




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

(Version 03.0)

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

### BASIC INFORMATION

<b>Title and UNFCCC reference number of the programme of activities (PoA)</b>	Small-Scale Renewable Energy PoA in Thailand (6222)		
<b>Version number of the validation report</b>	2.0		
<b>Completion date of the validation report</b>	17/02/2022		
<b>Version numbers of PoA-DD to which this report applies</b>	03		
<b>Title and UNFCCC reference number of each CPA for renewal</b>	<b>CPA Ref. no.</b>	<b>Title</b>	
	6222-P1-0002-CP1	CPA No. 3: Pho Thong Solar PV Power Project	
<b>Sectoral scopes for each CPA</b>	<b>CPA Ref. no.</b>	<b>Sectoral scopes (indicate mandatory and conditional sectoral scopes)</b>	
	6222-P1-0002-CP1	Sectoral scope 1: Energy industries (renewable - / non-renewable sources)	
<b>Applied methodologies and standardized baselines for each CPA</b>	<b>CPA Ref. no.</b>	<b>Applied methodologies and standardized baselines</b>	
	6222-P1-0002-CP1	AMS-I.D.: Grid connected renewable electricity generation, version 18	
<b>Number and duration of the next crediting period (CP)</b>	<b>CPA Ref. no.</b>	<b>No. of CP</b>	<b>Duration of the CP</b>
	6222-P1-0002-CP1	2	7 years from 04/03/2021 to 03/03/2028
<b>Coordinating/managing entity (CME)</b>	Carbon Coordinating Managing Entity Limited		
<b>Host Parties</b>	Thailand		
<b>Estimated amount of annual average greenhouse gas (GHG) emission reductions or GHG removals by sinks in the next crediting period (tCO<sub>2</sub>e), per CPA</b>	<b>CPA Ref. no.</b>	<b>Annual emission reductions or removals (tCO<sub>2</sub>e)</b>	
	6222-P1-0002-CP1	9,971 tCO <sub>2</sub> e	
<b>Name and UNFCCC reference number of the DOE</b>	TÜV SÜD South Asia Private Limited (TÜV SÜD) E-0005		
<b>Name, position and signature of the approver of the validation report</b>	 Eswar Murty, Senior Manager, Certification Body, TÜV SÜD South Asia Pvt Ltd.		

**SECTION A. Executive summary****Purpose and general description:**

The project activity generates the electricity using solar photo voltaic technology. The total installed capacity of the CPA is 9.66 MW, and the electricity generated is supplied to grid with the Provincial Electricity Authority (PEA) of Thailand, which would have otherwise been generated mainly by fossil fuel based grid-connected power plants.

The project is located at Khok Phusta, PhoThong district of Ang Thong province of Thailand. The geo-coordinates of the project are N14.68115 E100.38888.

The CPA No. 3: Pho Thong Solar PV Power Project (6222-P1-0002-CP1) was included on 04/03/2014 and commissioned on 29/03/2013. Since then the project is operational. The PPs have chosen a 7 year crediting period which the first crediting period started from 04/03/2014 and has expired on 03/03/2021. The next duration of the CPA commences on the day immediately after the expiration of the current duration i.e from 04/03/2021.

The CME of this CPA is Carbon Coordinating Managing Entity Limited and the CPA implementer is Siam Solar Power Co Ltd.

**Scope of validation:**

The objective of the Validation is to have an independent evaluation of the updated CPA-DD's compliance with relevant UNFCCC requirements and host Party criteria to confirm that the original project baseline is still valid or has been updated taking into account of new data where applicable. In particular, the project's baseline, monitoring plan and the project's compliance with relevant UNFCCC requirements and host Party criteria are validated in order to confirm the correctness of the application of the approved baseline methodologies for the determination of the continued validity of the baseline/or its update, and estimation of the emission reductions for the applicable crediting period. The validation scope is to review the updated PDD against the UNFCCC criteria for CDM. UNFCCC criteria for CDM refer to Article 12 of the Kyoto Protocol, the CDM modalities and procedures, the simplified modalities and procedures for small-scale CDM project activities and the subsequent decisions by the CDM Executive Board.

**Validation process:**

This report summarizes the findings from the validation of the updated PDD of the project, performed on the basis of UNFCCC criteria for CDM, as well as criteria given by the CDM Validation and Verification Standard for PoA, Version 03, CDM Project Cycle Procedure for PoA, Version 03 and CDM Project Standard for PoA, Version 03 and included an assessment of: (a) The impact of new relevant national and/or sectoral policies and circumstances on the baseline taking into account relevant guidance from the Board with regard to renewal of the crediting period at the time of requesting renewal of crediting period; (b) The correctness of the application of an approved baseline methodology for the determination of the continued validity of the baseline or its update, and the estimation of emission reductions from the applicable crediting period. This validation opinion is also to be seen in conjunction with the validation report at the time of requesting registration for the first crediting period. The Validation Opinion 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.

**Conclusion:**

In conclusion, it is TUV SUD's opinion that the project meets all the relevant requirements for the renewal of the crediting period to all relevant CDM requirements, UNFCCC requirements for the CDM, and all relevant host party criteria and the applied baseline and monitoring methodology AMS-I.D: "Grid connected renewable electricity generation, version 18.

**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, Technical Expert and Country Expert	EI	Menon	Rekha	TÜV SÜD South Asia Private Limited (TÜV SÜD)	√	-	√	√

**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	IR	Murty	Eswar	TÜV SÜD South Asia Private Limited (TÜV SÜD)
2	Approver	IR	Murty	Eswar	TÜV SÜD South Asia Private Limited (TÜV SÜD)

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

The updated CPA-DD, version 02 of 09/02/2022 /01/, in particular the applicability of the methodology, the baseline determination, the emission reduction calculations provided in the form of a spreadsheet "301292 CPA3 PhoThong\_Ex ante ER\_CP2\_v1\_19012022.xlsx", version 01 of 19/01/2022 /02/ and the documents listed in the Appendix 3 below, were reviewed during the validation.

**C.2. On-site inspection**

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

The Validation team could not conduct the site visit due to COVID-19 pandemic and subsequent travel restrictions. Moreover, an on-site visit is not mandatory for validation of the renewal of crediting period, in accordance with CDM VVS for PoA, version 03.0, paragraph 179, as the estimated annual average of GHG emission reductions of the CPA is less than 100,000 tCO<sub>2</sub>e. However, a remote audit was conducted and the personnel interviewed are discussed in section C.3.

**C.3. Interviews**

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Oudked	Ms. Benjaporn	Senior Buisness Development Engineer, Siam Solar Power	03/02/2022	Project implementation/ operation/ monitoring Equipment installed , measurement, calibration , necessary licences and approvals, QA/QC procedures	Rekha Menon
2	Maklamkhaw	Mr. Prapat	Senior Plant Supervisor, Siam Solar Power	03/02/2022		
3.	Rukwongtrakool	Ms. Suwipa	Project Manager – Carbon Coordinating Managing Entity Limited	03/02/2022		

**C.4. Sampling approach**

&gt;&gt; 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			
Application and selection of methodologies and standardized baselines		1	
Validity of original baseline or its update		1	
Demonstration of eligibility of the CPAs	1		
Estimated emission reductions or net anthropogenic removals			1
Validity of monitoring plan	1		
Crediting period		1	
CME and project participants			
Post-registration changes			
Others (please specify)			
<b>Total</b>	<b>2</b>	<b>3</b>	<b>1</b>

**SECTION D. Validation findings****D.1. CPAs to be renewed and corresponding generic CPAs**

Title and UNFCCC reference number of the CPA	Version number of the CPA-DD	Host Party	Title and reference number of the corresponding generic CPA	Version number of the PoA-DD on which the RCP is based
CPA No. 3: Pho Thong Solar PV Power Project  Reference number: 6222-P1-0002-CP1	2	Thailand	Generic CPA No. 2 Technology Type: Solar photovoltaic power generation (PV)	Version 03

**D.2. Compliance with CPA-DD form**

<b>Means of validation</b>	CPA-DD applies the applicable CDM-CPA-DD-FORM: Component project activity design document form for CPAs version 10 and complies with the "Instructions for filling out the Component project activity design document form" /32/. The validation team verified that for the renewal crediting period, information transferred to the later valid version of the CPA-DD form is materially the same as that in the registered CPA and the sections of the CPA-DD relating to the baseline, estimated GHG emission reductions, monitoring plan and crediting period have been updated in accordance with relevant requirements of the CDM Project Standard for PoA /30/ .
<b>Findings</b>	No CAR/CL has been raised
<b>Conclusion</b>	TUV SUD confirms that the CPA-DD is based on the currently valid CDM-CPA-DD-FORM template version 10 and is completed in accordance with the "Instructions for filling out the Component project activity design document form for CDM project activities" /32/

**D.3. Application and selection of methodologies and standardized baselines**

<b>Means of validation</b>	By means of comparison of the CPA-DD with (i) the applied CDM methodology (ii) all applicable CDM Meth tools and (iii) if applicable, a standardized baseline The verification team has checked whether the updated CPA-DD is in compliance with the requirements of the applied methodologies and tools .	
	<b>Methodology requirements</b>	<b>DOE Assessment</b>
	1. This methodology comprises renewable energy generation units, such as photovoltaic, hydro, tidal/wave, wind, geothermal and renewable biomass: (a) Supplying electricity to a national or a regional grid; or (b) Supplying electricity to an identified consumer facility via national/regional grid through a contractual arrangement such as wheeling.	The CPAs comprise renewable energy generation units based on solar energy that supply electricity to the National grid. Confirmed from the PPA and EPC contract.
	2. 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)	The CPAs are solar PV power plant supplying electricity to the national grid, therefore AMS-I.D is applicable.

	applies is included in appendix of the applied methodology.	
	<p>3. This methodology is applicable to project activities that</p> <ul style="list-style-type: none"> <li>(a) Install a Greenfield plant;</li> <li>(b) Involve a capacity addition;</li> <li>(c) Involve a retrofit of (an) existing plant(s);</li> <li>(d) Involve a rehabilitation of (an) existing plant(s)/unit(s); or</li> </ul> <p>Involve a replacement of (an) existing plant(s).</p>	Project activity involves the installation of new solar PV modules at the project site where there was no renewable energy generation unit operating prior to the proposed project activity (green field project activity).
	<p>4. Hydro power plants with reservoirs that satisfy at least one of the following conditions are eligible to apply this methodology:</p> <ul style="list-style-type: none"> <li>(a) The project activity is implemented in an existing reservoir with no change in the volume of reservoir;</li> <li>(b) The project activity is implemented in an existing reservoir, where the volume of reservoir is increased and the power density of the project activity, as per definitions given in the project emissions section, is greater than 4 W/m<sup>2</sup>;</li> </ul> <p>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/m<sup>2</sup>.</p>	Not applicable. The CPAs are solar PV power plant supplying electricity to the national grid.
	5. If the new unit has both renewable and non-renewable components (e.g. a wind/diesel unit), the eligibility limit of 15 MW for a small-scale CDM project activity applies only to the renewable component. If the new unit co-fires fossil fuel, the capacity of the entire unit shall not exceed the limit of 15 MW.	The installed electricity generation capacity of the renewable component does not exceed the limit of 15 MW.
	6. Combined heat and power (co-generation) systems are not eligible under this category.	Not applicable. The CPA comprises of renewable energy generation units based on solar energy.
	7. In the case of project activities that involve the capacity 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 <sup>1</sup> from the existing units.	Not applicable. There is no capacity addition of renewable energy generation.
	8. In the case of retrofit, rehabilitation or replacement, to qualify as a small-scale project, the total output of the retrofitted, rehabilitated or replacement power	Not applicable. There is no retrofit, rehabilitation or replacement, to qualify as a small-scale project.

<sup>1</sup> Physically distinct units are those that are capable of generating electricity without the operation of existing units, and that do not directly affect the mechanical, thermal, or electrical characteristics of the existing facility. For example, the addition of a steam turbine to an existing combustion turbine to create a combined cycle unit would not be considered "physically distinct".

	plant/unit shall not exceed the limit of 15 MW.	
	9. In the case of landfill gas, waste gas, wastewater treatment and agro-industries 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.	Not applicable. The CPAs are solar PV power plant supplying electricity to the national grid.
	10. In case biomass is sourced from dedicated plantations, the applicability criteria in the tool “Project emissions from cultivation of biomass” shall apply.	Not applicable. The CPAs are solar PV power plant supplying electricity to the national grid.
<b>Findings</b>	<p>CAR 1</p> <p>The CPA-DD is not transparent on the justification to the applicability conditions as per the methodology AMS-I.D “Grid connected renewable electricity generation”, version 18.</p> <p>For more information, please refer to Appendix-4 of the report.</p> <p>CAR1 is closed.</p>	
<b>Conclusion</b>	<p>TUV SUD confirms that the selected baseline and monitoring methodologies have been previously approved by the CDM Executive Board and are applicable to the project, which complies with all the applicability conditions therein the selected versions are valid at the time of submission of the renewal of crediting period. It is also confirmed that the methodologies are correctly applied by comparing them with the actual text of the applicable versions. The validation team confirms that the same is as per para 380(b) of the CDM VVS for PoA for project activities , version 03.0 /28/.</p>	

#### D.4. Validity of original baseline or its update

<b>Means of validation</b>	<p>The baseline was assessed according to the 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” /35/. The following steps were assessed:</p> <p>Step 1: Assess the validity of the current baseline for the next crediting period</p> <p><b>Step 1: Assess the validity of the current baseline is assessed using the following Sub-steps:</b></p> <p><b>Step 1.1: Assess compliance of the current baseline with relevant mandatory national and/or sectoral policies.</b></p> <p>The project activity is installation of a new grid connected renewable resource (solar) based power plant, the identified baseline as per the methodology is “the electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources into the grid”. Therefore, in accordance with the above, the baseline for the project activity is continuation of the pre-project scenario wherein the equivalent amount of electricity as generated by the project activity shall be generated at the thermal dominated grid connected power plants resulting in CO<sub>2</sub>e emissions. The same is line with all national policies and there is no policies or regulations which</p>
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mandates the project participant to implement the project activity. TUV SUD verified through the assessment of the power development plan 2018 /23/, energy act 2007 /24/ and Energy development and promotion action 1972 /25/ that the current baseline complies with all relevant mandatory national and/or sectoral policies. Also, PP has provided the Operation license for the solar power plant /18/ to demonstrate the project activity is in compliance with national sectoral policies. It is also confirmed that current relevant law and regulations does not mandate setting up renewable power plants from existing capacity.

#### **Step 1.2: Assess the impact of circumstances**

TUV SUD verified that there are no new relevant national and/or sectoral policies and/or circumstances that affect the baseline scenario; therefore, there is no impact in the project activity and baseline scenario. TUV SUD verified that the Thailand Grid is primarily fed by fossil fuel based power plants /36/.

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

As per the assessment of Step 1.1, the project proponent would have used the current baseline in absence of the project implementation as there is no requirements enforce change or modification of the current baselines. Hence it is verified that continuation of the use of current baseline equipment(s) is the most likely scenario for the crediting period for which the renewal is requested. It is further checked that the baseline equipments can still be operational for the next 18 years /15/ to /17/. The same was also confirmed and assessed in the first validation /05/.

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

The baseline emissions of the project activity were updated considering the latest version of the "Tool to calculate the emission factor for an electricity system" version 07. As per the registered CPA-DD, the grid emission factor was calculated as the weighted average of OM & BM; and was fixed ex-ante for the entire crediting period. Since the emission factors that were determined at the start of the first crediting period are not valid anymore, the data and parameters have been updated for the second crediting period.

#### **Step 2: Update the current baseline and the data and parameters**

##### **Step 2.1: Update the current baseline**

The baseline emissions for the second crediting period have been updated, without reassessing the baseline scenario, based on the latest approved version of the methodology AMS-I.D, version 18 /33/

##### **Step 2.2: Update the data and parameters**

The data and/or parameter(s) related to the grid emission factor for the second crediting period were updated.

The PP adopts the ex-ante calculation of emission factors of the grid and the combined margin emission factor for national grid of Thailand has been calculated as 0.5692 tCO<sub>2</sub> / MWh, which is based on the official data published by the Thai DNA based on data of years: 2014, 2015 and 2016 , which was published in 2017 /36/. This state body has provided the grid emission factor using the 'Tool to calculate the emission factor for an electricity system, version 07.0 /34/. This data is the latest publicly available data at the time of validation of renewal of crediting period.



	The emission factors are as follows:		
	<b>Parameter</b>	<b>Value</b>	<b>Source</b>
	EFOM,y : Operating Margin Emission Factor (tCO2/MWh)	0.5719 tCO2/MWh	Official data published by the Thai DNA based on data of years: 2014, 2015 and 2016 , which was published in 2017 /36/
	EFBM,y : Build Margin Emission Factor (tCO2/MWh)	0.5609 tCO2/MWh	
	EFCM,y : Combined Margin Emission Factor (tCO2/MWh)	0.5692 tCO2/MWh	
<p>According to the Version 07.0 of “Tool to calculate the emission factor for an electricity system”, the following default values are used in solar power generation project activities for the first crediting period and for subsequent crediting periods:</p> <p style="text-align: center;"><math>w_{OM} = 0.75</math> and <math>w_{BM} = 0.25</math></p> <p>So in the renewal crediting period, the CM emissions factor is derived as follows:</p> <p style="text-align: center;"><b><math>EF_{grid,CM,y} = 0.75 \times 0.5719 + 0.25 \times 0.5609 = 0.5692 \text{ tCO}_2/\text{MWh}</math></b></p> <p>Since the emission factors have been sourced from the data published by government authority, hence it has been accepted by the validation team.</p>			
<b>Findings</b>	<p>CAR2</p> <p>1.“Assessment of validity of the original/current baseline and update of the baseline at the renewal of the crediting period” is not justified in the CPA-DD. CME is requested to justify the same with supporting evidence.</p> <p>2. Provide pdf copies of the latest electricity/energy laws /national or sectoral policies.</p> <p>For more information, please refer to Appendix-4 of the report.</p> <p>CAR2 is closed.</p>		
<b>Conclusion</b>	<p>TUV SUD verified that the baseline was assessed according to the 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” /35/. The current project baseline is still valid at the renewal crediting period. The validation team confirms that the same is as per para 390 of the CDM VVS for PoA, version 03.0.</p>		

#### D.5. Demonstration of eligibility of the CPAs

<b>Means of validation</b>	<p>The DOE has assessed whether the coordinating/managing entity, in accordance with the relevant requirements in the “CDM project standard for programmes of activities”:</p> <p>Updated the eligibility criteria for inclusion of CPAs in the latest CDM PoA submitted for renewal of crediting period of the PoA and if so whether the CPAs renewed under this report are in compliance with the updated eligibility criteria.</p> <p>The following sources of information have been used in this context:</p> <ul style="list-style-type: none"> <li>• /PoA-DD/</li> <li>• /CPA-DD/</li> <li>• /AMS-I.D/</li> <li>• /unfccc/</li> </ul> <p>-The validation team can confirm based on its assessment and document check that the eligibility criteria for inclusion of CPAs in the updated CDM PoA, including the conditions that the CPAs meet the requirement pertaining to the demonstration of additionality, are not changed comparing with the latest approved PoA-DD according to the relevant requirements in the “CDM project standard for programmes of activities” considering the use of latest version of methodology, methodological tools and/or applied standardized baseline, original and updated baseline, current national legislation and/or sectoral policies and circumstances, estimation of GHG emission reductions and validity of the monitoring plan.</p>
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- As the eligibility criteria for then inclusion of the CPAs, including the conditions that the CPAs meet the requirement pertaining to the demonstration of additionality, have not been updated, the CPA is still in compliance with all related eligibility criteria as per registered PoA-DD.

- As per check with latest PoA-DD submitted for renewal of crediting period of the PoA the eligibility criteria have been updated. Please refer the below table for the current list of eligibility criteria as well as related assessment for compliance with the same.

S.No	Eligibility Criteria	Justification	Final result
1	The Project Activity is a voluntary initiative and not implemented due to mandatory policies or regulations.	In Thailand, there is no mandatory requirement to generate electricity from renewable energy sources and the Project Activity is carried out as a voluntary initiative, which is also confirmed in the declaration provided by the Project Entity to CME.	No update or changes to this eligibility criterion. As no changes occurred the initial assessment as per CPA inclusion report is still valid.
2	The Project Activity falls under one of the following Project Types: 1. Wind power 2. Solar photovoltaic power generation 3. Concentrated solar power 4. Run-of-the-River hydropower 5. Renewable biomass based power generation 6. Biogas based power generation	The Project Activity falls under Technology Type 2: Solar photovoltaic power generation (PV), which is also confirmed by CME based on the Technology Type descriptions provided in Section A.3 of the PoA-DD.	No update or changes to this eligibility criterion. As no changes occurred the initial assessment as per CPA inclusion report is still valid.  The validation team conducted virtual inspection of the site and also checked the pictures and videos of the site to confirm the same.
3 3 a. 3 b.	The installed electricity generation capacity of the Project Activity is less than or equal to 15 MW. In case of multiple Project Activities under one CPA, the combined installed capacity of all Project Activities under the CPA is less than or equal to 15 MW.	The CPA consists of 1 Project Activity with an installed capacity of 9.66 MW.	No update or changes to this eligibility criterion. As no changes occurred the initial assessment as per CPA inclusion report is still valid.  The same was confirmed by means of virtual inspection , PPA /19/ and EPC contract /37/.
4	The Project Activity is a grid-connected facility supplying electricity to the Thai national grid under Thailand's feed-in	The Project Activity will supply electricity to the Thai national grid under the VSPP scheme.	No update or changes to this eligibility criterion. As no changes occurred the initial assessment

		tariff/adder policy for Very Small Power Producers (VSPPs).		as per CPA inclusion report is still valid.  The PPA agreement is valid since it not terminated as per clause 2 of PPA /19/.
	5	The Project Activity is implemented under a Greenfield scenario (in line with AMS-I.D., version 18, paragraph 4).	There is no existing renewable power generation unit at the project site prior to the start of the Project Activity. Hence, the project is considered as a "Greenfield project".	No update or changes to this eligibility criterion. As no changes occurred the initial assessment as per CPA inclusion report is still valid.  The validation team confirmed the same from the EPC contract /37/ and audit observations.
	6	The Project Activity is not a combined heat and power (co-generation) project (in line with AMS-I.D., version 18, paragraph 7).	The Project Activity is not a combined heat and power (co-generation) project.	No update or changes to this eligibility criterion. As no changes occurred the initial assessment as per CPA inclusion report is still valid.  The validation team conducted virtual inspection of the site and also checked the pictures and videos of the site to confirm the same.
	7	The proposed Project Activity meets the Assessment of debundling for small-scale project activities, version 04.0.	Confirmation that the Project Activity complies with the Assessment of debundling for small-scale project activities, version 04.0.	No update or changes to this eligibility criterion. As no changes occurred the initial assessment as per CPA inclusion report is still valid.  This has been confirmed also from the database of UNFCCC.
	8	The Project Activity's boundary is within the geographical territory of Thailand.	The project is located at Khok Phusta, PhoThong district of Ang Thong province of Thailand.	No update or changes to this eligibility criterion. As no changes occurred the initial assessment as per CPA inclusion report is still valid.  The same was crosschecked with google earth images and confirmed to be appropriate.

	9	<p>The additionality for each Project Activity is demonstrated by any one of the following approaches:</p> <p><b>Approach 1:</b> Demonstration of additionality of microscale project activities, version 12.0; <b>OR</b></p> <p><b>Approach 2:</b> As per “<i>Demonstration of additionality of small-scale project activities</i>”, version 12.0, paragraph 10, additionality is demonstrated based on the investment barrier analysis.</p> <p>In case of bundled Project Activities within one CPA, additionality assessment using Approach 2 might be carried out at CPA level or at Project Activity level depending on how the underlying investment was structured.<sup>2</sup> <b>OR</b></p> <p><b>Approach 3:</b> As per “<i>Demonstration of additionality of small-scale project activities</i>”, version 12.0, paragraph 11, Project Activities based on solar technologies (i.e. Technology Type 2 and 3) and off-shore wind technology (as defined under Section A.3 of the</p>	The Approach 3 is applied for the Project Activities applying the Technology Type 2.	It is confirmed and checked that as per Demonstration of additionality of small-scale project activities, version 12.0, paragraph 11, the CPA complies with the positive list of grid-connected renewable electricity generation technologies that are automatically defined as additional.
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<sup>2</sup> In cases where a bundle of small units is considered as a single investment by an investor, the investment analysis shall be conducted at CPA level. In cases where different Project Activities bundled under one CPA were not conceived as a single investment (e.g. subject to different conditions, timing, etc.) the investment analysis shall be conducted individually for each Project Activity under the bundle.

		PoA-DD) with an installed capacity of up to 15 MW (subject to compliance with Eligibility Criteria No. 3) are automatically defined as additional.		
	10	The proposed Project Activity does not lead to double counting of emission reductions.	<p>The Project Activity does not and will not lead to double counting of emission reductions since it does not and will not claim emission reductions as:</p> <ol style="list-style-type: none"> <li>1. Standalone CDM project activity; <b>OR</b></li> <li>2. Part of a bundled CDM project activity; <b>OR</b></li> <li>3. Another registered CDM PoA; <b>OR</b></li> <li>4. Project activity under another emission reduction crediting scheme (e.g. voluntary carbon markets) during the same crediting period.</li> </ol>	<p>No update or changes to this eligibility criterion. As no changes occurred the initial assessment as per CPA inclusion report is still valid.</p> <p>This is checked vide CPA inclusion report and verifications report. Besides the power plant can be easily identified by GPS coordinates.</p>
	11	The starting date of the Project Activity is not before the date of commencement of validation of the PoA, i.e. the date on which the POA-DD is first published for global stakeholder consultation (in line with the "Glossary of CDM Terms", version 10).	The Project Activity start date is 06/02/2012, which is after the date of commencement of validation of the PoA.	<p>The start date of the Project Activity is 08/06/2012 in line with the supporting evidence as signed Engineering, Procurement and Construction Agreement dated 08/06/2012 /37/.</p> <p>Not updated or changed from the initial eligibility criterion. As the CPA has already started this has been checked via UNFCCC project webpage as well as CPA inclusion report. Criterion fulfilled and still correct.</p>
<b>Findings</b>	<p>CL1 CME is requested to provide the EPC (Engineering Procurement and Construction ) or BOOT ( Build Own Operate Transfer) agreements.</p> <p>For more information, please refer to appendix-4 of the report.</p>			

	CL 1 is closed.
<b>Conclusion</b>	The eligibility criteria for inclusion of CPAs in this CPA-DD are updated in line with the latest PoA-DD after renewal of the crediting period of the PoA. Besides editorial updates, the criteria have been updated to be fully consistent with the description of the applicability criteria as per related applied methodology versions. Further, no changes and updates have been conducted. Thus the latest approved CPA-DD has complied with the latest applicable versions of the methodologies and related PoADD and generic CPA-DD. No further changes to the eligibility criteria are required.

#### D.6. Estimated emission reductions or net anthropogenic removals

<b>Means of validation</b>	<p>The baseline emissions are calculated as per the paragraph 22 of the approved methodology AMS-I.D, version 18 /33/ and is the best suited for this project activity. Baseline emission is determined as the product of electrical energy baseline <math>EG_{PJ,y}</math> expressed in MWh of electricity produced by the renewable generating unit multiplied by the grid emission factor.</p> <p>Emission factor can be calculated either by combined margin approach consisting of the combination of operating margin and build margin according to the procedures prescribed in the 'Tool to calculate the emission factor for an electricity system', version 7.0 /34/. Appendix -4 of the PoA-DD checked, noted that tool to calculate the emission factor for an electricity system (Version 07.0) for is used in determination of combined margin emission factor for second crediting period based on information of grid emission factor of Thailand which was latest published by TGO (Thai DNA) on 28 September 2017 /36/.</p> <p>PP has opted for the combined margin emission factor approach. Operating margin emission factor is determined to be 0.5719 tCO<sub>2</sub>/MWh and the BM emission factor is determined to be 0.5692 tCO<sub>2</sub>e/MWh. The combined margin emission factor is determined to be 0.5692 tCO<sub>2</sub>/MWh. The calculation of the grid emission factor is based on official data available at the time of the CPA renewal. The value of the grid emission factor shall be fixed ex-ante for the entire crediting period of the CPA.</p> <p><math>EG_{PJ,y}</math>: 17,520 MWh/yr is calculated based on the contract export capacity i.e 8 MW and operating days per year (365) and operating days per day ( 6 hours), which is taken as per the BOI agreement /22/ .</p> $  \begin{aligned}  BE_y &= EG_{PJ,y} \times EF_{grid,y} \\  &= 17,520 \text{ MWh/y} \times 0.5692 \text{ t CO}_2\text{e/MWh} \\  &= 9,971 \text{ t CO}_2\text{e}  \end{aligned}  $ <p><b>Project emissions:</b> The project activity involves grid connected renewable energy generation from power plants other than geothermal plant and hydro power plant, project emission is considered as zero. Since this project activity involves grid connected renewable electricity generation through the solar PV modules, the project emissions are considered as zero.</p> <p><b>Leakage:</b> Also, it was verified that all the solar PV modules are new and there is no transfer of equipment from or to other project activity. Hence, no leakage has been considered for this project activity.</p> <p><b>Emission Reductions :</b> The emission reduction <math>E_{ry}</math> by the proposed project activity during the crediting period is the difference between baseline emissions (<math>B_{ey}</math>), project emissions (<math>P_{ey}</math>) and emissions due to leakage (<math>L_{ey}</math>) as follows, The following is the formula used for the same, <math>E_{ry} = B_{ey} - P_{ey} - L_{ey}</math> <math>E_{ry}</math> -Emission reductions during the year y.  <math>B_{ey}</math> -Baseline emissions during the year y.  <math>P_{ey}</math> -Project emissions during the year y.  <math>L_{ey}</math> – Leakage emissions during the year y.</p>
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	Based on the above consideration, the emissions reductions from the project activity will be the baseline emissions and have been determined to be 9,971 tCO <sub>2</sub> e per year throughout the renewable crediting period of seven years. Validation team has verified the emission reduction calculation sheet /02/ and found appropriate.
<b>Findings</b>	<p>FAR 1</p> <p>The coordinating/managing entity to apply any global warming potential values that may be adopted by the CMP at CMP 16 for the period from 1 January 2021 in the monitoring reports for any emission reductions achieved on or after 1 January 2021 and update the CPADD in accordance with any other requirements that may be adopted by the CMP at CMP 16;</p> <p>For more information , please refer to appendix-4 of the report.</p>
<b>Conclusion</b>	All changes due to the upgraded methodologies and the re-assessment of the baseline have been considered appropriately and in line with the CDM-PoA-PS. The calculation in the Excel spreadsheet and the corresponding calculation tables in the CPA-DD have been checked and no mistakes have been identified. The estimation of emission reductions for the 2 <sup>nd</sup> crediting period is deemed plausible and conservative.

#### D.7. Validity of monitoring plan

<b>Means of validation</b>	<p>The project activity has applied approved monitoring methodology AMS-I.D, version 18. The project activity is solar energy-based grid connected Greenfield power plant with a total installed capacity of 9.66 MW, applied monitoring methodology requires the monitoring of net generation electricity supplied to grid by the project plant. The net generation electricity supplied to grid shall be cross checked with monthly PEA reports and the respective invoices/receipts.</p> <p>Further, the monitoring methodology requires calibration of monitoring equipment as per national/local standard applicable. It is confirmed that the meters would be calibrated on annual basis as per the PEA regulations /26/. The monitored data must be archived in electronic format for two years after the end of the last crediting period.</p> <p>The CPA-DD has described the monitoring plan in a clear and transparent manner, which is in compliance with applied approved monitoring methodology AMS-I.D, version 18. The validation team has validated each parameter required to be monitored as per applied monitoring methodology and is of the opinion that the proposed monitoring plan in CPA-DD is feasible to implement and will result credible emission reductions resulted due to the project activity and is still valid.</p> <p><b>Parameters monitored ex-post</b></p> <ul style="list-style-type: none"> <li>- <b>EG<sub>PJ,y</sub></b>: Quantity of net electricity supplied to the grid in year y.</li> <li>- <b>Installed capacity after implementation of the Project Activity.</b></li> </ul> <p>According to the CPA-DD , the electricity supplied by the project to the grid and consumed from the grid is continuously measured by export meter and import meter, which are used in billing. The monthly readings are jointly recorded by the PEA representatives and project owner, which can be cross checked with the invoices.</p> <p>The updated CPA-DD /01/ describes that Data monitored and required for verification and issuance will be kept for two years after the end of the crediting period.</p>
<b>Findings</b>	<p>CL 2</p> <ul style="list-style-type: none"> <li>- As per the methodology “AMS-I.D”, Version 18 and the PoA-DD, Version 03 of 16/06/2020, the net electricity supplied to the grid is measured hourly. However, the same is not transparent in the CPA-DD.</li> <li>- Further the electricity exported to the grid is not consistent with the ER spread sheet.</li> </ul>

	<p>- CME to clarify the calibration frequency of the energy meter.</p> <p>For more information, please refer to appendix-4 of the report.</p> <p>CL2 is closed.</p>
<b>Conclusion</b>	All necessary changes have been appropriately reflected in the updated CPA-DD, the monitoring plan in the updated CPA-DD is in compliance with the applied monitoring methodology, and the monitoring arrangements described in the updated CPA-DD can be implemented and are feasible within the project design.

#### D.8. Crediting period

<b>Means of validation</b>	<p>The CPA has been included and registered on 04/03/2014 under the UNFCCC registration No. 6222-P1-0002-CP1. The PPs have chosen a 7 year crediting period which the first crediting period started from 04/03/2014 and has expired on 03/03/2021.</p> <p>As the respective requirements of PCP PoA, clause 315 are met, the project's 2<sup>nd</sup> crediting period may start immediately after the expiration of the 1<sup>st</sup> one, given that all other applicable criteria are met.</p> <p>It is further confirmed that the start date (08/06/2012) and the length of the crediting period (7 years) are in compliance with the project standard.</p>
<b>Findings</b>	<p>CAR 3</p> <p>-The start date of the 2<sup>nd</sup> crediting period does not start immediately after the expiration of the current period i.e the first crediting period.</p> <p>- CME is further requested to provide "Risk acknowledgement and acceptance" (CDM-RAA-FORM) duly completed and signed by the focal point of the CDM PoA.</p> <p>For more information, please refer to Appendix-4 of the report.</p> <p>CAR 3 is closed.</p>
<b>Conclusion</b>	It is thus confirmed that the start date and the length of the 2 <sup>nd</sup> crediting period (7 years) are in compliance with the project standard.

#### D.9. CME and project participants

<b>Means of validation</b>	<p>The validation team has checked the revised CPA-DD /01/ and the UNFCCC website esp. the latest version of the Modalities of Communication /38/ to check whether the listed CME and project participants have duly been authorized and if communication requirements are met. The information on the CPA implementer has been checked with the latest business permit to operate /18/, latest PEA monthly report /09/ and service agreement between CCME and Siam Solar Power Co Ltd /20/.</p> <p>The names of the CME and project participants as listed in the revised CPA-DD are consistent with those listed on the dedicated UNFCCC project website as well as in the last version of the modalities of communication.</p>
<b>Findings</b>	No CARs/CLs have been raised.
<b>Conclusion</b>	The names of the CME and project participants are consistent with those listed on the dedicated UNFCCC project website as well as in the last version of the modalities of communication /38/ .



**D.10. 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 <sup>3</sup>	N	-	-
Corrections	N	-	-
Changes to the start date of the crediting period of component project activity	N	-	-
Inclusion of monitoring plan	N	-	-
Permanent changes to the registered monitoring plan, or permanent deviation of monitoring from applied methodologies, standardized baselines, or other methodological regulatory documents	N	-	-
Changes to the project design	N	-	-
Changes specific to afforestation and reforestation activities	N	-	-
Others (please specify)	N	-	-

**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/remote assessment and after closure of findings. The internal quality control in the validation process is given by the final decision Validation Opinion) made by the Certification Body.

**SECTION F. Validation opinion**

The Carbon Co-ordinating Managing Entity has commissioned the TÜV SUD to re-validate the component project activity titled: "CPA No. 3: Pho Thong Solar PV Power Project " for the purpose of renewal of the CPA crediting period. The validation is based on the relevant UNFCCC requirements.

The review of the updated CPA design documentation and additional documents related to baseline and monitoring methodology; the subsequent background investigation, follow-up interviews have provided TÜV SUD with sufficient evidence to validate the fulfilment of the stated criteria applicable for RCP.

In detail the conclusions can be summarized as follows:

- (i) The updated CPA-DD has been completed using the valid version of the applicable CPADD form, following the instructions therein;
- (ii) The information transferred to the later valid version of the CPA-DD form is materially the same as that in the registered CPA -DD;
- (iii) The methodologies were applied in accordance with the applicable requirements in the "CDM project standard for programmes of activities";
- (iv) The baseline, the estimated GHG emission reductions or net anthropogenic GHG removals, and the monitoring plan in the updated CPA -DD comply with the applicable requirements in the "CDM project standard for programmes of activities", and the valid versions of the methodologies and, where applicable, the standardized baselines that are applicable to the CPA;
- (v) The next duration of the CPA commences on the day immediately after the expiration of the current duration;
- (vi) The names of the coordinating/managing entity and the project participants in the updated CPA -DD are consistent with the names of the coordinating/managing entity and the project participants in the latest version of the MoC statement;
- (vii) Updated the eligibility criteria for inclusion of CPAs as per latest PoA-DD after renewal of PoA crediting period;

<sup>3</sup> 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).

(viii) The current baseline of the CPA is in line with the national and/or sectoral policies and circumstances at the time of requesting renewal of CPA period.

(ix) The monitoring plan is transparent and adequate and in line with the applicable monitoring methodology (AMS-I.D version 18).

The conclusions of this report show, that the CPA, as it is described in the component project activity documentation, is in line with all CDM criteria applicable for the renewal of the CPA.

Pune, 17/01/2022



Eswar Murty, Senior Manager,  
Certification Body,  
TÜV SÜD South Asia Pvt Ltd.

## Appendix 1. Abbreviations

Abbreviations	Full texts
BE	Baseline Emissions
BM	Build Margin
BOOT	Build Own Operate Transfer
CAR	Corrective Action Request
CCME	Carbon Coordinating Managing Entity
CDM	Clean Development Mechanism
CDM M&P	Modalities and Procedures CDM
CER(s)	Certified Emission Reduction(s)
CH <sub>4</sub>	Methane
CL	Clarification Request
CM	Combined Margin
CO <sub>2</sub>	Carbon dioxide
CO <sub>2</sub> e	Carbon dioxide equivalent
DNA	Designated National Authority
DOE	Designated Operational Entity
EB	Executive Board
EPC	Engineering Procurement and Construction
ER	Emission Reductions
FAR	Forward Action Request
GHG(s)	Greenhouse gas(es)
GWP	Global Warming Potential
IPCC	Intergovernmental Panel on Climate Change
LoA	Letter of Approval
MoV	Means of Verification
MR	Monitoring Report
NGO	Non-governmental Organization
ODA	Official Development Assistance
OM	Operating Margin
PCP	Project Cycle Procedure
PDD	Project Design Document
PE	Project Emission
PEA	Provincial Electricity Authority
PP(s)	Project Participant(s)
PPA	Power Purchase Agreement
PS	Project Standard
Ref.	Document Reference
SS(s)	Sectoral Scope(s)
TA(s)	Technical Area(s)
TÜV SÜD	TÜV SÜD South Asia Private Limited
UNFCCC	United Nations Framework Convention on Climate Change
VVS	Validation and Verification Standard

## **Appendix 2. Competence of team members and technical reviewers**



## CERTIFICATE OF APPOINTMENT

Ms. Rekha Menon fulfills the requirements of the Certification Body 'Environment and Energy' of TCV SDC South Asia Pvt. Ltd. to participate in audits.

Qualification applicable to					
Standard	CDM	GS	VCS	ISO 14004:1, 2	Other
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Qualification as						
Status	Validator	Verifier	ATL	Technical Reviewer	Finance Expert	Technical Expert
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
TA (s)	1.2, 3.1, 13.1, 13.2, 14.1					

Country Expertise						
Region	1	2	3	4	5	Other
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Further countries	India, Thailand, Vietnam					

Technical Area/Scopes	
1.2_Renewables	
3.1_Energy Demand	
13.1_Waste handling and disposal (GHG)	
13.2_Manure	
14.1_Afforestation and Reforestation, Forestry and Other Land Use (CHC)	
Power generation and Electrical power transactions (renewable/nonrenewable) (G, IG)	

This appointment is valid until 26/10/2022 and is bound by internal requirements of the Certification Body 'Environment and Energy' of TCV SDC 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-00103/003.

Date	Signature
29/10/2022	

S-CMS-CB-POG-01/03, version 03

TCV SDC South Asia ♦ State (India) ♦ Local Audit ♦ Email: info@tcv-sdc.com ♦ Tel: +91 20 8811100 ♦ Fax: +91 20 8811101





## 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-14004-1/2	Other
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Qualification as						
Status	Validator	Verifier	ATL	Technical Reviewer	Financial Expert	Technical Expert
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
TA (s)	1.1, 1.2, 3.1, 4.1, 13.1					

Country Expertise						
Region	1	2	3	4	5	Other
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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-20317012.

Date	Signature
01/06/2021	

IS-CMS-CD-PDG-01/06, version 03

TÜV SÜD South Asia - Kolkata ♦ Pune ♦ Chennai ♦ Delhi ♦ Gurgaon ♦ Hyderabad ♦ Jaipur ♦ Lucknow ♦ Mumbai ♦ New Delhi ♦ Patna ♦ Ranchi ♦ Tirupur ♦ Vizag ♦ Wipro ♦

TUV<sup>®</sup>

### Appendix 3. Documents reviewed or referenced

No.	Author	Title	References to the document	Provider
1	Cabon Coordinating Managing Entity	CPA-DD "CPA No. 3: Pho Thong Solar PV Power Project"	Version 01 of 19/01/2022 Version 02 of 09/02/2022	CME
2	Cabon Coordinating Managing Entity	ER spread sheets in the form of (301292 CPA3 PhoThong_Ex ante ER_CP2_v1_19012022.xlsx) and 301292 CPA3 PhoThong_Ex ante ER_CP2_v1.1_15022022.xlsx	Version 01 of 19/01/2022 and Version 1.1 of 15/02/2022	CME
3	Cabon Coordinating Managing Entity	CDM-PoA-DD "Small-Scale Renewable Energy PoA in Thailand"	Version 03 of 16/06/2020	Others
4	Cabon Coordinating Managing Entity	CPA-DD "CPA No. 3: Pho Thong Solar PV Power Project"	Version 2.1 of 21/01/2014	Others
5	RINA Services S.p.A	CPA validation report "CPA No. 3: Pho Thong Solar PV Power Project"	Revision 1.1 Aa of 04/03/2014	Others
6	Foundation for Industrial Development – Management System Certification Institute (Thailand) (FID-MASCI)	CDM-PoA Validation report "Small-Scale Renewable Energy PoA in Thailand"	Version 1.1 of 25/06/2020	Others
7	Energy Regulatory Commission	Permission of Electricity Generation	15/02/2013	CME
8	Siam Solar Power public Co Ltd	Organization chart of Siam Solar Power Public Co Ltd	01/2022	CME
9	PEA	Monthly meter reports	10/2021	CME
10	Hitachi	Inverter data sheet (Hiverter-NP201i)		CME
11	-	Hyundai heavy industries co ltd: Solar Module –I MI series I,	dated 07/2011	CME
12	Solar Frontier	Product data sheet SF140-L	-	CME
13	Solar Frontier	Product data sheet SF155-L	-	CME
14	Sharp	Microamorphous silicon thin-film photovoltaic modules	-	CME
15	HYUNDAI Heavy Industries Co LTD	Hyundai Limited warranty for PV modules	-	CME
16	SOLAR Frontier	Limited warranty certificate.	-	CME
17	The SHARP	The limited warranty on Photovoltaic System	-	CME
18	Department of Industrial Work	Operation License	15/06/2016	CME
19		Power Purchase Agreement	30/12/2011	CME

		Agreement no. VSPP-PEA-056/2554 between Siam Solar Power Co.,Ltd. (Khok Phutsa Sub-district, Pho Thong District, Ang Thong Province)  and  Provincial Electricity Authority		
20	-	Service agreement for CPA inclusion into CCMEs "small scale renewable energy PoA in Thailand" by and between CCME and Siam Solar Power Co Ltd	26/11/2012	CME
21	Siam Solar Power Co Ltd	Photos, pictures and Videos of the site, technology installed and meters installed.	-	CME
22	The Board of Investment	Permission to operate the project	18/10/2013	CME
23	Ministry of Energy	Power Development Plan	2018	CME
24	Energy Regulatory Commission	Energy Industry Act 2007	-	CME
25	Ministry of Energy	Energy Development and Promotion Act	1992	CME
26	PEA	PEA regulation on meter practice	2019	CME
27	-	ERPA between CCME and Siam Solar Power Co Ltd	27/01/2022	CME
28	CDM Executive Board	CDM VVS for PoA	Version 03.0 of 09/09/2021	Others
29	CDM Executive Board	CDM PCP for PoA	Version 03.0 of 09/09/2021	Others
30	CDM Executive Board	CDM PS for PoA	Version 03.0 of 09/09/2021	Others
31	CDM Executive Board	EB-112 <sup>th</sup> meeting report	29/10/2021	Others
32	CDM Executive Board	CDM-CPA-DD-FORM	Version 10.0 of 08/10/2021	Others
33	CDM Executive Board	AMS-I.D Grid connected renewable electricity generation	Version 18 of 28/11/2014	Others
34	CDM Executive Board	Tool to calculate the emission factor for an electricity system	Version 07.0 of 31/08/2018	Others
35	CDM Executive Board	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 of 02/03/2012	Others
36	Thailand DNA – Thailand GreenHouse Gas Management Organization (TGO)	<a href="http://ghgreduction.tgo.or.th/th/download-tver/120-gwp-emission-factor/2374-2557_2374.html">http://ghgreduction.tgo.or.th/th/download-tver/120-gwp-emission-factor/2374-2557_2374.html</a>	Last accessed on 07/02/2022	CME
37	-	EPC contract	08/06/2012	CME
38	CCME	CDM-MOC-FORM-ANNEX-2	28/09/2020	Others



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

**Table 1. CL from this validation**

<b>CL ID</b>	01	<b>Section no.</b>	D.5	<b>Date:</b> 03/02/2022
<b>Description of CL</b>				
CL1 CME is requested to provide the EPC (Engineering Procurement and Construction) or BOOT (Build Own Operate Transfer) agreements.				
<b>CME response</b>				<b>Date:</b> 09/02/2022
The EPC contract has been provided as per the attachment CL01 Att01.				
<b>Documentation provided by CME</b>				
CL01 Att01 EPC Contract				
<b>DOE assessment</b>				<b>Date:</b> 10/02/2022
The validation team checked the EPC contract provided by Toyo-Thai Corporation PLC and PWH (Thailand) Co Ltd, dated 08/06/2012.				

<b>CL ID</b>	02	<b>Section no.</b>	D.7	<b>Date:</b> 03/02/2022
<b>Description of CL</b>				
CL 2 - As per the methodology "AMS-I.D", Version 18 and the PoA-DD, Version 03 of 16/06/2020, the net electricity supplied to the grid is measured hourly. However, the same is not transparent in the CPA-DD.  - Further the electricity exported to the grid is not consistent with the ER spread sheet.  - CME to clarify the calibration frequency of the energy meter.				
<b>CME response</b>				<b>Date:</b> 09/02/2022
The details have been updated as follows. - The monitoring frequency of the net electricity supplied to the grid has been revised to hourly measurement in section B.5.1 of the CPA-DD in line with the PoA-DD, Version 03 of 16/06/2020. - The value of electricity exported to the grid has been revised to 17,520 MWh/year in section B.5.1 of the CPA-DD in line with the ER spreadsheet. - The calibration frequency of the energy meter has been revised to an annual basis in section B.5.1 of the CPA-DD, which is complied with the Provincial Electricity Authority (PEA) Regulation.				
<b>Documentation provided by CME</b>				
CPA-DD version 2 dated 09/02/2022 CL02 Att01 PEA Regulation				
<b>DOE assessment</b>				<b>Date:</b> 10/02/2022
- Revised MR checked and noted that the measurement frequency has updated as per the requirements of the methodology. - Electricity export to the grid in section B.5.1 of the MR has been made consistent with the ER spread sheets. - The calibration frequency has been updated to annual, which is as per the requirements of PEA regulation. The team checked copy of the PEA regulation- 2019 and confirms the same.				
CL 2 is closed.				

Table 2. CAR from this validation

<b>CAR ID</b>	01	<b>Section no.</b>	D.3	<b>Date:</b> 03/02/2022
<b>Description of CAR</b>				
CAR 1 The CPA-DD is not transparent on the justification to the applicability conditions as per the methodology AMS-I.D "Grid connected renewable electricity generation", version 18.				
<b>CME response</b>				<b>Date:</b> 09/02/2022
The justification to the applicability condition of AMS-I.D, Version 18 has been provided under section B.1 of the CPA-DD.				
<b>Documentation provided by CME</b>				
CPA-DD version 2 dated 09/02/2022				
<b>DOE assessment</b>				<b>Date:</b> 10/02/2022
Yes, the applicability condition as per the requirement of AMS-ID, version 18 has been justified in section B.1 of the revised PD. The same has been checked against valid evidence and accepted.				
CAR 01 is closed.				

<b>CAR ID</b>	02	<b>Section no.</b>	D.4	<b>Date:</b> 03/02/2022
<b>Description of CAR</b>				
CAR2 1. "Assessment of validity of the original/current baseline and update of the baseline at the renewal of the crediting period" is not justified in the CPA-DD. CME is requested to justify the same with supporting evidence.  2. Provide pdf copies of the latest electricity/energy laws /national or sectoral policies.				
<b>CME response</b>				<b>Date:</b> 09/02/2022
1. The assessment of validity of the original/current baseline and update baseline at the renewal of the crediting period has been provided under section B.3 of the CPA-DD. 2. The pdf copies of the latest electricity/energy laws and national or sectoral policies have been provided as per the attachment CAR02 Att01, CAR02 Att02, CAR02 Att03, and CAR02 Att04.				
<b>Documentation provided by CME</b>				
CPA-DD version 2 dated 09/02/2022 CAR02 Att01 PDP 2018 CAR02 Att02 Energy Act 2007 CAR02 Att03 Factory Act 1992 CAR02 Att04 Energy Development and Promotion Act 1992				
<b>DOE assessment</b>				<b>Date:</b> 10/02/2022
1. it is checked that the baseline was re-assessed according to the 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. The review of the CPA-DD and the subsequent follow-up interviews have provided TUV SUD with sufficient evidence to determine the validity of the original baseline scenario.				
CAR 02 is closed.				

<b>CAR ID</b>	03	<b>Section no.</b>	D.8	<b>Date:</b> 03/02/2022
<b>Description of CAR</b>				
CAR 3  -The start date of the 2 <sup>nd</sup> crediting period does not start immediately after the expiration of the current period i.e the first crediting period.  - CME is further requested to provide "Risk acknowledgement and acceptance" (CDM-RAA-FORM) duly completed and signed by the focal point of the CDM PoA.				
<b>CME response</b>				<b>Date:</b> 09/02/2022
- The start date of the 2 <sup>nd</sup> crediting period has been corrected to 04/03/2021 under section C.3.2 of the CPA-DD, which starts immediately after the expiration of the 1 <sup>st</sup> crediting period. - The Risk acknowledgment and acceptance form has been provided as per the attachment CAR03 Att01.				
<b>Documentation provided by CME</b>				

CPA-DD version 2 dated 09/02/2022 CAR03 Att01 Risk acknowledgment and acceptance form	
<b>DOE assessment</b>	<b>Date:</b> 10/02/2022
1. The start date of the crediting period has been revised. 2. Signed Risk acknowledgement and acceptance form has been provided.	
CAR03 is closed.	

**Table 3. FAR from this validation**

<b>FAR ID</b>	01	<b>Section no.</b>	D.6	<b>Date:</b> 03/02/2022
<b>Description of FAR</b>				
FAR 1 The coordinating/managing entity to apply any global warming potential values that may be adopted by the CMP at CMP 16 for the period from 1 January 2021 in the monitoring reports for any emission reductions achieved on or after 1 January 2021 and update the CPADD in accordance with any other requirements that may be adopted by the CMP at CMP 16;				
<b>CME response</b>				<b>Date:</b> 09/02/2022
In case any global warming potential values are adopted by the CMP at CMP 16, the CME will apply the updated values for the period from 1 January 2021 in the monitoring reports for any emission reductions achieved on or after 1 January 2021 and update the CPA-DD in accordance with any other requirements that may be adopted by the CMP at CMP 16.				
<b>Documentation provided by CME</b>				
-				
<b>DOE assessment</b>				<b>Date:</b> DD/MM/YYYY

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**Document information**

<i>Version</i>	<i>Date</i>	<i>Description</i>
03.0	31 May 2019	Revision to: <ul style="list-style-type: none"> <li>Ensure consistency with version 02.0 of the “CDM validation and verification standard for programmes of activities” (CDM-EB93-A08-STAN);</li> <li>Make editorial improvements.</li> </ul>
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		