VALIDATION REPORT

"GRID CONNECTED WIND ELECTRICTY GENERATION IN TAMIL NADU, INDIA"

South Asia

Document Prepared by

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Project Title	Grid-Connected Wind Electricity Generation Project in Tamil Nadu, India
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Report Title	Validation report of "Grid-Connected Wind Electricity Generation Project in Tamil Nadu, India"

Client	National Enterprises EKI Energy Services Limited
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Summary:

TÜV SÜD South Asia Pvt. Ltd to carry out the validation of the renewal of crediting period of "Grid-Connected Wind Electricity Generation Project in Tamil Nadu, India". This report summarizes the findings of the validation of the renewal of crediting period of this project, performed on the basis of VCS Standard Version 4.1 criteria.

The project activity was registered as a Verra project in March 2010. The project involves setting up a wind farm of Grid-Connected Wind Electricity Generation Project in Tamil Nadu, India. The project activity has been developed by National Enterprises. 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 Tamil Nadu Electricity Board.

The objective of the Validation is to have an independent evaluation of a project activity by a designated operational entity against the requirements of the VCS Standard Version 4.1 on the basis of the revised project design document. In particular, the validity of the original baseline, project description and monitoring plan and the project's compliance with section 3.8.9 of VCS Version 4.1 requirements.

The validation scope is to review the VCS PD against the VCS criteria which refer to VCS Version 4.1 standard and all the GHG program requirements.

Validation is not meant to provide any consultancy towards the project participants. However, stated requests for clarifications and/or corrective actions may have provided input for improvement of the project design.

The validation team has raised 1 CAR during the course of validation of renewal of crediting period and the same have been successfully closed. In conclusion, it is TÜV SÜD's opinion that the project activity "Grid-Connected Wind Electricity Generation Project in Tamil Nadu, India", as described in the VCS PD version 03 meets all relevant requirements for VCS activities for the renewal of the crediting period.

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1 INTRODUCTION

1.1 Objective

The objective of the Validation is to have an independent evaluation of a project activity by a designated operational entity against the requirements of the VCS Version 4 and GHG program applied, on the basis of the project design document. In particular, the project's baseline, monitoring plan, and the project's compliance with relevant VCS requirements, GHG program requirements and host Party criteria are validated in order to confirm that the project design, as documented, is sound and reasonable and meets the identified criteria. Validation is a requirement for all VCS projects and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of Voluntary Carbon Units (VCUs).

1.2 Scope and Criteria

The validation scope is to review the VCS PD against the VCS criteria which refer to VCS Version 4.1 standard and all the GHG program requirements. Validation is not meant to provide any consultancy towards the project participants. However, stated requests for clarifications and/or corrective actions may have provided input for improvement of the project design.

1.3 Level of Assurance

All the revisions of the validation report before being submitted to the client were subjected to an independent internal technical review to confirm that all validation activities had been completed according to the pertinent TÜV SÜD's instructions. The technical review was performed by a technical reviewer(s) qualified in accordance with TÜV SÜD's qualification scheme for VCS and CDM validation and verification.

The level of assurance of the validation report is defined as reasonable.

The validation team and the technical reviewers consist of the following personnel:

Role/Qualification	Last Name	First Name	Country
VCS Team Leader, Validator and Technical Expert	Murty	Eswar	India
Technical Reviewer	Sudheendra	K	India

1.4 Summary Description of the Project

The project activity was registered as Verra project in March 2010. The project involves setting up a wind farm of Grid-Connected Wind Electricity Generation Project in Tamil Nadu, India. The project activity has been developed by National Enterprises. 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 Tamil Nadu Electricity Board.

A total of 2 nos. of WTGs were installed under the project activity. Each ETG capacity is 1.65 MW and all have been installed in Village-Samugarangapuram, District-Tirunelveli, Tamil Nadu. WTGs have been commissioned in 30- March-2008 & 31-March-2008.

2 VALIDATION PROCESS

2.1 Method and Criteria

Validation was conducted using TÜV SÜD procedures in line with the requirements specified in the VCS Standard and all others GHG Programs Requirements.

The validation consists of the following three phases:

- Document review;
- Follow-up actions;
- The resolution of outstanding issues and the issuance of the final validation report.

The following sections outline each step in more detail.

2.2 Document Review

The VCS PD version 03 dated 20-December-2021 in particular the applicability of the methodology, the baseline validity of the project activity, the project description and monitoring plan, the emission reduction calculations provided in the form of a spreadsheet (were assessed as part of the validation of renewal of crediting period.

The following table lists the documentation that was reviewed during the validation.

No.	Author	Title	References to the document
1	UNFCCC		PA web page on UNFCCC
2	UNFCCC	VCS PDD	Version 01 24/03/2010
3	UNFCCC	Approved Methodology AMS ID	Version 18
4	UNFCCC	Methodological Tool -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

5	Verra	https://registry.verra.org/app/projectDetail/VCS/927	PA web page on Verra
6	Verra	VCS Standard	Version 4.1
7	Verra	Rules on relaxation of mandatory site visits by DOEs https://anab.qualtraxcloud.com/ShowDocument.aspx?ID=17626	ANAB guidance
8	UNFCCC	Tool to calculate the emission factor for an electricity system	Version 7
9	EKI Energy Services Ltd	PD for 2nd crediting period	Version 3 20/12/2021
10	EKI Energy Services Ltd	ER calculation sheet	Version 1 15/12/2021
10	Central Electricity Authority	CO2 Baseline Database for the Indian Power Sector http://www.cea.nic.in/reports/others/thermal/tpece/cdm_co2/user_guide_ver15.pdf	Version 16 March 2021
13	National Enterprises	Commissioning certificates	30/03/2008 & 31/03/2018
13	National Enterprises	Declaration stating that PP not to claim same GHG emission reductions of the project from different GHG programs and Ownership of the VERs	15/12/2021

2.3 Interviews

The key personnel interviewed, and the main topics of the interviews are summarized in the table below.

S.No	Date	Name	Organization	Topics discussed
1	18/12/2021	Kailas	National Enterprises	PA description, and consistency, Validity of the original baseline- impact of new relevant national and/or sectoral policies and circumstances on the baseline, correctness of the application of the approved methodologies - EF values assessment
2	18/12/2021	Sumant Saurabh	EKI Energy Services Ltd	PA description and consistency, Validity of the original baseline- impact of new relevant national

				and/or sectoral policies and circumstances on the baseline, correctness of the application of the approved methodologies - EF values assessment
3	18/12/2021	Sukanta Das	EKI Energy Services Ltd	PA description and consistency, Validity of the original baseline- impact of new relevant national and/or sectoral policies and circumstances on the baseline, correctness of the application of the approved methodologies - EF values assessment

2.4 Site Inspections

The VVB has not conducted the on-site inspection for the validation of renewal of crediting period of this project activity. Due to the ongoing Covid-19 pandemic and the current travel restrictions within the country, the VVB was unable to conduct the site visit and has carried out remote assessment. However the VVB has achieved a reasonable level of assurance without conducting a site visit, or through a remote site visit, and this is in conformance with the VCS rules,

The VVB has used alternative measures of validation in place of mandatory on-site inspections as per the decision taken by CDM-EB on 29-October-2021 and subsequent extension of these alternative measures until 30-June-2022 as per p.22 EB 112. The VVB has used standard auditing techniques as per section 7.1.3 of CDM VVS PA v3.0 to conduct the remote assessment of the PA with the help of web meetings and video conferencing. The interviews and discussions were conducted successfully with the PP and their representatives.

Hence, the VVB concludes that the means used to conduct interviews are sufficient for the purpose of validation of renewal of crediting period of the PA.

2.5 Resolution of Findings

The objective of this phase of the validation is to resolve any outstanding issues, which need to be clarified for TÜV SÜD's positive conclusion on the project design.

To guarantee transparency a validation protocol has been customized for the project. The protocol shows in a transparent manner the requirements, means of validation and the results from validating the identified criteria. The validation protocol consists of three tables; the different columns in these tables are described in the figure below (see Figure 1). The completed validation protocol is enclosed in Appendix A to this report.

A corrective action request (CAR) is raised if one of the following occurs:

- The project participants have made mistakes that will influence the ability of the project activity to achieve real, measurable additional emission reductions.
- The VCS Version 4.1 requirements have not been met.
- There is a risk that the emission reductions cannot be monitored or calculated.

A clarification request (CR) is raised if information is insufficient or not clear enough to determine whether the applicable VCS Version 4.1 requirements have been met.

1 Corrective Action Request has been raised during the validation. No CL or FAR has been raised

CL from this validation

Not Applicable

CAR from this validation

CAR ID	01	**Section no.**		**Date:** 18-December-2021
Description of CAR				
PP to make the following changes in the PDD. 1. Version number to be in line with the previous version 2. Correct start date				
Project participant response				**Date:** 20-December-2021
1. Version number is in line with previous version 2. Start date has been corrected				
Documentation provided by project participant				
Revised PD (version 03)				
DOE assessment				**Date:** 21-December-2021
The necessary corrections have been made in the PDD. Hence the issue is closed.				

2.5.1 Forward Action Requests

No FAR is raised during the Validation.

3 VALIDATION FINDINGS

3.1 Project Details

The project activity was registered as a Verra project in March 2010. The project involves setting up a wind farm of Grid-Connected Wind Electricity Generation Project in Tamil Nadu, India. The project activity has been developed by National Enterprises. 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 Tamil Nadu Electricity Board.

A total of 2 nos. of WTGs were installed under the project activity. Each ETG capacity is 1.65 MW and all have been installed in Village-Samugarangapuram, District-Tirunelveli, Tamil Nadu. WTGs have been commissioned in 30- March-2008 & 31-March-2008.

TÜV SÜD was able to verify the commissioning certificates of the 2 WTGs during the validation process and can confirm the ownership and operation of the plant.

TÜV SÜD' confirms that the description of the VCS project activity, as contained in the VCS PD sufficiently covers all relevant elements, is accurate and complete and that it provides the reader with a clear understanding of the nature of the VCS project activity.

Project proponent

The project proponents and their responsibility are clearly defined under Section 1.3 and 1.4 of the VCS PD. Project is being developed by National Enterprises who is also the project owner. Other entities who are involved in the project are EKI Energy Services Ltd as a carbon consultant.

Project start date

The starting date of project activity is 30 -March -2008 which is the date of commissioning of the first WTG of the project activity.

Project crediting period

The crediting period of the project activity is 10 years twice renewable for a total of 30 years.

Project scale and estimated GHG emission reductions or removals

The estimated average annual emission reductions from the project are estimated to be on the average 7,419 tCO_2 per year over the selected 10 years renewable crediting period.

Projects are categorized by size according to their estimated average annual emission reductions or removals according to VCS Standard. Since the estimated annual emission reductions resulting from the project is less than 300,000 tCO2, the category of the project is defined as "Project" as per the VCS Standard.

Project location

District	Site	HTSC No.	Latitude	Longitude	Local grid sub station	Commissioning date
Tirunelveli	Village-Samugarangapuram	2570	N 8˚19'32.7"	E77˚40'59.2"	TNEB 33 KV	30-March-2008

		2595	N 8˚19'59.4"	E 77˚19'27.4"	(Tirunelveli)	31-March-2008

Project compliance with applicable laws, statutes and other regulatory frameworks

The relevant applicable local laws and regulations related to the project are given below:

- *Electricity Act 2003*
- *National Electricity Policy 2005*
- *Tariff Policy 2006*
- *Central Electricity Authority Database 2019*

The project is in compliance with the given laws.

Ownership and other programs

Right of use: The legal right to control and operate the project activity is belong to the project owner.

Emissions trading programs and other binding limits: Net GHG emission reductions or removals generated by the project will not be used for compliance with an emissions trading program or for meeting binding limits on GHG emissions

Participation under other GHG programs: The project has not been registered under any GHG program and only registered under VCS.

Pre Project Scenario

The project activity is a Greenfield activity that is the installation of WTGs for generating electricity. In the absence of the project activity, the electricity would have been imported from the Grid thereby consuming the fossil fuel.

Overall conclusion

The Project activity would generate 3.3 MW of electricity with efficient utilization of the available wind energy through adoption of the latest, efficient and modern technology. The generated electricity displaces equivalent electricity (generated from fossil sources) that may have been supplied to Tamil Nadu Electricity Board.

Other forms of environmental credit sought or received: The project has not created another form of Environmental Credit.The VVB has cross-checked the REC Registry link provided by PP has in section 1.16.2 of the PDD. VBB confirms that the registered project activity is not claiming any REC benefits.

Rejection by other GHG programs: The project has not been rejected by other GHG programs.

Additional information relevant to the project

Eligibility criteria for grouped projects:

The project is not a grouped project.

Commercially sensitive information:

Not applicable.

Any further information:

Not applicable.

3.2 Safeguards

3.2.1 No Net Harm

There is no significant impact due to implementation of project activity on air*, water,* soil quality and ambience are envisaged due to the project activity.

The project activity does not involve any major construction activity. It primarily requires the installation of the wind power project, interfacing the generators with the State Electricity Board by setting up HT transmission lines and installation of other accessories.

The report on "Developmental Impacts and Sustainable Governance Aspects of Renewable Energy Projects" prepared by MNRE dated September 2013. This report clearly mentioned that wind project activity operations do not result in direct air pollution, noise pollution. Please refer below web link for the same[1].

Thus, there is no any significant impact due to implementation of project activity on air*, water,* soil quality and ambience are envisaged due to the project activity.

PP has clarified the all the potential environment and socio-economic impacts and mitigation measure for them in detail under section 2.1 of the VCS PD which is found OK. The Project activity meets all local laws and regulation of India. Further socio-economic impacts are rather indirect but positively related to the project activity. There is no negative socio-economic impacts from the project which is also discussed during the stakeholder interview. Validation team has interviewed the local stakeholder and confirmed that project has positive impact on the environment and socio-economic aspect.

3.2.2 Local Stakeholder Consultation

Not applicable since this is validation of renewal of crediting period.

[1] http://164.100.94.214/sites/default/files/uploads/report-on-developmental-impacts-of-RE.pdf

3.2.3 Environmental Impact

In line with the Environmental Impact Assessment (EIA) notification S.O. 1533, dated 14th September 2006 issued by Ministry of Environment & Forests (MoEF), Govt. of India, wind projects are not included in the list of projects that are required to get Prior Environmental Clearance (EC) either from State or Central Govt. authorities. As the project activity under consideration is a wind power generation project, it does not fall under the purview of EIA notification and therefore the EIA study need not be conducted for it.

3.2.4 Public Comments

Not applicable since this is validation of renewal of crediting period.

3.2.5 AFOLU-Specific Safeguards

Not applicable since this is a Non-AFLOU Project activity.

3.3 Application of Methodology

3.3.1 Title and Reference

The CDM approved baseline and monitoring methodology AMS ID. Ver 18.

Tool to calculate the emission factor for an electricity system, Version 07.0 (EB 100, Annex 04)[2]
"Tool to calculate project or leakage CO_2 emissions from fossil fuel combustion"[3] *Version 03.0 for determining project emissions*

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[4]

3.3.2 Applicability

The project correctly applies the approved baseline and monitoring methodology AMS I.D. Ver.18. TÜV SÜD confirms that the chosen baseline and monitoring methodology is applicable to the project activity.

The project activity is a Renewable Energy Project i.e. Wind Power Project which falls under applicability criteria option 1(a) i.e., "Supplying electricity to a national or a regional grid". Hence

[2] https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v7.0.pdf

[3] https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-03-v3.pdf

[4] https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-11-v3.0.1.pdf

the project activity meets the given applicability criterion. The project activity is a 3.3 MW wind electricity generation. Unit does not co-fire fossil fuels.

The validation team hereby confirms that the selected baseline and monitoring methodology has been previously approved by the CDM Executive Board, and is applicable to the Project, which complies with all the applicability conditions therein.

The applicability condition of the AMS I.D Ver.18 in context of project activity is demonstrated in PDD. The summary of the project compliance with applicability criteria is listed below:

AMS I.D (Version 18) applicability conditions	Conclusion made by validation team
This methodology is applicable to grid-connected renewable energy power generation project activities that: (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).	The VCS project activity involves the installation of 3.3 MW wind power plant for electricity generation. The project activity supplies the generated renewable electricity to the regional grid (NEWNE grid. Now Indian Grid) which is fed mainly by fossil fuel fired electricity generating units. Based on the above assessment the validation team confirms that the registered CDM project activity is a Greenfield grid connected solar power project. Hence, this applicability condition is fulfilled.
Illustration of respective situations under which each of the methodology (i.e. "AMS-I.D.: Grid connected renewable electricity generation", "AMS-I.F.: Renewable electricity generation for captive use and mini-grid" and "AMS-I.A.: Electricity generation by the user) applies is included in Table.	The project activity supplies electricity to the Indian Grid. AMS-I.D is applicable as per Table 1 of the methodology AMS-I.D,Version 18.0 and thus project qualifies for using the methodology.
Hydro power plants with reservoirs that satisfy at least one of the following conditions are eligible to apply this methodology: • The project activity is implemented in an existing reservoir with no change in the volume of reservoir; • The project activity is implemented in an existing reservoir, where the volume of reservoir is increased	The project is wind power project and thus the criterion is not applicable to this project activity.

and the power density of the project activity, as per definitions given in the Project Emissions section, is greater than 4 W/m2; • The project activity results in new reservoirs and the power density of the power plant, as per definitions given in the Project Emissions section, is greater than 4 W/m2.	
If new unit has both renewable and non-renewable components (e.g. a wind/diesel unit), the eligibility limit of 15MW for a small scale CDM project activity applies only to the renewable component. If new unit cofires fossil fuel, the capacity of the entire unit shall not exceed the limit of 15MW:	The project activity will generate electricity from wind energy which is renewable source of energy; hence this condition is not applicable.
Combined heat and power (co-generation) systems are not eligible under this category.	The project activity doesn't involve cogeneration; hence this condition is not applicable.
In the case of project activities that involve the addition of renewable energy generation units at an existing renewable power generation facility, the added capacity of the units added by the project should be lower than 15 MW and should be physically distinct from the existing units.	The project activity doesn't involve the addition of renewable energy generation units at an existing renewable power generation facility; hence this condition is not applicable.
In the case of retrofit or replacement, to qualify as a small scale project, the total output of the modified or retrofitted or replacement unit shall not exceed the limit of 15 MW.	The project activity doesn't retrofit or replace an existing facility; hence this condition is not applicable
In the case of landfill gas, waste gas, waste water treatment and agroindustries projects, recovered methane emissions are eligible under a relevant Type III category. If the recovered methane is used for electricity generation for supply to a grid then the baseline for the electricity component shall be in accordance with procedure prescribed under this methodology. If the recovered methane is used for heat generation or cogeneration other applicable Type-I methodologies such as "AMS I.C.: Thermal energy production with or without electricity" shall be explored.	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.
In case biomass is sourced from dedicated plantations, the applicability criteria in the tool "Project emissions	The Project activity is a renewable wind project and is not a biomass project.

from cultivation of biomass" shall apply.	Hence the criteria is not applicable to the project activity.

3.3.3 Project Boundary

The project boundary is clearly defined in accordance with the applied methodology and as per the registered PDD. The project boundary includes the wind turbine generator, sub-stations, grid and all power plants connected to grid. The proposed project activity will evacuate power to the INDIAN grid. Therefore the entire INDIAN grid and all connected power plants have been considered in the project boundary for the VCS project activity. VVB has cross-checked the project boundary is inline with the methodology requirement AMS.-I.D. Ver.18

According to the approved baseline and monitoring methodology "AMS-I.D", Grid connected renewable energy generation", version 18 project boundary is defined as "The spatial extent of the project boundary includes the project power plant and all power plants connected physically to the electricity system that the CDM project power plant is connected to". The project boundary includes the wind turbine generators, metering equipment and the Indian grid. The project boundary of the project was verified during site visit and it is in line with AMS-I.D version 18.The energy generating equipment is new and they are not transferred from another activity. The same was verified during site visit and also verified from review of purchase orders and commissioning certificate. Hence in line with AMS-I.D version 18, there are no leakage emissions. The electricity imported by the project activity is accounted in the net electricity exported by the project activity, $EG_{BLy.}$ There are no other sources of project emissions. Hence, in line with the methodology, project participant has considered project emissions as zero for renewable wind power project.
The GHG sources and sinks included in the project boundary are given in the table below:

Source		Gas	Included?	Justification/Explanation
Baseline	CO_2 emissions from electricity generation in fossil fuel fired power plants connected to the grid that are displaced due to the project activity.	CO_2	Yes	Main emission source
		CH_4	No	This source is not required to be estimated for wind energy projects under AMS I.D. version 18
		N_2O	No	This source is not required to be estimated for wind energy projects under AMS I.D. version 18

Source		Gas	Included?	Justification/Explanation
Project	Greenfield Wind Power Project Activity.	CO_2	No	Not applicable for wind projects
		CH_4	No	Wind energy generation does not have any indirect GHG emissions
		N_2O	No	Not applicable for wind projects

3.3.4 Based on the document review and site visit, VVB can confirm that the project boundary and emission sources described in the PDD are accurate and complete and for each GHG source, sink and reservoir included in the project's boundary is in line with the methodology AMS ID version 18. Baseline Scenario

VVB has assessed the validity of the baseline of the project activity as per below. Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period

According to the Methodological tool of "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 stepwise procedure to assess the continued validity of the baseline and to update the baseline at the renewal of a crediting period are as follows:

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

According to the procedures approved by the CDM Executive Board, updated PDD is required to incorporate the impact of national and/or sectoral policies and circumstances existing at the time of requesting for renewal of the crediting period on the current baseline emissions, except for the case where the project activity applies the valid version of an applicable standardized baseline that standardizes baseline scenario. The validity of the current baseline is assessed using the following Sub-steps:

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

The baseline scenario identified at the validation of the project activity was 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. It has been checked that there has been no change in the baseline scenario and is in and is in compliance with all the relevant mandatory national and/or sectoral policies. The PP has used the latest available CO_2 Baseline Database (CEA database, version 16) at the time of requesting renewal of the crediting period for establishing the baseline emission factor, which itself considered all the new circumstances with respect to the Sector- wise installed capacity (MW) as on 31/03/2020.

Hence, the new circumstances do not have an impact on the baseline emission. As per CEA data, the fossil fuel based thermal power generation is dominant over the renewable based power generation, thus baseline scenario remains same as original.

Step 1.2: Assess the impact of circumstances

The PP has used the latest available CO_2 Baseline Database (CEA database, version 16) at the time of requesting renewal of the crediting period for establishing the baseline emission factor, which itself considered all the new circumstances with respect to the Sector- wise installed capacity (MW) as on 31/03/2020. Hence, the new circumstances do not have an impact on the baseline emission. As per CEA data (https://cea.nic.in/wp-content/uploads/baseline/2021/06/User_Guide_ver_16_2021-1.pdf), the fossil fuel based thermal power generation is dominant over the renewable based power generation, thus baseline scenario remains same as original. Hence the current baseline remain same and there is no impact if circumstances, existing at the time of requesting renewal of crediting period.

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

As explained in step 1.2 above, the baseline scenario was the electricity import/generation from the power plants connected to the electricity grid. The PA is a green field one and there is no baseline equipment or investment involved in project activity. Therefore this condition is not applicable to the project activity.

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

The validity of the baseline emission factors has been checked and it has been updated in the PDD as per the latest CO2 baseline data published by the Central Electricity Authority.

Step2: Update the current baseline and the data and parameters

Step 2.1: Update the current baseline

As per the Step 1 above, the current baseline scenario is still valid as per the methodology AMS ID. Ver 18. The identified baseline scenario of the proposed project is as follows: • 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.

Also, the baseline emissions for the 2nd crediting period have been updated, without reassessing the baseline scenario. This update was applied in the context of the sectoral policies and circumstances that are applicable at the time of request for renewal of the crediting period. Further information for the updated baseline emissions for the 2nd crediting period can be seen in the PDD. Only the approach used to calculate the baseline emission factor is updated as per the latest version of CEA database available at the time of PDD submission for renewal.

The methodology, AMS ID. Ver 18, has been used to determine the baseline and the estimation of emission reductions for the applicable crediting period. As referred in the methodology "*Tool to*

calculate the emission factor for an electricity system" (version 07.0) has been used to determine continued validity of the baseline based on combined margin (CM) calculations.

As per CEA database version 16, the fossil fuel dominated electricity is more than renewable sector and is continuing with same pattern. In light of the above discussion it is to be concluded that in accordance with relevant guidelines stipulated in CDM VVS PA v2.0, national and/or sectoral policies and circumstances had been considered towards formulating the OM & BM baseline scenario. Hence the baseline scenario as applied for the present project activity remains justified.

Step 2.2: Update the data and parameters

As stated in Step 1.4 above, all parameters regarding the grid emission factor calculation have been updated for the 2nd crediting period.

Parameter	Value	Source
$EF_{grid,CM,y}$ Combined margin CO_2 emission factor for the project electricity system in year y	0.9346 tCO_2/MWh	Baseline CO_2 Emission Database, Version 16.0, March 2021 published by Central Electricity Authority (CEA), Government of India
$EF_{grid,OM,y}$ Operating margin CO_2 emission factor for the project electricity system in year y	0.9568 tCO_2/MWh	Baseline CO_2 Emission Database, Version 16.0, March 2021 published by Central Electricity Authority (CEA), Government of India
$EF_{grid,BM,y}$ Build margin CO_2 emission factor for the project electricity system in year y	0.8682 tCO_2/MWh	Baseline CO_2 Emission Database, Version 16.0, March 2021 published by Central Electricity Authority (CEA), Government of India

3.3.5 Additionality

Since this is a renewal of crediting period, the additionality assessment has not been done. There is no impact of the national and/or sectoral policies and circumstances upon the baseline scenario of the project activity and project activity is additional as per CDM Tool for the demonstration and assessment of additionality and as per VCS Program rules. The baseline scenario remains same, and the grid emission factors have been updated as per the latest CEA guidelines for CO_2 carbon database.

Regulatory Surplus Demonstration:

In India, there is no any regulation to install the wind projects and the project activity is a voluntary step taken by PP. In India, the fossil fuel based thermal power generation is dominant over the renewable based power generation, thus baseline scenario remains same as original. As discussed in section 3.4 of VCS PD, there is no any Impact of the national and/or sectoral policies and circumstances upon the baseline scenario of the project activity and project activity is additional as per CDM Tool for the demonstration and assessment of additionality and as per VCS Program rules.

There are no certain laws and regulations which give comparative advantage to more emission intensive technologies or less emission intensive technologies. There are no any Type E+ and E- policies applicable to the project activity which prevent the implementation of local laws and regulations that would seek to contribute towards climate change mitigation. The project activity is in compliance with local laws and regulations. As explained in section 3.4, the current baseline complies with all relevant mandatory national and/or sectoral policies.

3.3.6 Quantification of GHG Emission Reductions and Removals

The VVB has assessed the calculation of GHG emission of the project activity complies with the applied methodology and requirement of the VCS. The GHG emission calculation of the project activity are as per the applied methodology AMS ID. Ver 18.

The baseline emission factor is calculated using the combined margin approach as per CEA values:

Therefore, $EF_{grid,y} = EF_{grid,CM,y} = 0.9346\ tCO_2/MWh$

Baseline Emission (BE_y) = $EG_{PJ,y}$ x $EF_{grid,y}$

Baseline Emission (BE_y) = 7,938 MWh x 0.9346 tCO_2e/MWh

Baseline Emission (BE_y) = 7,419 tCO_2e (annually)

The validation team confirms the following:

All relevant assumptions and data are listed in the project description, including their references and sources.

All data and parameter values used in the project description are considered reasonable in the context of the project.

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

TÜV SÜD's team confirms that the methodology and the above referenced tools have been applied correctly to calculate baseline emissions, project emissions, leakage and net GHG emission reductions and removals. Validation Report: VCS Version 4.1

3.3.7 Methodology Deviations

The project activity does not deviate from the applicable methodology.

3.3.8 Monitoring Plan

The approved baseline and monitoring methodology AMS ID. Ver 18 has been applied.

Monitoring parameter is Net Electricity Exported by the two WTGs to the Indian in the year y and based on the monthly invoice raised by the PP to State Utility Department based on the monthly JMR Report issued by State Electricity Department to the Project Proponent.

The monitoring plan is in accordance with the monitoring methodology; the monitoring plan will give opportunity for real measurement of achieved emission reductions. TÜV SÜD's team has checked the parameter presented in the monitoring plan against the requirements of the methodology; no deviations relevant to the project activity have been found in the plan.

TÜV SÜD's team confirms that the monitoring arrangements described in the monitoring plan are feasible within the project design, and the means of implementation of the monitoring plan are sufficient to ensure the emission reductions achieved by/resulting from the proposed VCS project activity can be reported ex post and verified.

Management System and Quality Assurance

The validation team checked the O&M structure along with the roles and responsibilities assigned. It is checked that the measurement reports /data will be verified and approved by the head of control and operation section. The head section will also have the responsibility to consolidate and report data to the operation and maintenance manager. The same was also confirmed during the site visit interviews.

The monitored data will be kept for two years after the end of the crediting period or the last issuance of VERs in line with the standard

The validation team confirms that the monitoring arrangements described in the monitoring plan are feasible within the project design; The means of implementation of the monitoring plan, including the data management and quality assurance and quality control procedures, are sufficient to ensure that GHG emission reductions achieved by/resulting from the proposed VCS project activity can be reported ex post and verified.

3.4 Non-Permanence Risk Analysis

Not Applicable

4 VALIDATION CONCLUSION

TÜV SÜD South Asia Pvt has performed a validation of the renewal of crediting period of the project activity "Grid-Connected Wind Electricity Generation Project in Tamil Nadu, India". The validation was performed on the basis of VCS Version 4 requirements.

The review of the project design documentation and the subsequent follow-up interviews have provided TÜV SÜD with sufficient evidence to determine the fulfilment of stated criteria.

The project correctly applied the baseline and monitoring methodology AMS ID. Ver 18 and the validity of the baseline has also been thoroughly assessed by the audit team for the renewal of crediting period.

Considering that the project is implemented as designed, the project is likely to achieve the estimated amount of annual emission reductions of 7,419 tCO_2e as specified within the final PDD version for the second crediting period. The findings raised during this validation have been closed satisfactorily.

In summary, it is TÜV SÜD opinion that the project meets all relevant VCS requirements and hence TÜV SÜD recommends the renewal of the crediting period of this project

APPENDIX 1: CAR/CL RAISED

CL from this validation

Not Applicable

CAR from this validation

CAR ID	01	**Section no.**		**Date:** 18-December-2021
Description of CAR				
PP to make the following changes in the PDD. 1. Version number to be in line with the previous version 2. Correct start date				
Project participant response				**Date:** 20-December-2021
1. Version number is in line with previous version 2. Start date has been corrected				
Documentation provided by project participant				
Revised PD (version 03)				
DOE assessment				**Date:** 21-December-2021
The necessary corrections have been made in the PDD. Hence the issue is closed.				