Validation report form for renewal of crediting period of component project activities

(Version 03.0)

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BASIC INFORMATION			
Title and UNFCCC reference number of the programme of activities (PoA)	Promotion of renewable energy generation in India-Programme of Activities (9416)		
Version number of the validation report	3.0		
Completion date of the validation report	12/01/2022		
Version numbers of PoA-DD to which this report applies	05		
Title and UNFCCC reference number of each CPA for renewal	CPA Ref. no.	Title	
	CPA 9416-P2-0002-CP2	Jamb Wind Power Project, Maharashtra	
	CPA 9416-P2-0003-CP2	Vaspet-II And Vaspet III Wind Power Project, Maharashtra	
	CPA 9416-P2-0004-CP2	Wind Power Project At Chikodi, Karnataka	
	CPA 9416-P2-0005-CP2	Welturi I Wind Power Project In Maharashtra	
Sectoral scopes for each CPA	CPA Ref. no.	Sectoral scopes (indicate mandatory and conditional sectoral scopes)	
	CPA 9416-P2-0002-CP2 CPA 9416-P2-0003-CP2 CPA 9416-P2-0004-CP2 CPA 9416-P2-0005-CP2	01	
Applied methodologies and standardized baselines for each CPA	CPA Ref. no.	Applied methodologies and standardized baselines	
	CPA 9416-P2-0002-CP2 CPA 9416-P2-0003-CP2 CPA 9416-P2-0004-CP2 CPA 9416-P2-0005-CP2	ACM0002 ver. 20 - Consolidated baseline methodology for grid-connected electricity generation from renewable sources Standardized baselines : Not Applicable	
	CPA Ref. no.	**No. of CP**	**Duration of the CP**

Number and duration of the next crediting period (CP)	CPA 9416-P2-0002-CP2	2nd	04/08/2021 – 03/08/2028
	CPA 9416-P2-0003-CP2	2nd	04/08/2021 – 03/08/2028
	CPA 9416-P2-0004-CP2	2nd	30/09/2021 – 29/09/2028
	CPA 9416-P2-0005-CP2	2nd	03/10/2021 – 02/10/2028
Coordinating/managing entity (CME)	General Carbon Advisory Services Pvt. Ltd		
Host Parties	India		
Estimated amount of annual average greenhouse gas (GHG) emission reductions or GHG removals by sinks in the next crediting period (tCO_2e), per CPA	CPA Ref. no.	**Annual emission reductions or removals (tCO_2e)**	
	CPA 9416-P2-0002-CP2	46,076	
	CPA 9416-P2-0003-CP2	84,044	
	CPA 9416-P2-0004-CP2	34,465	
	CPA 9416-P2-0005-CP2	80,050	
Name and UNFCCC reference number of the DOE	TÜV SÜD South Asia Private Limited (TÜV SÜD)- E-0005		
Name, position and signature of the approver of the validation report	Milind Shende Manager, Certification Body TUV SUD South Asia Pvt Ltd		

SECTION A. Executive summary

TUV SUD has performed the validation for second renewal of the crediting period of the following component of activities (CPAs) under the registered Programme of Activities, PoA 9416: Promotion of renewable energy generation in India- Programme of Activities.

CPA 0002: JAMB WIND POWER PROJECT, MAHARASHTRA
The project activity is the installation of a 28 MW (2MW x 14 no. of WTG), Greenfield renewable wind energy projects in Satara district in the state of Maharashtra. The purpose of the project activity is to generation of clean power utilising wind energy and to ~~sale~~ sell it to the Indian grid through a long term Power Purchase Agreement (PPA).

CPA 0003: Vaspet-II and Vaspet III Wind Power Project, Maharashtra
The project activity is a 49.50 MW (1.5 MW x 33 no. of WTG), Greenfield renewable wind energy projects in Sangli district in the state of Maharashtra. The purpose of the project activity is to generate clean power utilising wind energy and sell it to the Indian grid through a long term Power Purchase Agreement (PPA).

CPA 0004: Wind power project at Chikodi, Karnataka
The project activity is a 18 MW (2 MW x 9 no. of WTG), Greenfield renewable wind energy projects in Belgaum district in the state of Karnataka. The purpose of the project activity is to generate clean power utilising wind energy and sell it to the Indian grid through a long term Power Purchase Agreement (PPA).

CPA 0005: Welturi I wind power project in Maharashtra
The project activity is a 50.4 MW (2.1 MW x 24 no. of WTG), Greenfield renewable wind energy projects in Beed district in the state of Maharashtra. The purpose of the project activity is to ~~generation~~ generate clean power utilising wind energy and sell it to the Indian grid through a long term Power Purchase Agreement (PPA).

The Validation has been conducted in accordance with the CDM VVS for PoA v3.0 and the section 7.1.3 to validate the information provided by the coordinating/managing entity.

The validation process includes three phases:

- Desk review of documents;
- Follow-up interviews with the relevant personnel;
- Resolution of outstanding issues

The PoA aims to increase the supply of renewable energy to the Indian national/sub-national grid from renewable wind energy resources on a commercially sustainable basis. The PoA facilitates the access to carbon revenues for wind energy projects in India by means of standalone or Bundling or grouping of wind projects located in different regions but within geographical boundary of India.

The audit team has assessed the validity of the original baseline through an assessment of impact of new relevant national and/or sectoral policies and circumstances on the baseline taking into account of all relevant guidelines, and the correctness of the applicability of the latest methodology.

1 Clarification Request (CL) and 1 Corrective Action Requests (CARs) have been raised during the course of the assessment and have been successfully closed.

SECTION B. Validation team, technical reviewer and approver

B.1. Validation team member

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)	Involvement in			
						Desk/document review	On-site inspection	Interviews	Validation findings
1.	Team Leader, Validator , Validator	IR	Murty	Eswar	TUV SUD South Asia Pvt Ltd	✓		✓	✓
2.	Host country Expert	IR	Murty	Eswar	TUV SUD South Asia Pvt Ltd	✓		✓	✓

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

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)
1.	Technical reviewer	EI	Sudheendra	K	TUV SUD South Asia Pvt Ltd
2.	Approver	IR	Shende	Milind	TUV SUD South Asia Pvt Ltd

SECTION C. Means of validation

C.1. Desk/document review

The information presented in the CPA-DDs on the technical design has been assessed for accuracy and completeness using standard auditing techniques including:

- Document review including
- A review of data and information;
- Cross checks between information provided in the CPA-DDs and information from sources other than those used, the DOE´s sectoral or local expertise. If necessary, independent background investigations were performed.

In opinion of TÜV SÜD the project description, as included in the CPA-DD, is accurate and complete; and it provides a correct understanding of the proposed project activity.

A complete list of all documents reviewed is attached as Appendix 3 to this report.

C.2. On-site inspection

As per the requirement of p.179 and p.180 of CDM validation and verification standard for programmes of activities, version 03, assessment team has not conducted site visit for 2nd renewal of crediting period for the following 4 CPAs mentioned below:

CPA 0002: JAMB WIND POWER PROJECT, MAHARASHTRA

CPA 0003: Vaspet-II and Vaspet III Wind Power Project, Maharashtra

CPA 0004: Wind power project at Chikodi, Karnataka

CPA 0005: Welturi I wind power project in Maharashtra

The DOE has not conducted the on-site inspection for the validation of renewal of crediting period of this project activity, which is in line with p.179, 180 of CDM VVS PoA v3.0.

According to p.179 of the CDM VVS PoA v3.0, the following conditions are mandatory for on-site inspection. The following conditions are applicable for renewal of crediting period of the CPAs also as per p.392 of CDM VVS PoA v3.0.

<table>
<tr><th>S.No</th><th>Requirement</th><th>Applicability for the current CPAs</th></tr>
<tr><td>1</td><td>Its estimated annual average of greenhouse gas (GHG) emission reductions or net anthropogenic GHG removals is more than 100,000 t CO2 eq;</td><td>The estimated annual average (GHG) emission reductions or net anthropogenic GHG removals for CPAs is less than 100,000 t CO2 eq as mentioned below:
<table>
<tr><th>CPA ref</th><th>Annual ERs (tCO_2e)</th></tr>
<tr><td>CPA 0002</td><td>46,076</td></tr>
<tr><td>CPA 0003</td><td>84,044</td></tr>
<tr><td>CPA 0004</td><td>34,465</td></tr>
<tr><td>CPA 0005</td><td>80, 050</td></tr>
</table></td></tr>
<tr><td>2</td><td>There is pre-project information that is relevant to the requirements for inclusion of the CPA and may not be traceable after the inclusion</td><td>There is no pre-project information, which is not traceable after the inclusion.</td></tr>
</table>

The DOE has conducted remote interviews through Microsoft teams platform to discuss with the client regarding the data and documents pertaining to renewal of crediting period. The interviews and discussions were conducted successfully with all concerned staff and stakeholders and it is sufficient for the DOE to verify and prepare the report. Moreover, the DOE has used standard auditing techniques as per section 7.1.3 of CDM VVS PoA v3.0 to conduct the remote assessment of the PA with the help of web meetings. The interviews and discussions were conducted successfully with the PP and their representatives.

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

Duration of on-site inspection: DD/MM/YYYY to DD/MM/YYYY				
No.	**Activity performed on-site**	**Site location**	**Date**	**Team member**
1.	NA	NA	NA	NA

C.3. Interviews

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Babu	Ram	General Carbon Advisory Services Pvt. Ltd	20/09/2021	CPA description, MoC names and consistency Validity of the original baseline- impact of new relevant national and/or sectoral policies and	Eswar Murty

					circumstances on the baseline, correctness of the application of the approved methodologies - EF values assessment	
2.	Sharma	Aditya	Renew Power			
3.	Singh	Chinmay	Renew Power	20/09/2021	CPA description, MoC names 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	Eswar Murty
4.	Das	Kingshuk	EKI Energy Services Ltd	20/09/2021	CPA description, MoC names 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	Eswar Murty
5.	Sharma	Barun	EKI Energy Services Ltd	20/09/2021	CPA description, MoC names 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	Eswar Murty

C.4. Sampling approach

Sampling approach is not applicable.

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

Area of validation findings (SECTION D)	No. of CL	No. of CAR	No. of FAR
CPAs to be renewed and corresponding generic CPAs			
Compliance with CPA-DD form		1	
Application and selection of methodologies and standardized baselines			
Validity of original baseline or its update			
Demonstration of eligibility of the CPAs			
Estimated emission reductions or net anthropogenic removals	1		
Validity of monitoring plan			
Crediting period			
CME and project participants			
Post-registration changes			

Others (please specify)			
Total	1	1	

SECTION D. Validation findings

D.1. Compliance with CPA-DD form

Means of validation	The Specific case CPA DDs have been prepared using the latest version of CDM-CPA-DD Form, i.e. version 10.
Findings	CAR 1 has been raised since the latest form has not been used for the CPA.
Conclusion	The CPA-DD is compliant with relevant form and guidance. Hence the DOE confirms that CDM-CPA-RCPV-FORM Version 10.0 confirms that the CME used a later valid version of the CPA-DD form for the updated CPA-DD than the version of the form of the registered CPA-DD. The information transferred to the revised CPA-DDS is materially the same as that in the registered CPA-DD in accordance with CDM VVS PA v3.0.

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

Means of validation	Each Large Scale CPA under PoA will meet the applicability conditions of the approved consolidated baseline and monitoring methodology ACM0002, Version 20.0, Sectoral Scope 1, EB 105 as described below:	
	Applicability conditions of AMS0002, Version 20.0	**DOE Assessment**
	This methodology is applicable to grid-connected renewable energy power generation project activities that: • Install a Greenfield power plant; • Involve a capacity addition to (an) existing plant(s); • Involve a retrofit of (an) existing operating plants/units; • Involve a rehabilitation of (an) existing plant(s)/unit(s) or • Involve a replacement of (an) existing plant(s)/unit(s).	All 4 CPAs under PoA 9416 are the installation of a new grid connected renewable energy power plant (Wind power) at a site where no renewable power plant was operated prior to the implementation of the project activity (Greenfield plant) and hence this criterion is applicable.
	The methodology is applicable under the following conditions: a) The project activity may include renewable energy power plant/unit of one of the following types: hydro power plant/unit with or without reservoir, wind power plant/unit, geothermal power plant/unit, solar power plant/unit, wave power plant/unit or tidal power plant/unit; b) In the case of capacity additions, retrofits, rehabilitations or replacements (except for wind, solar, wave or tidal power capacity addition projects) the existing plant/unit started commercial operation prior to the start of a minimum historical reference period of five years, used for the calculation of	All 4 CPAs under PoA 9416 is an installation of a new grid connected renewable energy power plant (wind power) and hence this first condition is met. These CPAs does not involve any capacity additions, retrofits or replacements and therefore this second condition is not applicable.

	baseline emissions and defined in the baseline emission section, and no capacity expansion, retrofit, or rehabilitation of the plant/unit has been undertaken between the start of this minimum historical reference period and the implementation of the project activity.	
	In case of hydro power plants, one of the following conditions shall apply:[1] a) The project activity is implemented in existing single or multiple reservoirs, with no change in the volume of any of the reservoirs; or b) The project activity is implemented in existing single or multiple reservoirs, where the volume of the reservoir(s) is increased and the power density calculated using equation (3), is greater than 4 W/m^2; or c) The project activity results in new single or multiple reservoirs and the power density, calculated using equation (3), is greater than 4 W/m^2; or d) The project activity is an integrated hydro power project involving multiple reservoirs, where the power density for any of the reservoirs, calculated using equation (3), is lower than or equal to 4 W/m^2, all of the following conditions shall apply: i. The power density calculated using the total installed capacity of the integrated project, as per equation (4), is greater than 4 W/m^2; ii. Water flow between reservoirs is not used by any other hydropower unit which is not a part of the project activity; iii. Installed capacity of the power plant(s) with power density lower than or equal to 4 W/m^2 shall be: a) Lower than or equal to 15 MW; and b) Less than 10 per cent of the total installed capacity of integrated hydro power project.	The 4 CPAs under PoA are installation of new wind based electricity generation plants (not a hydro power plant). Hence, this criteria is not applicable.
	In the case of integrated hydro power projects, project proponent shall:	The 4 CPAs under PoA are installation of new wind based electricity generation plants (Wind

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

	a) Demonstrate that water flow from upstream power plants/units spill directly to the downstream reservoir and that collectively constitute to the generation capacity of the integrated hydro power project; or b) Provide an analysis of the water balance covering the water fed to power units, with all possible combinations of reservoirs and without the construction of reservoirs. The purpose of water balance is to demonstrate the requirement of specific combination of reservoirs constructed under CDM project activity for the optimization of power output. This demonstration has to be carried out in the specific scenario of water availability in different seasons to optimize the water flow at the inlet of power units. Therefore, this water balance will take into account seasonal flows from river, tributaries (if any), and rainfall for minimum of five years prior to the implementation of the CDM project activity.	power). This condition is applicable only for hydro power plants and not applicable for wind power projects. Hence, this criteria is not applicable.
	The methodology is not applicable to: a) Project activities that involve switching from fossil fuels to renewable energy sources at the site of the project activity, since in this case the baseline may be the continued use of fossil fuels at the site; b) Biomass fired power plants/units.	The 4 CPAs under PoA are installation of new wind based electricity generation plants (wind power) and does not involve switching from fossil fuel to renewable energy and hence this criterion is not relevant to the PoA. This PoA does not involve any biomass based power plants and hence this criterion is not applicable to the project activity.
	In the case of retrofits, rehabilitations, replacements, or capacity additions, this methodology is only applicable if the most plausible baseline scenario, as a result of the identification of baseline scenario, is "the continuation of the current situation, that is to use the power generation equipment that was already in use prior to the implementation of the project activity and undertaking business as usual maintenance"	The 4 CPAs under PoA are installation of new wind based electricity generation plants (wind power) and not a retrofits, replacement or capacity additions and therefore this criterion is not applicable to the project activity.
	Applicability conditions of "Tool to calculate the emission factor for an electricity system"	
	This tool may be applied to estimate the OM, BM and/or CM when calculating baseline emissions for a	This condition is applicable. OM, BM and CM are estimated using the tool for calculating baseline emissions.

	project activity that substitutes grid electricity that is where a project activity supplies electricity to a grid or a project activity that results in savings of electricity that would have been provided by the grid (e.g. demand-side energy efficiency projects).	
	Under this tool, the emission factor for the project electricity system can be calculated either for grid power plants only or, as an option, can include off- grid power plants. In the latter case, the conditions specified in "Appendix 2: Procedures related to off- grid power generation" should be met. Namely, the total capacity of off-grid power plants (in MW) should be at least 10 per cent of the total capacity of grid power plants in the electricity system; or the total electricity generation by off-grid power plants (in MWh) should be at least 10 per cent of the total electricity generation by grid power plants in the electricity system; and that factors which negatively affect the reliability and stability of the grid are primarily due to constraints in generation and not to other aspects such as transmission capacity.	All 4 CPAs under PoA is grid connected (wind power), this condition is applicable and the emission factor has been calculated accordingly.
	In case of CDM projects the tool is not applicable if the project electricity system is located partially or totally in an Annex I country.	All 4 CPAs under PoA is located in India, a non-Annex I country. Therefore, this criterion is not applicable for the project activity.
	Under this tool, the value applied to the CO_2 emission factor of biofuels is zero.	Each CPA under PoA will be grid connected renewable energy project (wind power) and CO_2 emission factor is not considered for biofuels.
Findings	CAR 1 has been raised since the version of the updated DDs are not in line with the previous crediting period. CL1 also has been raised as some of the documents supporting the updated EF has not been provided.	
Conclusion	The CPAs have applied the latest applicable version of the methodology and in-line with the methodology requirement for its project activity. The selected methodology is applicable to the CPA and selected version of the methodology is valid at the time of submission for renewal. For each of the applicability conditions listed in the methodology ACM0002. Version 20, the steps taken to assess the relevant information contained in the CPA-DDs have been clearly described.	

D.3. Validity of original baseline or its update

Means of validation	The baseline scenario as depicted in the revised version of the 4 CPA-DDs is checked during telecon with CME's representatives during the interview. DOE 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 CPA-DDs 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, March 2021) 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, database ,the fossil fuel based thermal power generation is dominant over the renewable based power generation, thus baseline scenario remains same as original (https://cea.nic.in/wp-content/uploads/baseline/2021/06/User_Guide_ver_16_2021-1.pdf). **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 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 CPA 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. . **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 CPA-DDs 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 ACM0002 Version 20.0. 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 CPA-DDs. 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 CPA-DDs submission for renewal. The approved consolidated baseline methodology, ACM0002 Version 20.0, 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 v3.0, 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. As per the approved consolidated Methodology ACM0002 Version 20.0 para 22: "If the project activity is the installation of a Greenfield power plant, the baseline scenario is electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in the "Tool to calculate the emission factor for an electricity system". **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	Nomenclature	Source
EFgrid,CM,y	0.9346 tCO2/MWh	Combined margin CO2 emission factor for the project electricity system in year y	Calculated as the weighted average of the operating margin (0.25) & build margin (0.75) values, sourced from Baseline CO2 Emission Database, Version 16.0, March 2021 published by Central Electricity Authority (CEA), Government of India
Efgrid,OM,y	0.9568 tCO2/MWh	Operating margin CO2 emission factor for the project electricity system in year y	Calculated as the last 3 year (2017-18, 2018-19, 2019-20) generation-weighted average, sourced from Baseline CO2 Emission Database, Version 16.0, March 2021 published by Central Electricity Authority (CEA), Government of India
Efgrid,BM,y	0.8682 tCO2/MWh	Build margin CO2 emission factor for the project electricity system in year y	Baseline CO2 Emission Database, Version 16.0, March 2021 published by Central Electricity Authority (CEA), Government of India

Findings	No CAR/ CL has been raised.
Conclusion	TUV SUD confirms that the validity of the baseline has been assessed as per the requirements of the methodological Tool and CDM VVS PoA v3.0.

D.4. Demonstration of eligibility of the CPAs

Means of validation

The eligibility criteria have been developed to meet the references in the PS for PoAs 03.0 Section 7.12.6, taken from the 2nd CP PoA-DD and the DOE has checked the fulfilment of the same for the renewal of the CPAs.

As per the "Standard for the demonstration of additionality, development of eligibility criteria and application of multiple methodologies for Programme of Activities" 26 – version 02.1, following criteria must be met by each CPA to be included under the PoA:

S.No	Eligibility criterion-Category	CME justification	Validation conclusion
1	The geographical boundary of the CPA including any time-induced boundary consistent with the geographical boundary set in the PoA	The geographical boundary of the CPA must be consistent with the geographical boundary set in the PoA. Hence, the CPA must be located within India.	It has been evident from any of the following documents: • supply order/ purchase order/ MOU with supplier • commissioning certificate/land ownership/ lease OR regulatory clearance • Geo-coordinates of the project
2	Conditions to avoid double counting of GHG emission reductions or net anthropogenic GHG removals, such as unique identifications of	Each CPA will not be involved in another registered or under validation as a CDM project activity or as a CPA under proposed or another PoA or as another GHG reduction	It has been evident from following: • Unique identification numbers allocated to CPA. • Unique Geo-coordinates

		product and end user locations (e.g. programme logo)	projects related to wind or solar power project	allocated for each CPA • Declaration of no double counting of emission reductions.
	3	The specifications of technology/measure including the level and type of service, performance, specifications including compliance with testing/certifications	Each CPA implementer will provide description of the technologies including expected lifetime, capacity, plant load factor, and any other manufacturer specifications, etc. must be included in CPA-DD.	Details of technology used will be evident from following: • Product Brochure/Manufacturer brochure of the equipment used • Detailed Project report/Feasibility Report • Plant Load Factor can be evident from 3rd Party PLF report or 3rd party DPR.
	4	Start date of the CPA	The start date of CPA should be in the format of dd/mm/yyyy. The start date of the CPA should be after the start date of the PoA.	The start date format used dd/mm/yyyy in all 4 CPAs and same can be verified from the commissioning dates.
	5	Compliance with applicability conditions and other requirements of ACM0002	Each CPA will satisfy the applicability conditions for simplified baseline and monitoring methodologies as specified in the ACM0002 (Ver. 20.0)	Applicability conditions of ACM0002 (Ver.20.0) Section B of CPA-DD
	6	Demonstration of Additionality	Each CPA will demonstrate the additionality as per the "Tool for the demonstration and assessment of additionality" (Ver. 07.0.0, EB 70, Annex 8) at the time of inclusion of each CPA.	There is no change in the project design, capacity and monitoring measurement of the project, thus it can be confirmed that no impact on the additionality of the project from the CPA-DD included during renewal crediting period of the project activity.
	7	Local Stakeholder Consultation and Environmental Impact Analysis.	Each CPA will hold local stakeholder consultation before the inclusion in PoA and before project construction. Each CPA will conduct environmental impact analysis as per the national compliance.	Stakeholder consultation was carried out during inclusion of CPA-DD. No fresh stakeholder consultation is required during renewal crediting period.
	8	Public funding or ODA	Each CPA will provide an affirmation that funding from Annex I party, if any, does not result in a diversion of	This criteria has been confirmed through no ODA declaration was submitted by the CME/PP during

			official development assistance.	inclusion time of the CPA-DD
	9	Target group	The target group of each CPA will be connected to Indian electricity grid	Project activity is supplying power to the grid and it can be confirmed from the PPA.
	10	Sampling	No Sampling method is applicable	Not Applicable
	11	Other PoAs or projects	There is no other registered CDM project activity, included in another registered PoAs, deregistered project activities with the same identification data.	Declaration of double counting check, GPS coordinates, Analysis of projects in the CDM pipeline
	12	Small-Scale Thresholds	The capacity of each hydro power project will not exceed 15MW over the entire crediting period as small-scale CDM project activities. In case of microscale CPA, the installed capacity of each hydro power project will not exceed 5MW over the entire crediting period.	Not applicable for the POA as Large Scale meth will be used and hence capacity of the CPA should be more than 15 MW.
	13	De-bundling Check	Each CPA is not a de-bundled component of a large scale project activity as per Para.15 of Methodological tool Assessment of de-bundling for small scale project activities	Not applicable for the POA as Large Scale meth will be used and hence de-bundling atisfy is not applicable for the POA.
Findings	No CAR/CL has been raised.			
Conclusion	The DOE confirms that the eligibility criteria for inclusion of CPAs is in accordance with p.132, 133 of CDM VVS PoA v3.0.			

D.5. Estimated emission reductions or net anthropogenic removals

Means of validation	The purpose of the validation to ensure that calculation of GHG emission of the project activity complies with the applied methodology. TÜV SÜD has assessed the calculations of project emissions, baseline emissions and leakage and emission reductions presented in the spread sheet and compared it the values provided in the PoA-DD. The parameters and formulae presented in the spread sheet and the CPA-DD were cross checked and verified with approved methodology and the respective tools. The GHG emission calculations of the project activity are as per the applied methodology ACM0002, Version 20.0. **Project Emissions:** For most renewable power generation projects activities. **Leakage Emissions:** No Leakage emissions are considered. **Baseline Emission (BE_y)** The baseline emissions are the product of electrical energy baseline $EG_{facility,y}$ expressed in MWh of electricity produced by the renewable generating unit multiplied by an emission factor.

$BE_y = EG_{PJ,y} * EF_{grid,CM,y}$

Where,

BE_y	=	Baseline emissions in year y (tCO_2/yr)
$EG_{PJ,y}$	=	Quantity of net electricity generation that is produced and fed int the implementation of the project activity in year y (MWh/yr)
$EF_{grid,CM,y}$	=	Combined margin CO_2 emission factor for grid connected pow calculated using the latest version of the "Tool to calculate the electricity system" (tCO_2/MWh)

As per para 41 of methodology, project activity is the installation of a Greenfield power plant, hence

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

Where

$EG_{PJ,y}$	=	Quantity of net electricity generation that is produced and fed int the implementation of the CDM project activity in year y (MWh/yr)
$EG_{PJ,facility,y}$	=	Quantity of net electricity generation supplied by the project plan y (MWh/yr)

Annual electricity supplied to the grid by the Project ($EG_{PJ,y}$)

Annual Baseline Emissions Reduction:
Bey = $EG_{PJ,y}$ x $EF_{grid,CM,y}$

CPA no	$EG_{PJ,y}$ (MWh)	$EF_{grid,CM,y}$ tCO2e/MWh	tCO2e/year
CPA 0002	49,301	0.9346	46,076
CPA 0003	89,925	0.9346	84,044
CPA 0004	36,877	0.9346	34,465
CPA 0005	85,652	0.9346	80,050

Findings	A CL has been raised to provide the grid emission factor and emission reduction sheet. CME has been provided the same to close this CL. ER calculation has been done appropriately in the ER sheet.
Conclusion	The GHG emission calculations of the project activity are as per the applied methodology ACM0002 Version 20.0.

D.6. Validity of monitoring plan

Means of validation	Assessment team checked the monitoring practice of CPAs and also checked the requirement of ACM0002 version 20 and procedure mentioned in the registered PoA- DD of 2nd Crediting Period. Following monitoring parameters are included in CPA-DDs and the same is as per the requirement of approved methodology: **The following parameters have been determined ex-ante:** I. The Build Margin emission factor of Indian grid II. The Operating Margin emission factor of Indian grid III. Combined margin CO_2 emission factor in year y **Parameters Monitored Ex-Post The following parameters will be monitored:** I. Quantity of net electricity generation supplied by the project plant/unit to the grid in year y
Findings	No CAR/CL has been raised
Conclusion	Based on the above mentioned assessment TUV-SUD considers that stated monitoring plan is feasible and the project proponent will be able to implement the monitoring plan into practice in order to atisfy the methodological requirements.

	The ex-ante and monitored parameters are also in line with the Generic CPA-DD as per the registered PoA-DD for the 2nd CP, thus found acceptable by the assessment team.

D.7. Crediting period

Means of validation

The crediting period is checked as per UNFCCC CDM PoA's view page for all following 4 CPAs:

CPA-ID	CPA Tile	Crediting start date	Crediting end date
CPA 0004	Welturi I wind power project in Maharashtra	03/10/2021	02/10/2028
CPA 0004	Wind power project at Chikodi, Karnataka	30/09/2021	29/09/2028
CPA 0003	Vaspet-II and Vaspet III Wind Power Project, Maharashtra	04/08/2021	03/08/2028
CPA 0002	JAMB WIND POWER PROJECT, MAHARASHTRA	04/08/2021	03/08/2028

The Crediting period for all these CPA-DDs is as follows:

CPA Ref. no.	No. of CP	Duration of the CP
CPA 0002	2nd	04/08/2021 – 03/08/2028
CPA 0003	2nd	04/08/2021 – 03/08/2028
CPA 0004		
CPA 0005	2nd	30/09/2021 – 29/09/2028
	2nd	03/10/2021 – 02/10/2028

Findings	No CAR/CL has been raised
Conclusion	This is 2nd renewable crediting period and the duration is 7-year renewable. The next (second) crediting periods of the CPAs commence on the day immediately after the expiration of the first crediting period. This is in accordance with the VVS for PoAs 03.0 Para 391, hence found acceptable by the assessment team.

D.8. CME and project participants

Means of validation	The project participant names were checked from UN homepage https://cdm.unfccc.int/ProgrammeOfActivities/poa_db/H8ZL9NPDCF0B76JQM5XVTGKI1YU4AO/view?cp=1
Findings	No finding was raied
Conclusion	General Carbon Advisory Services Pvt. Ltd is the CME and also the CPA implementer for the CPA 0002,0003,0004,00005.The same is correct and in line with CPA-DDs registered under 1st Crediting period as well as MOC obtained from UN home page. The details are true for the 2nd Crediting period as well.

D.9. Post-registration changes

Type of post-registration changes (PRCs)	Confirmation (Y/N)	Validation report for PRCs	
		Version	Completion date
Temporary deviations from the registered monitoring plan, applied methodologies, standardized baselines or other methodological regulatory documents[2]	N	NA	NA
Corrections	N	NA	NA
Changes to the start date of the crediting period of component project activity	N	NA	NA
Inclusion of monitoring plan	N	NA	NA
Permanent changes to the registered monitoring plan, or permanent deviation of monitoring from applied methodologies, standardized baselines, or other methodological regulatory documents	N	NA	NA
Changes to the project design	N	NA	NA
Changes specific to afforestation and reforestation activities	N	NA	NA
Others (please specify)	N	NA	NA

SECTION E. Internal quality control

Internal quality control within the team is assured by means of a technical review process that takes place after the on-site assessment and after closure of findings. The internal quality control in the verification process is given by the final decision made by the Certification Body.

SECTION F. Validation opinion

TUV-SUD has performed a validation for renewal of crediting period of the following 4 CPAs :

1. 9416-P1-0002-CP1-JAMB WIND POWER PROJECT, MAHARASHTRA
2. 9416-P1-0003-CP1-Vaspet-II and Vaspet III Wind Power Project, Maharashtra
3. 9416-P1-0004-CP1-Wind power project at Chikodi, Karnataka
4. 9416-P1-0005-CP1-Welturi I wind power project in Maharashtra

The validation was performed on the basis of UNFCCC criteria and host country criteria, as well as criteria, e.g. ACM0002 version 20, given to provide for consistent project operations, monitoring and reporting.

TÜV SÜD has performed a validation of the request for renewal of the 2nd crediting period of the aforementioned existing CDM project activity. Standard auditing techniques have been used for the validation process. The validation has been performed following the requirements of the latest version of the CDM VVS for PA v3.0.

The review of the project design documentation, subsequent follow-up interviews, and further verification and validation of references have provided TÜV SÜD with sufficient evidence to determine the validity of the original baseline and to confirm that the estimated emission reductions are in line with the applied methodology. In our opinion, the project meets all relevant UNFCCC requirements and hence TÜV SÜD recommends the renewal of the crediting period of this project.

The single purpose of this report is its use during the registration process as part of the CDM project cycle. Based on the work described in this report, nothing has come to our attention that

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

causes us to believe that any project component or issue has not been covered by the validation process.

Pune, 12/01/2022

Milind Shende

Manager, Certification Body
TÜV SÜD South Asia Private Limited

Appendix 1. Abbreviations

Abbreviations	Full texts
BM	Build Margin
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CDM-EB	CDM Executive Board
CER	Certified Emission Reduction
CEA	Central Electricity Authority
CM	Combined Margin
CMP	Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol
CO2e	Carbon dioxide equivalent
CR / CL	Clarification Request
DNA	Designated National Authority
DOE	Designated Operational Entity
EF	Emission Factor
EIA / EA	Environmental Impact Assessment / Environmental Assessment
ER	Emission Reduction
FAR	Forward Action Request
GHG	Greenhouse Gas(es)
GWP	Global Warming Potential
IRL	Information Reference List
KP	Kyoto Protocol
MP	Monitoring Plan
MR	Monitoring Report
OM	Operational Margin
PCP	Project Cycle Procedure
CPA-DDS	Project Design Document
PP	Project Participant
RCP	Renewable Crediting Period
TÜV SÜD	TÜV SÜD South Asia Pvt. Ltd
UNFCCC	United Nations Framework Convention on Climate Change
VVS	CDM Validation And Verification Standard for Project Activities

Appendix 2. Competence of team members and technical reviewers

ZERTIFIKAT ◆ CERTIFICATE ◆ 認証証書 ◆ СЕРТИФИКАТ ◆ CERTIFICADO ◆ CERTIFICAT

CERTIFICATE OF APPOINTMENT

Mr. Murty, Eswar fulfills the requirements of the Certification Body 'Environment and Energy' of TÜV SÜD South Asia Pvt Ltd to participate in audits.

Qualification applicable to					
Standard	CDM	GS	VCS	ISO-14064-1/2	Other
	☒	☒	☒	☒	☐

Qualification as						
Status	Validator	Verifier	ATL	Technical Reviewer	Financial Expert	Technical Expert
	☒	☒	☒	☒	☒	☒
TA (s)	1.1, 1.2, 3.1, 4.1, 13.1					

Country Expertise						
Region	1	2	3	4	5	Other
	☒	☐	☐	☐	☐	
Further countries	India, Indonesia					

Technical Area/ Scopes
1.1_Thermal Energy Generation
1.2_Renewables
3.1_Energy demand
4.1_Cement and lime production, General Manufacturing (physical and chemical inc. construction (GHG), General (GHG)
13.1_Waste handling and disposal (GHG)
Power generation and Electrical power transactions(renewable/non-renewable-(GHG)

This appointment is valid until 31.05.2022 and is bound by internal requirements of the Certification Body 'Environment and Energy' of TÜV SÜD South Asia Pvt Ltd.
In case of loss of validity of this certificate as per result of an assessment according to internal procedures or due to any other reason, it will be properly communicated to you.
Your Certificate has the internal reference no. CB-IND-CCP-0031/012.

Date	Signature
01/06/2021	

IS-OMS-CB-POG-01/06, version 06

TÜV SÜD South Asia ■ Kolkata, [illegible] ■ T. [illegible] ■ Tel. +91 [illegible] ■ Fax +91 [illegible]

ZERTIFIKAT ◆ CERTIFICATE ◆ 認証証書 ◆ СЕРТИФИКАТ ◆ CERTIFICADO ◆ CERTIFICAT

CERTIFICATE OF APPOINTMENT

Mr. Sudhoondra, K fulfils the requirements of the Certification Body 'Environment and Energy' of TÜV SÜD South Asia Pvt Ltd to participate in audits.

Qualification applicable to					
Standard	CDM	GS	VCS	ISO-14064-1, 2	Other
	☒	☒	☒	☒	☐

Qualification as						
Status	Validator	Verifier	ATL	Technical Reviewer	Financial Expert	Technical Expert
	☐	☐	☐	☒	☐	☒
TA (s)	1.1, 1.2					

Country Expertise						
Region	1	2	3	4	5	Other
	☑	☐	☐	☐	☐	
Further countries						

Technical Area/ Scopes
1.1_Thermal energy generation, Energy Industries (Thermal)-CHG
1.2_Renewables
Power generation and Electrical power transactions (fossil fuel-thermal renewable/nonrenewable-(CHG)
Energy distribution (GHG)

This appointment is valid until 31.07.2022 and is bound by internal requirements of the Certification Body 'Environment and Energy' of TÜV SÜD South Asia Pvt Ltd.
In case of loss of validity of this certificate as per result of an assessment according to internal procedures or due to any other reason, it will be properly communicated to you.
Your Certificate has the internal reference no. CB-IND-COP-010/2020.

Date	Signature
07/05/2021	

IS-CMS-CB-PCCG-01/05, version 03

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Appendix 3. Documents reviewed or referenced

No.	Author	Title	References to the document	Provider
1	UNFCCC	https://cdm.unfccc.int/PoARenewal/ren_db/poaren115308273/view	PoA-Webpage	UNFCCC
2	UNFCCC	Registered PoA-DD	Version 05, 03/07/2020	UNFCCC
3	UNFCCC	Methodology ACM0002: Grid-connected electricity generation from renewable sources	Version 20	UNFCCC
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.	UNFCCC
5	UNFCCC	Tool to calculate the emission factor for an electricity system"	Version 07.0	UNFCCC
6	UNFCCC	Tool to calculate the emission factor for an electricity system	Version 07.0	UNFCCC
7	UNFCCC	Tool for the demonstration and assessment of additionality'	Vesrion 07.0.0	UNFCCC
8	UNFCCC	CO2 Baseline Database for the Indian Power Sector https://cea.nic.in/cdm-co2-baseline-database/?lang=en	Version 16	CEA
9	UNFCCC	CPA0002- Emission Reduction Sheet	Version 02	
10	UNFCCC	CPA0003- Emission Reduction Sheet	Version 02	
11	UNFCCC	CPA0004- Emission Reduction Sheet	Version 02	
12	UNFCCC	CPA0005- Emission Reduction Sheet	Version 02	
13	UNFCCC	Revised CPA-DD (CPA 002)	Version 06 01/12/2021	
14	UNFCCC	Revised CPA-DD (CPA 003)	Version 05 01/12/2021	
15	UNFCCC	Revised CPA-DD (CPA 004)	Version 05 01/12/2021	
16	UNFCCC	Revised CPA-DD (CPA 005)	Version 06 01/12/2021	
17	CPA implementer	Commissioning certificates	All 4 CPAs	
18	UNFCCC	Registered CPA-DDs CPA -002, 003, 004, 005	Version 4/ 25/07/2014 Version 3/25/07/2014 Version 3/16/09/2014 Version 4/26/09/2014	
19	CME	RAA form		

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

Table 1. CL from this validation

CL ID	01	**Section no.**		**Date:** 21/09/2021
Description of CL				
PP to provide the following documentation with respect to CPA 002- CPA 006 1. Supporting evidences to demonstrate the operation of all CPAs- Commissioning/JMRs etc 2. Ownership of the CPAs 3. Calculation of Grid EF and estimated ERs				
Project participant response				**Date:** 01/12//2021
1. Commissioning Certificates of all CPAs are now submitted to the DOE assessment team to justify the operational activity of the CPAs. 2. Commissioning Certificates of all CPAs are now submitted to the DOE assessment team to justify the ownership of the CPAs. 3. Estimated ER sheet of all CPAs are now submitted to the DOE assessment team.				
Documentation provided by project participant				
1. Commissioning Certificates of all CPAs 2. Estimated ER sheet of all CPAs				
DOE assessment				**Date:** 15/12/2021
Project proponent has been submitted commissioning certificates of all CPAs to confirm the operational activity and ownership of the CPAs. Also submitted ER sheet of all CPAs according to the requirement. Since all documents have been submitted in line with requirements, hence this CL is closed now.				

Table 2. CAR from this validation

CAR ID	01	**Section no.**		**Date:** 21/09/2021
Description of CAR				
PP to make revisions in the CPA-DDs for CPA 002-005 as given below 1. Version number of CPA- DDs Pg 1 with respect to the previous CPA-DD of first CP 2. Actual status of the CPA- instead of ‘proposed’ 3. Latest CPA-DD form template				
Project participant response				**Date:** 01/12//2021
1. The version number of the CPA-DD is now corrected with respect to the previous CPA-DDs for all CPAs. 2. The sentences in all the CPA-DDs are now revised, as the projects are implemented. 3. The CPA-DDs are now revised as per latest template version 10.				
Documentation provided by project participant				
1. Revised CPA-DDs for all CPAs				
DOE assessment				**Date:** 15/12/2021
Version no. and actual status of the project activity has been updated in all CPAs. This is CAR is closed.				

Table 3. FAR from this validation

FAR ID	1	Section no.		Date: 21/09/2021
Description of FAR				
Due to postponement of CMP 16 meeting and scheduled end of 2nd commitment period of Kyoto protocol on 31/12/2020, in accordance with para 7 (c) of EB 108th meeting report and EB 109 clariification, PP shall apply any global warming potential values that may be adopted by the CMP for that period in their monitoring reports for any emission reductions achieved on or after 1 January 2021; and update their project design documents in accordance with any requirements of the CMP guidance.				
Project participant response				**Date:** DD/MM/YYYY
Documentation provided by project participant				
DOE assessment				**Date:** DD/MM/YYYY

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Document information

Version	*Date*	*Description*
03.0	31 May 2019	Revision to: • Ensure consistency with version 02.0 of the "CDM validation and verification standard for programmes of activities" (CDM-EB93-A08-STAN); • Make editorial improvements.
02.0	29 December 2017	Revision to align with the requirements of the "CDM validation and verification standard for programme of activities" (version 01.0). Change form symbol from CDM-CPA-RCP-FORM to CDM-CPA-RCPV-FORM.
01.0	3 August 2015	Initial publication.

Decision Class: Regulatory
Document Type: Form
Business Function: Renewal of crediting period
Keywords: component project activity, crediting period, validation report