Client
Findings	No CAR was raised regarding crediting period
Conclusion	This is 2 nd renewable crediting period and the duration is 7 year renewable (7th Jan 2018 to 6th of Jan 2025)

D.7. Project participants

Means of validation	The project participant names were checked from UN homepage https://cdm.unfccc.int/Projects/DB/SGS-UKL1273659698.37/view		
Findings	No CAR was raised regarding project participant		
Conclusion	Following are the details of PP (host country) and Annex 1 country. The same is correct and in line with PDD registered under 1st Crediting period as well as MOC obtained from UN home page		
	Party involved (host) indicates host Party	Private and/or public entity(ies) project participants (as applicable)	Indicate if the Party involved wishes to be considered as project participant (Yes/No)
	INDIA	Sargam Retails Private Limited (SRPL)	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, monitoring methodology or standardized baseline	N	NA	NA
Corrections	N	NA	NA
Inclusion of a monitoring plan to a registered project activity	N	NA	NA
Permanent changes from registered monitoring plan, monitoring methodology or standardized baseline	N	NA	NA
Changes to the project design of a registered project activity	N	NA	NA
Types of 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.

After confirmation of the PP the validation opinion and relevant documents are submitted to the EB through the UNFCCC web-platform

SECTION F. Validation opinion

Applus+ LGAI has performed a validation of the renewable crediting period for the project entitled "13.75 MW wind power project in Davangere, Karnataka, India". The validation for renewable crediting period was performed on the basis of UNFCCC criteria and host country criteria, as well

as criteria, e.g. AMS.I.D version 18, given to provide for consistent project operations, baseline, monitoring and reporting.

The review of the project design documentation for renewable crediting period and the subsequent follow-up interviews have provided Applus+ LGAI 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+ LGAI for registration with the UNFCCC.

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 investment and technological barriers 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 27,922tCO_{2e}.

The validation has been performed following the requirements of the latest version of the CDM VVS version 09 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
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
PP	Project Participant
PPA	Power Purchase agreement

Appendix 2. Competence of team members and technical reviewers

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 respectively. 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 eight 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 audit.
2. Ms. Natalia Rodrigo Vega has a Bachelor's Degree on Environmental Engineering and Master's Degree on Environmental and Quality Management System (under ISO 9001 and 14001).
She Works in Applus Environmental and Quality Management Systems Department since March 2012, being specially involved on technical support tasks related to CDM-VCS and GS Standards, among others (i.e. GHG verification and Proyec to Clima)

Appendix 3. Documents reviewed or referenced

No.	Author	Title	References to the document	Provider
1	NA	Contract of the project participant with the DOE	Contract document signed between PP and DOE	Project participant
2	NA	Technical specifications of turbine	Manufacturer technical specifications	Project participant
3	NA	PDD based on which opinion is provided-version 03	27/04/2017	Project participant
4	NA	Emission reduction calculation sheet-version 01	27/04/2017	Project participant
5	NA	The operational lifetime of the project activity from the manufacturer=(Technical specifications)	Technical lifetime certificate from Manufacturers	Project participant
6	NA	AMS I D version 18	UNFCCC CDM web site	UNFCCC
7	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
8	NA	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 2, EB 41 Tool to calculate the emission factor for an electricity system version 05 Glossary of CDM terms version 07 Guideline for completing the PDD form for small scale CDM project activity version 8.0 	UNFCCC CDM web site	UNFCCC

		<ul style="list-style-type: none"> Methodological tool: EB 66 Annex 47. 		
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Appendix 4. Clarification requests, corrective action requests and forward action requests

Table 1 CL from this validation

CL ID	01	Section no.	Section B.6	Date: 06/06/17
Description of CL				
During the document review it was observed that Grid availability correction factor of 5% and Transmission loss by 3% is accounted in ER calculation. Please clarify the rationale behind this assumptions				
Project participant response				Date: 07/06/2017
As per registered PDD, the PLF was determined at controller end based on manufacturers generation data, thus to arrive net billable generation, 5% grid availability correction factor and 3% transmission losses are considered for both IRR calculations and for estimation of emission reductions. Hence revised PDD has mentioned same information consistently. Also actual net electricity export to grid is within the threshold limit of increase in PLF for previous verifications. Thus same registered PDD value of Net electricity supplied to grid is mentioned in revised PDD. The estimated emission reductions are changed due to change in grid emission factor as per latest CEA database.				
Documentation provided by project participant				
NA				
DOE assessment				Date: 08/06/2017
As per the registered PDD to obtain the net billable generation 5% grid availability correction factor and 3% transmission losses are considered for both IRR calculations and for estimation of emission reductions. As the approach to calculate the emission reduction is conservative and accurate the same is acceptable to the assessment team. Thus same registered PDD value of Net electricity supplied to grid is mentioned in revised PDD for this renewable crediting period request.				
Moreover, latest version of CEA database, Govt of India version 11 is considered to calculate the grid emission factor, hence the calculated emission factor is correct at this time of validation. The emission factor is fixed ex-ante and the same is acceptable to the assessment team.				
CL is thus closed.				

Table 2 CAR from this validation

CAR ID	01	Section no.	A	Date: 06/06/17
Description of CAR				
During the document review it was observed that the technical details of the WTGs are not submitted to the DOE. Corrective action is sought for the same.				
Project participant response				Date: 07/06/2017
The project activity involves Suzlon make 5 WTGs of 1.5 MW capacity (S-82 model) and 5 WTGs of 1.25 MW capacity (S-64 model). The technical specifications of these WTGs models are submitted to DOE.				
Documentation provided by project participant				
Technical Specifications of WTG				
DOE assessment				Date: 08/06/2017
The technical specifications from the manufacturers are checked and it is observed that the information provided in the revised PDD for renewable of Crediting period is correct. Assessment team checked the name plate capacity of the WTGs during the onsite visit and thus also confirmed that the capacity of the WTGs as mentioned in revised PDD for renewable of Crediting period is correct.				
CAR is thus closed.				
CAR ID	02	Section no.	NA	Date: 06/06/17

Description of CAR	
During the document review it was observed the UNFCCC confirmation email regarding renewable crediting period is not submitted to the DOE. Corrective action is sought for the same.	
Project participant response	Date: 07/06/2017
The email send to UNFCCC for Intention of renewing crediting period along with un-validated CDM-PDD-FORM and CDM-RENN-FORM are submitted to DOE. Also UNFCCC acknowledgement for that e mail and informing that this case is now available for further processing by DOE are submitted to DOE.	
Documentation provided by project participant	
E mail with UNFCCC	
DOE assessment	Date: 08/06/2017
Assessment team checked the acknowledgement email from UNFCCC dated 05/05/2017 and confirm that the intention to seek renewable crediting period notification is provided to UNFCCC.	
CAR is thus closed.	

Document information

<i>Version</i>	<i>Date</i>	<i>Description</i>
01.0	23March 2015	Initial publication.
Decision Class: Regulatory Document Type: Form Business Function: Renewal of crediting period Keywords: crediting period, project activities, validation report		